Development of OER-based undergraduate technology course material: “TCC242/05 Web Database Application” delivered using ODL at Wawasan Open University

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Open Educational Resources ASIA

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PERSPECTIVES ON OPEN AND DISTANCE LEARNING

Open Educational Resources: An Asian Perspective

Gajaraj Dhanarajan and David Porter, Editors

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COMMONWEALTH *of* LEARNING

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Background

A series of studies on distance learning technologies in the Asian region, collectively known as the PANdora studies (described in *Distance Education Technologies in Asia* and *Policy and Practice in Asian Distance Education*, both edited by Tian Belawati and Jon Baggaley, and published by SAGE and IDRC in 2010), were carried out from 2005 to 2010, through a research project supported by the International Development Research Centre of Canada. A second series of studies, collectively titled "Openness and Quality in Asian Distance Education", were undertaken by the same research network between 2010 and 2012, and the current work is the outcome of one of its major components, "A Study of the Current State of Play in the Use of Open Educational Resources in the Asian Region". The main objective of the study is to establish, qualitatively and quantitatively, the extent and practice of OER use by institutions and individuals in the developing parts of Asia, with a view to enhancing and promoting collaboration in the region for the purposes of sharing curriculum, learning materials, learning tools and delivery strategies. The interest in OER is based on the inherent value of freely available knowledge resources to the world's poor and marginalised populations. The research study has resulted in a significant contribution to the understanding of OER and their use in Asian distance education, through this book and its associated website, www.oerasia.org.

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Foreword

Globally, there has been a great deal of discussion regarding the potential for open educational resources (OER) in higher education (HE) to increase access, reduce costs and enhance educational quality. This was evident during the World OER Congress organised jointly by the Commonwealth of Learning (COL) and UNESCO in Paris, in June 2012. This resulted in the Paris OER Declaration, which makes ten recommendations relating to the need for advocacy, policy development, capacity-building and research. COL's interest and experience in OER cover all these aspects and go beyond HE to cover secondary education, teacher training and non-formal education. COL focusses increasingly on the importance of OER to promote internationally agreed goals, such as the Millennium Development Goals and the Education For All goals, wherein learning is seen as the key to development. This is inevitably leading us to pay closer attention to OER in the developing Commonwealth, and to the challenges of OER awareness, development, adaptation and reuse.

This book, the result of an OER Asia research project hosted and implemented by the Wawasan Open University (WOU) in Malaysia, with support from Canada's International Development Research Centre (IDRC), brings together ten country reports and ten case studies on OER in the Asian region that highlight the typical situations obtaining in each context. Asia is a continent full of contrasts. It is home to the largest number of ultra-poor people in the world; it can also claim some of the richest economies with the most advanced information and communication technology (ICT) infrastructures. However, South Asia and the Mekong region contain vast areas that remain amongst the least connected in the world. Even against such a backdrop of sharp contrasts, this book demonstrates that OER development is thriving in Asia — in different economies, amongst different types of stakeholders and with varied approaches to open licensing. The diversity of the contexts and approaches provides valuable insights and information that make this publication an important advocacy tool for promoting the use of OER.

What clearly emerges from this book is that outside the USA and the UK, three Asian countries have published a substantial quantity of OER in HE. China has its very large National Core Courses project (Jingpinke), in which Beijing Open University is one stakeholder. The Virtual University of Pakistan has placed nearly 6,000 hours of course material on YouTube. India's National Programme on Technology Enhanced Learning has uploaded over 260 courses on the Web in text and video formats. Both the Pakistani and Indian initiatives have explicitly adopted an open licensing framework and Creative Commons Attribution-ShareAlike (CC-BY-SA) licences, as well as noncommercial forms of the Creative Commons (CC) licences.

Indonesia is making significant progress in OER matters under the leadership of the Universitas Terbuka, which is premised on a culture of sharing course materials amongst the faculty, facilitated by the national network, INHERENT. In the Philippines, the University of the Philippines Open University is in the process of developing an OER policy. An OER initiative at WOU has already led to the delivery of a full course built entirely on OER. Because of limited connectivity, Vietnam has created local online access to MIT's OER (namely, the institution's OpenCourseWare resources), which serve a large number of its universities. The high-income economies of Japan and South Korea, where expansion of HE has plateaued, have been early innovators and adopters of OER. Japan was a pioneer in enabling university faculty to exchange digital learning materials, as early as 1997. The Japan Open Courseware (OCW) consortium now leads the OER movement with a large membership of HE institutions. South Korea has formed its own OCW consortium and is harnessing its very advanced ICT infrastructure to further improve the quality of its teaching and learning.

The survey results presented here indicate that teachers in their classrooms are at the forefront of OER use in Asian HE. Their commitment to excellence in teaching is the real driving force in the reuse/adaptation of OER, overriding the general lack of awareness and, more importantly, the lack of career advancement incentives and supportive institutional policies. This in itself is a great strength and augurs well for the future of OER in Asia, where institutions and governments will require more time to adopt open licensing approaches. What this book illustrates is the pressing need to foster faculty commitment to OER, whilst encouraging the gradual evolution of institutional policies.

COL promotes "learning for development" and focusses on harnessing the use of OER and appropriate technologies, such as mobile phones and community radio for non-formal education (NFE). The two case studies focusing on the NFE sector, one from the Philippines and the other from India, demonstrate the viability of OER use in different linguistic, social and educational contexts.

We are very grateful to our former President and WOU founding Vice Chancellor (and now Honorary Director of WOU's Institute for Research and Innovation), Tan Sri Dato' Emeritus Professor Gajaraj Dhanarajan, the lead project investigator for OER Asia, for inviting COL to be the publisher of this important collection of research on OER. We would like to thank IDRC, Canada, for their support of OER Asia, and record our appreciation for the important editorial contributions of David Porter, Joan Acosta and Dania Sheldon. Equal credit goes to the COL Director, Technology and Knowledge Management, Dr. Venkataraman Balaji, for contributing a report and a case study.

In the past decade, the OER community has focussed primarily on advocacy, OER development and seeking the commitment of policy makers. This book clearly indicates that as more and more governments are able to provide computers and connectivity in the classroom, the time is now ripe to move beyond commitment, to action.

Professor Asha Kanwar
President and Chief Executive Officer
Commonwealth of Learning

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    - Prof. Ya-wan Li of the Open University of China.
    - Prof. Tsuneo Yamada of the Open University of Japan.
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Yong Kim is a professor at Korea National Open University and since 2010 has been with their Department of eLearning, which offered Korea's first master's programme in eLearning. His research interests are: eLearning, learning management systems and learning content management systems; e-portfolios; and quality assurance. He has also played important roles in eLearning fields such as ISO/IEC JTC1/SC36, and as a project co-editor has developed international standards.

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David Porter is the Executive Director of BCcampus.ca in British Columbia, Canada. As a long-time advocate for the benefits of adapting new technology to deliver educational opportunities, David was uniquely qualified to lead BCcampus in achieving its vision for creating a collaborative online learning agency that supports BC's public post-secondary institutions. David's experience in the education and training fields has included working with both public and private sector organisations in Canada. He has also been a project manager for industry-based projects in Canada and the US, and has worked as a project leader and consultant for international projects, most recently in Mongolia, Vietnam, Malaysia, India and Mexico.

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List of Acronyms

3G	third-generation mobile telecommunications
AgriLORE	Agricultural Learning Objects Repository
ARIADNE	Alliance of Remote Instructional Authoring and Distribution Networks for Europe
BJOU	Beijing Open University
CBP	course blueprint
CC	Creative Commons
CCC	Cyber Campus Consortium
CCHK	Creative Commons Hong Kong
CDT	course development team
CGIAR	Consultative Group on International Agricultural Research
CMU	Carnegie Mellon University
CORE	China Open Resources for Education
DR	digital resources
EMPC	Electronic Media Production Centre (at IGNOU)
GLOBE	Global Learning Objects Brokered Exchange
HE	higher education
HEC	Higher Education Commission (Pakistan)
HEI	higher education institution
HKSAR	Hong Kong Special Administrative Region
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICT	information and communication technology/technologies
IDRC	International Development Research Centre (Canada)
IGNOU	Indira Gandhi National Open University
III	Institute for Information Industry (Taiwan)
IIM	Indian Institute of Management
IISc	Indian Institute of Science
IIT	Indian Institute of Technology
IP	Internet protocol
IPR	intellectual property rights
IRI	Institute for Research and Innovation (Wawasan Open University)
ISKME	Institute for the Study of Knowledge Management in Education (USA)
IT	information technology
JOCW	Japan Open Courseware Consortium
KERIS	Korea Education and Research Information Service
KM	knowledge model
KOCW	Korean Open Courseware
LACLO	Latin-American Community of Learning Objects
LLL	lifelong learning

LMS	learning management system
LORNET	Learning Object Repositories Network
MEITAL	Inter-University Center for e-Learning (Israel)
MERLOT	Multimedia Educational Resource for Learning and Online Teaching
MEXT	Ministry of Education, Culture, Sports, Science and Technology (Japan)
MIT	Massachusetts Institute of Technology
MOOC	massive open online course
MQA	Malaysian Qualifications Agency
MSC	Multimedia Super Corridor (Malaysia)
NCC	national core courses (China)
NHESP	National Higher Education Strategic Plan (Malaysia)
NIME	National Institute of Multimedia Education (Japan)
NIME-glad	National Institute of Multimedia Education Gateway to Learning for Ability Development
NKC	National Knowledge Commission (India)
NME-ICT	National Mission on Education Through ICT (India)
NPC	National Programme Committee (India)
NPE	National Policy on Education (India)
NPO	non-profit organisation
NPTEL	National Programme on Technology Enhanced Learning (India)
NSDL	National Science Digital Library (USA)
OA	open access
OCW	open courseware
OCWC	OpenCourseWare Consortium
ODL	open and distance learning
OER	open educational resources
OSCAR	Open Source Courseware Animations Repository (India)
OSS	open source software
OUHK	Open University of Hong Kong
OUJ	Open University of Japan
OUJ-CODE	Open University of Japan's Center of ICT and Distance Education
OUJ-OCW	Open University of Japan Open Courseware
PG	post-graduate
PIC	Project Implementation Committee (India)
QA	quality assurance
R&D	research and development
RLO	reusable learning object
TCU	Thailand Cyber University Project
TEL	technology-enhanced learning
UG	undergraduate
UGC	University Grants Commission (India)

UNOM	University of Madras
UPOU	University of the Philippines Open University
UT	Universitas Terbuka
VASAT	Virtual Academy for the Semi-Arid Tropics
VOER	Vietnam Open Educational Resources programme
VUP	Virtual University of Pakistan
WOU	Wawasan Open University

PART

I

Overview

CHAPTER

1

Higher Education and Open Educational Resources in Asia: An Overview

Gajaraj Dhanarajan and Ishan Sudeera Abeywardena

Abstract

Higher education has experienced phenomenal growth in all parts of Asia over the last two decades. This expansion, coupled with a diversity of provisions, has meant that more and more young Asians are experiencing tertiary education within their own countries. Notwithstanding this massive expansion of provisions, equitable access is still a challenge for Asian countries. There is also concern that expansion will erode quality. The use of digital resources is seen as one way of addressing the dual challenges of quality and equity. Open educational resources (OER), free of licensing encumbrances, hold the promise of equitable access to knowledge and learning. However, the full potential of OER is only realisable by acquiring: (i) greater knowledge about OER, (ii) the skills to effectively use OER and (iii) policy provisions to support its establishment in the continent's higher education milieu.

Keywords: *Asia, higher education, digital resources, open educational resources, OER awareness, policies, practices, benefits and barriers*

Higher Education in Asia

The last three decades has seen a rapid increase in the provision of higher education in almost all parts of greater Asia — from the Korean peninsula in the east to the western borders of Central Asia. Nowhere has this increase matched the growth seen in South, South East and Far East Asia. Universities, polytechnics, colleges and training institutes with a variety of forms, structures, academic programmes and funding provisions have been on an almost linear upward progression (Table 1.1).

Table 1.1: Number of higher education institutions in selected countries[1]

Country	Three- to four-degree & post-graduate schools	Two- to four-year undergraduate schools	Two- and three-year diploma schools	Short certificate schools	Professional and technical schools
Cambodia	69	9	-	-	-
PRC	1,237	1,264	1,878	-	-
India	504	28,339	-	-	3,533
Indonesia	480	3967	162	-	-
Laos	34	-	11	-	-
Malaysia	57	488	24	37	-
Philippines	1,710	-	114	30	-
South Korea	197	152	-	-	-
Sri Lanka	15	16	-	-	-
Thailand	102	32	19	-	-

In addition to governments, private for-profit and not-for-profit organisations, public–private partnerships, international agencies and intergovernmental agencies have been participating in and financially supporting this growth. With the arrival of and access to the Internet, World Wide Web and a huge range of fast and intelligent information and communication technologies (ICT), many individuals have also been prepared to share their life experiences and knowledge with others through YouTube, Flickr, Wikieducator and other similar tools. Consumers of education have themselves become producers of education. The growth in Asia reflects the growth in many other parts of the world, which was experiencing increased participation from 28.6 million in 1970 to about 152.7 million in 2007, at a rate of increase of almost 4.6 per cent per year (UNESCO, 2009). Between 1990 and 2005, about 98 million Asians had experienced one or another form of tertiary education in a variety of institutions, ranging from technical colleges to universities (Table 1.2).

Table 1.2 is also illustrative of high levels of termination in higher education by millions of young people who, despite being qualified to meet the challenges of higher education, are unable to fulfil their aspirations. The gap between demand for and supply of higher education still continues to be high. Further exacerbating this situation is that those failing to gain admission into higher education are often from the marginalised segments of a nation's population.

Unequal access to higher education on the basis of gender, economic and social status, location of residence and poor prior schooling all continue to challenge many Asian nations. Countries such as Cambodia, Laos, India, Indonesia, Pakistan and Vietnam have low participation rates for the 17–24 age cohort. Further, policies on widening participation in higher education will also require serious regard for many other groups besides those described so far. These other groups include challenged and displaced persons, migrant labourers, immigrants and the elderly. Many international conventions and covenants provide a framework for countries to consider. As of June 2009, only India, the Philippines and Bangladesh had ratified conventions, whilst others are moving slowly on this front, even though countries like Malaysia have policies in place to facilitate access for challenged persons.

[1] Data extrapolated from Asian Development Bank, 2012.

Table 1.2: Upper secondary gross, graduation and tertiary entry ratios (Asian Development Bank, 2012)

Country	Secondary gross enrolment ratio	Upper secondary gross graduation/ completion (ISCED 3A)	Gross entry ratio into tertiary (ISCED 5A)
Cambodia	23a	7.5e, f	
China	72a	33	14
India	52a	28	13c
Indonesia	58a	31	17
Laos	27b	5.3c, f	
Malaysia	82a		26c
Philippines	72a, c	64	
South Korea	102a	62	61
Sri Lanka	56.6f	28.3c, f	21.2c
Thailand	82a	40	20
Vietnam	25.5a, b	12.5c	

ISCED = International Standard Classification of Education. ISCED 3A = upper secondary level of education; programmes at level 3 are designed to provide direct access to ISCED 5A. ISCED 5A = first stage of tertiary education; programmes are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements.
Sources: (a) UNESCO, 2009 (data from [b] 2005, [c] 2006, [d] 2001); (e) not segregated under ISCED; (f) Barro & Lee, 2010.

Besides this normal age cohort, many other groups are also seeking or requiring access to higher education. The biggest amongst these are adults who wish to return to learning. For many of these adults, higher education was denied them earlier. Their return to study requires facilitation which in an already supply-poor situation presents difficulties. Not facilitating or incentivising such returnees is not only a social denial, but also economically counterproductive. Malaysia presents such a situation. The country aspires to be high-income in another decade. To support that aspiration, it requires an adult workforce of highly skilled and knowledgeable citizens. Currently, of its 12 million citizens in the workforce, more than 80 per cent have less than a secondary school education. This is a serious concern, given the country's ambition. Policy initiatives will be required to increase participation. Countries such as Malaysia recognise this dilemma and are actively pursuing policies to widen participation. This may not be the case all across Asia. Special policies include creating alternate pathways of entry, part-time studies, distance education, special financial incentives and arrangements, recognition of workplace training and according of academic credit for such training through policy instruments promoting lifelong learning. South Korea, like its other OECD counterparts, has long been a leader in such arrangements. The Philippines, Indonesia, Thailand, India and China all have enculturised lifelong learning or are moving towards doing so.

Besides "balancing the continued expansion of access with greater attention to equity" (Asian Development Bank, 2011), higher education in Asia is also

challenged by other concerns. According to a recently published study by the Asian Development Bank (2011), these include the following:

- Maintaining and improving education quality, even in the face of serious financial constraints.
- Increasing the relevance of curriculum and instruction at a time of rapid change in labour market needs.
- Increasing and better utilising the financial resources available to higher education.

In many development circles in Asia, ICT has been viewed if not as a panacea then at least as having the potential to address many of the above challenges. In an earlier report on the role of ICT in education, the Asian Development Bank (2009) went on to declare:

> ICT has the potential to "bridge the knowledge gap" in terms of improving quality of education, increasing the quantity of quality educational opportunities, making knowledge building possible through borderless and boundless accessibility to resources and people, and reaching populations in remote areas to satisfy their basic right to education. As various ICTs become increasingly affordable, accessible, and interactive, their role at all levels of education is likely to be all the more significant in making educational outcomes relevant to the labor market, in revolutionizing educational content and delivery, and in fostering "information literacy".

Many Asian nations have been investing in ICT for the last four decades or so, and some of these countries (e.g., South Korea, Japan, Singapore, Malaysia) have ICT infrastructures that rank amongst the best in the world; on the other hand, in many Asian countries ICT developments are somewhat modest, or even inadequate to support the needs of higher education. Notwithstanding, there is a clear appreciation of the role that ICT, especially digitised learning resources, can play in expanding access and improving the quality of education.

Use of Digitised Educational Resources in Asian Higher Education

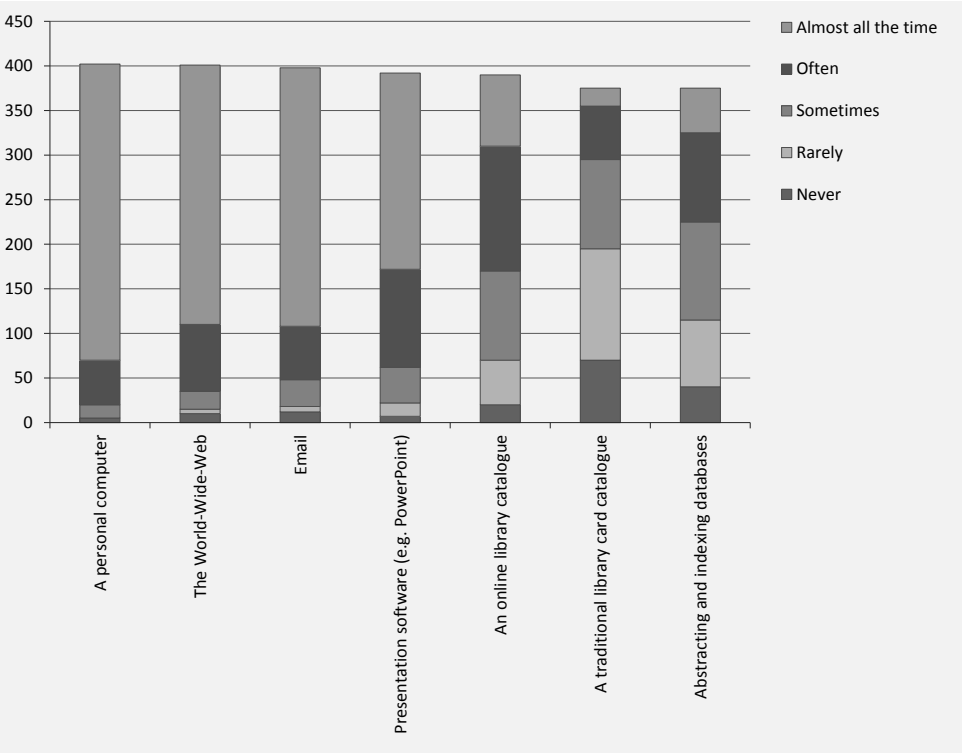
During the last 40 years, Asian nations have developed an affinity for the use of ICT to serve education in a variety of ways. These technological tools have been employed to deliver education in various sectors and at various levels. Institutions have been using both low and high technologies, and many that have been using the former, such as analogue broadcast radio and television and print, have been gradually moving in tandem with the evolution of the latter, i.e., from the analogue to the digital realm using the Internet, the World Wide Web and multimedia resources. Amongst a few, pedagogy has also evolved along with the technologies, albeit not at the same pace. Of the new pedagogies, distance education or open distance education has proven to be especially attractive to policy makers and budget-conscious administrators, as well as a segment of learners who look for a much more self-directed and flexible learning environment. But increasingly, eLearning, virtual campuses and online courses are also being delivered, especially in ICT-rich environments like South Korea and

Japan. The availability of new technologies has also created opportunities in other Asian countries to embed digital resources in their courses delivered on- or offline. However, the use of digital resources for teaching or learning is not uniform across or within nations. A number of factors either enable or hinder such use. In a recent study conducted with the support of a grant from the International Development Research Centre of Canada, researchers found, through a survey of some 580 academic staff from ten Asian countries (South Korea, Japan, China, Hong Kong, the Philippines, Indonesia, Vietnam, Malaysia and India), the following.

Access to ICT infrastructure and digital infrastructure

What was seen as a major impediment even as recently as the turn of the millennium is no longer viewed as a major challenge. Reliable electricity, available and affordable appliances, the skills to install, maintain and use appliances, and access to the Internet (albeit at a higher connection cost and smaller bandwidth) are there for most workers in higher education. Urban populations, both staff and students, have easier access to ICT infrastructure, but with the increasing availability of mobile devices and telephones the urban–rural imbalance is somewhat mitigated. Infrastructural resources besides the availability of personal computers and mobiles also include access to the Internet, the World Wide Web, email, presentation software and in some cases electronic libraries (Figure 1.1).

Figure 1.1: The availability of ICT infrastructure in selected Asian countries



Sources of digital resources

As Table 1.3 indicates, almost all academic staff use the popular search engines (Google, Yahoo!, Safari and Bing). A few build and maintain their own personal collections and/or use media sources, such as CNN, BBC or local television and radio channels. There is limited use of resources from museums, professional organisations and commercial databases (probably a reflection of the cost to access these resources).

Table 1.3: Sources of digital resources (after Dhanarajan & Abeywardena, 2012)

	Use (%)					
Sources of digital resources	Almost all the time	Often	Sometimes	Rarely	Never	N
Search engines/directories (e.g., Google, Yahoo!)	54.38	32.47	9.54	2.32	1.29	388
My own personal collection of digital materials	30.59	39.85	17.48	9.77	2.31	389
Public (free) online image databases	23.31	34.27	27.53	9.55	5.34	356
Online journals (e.g., via JSTOR)	21.43	28.06	27.3	15.82	7.4	392
Library collections (digital)	16.41	27.95	29.23	17.69	8.72	396
Campus image databases from my own institution (e.g., departmental digital slide library)	13.44	22.22	28.17	18.35	17.83	387
"Portals" that provide links or URLs relevant to particular disciplinary topics	13.04	33.25	36.32	11.51	5.88	391
Media sites (e.g., NPR, New York Times, CNN, PBS)	10.97	25.59	32.64	19.58	11.23	383
Other	5.56	11.11	18.52	12.04	52.78	108
Online exhibits (e.g., from museums)	3.66	10.44	25.85	32.11	27.94	383
Commercial image databases (e.g., Saskia, AMICO)	2.86	9.61	24.16	27.01	36.36	385

Use of digital resources

Table 1.4 shows that depending on residential locations and bandwidth availability, academics *mostly* accessed a range of resources, such as: digital readers (e.g., Adobe Acrobat); images or other visual materials, such as drawings, photographs and art posters; online reference materials; digitised documents; digital film or video; and course packs. The least accessed resources included data archives; audio materials, such as speeches and oral interviews; online diaries; government documents; and simulations or animations.

Table 1.4: Types of digital resources and their frequency of use (after Dhanarajan & Abeywardena, 2012)

Types of digital resources	Use (%)					
	Almost all the time	Often	Sometimes	Rarely	Never	N
Digital readers (e.g., Adobe Acrobat)	30.4	34.2	21.3	8.0	6.1	395
Images or visual materials (drawings, photographs, art, posters, etc.)	26.8	41.3	23.3	7.3	1.5	400
Online reference resources (e.g., dictionaries)	24.2	40.9	25.0	7.1	2.9	396
Online or digitised documents (including translations)	17.3	34.9	23.4	16.3	8.0	398
Online class discussions (including archived discussions)	15.9	25.8	27.4	16.6	14.3	391
Digital film or video	15.4	33.9	35.7	10.6	4.3	395
News or other media sources and archives	15.3	35.1	32.3	13.0	4.3	393
Course packs	14.7	20.4	35.6	16.2	13.1	388
Curricular materials and websites that are created by other faculty and/or other institutions (e.g., MIT OpenCourseWare, World Lecture Hall, MERLOT)	13.8	29.4	33.3	15.3	8.3	398
Other	13.3	20.5	25.8	9.3	31.1	151
E-book readers (e.g., Kindle)	10.3	19.6	19.57	22.83	27.72	368
Data archives (numeric databases, e.g., census data)	9.16	23.4	31.6	20.6	15.3	393
Audio materials (speeches, interviews, music, oral histories, etc.)	7.9	23.5	35.4	22.0	11.1	395
Personal online diaries (e.g., blogs)	6.9	18.9	27.0	27.3	19.9	392
Government documents in digital format	6.6	21.1	33.84	21.37	17.05	393
Simulations or animations	5.37	26.6	34.2	23.3	10.5	391
Maps	3.8	12.2	33.9	29.4	20.8	395
Digital facsimiles of ancient or historical manuscripts	2.3	6.9	16.0	26.7	48.2	394

Factors inhibiting the use of digital resources

Two types of barriers seem to dissuade individuals, especially teachers, from using digital resources: technical and attitudinal. The technical barriers include: needing technical support to search and find digital resources; locating and clearing copyright; setting up technical infrastructure (computers, connections); installing appropriate software; evaluating the quality of resources; integrating resources into learning management systems; and using learning management systems (Table 1.5). The attitudinal barriers mostly arise from (i) apprehension about the quality of the digital resources, the context of their creation and the appropriateness of the resources to buttress the curriculum, (ii) lack of confidence in learners' skills to use digital resources and (iii) anxieties over issues relating to plagiarism (Table 1.6).

Table 1.5: Technical barriers to the use of digital resources (after Dhanarajan & Abeywardena, 2012)

Barriers	Extremely important	Very important	Somewhat important	A little important	Not at all important	N	Percentage
Support with interpreting copyright laws and/or securing copyright permission	35.60%	38.90%	16.20%	6.40%	2.80%	388	92.40%
Support with finding digital resources	35.00%	42.20%	13.80%	5.40%	3.60%	391	93.10%
Support with assessing the credibility of digital resources	34.60%	41.30%	15.40%	5.40%	3.30%	390	92.90%
Support with obtaining or setting up technical infrastructure (servers, computers, smart classrooms, etc.)	31.30%	38.20%	20.40%	6.70%	3.40%	387	92.10%
Support with evaluating the appropriateness of resources for my teaching goals	27.50%	38.00%	19.00%	11.60%	3.90%	389	92.60%
Support with gathering, organising, and maintaining digital materials	26.50%	45.50%	16.20%	7.70%	4.10%	389	92.60%
Support with digitising existing resources	26.00%	39.70%	22.90%	7.30%	4.20%	385	91.70%
Support with integrating resources into a learning management system (e.g., Moodle, Sakai)	24.90%	33.40%	23.10%	12.40%	6.20%	386	91.90%
Support with training students to find or evaluate digital resources	24.00%	39.80%	25.10%	7.80%	3.40%	387	92.10%
Support with importing resources into a course website or a database	21.80%	36.40%	23.40%	13.50%	4.90%	385	91.70%
Support with learning how to use a learning management system (e.g., Moodle, Sakai)	20.00%	42.10%	19.00%	12.20%	6.80%	385	91.70%
Support with creating my own website	19.30%	32.00%	27.60%	14.70%	6.40%	388	92.40%

Table 1.6: Non-technical barriers to the use of digital resources (after Dhanarajan & Abeywardena, 2012)

Barriers	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	N	Percentage
They cannot substitute for the teaching approaches I use	13.60%	26.90%	33.80%	25.80%	361	86.00%
I don't have time to use digital resources	11.80%	24.60%	33.00%	30.60%	382	91.00%
Digital resources are difficult for me to access	9.70%	20.20%	35.20%	34.90%	381	90.70%
Digital materials can be presented outside their original context	8.30%	24.50%	41.90%	25.30%	363	86.40%
They are irrelevant to my field	7.70%	23.10%	35.60%	33.50%	376	89.50%
Using them distracts from the core goals of my teaching	5.60%	22.70%	40.60%	31.00%	374	89.00%
Students don't have the information literacy skills to assess the credibility of digital resources	5.40%	25.10%	37.60%	31.90%	367	87.40%
I don't want my students to copy or plagiarise material from the Web	4.20%	21.90%	42.70%	31.20%	356	84.80%

Factors enabling or encouraging academic staff to use digital resources

These factors relate either to pedagogical reasons (Table 1.7) — such as a desire to be current in knowledge, access to content not available in the local institution, and availability of sophisticated media, digital resources and supporting research — or to personal reasons (Table 1.8), including "exciting" learners about new ways of learning and engaging in critical thinking, providing learners with current knowledge from primary sources, supporting learner creativity and enabling learning flexibility by allowing content to be available 24/7. Also emerging amongst innovators are many novel opportunities that new digitised resources present. These include collaborating in and sharing of curriculum, learning materials and associated tools/technologies. In parallel to technological advancements has been a desire of many to share — especially learning materials — free of legal and logistical restrictions. The rearrangement of licensing protocols and regulations, such as via the family of Creative Commons provisions, is encouraging Asian academics to explore a range of activities, including participation in the global open educational resources (OER) movement.

Table 1.7: Pedagogical reasons (after Dhanarajan & Abeywardena, 2012)

Factors	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	N	Percentage
It helps me get students excited about a topic	57.30%	36.10%	5.90%	0.80%	393	93.60%
It improves my students' learning	54.50%	39.50%	5.90%	0.00%	387	92.10%
It helps me let students know the most up-to-date (or most current) developments in the subject	54.40%	37.90%	7.20%	0.50%	388	92.40%
It helps me provide students with a context for a topic	52.40%	44.00%	3.10%	0.50%	391	93.10%
It allows me to integrate primary source material into the course	45.50%	44.70%	9.00%	0.80%	387	92.10%
It allows my students to be more creative	42.50%	46.40%	9.80%	1.30%	386	91.90%
It is more convenient for my students and their schedules	40.50%	42.60%	14.60%	2.30%	383	91.20%

Table1.8: Personal reasons (after Dhanarajan & Abeywardena, 2012)

Factors	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	N	Percentage
It saves me time	39.50%	37.10%	16.40%	7.00%	385	91.70%
It provides access to resources that we don't have at our college	39.10%	46.10%	12.20%	2.60%	386	91.90%
It allows me to do things in the classroom that I could never do otherwise	36.40%	47.30%	11.40%	4.90%	385	91.70%
It allows me to stay up to date with my colleagues	35.70%	35.90%	20.60%	7.80%	384	91.40%
It helps me to teach critical thinking skills	35.10%	41.00%	19.10%	4.90%	388	92.40%
It helps me to integrate my research interests into my course	34.10%	49.40%	14.50%	2.10%	387	92.10%
I like or feel very comfortable with the new technologies	30.60%	48.10%	17.70%	3.60%	385	91.70%
It helps me to teach information literacy (i.e., evaluating the online materials for themselves)	29.90%	47.90%	18.00%	4.10%	388	92.40%
I enjoy having my teaching practices and course materials available to anyone in the world who would like to use them	29.70%	43.00%	19.90%	7.40%	377	89.80%
The administration (deans, chairs, provost) encourages me to use digital resources more	20.80%	32.80%	26.60%	19.80%	384	91.40%
It may help me get promoted or get tenure	10.70%	25.10%	35.50%	28.70%	383	91.20%

Pursuing OER

Open educational resources are increasingly being promoted by enthusiasts as a solution, amongst many others, to overcome the challenges of access, quality and cost in providing or participating in higher education, all over the world. Whilst in many parts of the developed world cost has often been cited as a reason to seriously consider OER as an alternative to expensive textbooks, skyrocketing tuition fees and inflexible learning opportunities within conventional systems, in the developing world inequitable access to learning, especially at the tertiary level — both formal and non-formal — has been presented as an argument to buttress the case. Conceiving of OER purely in terms of access, cost and quality is perhaps limiting, as there are other more profound reasons to assert a place for OER in higher education.

Even though ideas relating to OER have been in circulation, globally, over the last decade or so, developments in the poorer Asian nations have been slow. Similarly, and despite the contemporary international debate and dialogue, knowledge of OER and their value amongst members of the larger Asian academic community as well educational policy makers is modest at best. Even in countries where there is familiarity, such as Japan, China and India (all of which already have some kind of arrangements to share digitised course content through consortium arrangements),[2] discernible gaps exist regarding understanding and application in many of the following aspects:

- Detailed knowledge of OER as a practice.
- Knowledge of user needs.
- Knowledge of usage levels amongst various user groups.
- The characteristics of organisations successfully using OER.
- A knowledge of and compliance with standards.
- The range of technological assets required to benefit from OER.
- The human capacities needed to develop and manage OER.
- Other contextual factors (e.g., bandwidth).

Notwithstanding the above, a number of national and institutional initiatives are ongoing, ranging from the big to the tiny. Some examples of OER activity in the formal academic sector, described in the present volume, are: India's NPTEL (National Programme on Technology Enhanced Learning), the efforts by a consortium of the Indian Institutes of Technology (Chapter 17); Beijing Open University's non-formal educational courses (Chapter 1); formal degree programmes at the Virtual University of Pakistan (Chapter 8); South Korea's provision of employment-related training programmes (Chapter 6); Vietnam's efforts at producing translated versions of academic texts as open textbooks (Chapter 10); and formative efforts by Malaysia's Wawasan Open University (Chapter 11). In the non-formal sector, Indonesia's Open University is building a community of teachers to share learning resources through its teacher education forum (Chapter 18); a commercial publisher in the Philippines is putting together on a free-to-use basis historical and cultural documents about the Philippines (Chapter 13); and in India an international development agency, ICRISAT (International Crops Research Institute for the Semi-Arid Tropics) has created a suite of learning objects on agriculture and climate sciences, and made it available to farmers, extension workers and academics as OER (Chapter 12).

[2] www.ocwconsortium.org

There are any number of reasons why participation in an OER movement is beginning to happen (Table 1.9). It is still early days to predict how well a culture of producing, sharing, using and reusing OER will develop in most parts of Asia. At best, it is a development in progress, and at worst, it could be perceived as yet another techno-fad. Institutions and individuals who produce, access and use OER clearly perceive benefits, despite some difficult barriers. Survey findings from nine Asian countries regarding perceptions of benefits and barriers are presented in Tables 1.9 and 1.10.

Table 1.9: Perceived benefits of accessing and using OER (after Dhanarajan & Abeywardena, 2012)

	1	2	3	4	5		
Benefits	Very important				Unimportant	N	Percentage
Gaining access to the best possible resources	72.30%	21.00%	5.40%	0.60%	0.60%	314	74.80%
Promoting scientific research and education as publicly open activities	47.50%	34.90%	11.90%	3.80%	1.90%	318	75.70%
Bringing down costs for students	45.40%	29.30%	16.10%	6.60%	2.50%	317	75.50%
Bringing down costs of course development for institutions	42.40%	30.10%	15.20%	6.60%	5.70%	316	75.20%
Providing outreach to disadvantaged communities	44.00%	28.20%	17.70%	7.60%	2.50%	316	75.20%
Assisting developing countries	37.80%	26.70%	21.30%	9.80%	4.40%	315	75.00%
Becoming independent of publishers	27.60%	23.70%	28.80%	12.20%	7.70%	312	74.30%
Creating more flexible materials	47.20%	33.20%	12.00%	3.20%	4.40%	316	75.20%
Conducting research and development	50.30%	27.40%	15.60%	4.80%	1.90%	314	74.80%
Building sustainable partnerships	41.50%	27.50%	21.10%	6.10%	3.80%	313	74.50%

Table 1.10: Barriers to producing and utilising OER (after Dhanarajan & Abeywardena, 2012)

	1	2	3	4	5		
	Very important				Unimportant	N	Percentage
Lack of awareness	51.00%	29.90%	9.90%	3.80%	5.40%	314	74.80%
Lack of skills	30.60%	40.80%	17.20%	5.40%	6.10%	314	74.80%
Lack of time	24.20%	30.60%	24.20%	9.70%	11.30%	310	73.80%
Lack of hardware	17.30%	24.70%	25.00%	15.10%	17.90%	312	74.30%
Lack of software	18.70%	28.80%	23.40%	13.60%	15.50%	316	75.20%
Lack of access to computers	19.50%	19.20%	13.40%	16.00%	31.90%	313	74.50%
Lack of ability to locate specific and relevant OER for my teaching	23.60%	33.70%	22.30%	11.30%	9.10%	309	73.60%
Lack of ability to locate quality OER for my teaching	27.90%	39.60%	18.80%	8.40%	5.20%	308	73.30%
No reward system for staff members devoting time and energy	25.60%	31.10%	22.80%	7.40%	13.10%	312	74.30%
Lack of interest in pedagogical innovation amongst staff members	28.60%	32.80%	22.80%	7.70%	8.00%	311	74.00%
No support from management level	27.40%	28.10%	21.80%	11.90%	10.90%	303	72.10%

Awareness and knowledge of OER

To those who are ardent advocates of OER, benefits of utilising these free resources are familiar. However the higher education community in Asia is large, diverse and relatively conservative in its attitudes towards teaching and learning. Awareness as well as knowledge-building, amongst both teachers and policy makers, is critical for the acceptance and integration of resources for teaching. Such awareness is currently very low — recent advocacy efforts by UNESCO and the Commonwealth of Learning (COL) through their joint declaration on OER (UNESCO & COL, 2012) are helpful, but OER need to be popularised; greater efforts at knowledge-building, especially amongst policy makers and institutional management, have to be enhanced. Such knowledge-building has to be comprehensive and current — those in decision-making positions must be aware of what OER exist, in what contexts and how they have been used, how to gain access to them, what technologies and skills are required for teachers and learners alike to access them, and the pedagogical and economic benefits of OER.

Table 1.11: Familiarity with and awareness of OER (after Dhanarajan & Abeywardena, 2012)

	Familiarity and awareness			
Country	Yes	No	Unsure	Total (N)
China	40	21	11	72
	55.60%	29.10%	15.30%	100.00%
Hong Kong	8	9	2	19
	42.10%	47.40%	10.50%	100.00%
India	25	14	9	48
	52.10%	29.20%	18.80%	100.00%
Indonesia	27	7	4	38
	71.10%	18.40%	10.50%	100.00%
Japan	5	4	0	9
	55.60%	44.40%	0.00%	100.00%
Malaysia	16	3	4	23
	69.60%	13.00%	17.40%	100.00%
Philippines	20	1	3	24
	83.30%	4.20%	12.50%	100.00%
South Korea	46	10	6	62
	74.20%	16.10%	9.70%	100.00%
Vietnam	15	4	1	20
	75.00%	20.00%	5.00%	100.00%

Purpose of OER

The international debate on a purpose for OER in the higher education milieu continues to engage scholars passionately. Such debate also encompasses more recent arguments around massive open online courses, or MOOCs, and their range of analogues. What was once considered a straightforward purpose for OER — i.e., resources such as "courses, course materials, content modules,

collections, and journals . . . [as well as] tools for delivering educational content, e.g., software that supports the creation, delivery, use and improvement of open learning content, searching and organisation of content, content and learning management systems, content development tools, and on-line learning communities meant to be used for education",[3] not necessarily for academic credit — is no longer the case. As technology innovations progress, new agendas have become part and parcel of OER dialogues; MOOCs are a recent innovation that have confused the open space for consumers and academics alike.

In the context of developing Asia, it may be useful to promote OER with an unambiguous clarity of purpose, such as that OER improves cost-free access to up-to-date and current information relating to content, reduces the cost of curriculum transformation, assists in designing employment-relevant curriculum, supports flexible ways of delivering curriculum and facilitates inter-institutional collaboration and co-operation in content development and sharing.

Policies on OER

In many parts of Asia, government policy support can accelerate the adoption of innovations in education. Governments have it in their powers, through a variety of instruments, to support innovation or retard it. Asian governments could discourage OER production, use, reuse and distribution in a number of ways, including: (i) restricting the free flow of information, (ii) limiting access to search engines, (iii) limiting financial support for adopting innovations, (iv) limiting the extent to which curriculum and content can be explored at the delivery end and (v) discouraging the use of Creative Commons licences. At the last count, some eleven countries in Asia had established national affiliates. Some of the affiliates are active, whilst others are not.

Besides policy support at government levels, such support or lack thereof at institutional levels also places limitations on the extent to which OER can play an effective role. Familiarity with the purpose and benefits of OER as well as comprehensive knowledge of copyright matters play a role in encouraging academic staff to engage in OER-related activities. Recent studies indicate that whilst there is sufficient familiarity, at a surface level, with copyright legislation and Creative Commons licensing in at least 300 of the academics surveyed, fewer had in-depth knowledge of both (Dhanarajan & Abeywardena, 2012). Institutional policies to incentivise, through recognition and rewards, the production and use of OER are also somewhat thin in most Asian institutions.

Table 1.12: Policy matters (after Dhanarajan & Abeywardena, 2012)

Institutional policy items	Yes	No	Total [N]
Knowledge of copyright	63 [97%]	24 [3%]	65
Knowledge of CC licences	41 [63%]	24 [37%]	65
Provisions for sharing, collaborating in and using OER	13 [18%]	58 [82%]	71
Provisions for incentivising OER participation	25 [35%]	46 [65%]	71
Provisions for staff development	29 [42%]	40 [58%]	69

[3] http://en.wikipedia.org/wiki/Open_educational_resources

Skills at using the technologies buttressing OER

Adequate national ICT infrastructures, such as telephony, access to computers, adequate bandwidth, freedoms relating to using the Internet, exploring the WWW for content through search engines, as well as knowledge of and skills to use a range of appropriate software are all important prerequisites for greater participation in OER-related activities. As mentioned earlier, most Asian nations have adequate ICT provisions. Skills to use computers and access to the Internet are also adequate; however, the limited availability of bandwidth and appropriate software to access, remix, reuse and redistribute content requires further and additional investment. The poorer nations and their institutions (especially in the rural areas) are somewhat handicapped in this aspect. Until all the technologies buttressing OER are freely and easily available, many developing Asian countries will not be in a position to benefit from the full potential of OER for a little whilst to come.

Conclusion

Whilst interest in and the production, distribution and use of OER are still very much in the early stages of development in most parts of Asia, OER's potential value to improve the quality of curriculum, content and instruction, facilitate academic collaboration and enhance equitable access to knowledge resources cannot be overstated. Marshall Smith, in an unpublished paper (2011), articulated this elegantly:

> Knowledge should be universal but is unequally and unfairly distributed and OER will help to overcome the gaps. A second narrative emphasize[s] the opportunity for users to become producers by having the opportunity to change and adapt OER for their purposes. This same narrative [holds] that OER [provide] new opportunities for teachers and other non-technical people to become producers of totally new open content and tools. A third narrative holds that OER [have] the potential to transform opportunities for learning and teaching by providing opportunities for students to learn on their own for free and from others (peers, mentors) on the networks and in the crowd, and to potentially get credit for the learning.
>
> All of these narratives are still operable. A fourth narrative is about fulfilling the first three in the developed world and, more importantly, in the developing world. This is the narrative of implementation, helping to create appropriate technical infrastructure including the necessary tools such as platforms and Creative Commons licences to construct quality open materials, making it possible for OER to be easily accessed and used, and supporting local communities, government and NGOs in their efforts to use OER effectively. This is the narrative of our times — it will not be a smooth road but the opportunities that it may provide are worth it.

It is in pursuit of especially the fourth narrative that educators and their political masters need to invest efforts in OER, which have the potential to serve a potpourri of multiple purposes in Asian higher education.

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PART

II

Country Perspectives

CHAPTER

1

A Study on the Use of Open Educational Resources in China

Li Yawan and Li Ying

Abstract

In 2003, China Open Resources for Education (CORE), a collaborative venture, was formed by universities to promote and apply open educational resources (OER) in higher education across China. Since 2003, CORE has developed to some extent. However, the concept of open education has limited scope, development and influence in China. This chapter is intended to report on and discuss the current situation of OER use and development in mainland China through investigations of member institutions and individuals participating in the CORE initiative, using quantitative research methods. The study will provoke thoughts on further development of OER in China by presenting data and opinions from institutions and individuals about OER use. The study also provides data on the publication and use of OER, institutional OER policies, and the awareness and views of institutions and individuals about OER copyright issues.

Keywords: *OER, China, research, survey*

Introduction

Open educational resources (OER) are digital content and media resources available for use by anyone under the terms of open licences. Beginning with the Massachusetts Institute of Technology's promotion of the OpenCourseWare initiative internationally in 2001, the concept of OER and its practice has drawn attention from people all over the world. With the support of UNESCO, The William and Flora Hewlett Foundation and other international organisations, more and more educational institutions have created a large number of OER programmes, such as OpenLearn, by The Open University, in the United Kingdom, Connexions, by Rice University, in the USA, and the Open Learning

Initiative, by Carnegie Mellon University, also in the USA. OER promotes the idea of sharing knowledge, as opposed to privatising and commercialising knowledge. The successful development of OER could have a far-reaching impact on management concepts for educational content, on forms of teaching organisations and on educational theory.

In 2003, Chinese universities wishing to promote and apply OER in higher education across China formed China Open Resources for Education (CORE), a collaborative venture. A networked community associated with CORE was also established. Since then, those involved have witnessed the ongoing and further development of CORE. Presently, the main CORE projects include the translation, localisation and use of open resources that were developed overseas, the production and translation of national-level core courses, and the application and development of open education software. To date, however, the concept of open education has only limited scope, development and influence in China.

Using quantitative research methods, this chapter is intended to report on and discuss the current situation of OER use and development in mainland China, through investigations of member institutions and individuals participating in the CORE initiative. The study will provoke thoughts on the further development of OER in China by presenting data and opinions from institutions and individuals about OER use. The study also provides data on the publication and use of OER, institutional OER policies, and awareness and views of institutions and individuals about OER copyright issues.

Data Collection

OER in this research report constitute educational materials and resources offered freely and openly for anyone to use, and the specific licences to remix, improve and redistribute them. OER include full courses, courseware, content modules, learning objects, collections and journals. They also include tools such as software to support the development, use, reuse and delivery of learning content, the organisation of content, and the delivery of content using learning management systems, as well as content development tools and online learning communities. Implementation resources are defined to include components such as intellectual property licences to promote open publishing of materials, design principles that highlight best practices, and processes for the localisation of content.

This study was supported by an OER research project in the Asia region. The main objective of this study was to understand the development of OER in Asia, with a view to enhancing and promoting collaboration in the region for purposes of sharing curriculum, learning materials, learning tools and delivery strategies. The survey questionnaires were translated by Chinese researchers from English to Chinese before being sent out to survey subjects.

This survey consisted of two parts. Part A was to be completed by individuals who had experience in OER, to reflect personal views on OER. Part B was to be completed by a competent authority from an institution who could comment holistically on the institution's practice of OER.

Part A consisted of three parts:

- Digital resources used in teaching/research, familiarity with digital resources by the survey participants, providing a background for the use of OER.
- The individuals' use of OER, including whether they were involved in collaborative OER projects, their willingness to publish OER, barriers in using and publishing OER, and benefits of publishing and using OER.
- OER copyright issues, including the participants' awareness, views and basic knowledge of copyright issues for publishing and using OER.

Part B also consisted of three parts:

- The institution's use of OER, including whether the institution was involved in collaborative OER projects, its willingness to publish OER, barriers to publishing and using open educational content, and the benefits to the institution itself of publishing and using OER.
- OER copyright issues, including the institution's awareness, views and basic knowledge of issues related to OER licensing and copyright.
- The policy for OER use in the institution, including whether the institution had a policy on sharing and importing OER, whether the institution had a policy to encourage students and staff to use OER as resources, the budgetary allocation of the institution with respect to OER, and whether the institution had an adequate technical infrastructure to support the development, use and sharing of OER.

Survey results were analysed in terms of the following four aspects:

- Individuals' use of digital resources.
- Individuals' and institutions' use of OER.
- Individuals' and institutions' views upon OER copyright issues.
- Universities' policies towards OER.

Although OER have been deployed in China for eight years, the dissemination, development and influence of OER are quite limited. To better reflect the understanding of OER by Chinese institutions and individuals, the researchers asked CORE to invite (i) individuals with OER experience and (ii) institutional authorities (usually leaders or experts in charge of resource development or directly in charge of OER) to fill in the survey questionnaires.

CORE was established in October 2003 as a non-profit union made up of participating universities and provincial-level radio and TV universities. CORE's goal was to promote the sharing of international educational resources and improve education quality. At present, CORE has more than 100 member universities.

From January to March 2011, the researchers obtained 70 Part A questionnaires filled in by individuals with OER experience; 65 responses were considered valid. The research also obtained 27 Part B questionnaires filled in by competent authorities of institutions, of which 26 were considered valid.

The 65 questionnaires filled in by individuals (all from public institutions) showed that 100 per cent of the participants had experience in using digital resources, which was congruent with the questionnaire's requirement. Amongst the participating institutions, 63.1 per cent offered undergraduate programs and 7.7 per cent offered post-graduate programmes. Twenty-one and a half per cent of the participants came from universities with fewer than 10,000 students and 78.5 per cent came from universities with more than 10,000 students. (Universities with more than 100,000 students accounted for 16.9 per cent of the responses.)

The 26 questionnaires filled in by institutional authorities (all from public institutions) showed that 65.4 per cent taught undergraduate students and 3.8 per cent taught post-graduate students. Nineteen per cent came from universities with fewer than 10,000 students and 81 per cent came from universities with more than 10,000 students. (Universities with more than 100,000 students accounted for 26.6 per cent of the responses.)

Higher Education in China

China's higher education sector has grown steadily. The 2009 yearly National Statistical Gazette for Educational Development (see Table 2.1) showed that there were 2,689 higher education institutions (HEIs). Of these, 2,305 were regular institutions and 384 were HEIs for adults.

Amongst the regular HEIs, 1,090 were universities providing undergraduate programmes and 1,215 were vocational colleges. There were 796 institutions that provided post-graduate programmes. Amongst those, 481 were universities of higher education and 315 were research institutes. The scale of enrolment in higher education is growing and the number of existing students keeps increasing. The total number of students attending higher education reached 27,970,000, and the gross higher education entrance rate reached 24.2 per cent. The number of students enrolled in post-graduate programmes was 510,900, including 61,900 PhD candidates and 449,000 master's degree candidates. The number of existing post-graduates was 1,404,900, amongst which 24,630 were PhD candidates and 1,158,600 were master's candidates. The number of graduates was 371,300, amongst which 48,700 were PhD degree holders and 322,600 were master's degree holders. The total enrolment of all regular HEIs was 6,394,900, the total number of existing students was 21,446,600 and the total number of graduates was 5,311,000. In HEIs for adults, the enrolment was 2,014,800, the number of existing students was 5,413,500 and the number of graduates was 1,943,900. The average number of full-time existing students in regular HEIs, including both universities providing undergraduate programmes and vocational colleges, was 9,086.

Compared with the steady development of higher education, the development of CORE was limited. This imbalance on the one hand reflects that the influence of OER in China's universities was limited, and on the other hand indicates that OER has great potential for development in China.

Table 2.1: Number of higher education institutions in China

	Total	HEIs under central ministries and agencies			HEIs under local authorities			Non-state/ private
		Total	HEIs under Ministry of Education	HEIs under other central agencies	Total	HEIs under Ministry of Education	HEIs run by non-educational departments	
1. Institutions providing post-graduate programmes	796	373	73	300	423	360	63	
1.1 Regular HEIs	481	98	73	25	383	359	24	
1.2 Research institutes	315	275		275	40	1	39	
2. Regular HEIs	2305	111	73	38	1538	877	661	656
2.1 HEIs providing degree-level programmes	1090	106	73	33	614	543	71	370
2.2 Non-university tertiary	1215	5		5	924	334	590	286
2.2.1 Tertiary vocational-technical colleges	1071	2		2	790	274	516	279
3. HEIs for adults	384	14	1	13	368	154	214	2
4. Non-state/private HEIs	812							812

Source: National Statistical Gazette for Educational Development, www.moe.edu.cn/publicfiles/business/htmlfiles/moe/s4960/201012/113595.html

Data Analysis

OER Use by Individuals

Digital resources and the use of such materials in teaching/research, as well as familiarity with digital resources, provide the background for this analysis of OER use by individuals. The definition of digital resources in this research is broad and includes recorded materials, photos, maps, text, manuscripts, graphs, slides, charts, video, curricular support materials and primary source materials.

The following analysis is based on 65 questionnaires completed by participants with OER experience who reported on how they learned about digital resources, the tools they often used, the factors influencing their use of digital resources, and the support that they needed for using digital resources. The results showed that:

- The institutions play a significant role in supporting individuals using digital resources.
- Individuals have been equipped with the basic facilities for publishing and using OER.
- Free digital resources have appeal for individuals who work in universities.
- Individuals expect the operational procedures for using digital resources to be simplified.
- Individuals who work in universities expect to obtain services related to teaching when using digital resources, including the appraisal of digital resource quality, copyright permits and authorisation, and training for students to seek and identify digital resources.

How did the individuals learn about digital resources? Table 2.2 shows that the channels employed were school technology departments, colleagues and recommendations by major associations and students; amongst these, the first two played important roles.

Table 2.2: Responses to the question: "How often have you heard about sources of digital resources from each of the following?"

	Almost all the time	Often	Sometimes	Rarely	Never	Missing	Response count
Professional societies or discussion lists	6.2% (4)	18.5% (12)	33.8% (22)	18.5% (12)	13.8% (9)	9.2% (6)	59
Recommendation from a campus librarian	3.1% (2)	12.3% (8)	23.1% (15)	38.5% (25)	13.8% (9)	9.2% (6)	59
Word of mouth from colleagues	6.2% (4)	47.7% (31)	33.8% (22)	4.6% (3)	3.1% (2)	4.6% (3)	62
Word of mouth from students	3.1% (2)	23.1% (15)	41.5% (27)	16.9% (11)	6.2% (4)	9.2% (6)	59
A campus department devoted to instructional technology	13.8% (9)	44.6% (29)	26.2% (17)	4.6% (3)	6.2% (4)	4.6% (3)	62

Table 2.3 shows how often individuals used personal computers, the Web, email and presentation software.

Table 2.3: Responses to the question: "How often do you use each of the tools listed below?"

	Almost all the time	Often	Sometimes	Rarely	Never	Missing	Response count
A personal computer	87.7% (57)	9.2% (6)	0.0% (0)	0.0% (0)	1.5% (1)	1.5% (1)	64
The World Wide Web	83.1% (54)	13.8% (9)	0.0% (0)	0.0% (0)	1.5% (1)	1.5% (1)	64
Email	80.0% (52)	15.4% (10)	1.5% (1)	0.0% (0)	1.5% (1)	1.5% (1)	64
Presentation software (e.g., PowerPoint)	64.6% (42)	26.2% (17)	1.5% (1)	1.5% (1)	3.1% (2)	3.1% (2)	63
An online library catalogue	30.8% (20)	40.0% (26)	15.4% (10)	4.6% (3)	4.6% (3)	4.6% (3)	62
A traditional library card catalogue	1.5% (1)	13.8% (9)	26.2% (17)	30.8% (20)	18.5% (12)	9.2% (6)	59
Abstracting and indexing databases	33.8% (22)	24.6% (16)	18.5% (12)	7.7% (5)	9.2% (6)	6.2% (4)	61

Some factors may exert an influence on individuals' use of digital resources. For example, 87.6 per cent of the participants reported that whether digital resources are free or not will influence their use, and 66.1 per cent reported that whether registration or a password is required will influence their use. See Table 2.4.

Table 2.4: Responses to the question; "How strongly do you agree or disagree with the following statements?"

	Strongly agree that this is a reason for me	Somewhat agree that this is a reason for me	Somewhat disagree that this is a reason for me	Strongly disagree that this is a reason for me	Missing	Response count
My use of digital resources is very dependent on whether they are available to me for free.	33.8% (22)	53.8% (35)	3.1% (2)	6.2% (4)	3.1% (2)	63
My use of digital resources is very dependent on whether they require registration or a password.	16.9% (11)	49.2% (32)	26.2% (17)	3.1% (2)	4.6% (3)	62

The participants reported that in their teaching activities the following supports were very important, as Table 2.5 details:

- Finding digital resources.
- Assessing the credibility of digital resources.
- Evaluating the appropriateness of resources.
- Interpreting copyright laws and/or securing copyright permission.
- Digitising existing resources.
- Support with gathering, organising and maintaining digital materials.
- Training students to find or evaluate digital resources.
- Obtaining or setting up technical infrastructure.

Table 2.5: Responses to the question: "How important is it for you to have support or assistance with each of the following activities for your teaching?"

	Support is extremely important	Support is very important	Support is somewhat important	Support is a little important	Support is not at all important	Missing	Response count
Support with finding digital resources	29.2% (19)	49.2% (32)	10.8% (7)	6.2% (4)	1.5% (1)	3.1% (2)	63
Support with assessing the credibility of digital resources	43.1% (28)	35.4% (23)	13.8% (9)	4.6% (3)	1.5% (1)	1.5% (1)	64
Support with evaluating the appropriateness of resources for my teaching goals	23.1% (15)	43.1% (28)	20.0% (13)	9.2% (6)	1.5% (1)	3.1% (2)	63
Support with interpreting copyright laws and/or securing copyright permission	24.6% (16)	35.4% (23)	23.1% (15)	4.6% (3)	6.2% (4)	6.2% (4)	61
Support with creating my own website	10.8% (7)	20.0% (13)	35.4% (23)	16.9% (11)	12.3% (8)	4.6% (3)	62
Support with importing resources into a course website or a database	16.9% (11)	30.8% (20)	24.6% (16)	18.5% (12)	4.6% (3)	4.6% (3)	62
Support with learning how to use a learning management system (e.g., Moodle, Sakai)	12.3% (8)	30.8% (20)	29.2% (19)	15.4% (10)	7.7% (5)	4.6% (3)	62
Support with integrating resources into a learning management system (e.g., Moodle, Sakai)	15.4% (10)	29.2% (19)	29.2% (19)	13.8% (9)	7.7% (5)	4.6% (3)	62
Support with digitising existing resources	29.2% (19)	30.8% (20)	23.1% (15)	7.7% (5)	4.6% (3)	4.6% (3)	62
Support with gathering, organising and maintaining digital materials	33.8% (22)	36.9% (24)	13.8% (9)	10.8% (7)	1.5% (1)	3.1% (2)	63
Support with training students to find or evaluate digital resources	18.5% (12)	30.8% (20)	36.9% (24)	6.2% (4)	3.1% (2)	4.6% (3)	62
Support with obtaining or setting up technical infrastructure (servers, computers, smart classrooms, etc.)	18.5% (12)	24.6% (16)	36.9% (24)	9.2% (6)	6.2% (4)	4.6% (3)	62

OER Use by Individuals and Institutions

The following analysis is based on 65 questionnaires completed by participants with OER experience and 26 completed by institutional (university) authorities.

Producing and Exchanging OER Through Co-operation Between Individuals, Institutions and Other Educational Institutions

Table 2.6 describes the situation for producing and exchanging OER through co-operation between individuals, institutions and other educational institutions.

- 67.7 per cent of the individuals answered that at present they are not involved in any co-operation with other educational institutions for producing educational content.

- 72.3 per cent of the individuals reported that at present they are not involved in any co-operation with any educational institutions for exchanging open educational content.
- 80.8 per cent of authorities reported that their institutions are now co-operating with other institutions to produce open educational content.
- 69.2 per cent of the authorities reported that their institutions are now co-operating with educational institutions to exchange open educational content.

It can be seen that there was a significant difference between the answers of individuals and of institutional authorities — most of the latter reported that they have started to co-operate with other institutions, whilst most individuals were not aware of this co-operation. This difference reflects a lack of consensus and effective communication between institutions and individuals. Despite the difference between the views, both the individuals and the institutional authorities agreed that OER co-operation is still lacking at an international level.

Table 2.6: Responses to the question: "Are you involved in any co-operation with people from other educational institutions for producing or exchanging open educational content?"

	Individual				Institution			
	Are you involved in any co-operation with people from other educational institutions for PRODUCING open educational content?		Are you involved in any co-operation with people from other educational institutions for EXCHANGING open educational content?		Are you involved in any co-operation with people from other educational institutions for PRODUCING open educational content?		Are you involved in any co-operation with people from other educational institutions for EXCHANGING open educational content?	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
No	44	67.7	47	72.3	4	15.4	7	26.9
Yes, in other parts of the country	18	27.7	17	26.2	21	80.8	18	69.2
Yes, inter-nationally	2	3.1	1	1.5	1	3.8	1	3.8
Others	1	1.5	0	0				
Total	65	100.0	65	100.0	26	100.0	26	100.0

The Principal Barriers to OER Use

For individuals, the principal barriers to OER use are lack of: (i) awareness, (ii) the ability to locate quality OER for teaching, (iii) skills, (iv) interest in pedagogical innovation amongst staff members, (v) an incentive mechanism for staff members to devote time and energy, (vi) support from management and (vii) the ability to locate specific and relevant OER for teaching. Table 2.7 presents the data.

As Table 2.8 indicates, the institutional authorities maintained that the principal barriers for institutions to use OER in teaching are lack of: (i) awareness, (ii) an incentive mechanism for staff members to devote time and energy, (iii) interest in pedagogical innovation amongst staff members, (iv) skills and (v) proper software.

Table 2.7: Responses to the question: "What are the most significant barriers to the use by other colleagues of open educational content in their teaching?"

	1	2	3	4	5		
	Very important				Unimportant	Missing	Response count
Lack of awareness	41.5% (27)	29.2% (19)	4.6% (3)	7.7% (5)	10.8% (7)	6.2% (4)	61
Lack of skills	24.6% (16)	43.1% (28)	10.8% (7)	6.2% (4)	12.3% (8)	3.1% (2)	63
Lack of time	9.2% (6)	18.5% (12)	29.2% (19)	4.6% (3)	33.8% (22)	4.6% (3)	62
Lack of hardware	6.2% (4)	21.5% (14)	18.5% (12)	13.8% (9)	33.8% (22)	6.2% (4)	61
Lack of software	7.7% (5)	23.1% (15)	20.0% (13)	12.3% (8)	30.8% (20)	6.2% (4)	61
Lack of access to computers	4.6% (3)	10.8% (7)	4.6% (3)	6.2% (4)	67.7% (44)	6.2% (4)	61
Lack of ability to locate specific and relevant OER for my teaching	16.9% (11)	27.7% (18)	20.0% (13)	12.3% (8)	16.9% (11)	6.2% (4)	61
Lack of ability to locate quality OER for my teaching	29.2% (19)	32.3% (21)	12.3% (8)	9.2% (6)	10.8% (7)	6.2% (4)	61
No reward system for staff members devoting time and energy	23.1% (15)	18.5% (12)	23.1% (15)	12.3% (8)	16.9% (11)	6.2% (4)	61
Lack of interest in pedagogical innovation amongst staff members	24.6% (16)	16.9% (11)	29.2% (19)	9.2% (6)	13.8% (9)	6.2% (4)	61
No support from management level	21.5% (14)	16.9% (11)	20.0% (13)	10.8% (7)	21.5% (14)	9.2% (6)	59

Table 2.8: Responses to the question: "What are the most significant barriers to the use of open educational content in your institution?"

	1 Very important	2	3	4	5 Unimportant	Missing	Response count
Lack of awareness	30.8% (8)	30.8% (8)	11.5% (3)	0.0% (0)	15.4% (4)	11.5% (3)	23
Lack of skills	7.7% (2)	23.1% (6)	26.9% (7)	7.7% (2)	19.2% (5)	15.4% (4)	22
Lack of time	3.8% (1)	15.4% (4)	3.8% (1)	30.8% (8)	23.1% (6)	23.1% (6)	20
Lack of software	15.4% (4)	15.4% (4)	26.9% (7)	7.7% (2)	19.2% (5)	15.4% (4)	22
Lack of access to computers	3.8% (1)	0.0% (0)	15.4% (4)	23.1% (6)	42.3% (11)	15.4% (4)	22
No reward system for staff members devoting time and energy	19.2% (5)	15.4% (4)	19.2% (5)	30.8% (8)	7.7% (2)	7.7% (2)	24
Lack of interest in pedagogical innovation amongst staff members	11.5% (3)	23.1% (6)	23.1% (6)	19.2% (5)	11.5% (3)	11.5% (3)	23
No support from management level	3.8% (1)	19.2% (5)	11.5% (3)	7.7% (2)	38.5% (10)	19.2% (5)	21

It can be seen that both individuals and institutional authorities agreed that lack of awareness is the most significant barrier for OER use. However, the individuals were more concerned about OER quality and operational skills, whilst the institutional authorities were more concerned about forming incentive mechanisms to promote OER use.

Willingness to Submit Open Resources

When asked whether they were willing to submit open resources, 49.2 per cent of the individuals answered that they have submitted teaching and learning resources for publication as OER, and 67.7 per cent answered that they would submit teaching and learning resources for publication as OER in the future. Of the institutional authorities, 34.6 per cent reported that their institutions had submitted teaching and learning resources for publication as OER, and 57.7 per cent stated that they would submit teaching and learning resources for publication as OER in the future. It is worth noting that some individuals and authorities chose "unsure", which to a degree reflects the lack of awareness of OER. See Table 2.9.

Table 2.9: Submitting open resources

		Yes	No	Unsure	Missing	Response count
Individual	I have submitted teaching and learning resources for publication as OER.	49.2% (32)	33.8% (22)	7.7% (5)	9.2% (6)	59
	I will submit teaching and learning resources for publication as OER in the future.	67.7% (44)	6.2% (4)	16.9% (11)	9.2% (6)	59
Institutional authority	We have submitted teaching and learning resources for publication as OER.	34.6% (9)	19.2% (5)	34.6% (9)	11.5% (3)	23
	We will submit teaching and learning resources for publication as OER in the future.	57.7% (15)	3.8% (1)	26.9% (7)	11.5% (3)	23

Benefits of Publishing and Using OER

As for the benefits of developing and publishing OER, the individuals believed that it would: (i) enhance both the university's reputation and their personal reputation, (ii) improve performance, (iii) share best practices, (iv) reduce development cost and time, (v) extend the users' knowledge of a subject or a course, (vi) support students with no access to higher education, (vii) support developing nations and (viii) develop communities of practice and social networks.

The institutional authorities believed the benefits of publishing OER, ranked from most important to least important, were: (i) enhance the university's reputation, (ii) extend the users' knowledge and practice of a subject or a course and (iii) develop communities of practice and social networks. The authorities thought that using OER would: (i) reduce development costs and production time, (ii) improve performance, (iii) extend the users' knowledge of a subject or a course, (iv) develop communities and social networks, (v) share best practices and (vi) support students with no access to higher education. It can be seen that the individuals paid more attention to the positive influence OER might have on personal career development, whilst the institutional authorities paid more attention to the influence of OER on university reputation and on development costs and production time. See Table 2.10.

Table 2.10: Responses to the question: "What benefits do you see in publishing and using OER materials?"

	Individual			Institutional authority		
	Publishing	Using	Response count	Publishing	Using	Response count
Enhance university reputation	61.5% (40)	41.5% (27)	65	76.9% (20)	38.5% (10)	26
Enhance personal reputation	55.4% (36)	36.9% (24)	65	42.3% (11)	26.9% (7)	26
Enhance the users' knowledge of a subject	43.1% (28)	63.1% (41)	65	57.7% (15)	53.8% (14)	26
Enhance the users' knowledge of a course	44.6% (29)	63.1% (41)	65	50.0% (13)	61.5% (16)	26
Support students without formal access to HE	43.1% (28)	58.5% (38)	65	46.2% (12)	46.2% (12)	26
Share best practices	49.2% (32)	63.1% (41)	65	42.3% (11)	53.8% (14)	26
Reduce development costs/time	46.2% (30)	60.0% (39)	65	46.2% (12)	65.4% (17)	26
Develop communities and build connections	43.1% (28)	61.5% (40)	65	42.3% (11)	57.7% (15)	26
Enhance current practice	52.3% (34)	58.5% (38)	65	46.2% (12)	61.5% (16)	26
Support developing nations	44.6% (29)	49.2% (32)	65	34.6% (9)	34.6% (9)	26

The Barriers to Publishing and Using OER

Of the individuals surveyed, 50.8 per cent reported that the most significant barrier to publishing OER was the lack of reward and recognition; 46.2 per cent believed the barriers, from most significant to least significant, to be: (i) awareness of the university OER repository and other OER repositories, (ii) fear over copyright infringement, (iii) ownership and legal barriers (other than copyright), (iv) scepticism over usefulness and (v) lack of feedback from users.

For 50.8 per cent of the individuals, the most significant barrier to using OER was fear about copyright infringement, whilst 49.2 per cent considered relevance of available materials the most significant barrier. In addition, awareness of the university OER repository and other OER repositories, ownership and legal barriers other than copyright, users' time and lack of feedback from users also hindered them from using OER.

Fifty per cent of the institutional authorities believed that the barriers to publishing OER, ranked from most significant to least significant, were: (i) fear over infringement of copyright, (ii) awareness of the university OER repository and other OER repositories, (iii) ownership and legal barriers (other than copyright), (iv) potential negative influence on reputation, (v) lack of users' feedback, (vi) lack of reward and recognition and (vii) lack of support. Regarding the barriers to using OER, ranked from most significant to least significant, 53.8 per cent of them considered these to be: (i) ownership and legal barriers, (ii) awareness of the university OER repository and other OER repositories,

(iii) fear over infringement of copyright, (iv) lack of users' feedback, (v) relevancy of materials available and (vi) lack of support.

It can be seen that the individuals and the authorities assigned different priority to the significance of barriers to publishing OER. The individuals gave foremost attention to the reward system and then intellectual property rights issues, whilst the authorities gave foremost attention to legal barriers and then influence on the university's reputation, followed by the reward system. As for barriers to using OER, both individuals and authorities considered intellectual property rights and legal issues most significant. Individuals and authorities were also aware of the influence their knowledge of OER had on their use and publishing of OER. See Table 2.11.

Table 2.11: Responses to the question: "What barriers do you face in publishing and using OER materials?"

	Individual			Institutional authority		
	Publishing	Using	Response count	Publishing	Using	Response count
Awareness of the university OER repository and other OER repositories	46.2% (30)	44.6% (29)	65	46.2% (12)	46.2% (12)	26
Fear over copyright infringement	46.2% (30)	50.8% (33)	65	50.0% (13)	46.2% (12)	26
Ownership and legal barriers (other than copyright)	46.2% (30)	44.6% (29)	65	34.6% (9)	53.8% (14)	26
Your time	33.8% (22)	46.2% (30)	65	26.9% (7)	19.2% (5)	26
Scepticism over usefulness	43.1% (28)	38.5% (25)	65	15.4% (4)	19.2% (5)	26
Lack of reward and recognition	50.8% (33)	33.8% (22)	65	30.8% (8)	23.1% (6)	26
Possible negative impact on reputation	33.8% (22)	27.7% (18)	65	34.6% (9)	15.4% (4)	26
Lack of support	44.6% (29)	41.5% (27)	65	30.8% (8)	30.8% (8)	26
School/institution policy	36.9% (24)	36.9% (24)	65	15.4% (4)	23.1% (6)	26
Criticism from colleagues	24.6% (16)	35.4% (23)	65	11.5% (3)	15.4% (4)	26
Criticism from students	21.5% (14)	40.0% (26)	65	11.5% (3)	15.4% (4)	26
Impact on career progression	30.8% (20)	36.9% (24)	65	7.7% (2)	15.4% (4)	26
Relevancy of materials available	33.8% (22)	49.2% (32)	65	19.2% (5)	34.6% (9)	26
Lack of feedback from users	43.1% (28)	46.2% (30)	65	34.6% (9)	46.2% (12)	26

OER Copyright

The following analysis results come from questionnaires completed by 65 individuals and 26 institutional authorities with OER experience.

Using Licences to Explain the Rules that Others Should Follow When They Use Resources Produced by You or Your Institution

The survey showed that 66.2 per cent of the individuals and 80.8 per cent of the institutions did not use licences to explain the rules that others should follow when using the resources the individuals or institutions produced. See Table 2.12.

Table 2.12: Responses to the question: "Do you use any licence to express the rights others have to use resources you have produced?"

	Individual		Institutional authority	
	Frequency	%	Frequency	%
No	43	66.2	21	80.8
Yes, Creative Commons	16	24.6	3	11.5
Yes, other "open content licence"	5	7.7	2	7.7
Other	1	1.5		
Total	65	100.0	26	100.0

Dealing With Copyright Issues When Producing or Collecting OER

In the case of individuals, 53.8 per cent did not deal with copyright issues when creating or collecting OER, 41.5 per cent sometimes dealt with copyright issues and 4.6 per cent always or often dealt with copyright issues. Of the institutional authorities, 65.4 per cent sometimes dealt with copyright issues and 26.9 per cent did not deal with copyright issues. It can be seen that institutions had more experience with copyright issues than the individuals. However, generally speaking, both still lacked experience. See Table 2.13.

Table 2.13: Responses to the question: "How often do you deal with copyright issues in producing or assembling educational resources?"

	Individual		Institutional authority	
	Frequency	%	Frequency	%
Not at all	35	53.8	7	26.9
Sometimes	27	41.5	17	65.4
Frequently	1	1.5	1	3.8
Very frequently	2	3.1	1	3.8
Total	65	100.0	26	100.0

Confidence in Providing an Accurate Definition for Creative Commons Licences

When asked whether they were confident in providing an accurate definition for Creative Commons licences, 32.3 per cent of the individuals answered "not confident", 46.2 per cent answered "not sure" and 4.6 per cent answered "confident" or "very confident". Of the institutional authorities, 30.8 per cent answered "confident" or "very confident", showing a higher awareness of the law. However, generally speaking, both individuals and authorities need to improve their knowledge of Creative Commons licences. See Table 2.14.

Table 2.14: Responses to the question: "If you were asked to explain Creative Commons licences, how confident would you be in the accuracy of your description?"

	Individual		Institutional authority	
	Frequency	%	Frequency	%
Not confident	21	32.3	2	7.7
Not sure	30	46.2	11	42.3
Somewhat confident	11	16.9	5	19.2
Confident	2	3.1	6	23.1
Very confident	1	1.5	2	7.7
Total	65	100.0	26	100.0

Awareness of Using Creative Commons Licensed Materials Based on One or More Limitations to Copyright When Producing or Publishing OER

When individuals were asked whether they were aware of using Creative Commons licensed materials based on one or more limitations to copyright when producing or publishing OER, 41.5 per cent answered "not sure" and 43.1 per cent answered "yes"; in comparison, 42.3 per cent of the authorities answered "not sure" and 57.7 per cent answered "yes" (see Table 2.15).

Comparatively speaking, institutions displayed a higher awareness of Creative Commons licences, but in general, both authorities and individuals lacked in-depth understanding of intellectual property rights.

Table 2.15: Responses to the question: "When creating and publishing educational materials, do you find yourself using Creative Commons licensed materials as well as materials based on one or more limitations to copyright?"

	Individual		Institutional authority	
	Frequency	%	Frequency	%
Not sure	27	41.5	11	42.3
Yes	28	43.1	15	57.7
No	10	15.4		
Total	65	100.0	26	100.0

Institutional Policy Towards OER

The following analysis comes from 26 questionnaires answered by the institutional authorities.

Of the institutions, 73.1 per cent had not made any new policy on sharing and importing OER, whilst 26.9 per cent had done so. Fifty per cent currently had a policy to encourage or provide incentives for the development and use of OER as resources, and 50 per cent did not. In addition, 53.8 per cent currently had training and development facilities provided by the university for the development and use of OER, and 46.2 per cent did not. See Table 2.16.

As for budgetary allocations with respect to OER, 30.4 per cent of the participants answered "zero" and 23 per cent answered "unknown". See Table 2.17.

It can be seen that institutions' support for OER is still limited.

Table 2.16: Institutional policy towards OER

	Does your institution currently have a policy on sharing and importing OER?		Does your institution currently have a policy to encourage or incentivise developing and using OER as resources?		Are there training and development facilities provided by the university with respect to developing and using OER?	
	Frequency	%	Frequency	%	Frequency	%
No	19	73.1	13	50.0	12	46.2
Yes	7	26.9	13	50.0	14	53.8
Total	26	100.0	26	100.0	26	100.0

Table 2.17: Responses to the question: "What is the budgetary allocation of your institution for OER?"

RMB	Frequency	%
0	8	30.4
20,000	1	3.8
100,000	1	3.8
300,000	1	3.8
400,000	1	3.8
500,000	1	3.8
>1,500,000 annually	1	3.8
500,000 annually	2	7.6
Appropriate	1	3.8
Allocated according to the number of courses	1	3.8
Allocated according to actual need	1	3.8
Unknown	6	23.0
Missing	1	3.8
Total	26	100.0

Conclusions

This study surveyed, analysed and reported on the current situation of OER use and development in mainland China, on the basis of investigations of member institutions and individuals participating in the CORE initiative. The chapter presented the opinions of institutions and individuals towards OER, as well as data on (i) the publication and use of OER, (ii) institutional policies towards OER and (iii) the awareness and views of institutions and individuals regarding OER copyright issues.

In conclusion, the investigation showed that the impact of OER on China's institutions is still minimal, despite the large number and rapid growth of HEIs. The results of this report may also indicate the great potential for future development of OER in China. This argument is supported by some institutions' relevant policies towards OER.

The pattern of individuals' use of digital resources indicates that OER use by individuals depends on the promotional efforts of institutions. China's HEIs have equipped individuals with the basic facilities for OER to be published and used. However, neither institutions nor individuals have a deep understanding of OER, and this deficit has affected their willingness to publish or use OER.

Both institutions and individuals are encouraged by the availability of free OER. At the same time, they are concerned about copyright issues and a lack of adequate knowledge about copyright and open licences, though institutions are more experienced than individuals in this regard. Institutions and individuals agree that the primary barrier to their use of OER results from lack of knowledge of OER. Secondly, individuals are more concerned with OER quality and the skills required for effective OER use, whilst institutions are more concerned with the incentive mechanisms that will promote individuals' use of OER.

Institutions and individuals agree that lack of an incentive mechanism poses a barrier to publishing OER. For individuals, the incentive mechanism mainly comes from institutions, whilst for institutions, it comes from external forces. Institutions and individuals are both aware of the benefits of using and publishing OER. Individuals value the positive influence on personal development and career development, whilst institutions are more concerned with the potential for OER to influence an institution's reputation and lower its development costs and production times.

The investigation results point to directions for OER development in China:

- Both institutional and individual awareness of OER should be raised.
- Legal issues and copyright knowledge of OER should be publicised.
- OER should live up to a specified quality standard.
- External incentive mechanisms should be provided.
- Procedures for OER use should be simplified.
- Training on OER use and copyright issues should be provided.

This research reflects the current state of OER use and development in China. Interpretation of its data should be based on the following two points. First, CORE, who invited those of its members with OER experience (both individuals

and institutions) to fill in questionnaires, facilitated the investigation. Second, though efforts were made to contact the OER community as widely as possible, the investigation sample was limited by the small size of the CORE membership and its restricted influence.

Translating the questionnaire from English into Chinese did, to a degree, also help to increase the number of investigation samples. However, doubt remains as to whether the Chinese version accurately and fully conveyed the original information contained in the English version of the survey. Thus, OER use and development in China requires more research to better understand its current context and future potential.

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CHAPTER

2

Open Educational Resources in Hong Kong

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Abstract

Hong Kong is well provisioned with pervasive IT facilities and broadband connectivity, and the community in general has a high degree of computer literacy as well as extensive use of electronic media in social and business life. The tertiary education sector is also well equipped with a robust infrastructure and easily accessible resources, and many institutions have made significant investments to promote the adoption of electronic means to support, enrich or transform traditional teaching and learning. The results of a survey conducted with people from a cross-section of the major local institutions indicates that the use of digital resources varies depending on individual decisions, and attitudes towards the open reuse and sharing of content and materials tend to be conservative. Although hardware and software knowledge and skills pose no major constraints, teachers are concerned about the lack of explicit institutional policy and incentives for adopting open educational resources (OER), in part due to uncertainty about ethics and copyright infringement.

However, teachers acknowledge the benefits of using electronic technology and resources to make their teaching more flexible, efficient and interesting. This positive view does resonate with the current government appeal for a more innovative, student-centred and resource-rich approach in pedagogy, as well as more responsive and cost-effective ways to cater for a more diverse and differentiated higher education ecosystem. OER can play a strategic role in facilitating the wider collaboration of individuals and institutions across geographical boundaries, enhancing the quality of teaching and learning and reducing the costs of fulfilling Hong Kong's ambition to become a regional hub for higher education.

Keywords: *higher education, digital resources, OER, copyright, OER policy and incentives, regional hub for higher education*

The Higher Education Environment of Hong Kong

Since the turn of the millennium, the fast economic growth of mainland China as well as the influence of globalisation has speeded up Hong Kong's transition towards being a service hub, leading to a strong demand for professionals and high-skill knowledge workers. The government has therefore pursued an active policy of massive and rapid expansion in tertiary education, and in ten years has been able to raise the participation rate from 33 per cent in 2000 to 60 per cent in 2010. Today education is listed amongst the six strategic industries of future development, with the ambition of making Hong Kong a regional hub of higher education for both local and international students. Public expenditure on education in 2010–2011 was USD 8.1 billion, which represents 20.1 per cent of the government's total spending and 4.5 per cent of Hong Kong's GDP. About 20 per cent of this amount is spent on tertiary education (Legislative Council, Hong Kong, 2011).

Hong Kong's public tertiary institutions are well regarded for their performance and status, with six universities placed in the top 300 in world rankings (*Times Higher Education*, 2011). The government finances 82 per cent of their expenditure, at USD 1.41 billion in 2011, which is set to rise further following the restructuring from a three-year system to four years for first degrees, beginning in 2012.

Hong Kong has 15 degree-awarding higher education institutions: nine of these are publicly funded and six are self-financing. They provide a combined first-year enrolment of about 20,000 students (Table 3.1; University Grants Committee, 2011). Government commitment for public university first-year places has been capped at 14,500 since 1991. In the last decade, support and subsidies for post-graduate programmes has been gradually withdrawn. A large part of the recent expansion has been met by a burgeoning self-financing sector. The number of such providers has increased four times, and the number of programmes has grown by more than 16 times. At the sub-degree level in 2010 there were 12 public technical institutes under the aegis of the Vocational Training Council, plus about 20 public or private providers offering diploma or associate degree courses to about 35,000 students. In addition, over 60,000 students were enrolled in self-financing part-time programmes ranging from sub-degree to degree and post-graduate levels (Table 3.2). A USD 640 million Continuing Education Fund was set up in 2002 to subsidise adults wishing to take approved courses in a variety of disciplines (University Grants Committee, 2002).

Table 3.1: Student enrolment (full-time equivalent) in UGC-funded programmes, 2010/11 (University Grants Committee, 2011)

Type of programme	Student enrolment
Sub-degree	7,767
Undergraduate	57,565
Taught post-graduate	3,578
Research post-graduate	6,525
Total	75,435

Table 3.2: Student enrolment in self-financing full-time programmes, 2010/11 (Education Bureau, HKSAR Government, 2011c)

Type of programme	Student enrolment
Associate degree	27,500
Higher diploma	24,600
Undergraduate	10,800
Total	62,900

Hong Kong is also completely open to overseas institutions — predominantly British ones, followed by Australian and U.S. These institutions offered more than 1,100 degree and sub-degree courses in 2010 to 20,900 local students, delivered mainly in offshore or distance learning modes through local agents (Education Bureau, HKSAR Government, 2011a).

Hong Kong institutions have successfully recruited more non-local students, whose numbers have grown steadily to 11,250 in 2010/11, a 42 per cent jump over just three years (Table 3.3). In pursuit of the goal of being the regional hub, the government has relaxed non-local enrolment quotas to 20 per cent and put in place a USD 160 million scholarship scheme to recruit high-calibre research students worldwide. Other than sources noted, non-local enrolment has been supported with students' tuition fees and other sources, including private donations (University Grants Committee, 2010).

Table 3.3: Enrolment of non-local students in eight public institutions (Education Bureau, HKSAR Government, 2011b)

2008/09		2009/10		2010/11	
Number	% of total	Number	% of total	Number	% of total
8,392	11.6%	9,333	12.7%	10,087	13.4%

An interesting outcome of this fast expansion in tertiary education is the tremendous increase in the diversity of pathways, students, modes and pedagogies, turning the overall post-secondary education into a mixed system. Both public and private institutions have become more flexible and responsive to new demands — for example, by offering multiple access models, collaborating in bridging programmes, sharing resources, exchanging students, blending on-campus and online learning and delivering teaching across borders. Instead of recurrent funding, the government has provided indirect subsidies to the self-financing sector via land provision and start-up loans to the institutions, as well as grants and loans to students in need. It does not exercise direct control over this organic growth, but only insists on fulfilling quality assurance requirements monitored by appropriate oversight bodies.

Online Learning in Tertiary Education

Whilst local institutions differ in scale, student population, infrastructure and budgets, all universities in Hong Kong have installed online learning management systems (LMSs) for courses. These systems are usually operated by the institutions' IT services units, whilst the course design and pedagogy associated with the systems are supported by educational development units. Currently, Blackboard and Moodle are the two common LMSs adopted by universities in Hong Kong. Most universities support just one LMS, but one university provides two options for the faculties to choose from. Typically, the course or subject websites in the LMS consist of comprehensive eLearning features such as delivery, storage, communication, interactivity, personal organisation, submission and assessment, with links to internal and external resources, authoring tools and multimedia capacities.

Few institutions make eLearning mandatory in their courses, but eLearning is offered as a complement to traditional teaching and learning, or as an experimental innovation to enrich students' experiences. eLearning and educational technology are usually promoted as an institutional position, strategy or action plan for adoption in individual courses, as staff deem appropriate. All universities have educational development centres that provide either hands-on support, skill training or technical services to adopters, and some may extend these to students needing instruction about using technology and resources in their work.

Academic staff members usually maintain control and responsibilities for the course content presented in their selected formats and pedagogies. However, in some institutions, such as the Open University of Hong Kong (OUHK), a clear division of labour governs distance learning course material development. The OUHK Educational Technology and Publishing Unit has been entrusted with the job of instructional design and course website maintenance, though the course co-ordinators can also edit the courses.

Technology Environment

Hong Kong is well provisioned in its technology environment. According to the results of the Household Survey conducted by the government's Census and Statistics Department in 2009, 1,756,300 households, or 75.8 per cent of all domestic households in Hong Kong, had PCs at home in 2009 (Census and Statistics Department, HKSAR Government, 2009). Amongst these, 96.8 per cent had Internet connections, 97.7 per cent of which were via broadband. In general, there is a high level of acceptance and literacy about the Internet and computer technology in society. The government survey in 2009 indicated that 70.2 per cent of the population were already Internet users at the age of ten, whilst 99 per cent of young students and 95.7 per cent of large organisations used the Internet. Third-generation mobile telecommunications, or 3G, provides mobile broadband access by laptop computers and handheld devices. The service is pervasive and affordable, with subscription accounts reaching 7.4 million against a population of 7 million (Office of the Telecommunications Authority, 2011).

Tertiary education institutions in general encourage and support the extensive use of Internet connections by providing free Wi-Fi access service on campus,

and often by arranging group purchases of student laptops and mobile devices at discount prices (eLearning Resources Centre, Chinese University of Hong Kong, 2011). Most of the institutions also provide computer terminals and Internet connectivity in libraries, laboratories and at other access points on campus.

Extent of Practice

The survey described in this chapter was conducted in Hong Kong from November 2010 to April 2011. The respondents were a small cross-sectional sample of the tertiary sector, covering all of the major public institutions and the leading self-financing providers.

Most of the survey respondents indicated that they have good access to a wide range of software and hardware infrastructure tools and are familiar users of PCs (87.2 per cent), the Web (71.8 per cent), email (76.9 per cent), presentation software (65.8 per cent) and online library catalogues (66.7 per cent). A significant percentage (95.9 per cent) indicated that they had access to and had used a variety of digital resources, including search engines/directories (79.5 per cent), personal collections (66.7 per cent), free image databases (46.2 per cent), library collections (43.6 per cent) and journals (46.1 per cent). Formats in use encompassed PDF files (69.2 per cent), online references (66.7 per cent), visual materials (58.8 per cent), course packs (43.5 per cent) and online class discussions (41 per cent).

Whilst a considerable majority of the survey participants (89.5 per cent) had some experience in using OER, and others commented on the institution's practice of using OER, these practitioners tended to use the digital tools and online resources mainly within a personal scope. Less than half (43.6 per cent) noted that they often used the digital resources in classes/lectures but seldom linked them to student learning activities and assignments.

Respondents said they came across OER incidentally and had not been actively advised of the existence of open digital resources. Only about half had heard about open resources from professional societies or discussion lists, librarians, colleagues and even students, or from a department devoted to instructional technology.

In terms of sharing the available digital resources, most respondents (68.4 per cent) indicated that those they have gathered are for maintaining their own collection of digital resources, and 42.1 per cent indicated they are unlikely to make their own digital resources available to others through the Web.

Production Barriers

Our survey showed that whilst more than half of the respondents acknowledged that there is good support from institutional management towards staff production of OER and open source software, only 12 of the 57 respondents said they had ever produced OER as a full course or part of a course, or as learning objects. A few had collaborated with other people, and very few had exchanged with others or published OER online. Those who were interested in OER appreciated the potential benefits for institutional and personal reputation, enhancing users' knowledge, sharing best practices and improving students' access to learning resources. However, few (three) had submitted and published

material as OER. Even amongst those who had produced OER, the majority was willing to share them only within their own institution, whilst the minority (31.3 per cent) wished to share the materials globally. However, very few were willing to place them in open repositories such as the OCW Consortium and OER Commons.

In terms of attitude, the respondents were unanimously concerned about acknowledgement of the creator of the resource when it was to be used or adapted by others. They also wanted to know by whom and how the resource would be used and/or changed, and whether the contributor would be rewarded with money, or through a work plan, promotion, awards or other mechanisms. They also thought quality review of the resources was a matter of importance.

Use and Reuse Barriers

The majority of respondents understood and appreciated the purpose and value of OER, agreeing that they could excite students, improve their learning, and teach information literacy as well as critical and creative thinking skills. They also recognised that OER could help them know about the most up-to-date developments and create a sense of community in the course. They agreed that OER save time for teachers, allow them to do things they could not do otherwise, provide convenient access and let them stay up to date with colleagues.

In a broader context, respondents believed that OER could help build fruitful partnerships with colleagues and institutions worldwide, and benefit students by providing a range of approaches to the subject available. In addition, respondents believed that OER would enhance the reputation of the university, and attract better students and better staff. OER are a useful way of developing new courses. Exploring the available OER worldwide could enhance the respondents' teaching and raise standards across the university.

Nevertheless, the majority of the respondents would only use OER in their teaching if they were able to edit and personalise the materials for use with their students. Respondents were divided (54.0 per cent versus 43.6 per cent) over whether or not to make their teaching practices and course materials open to any users, indicating they would be more willing to share their teaching resources openly if they had good control over the reuse by others.

In general, use of digital resources depended on whether the resources were available for free (84.2 per cent) or whether they were an easy option. Less than half (42.1 per cent) of the respondents had used OER created by others in their teaching. A large majority said the materials used were produced by themselves or within the institution. A small proportion of resources were downloaded freely from an OER repository (16.7 per cent), compared with 44.4 per cent from the Internet and 27.8 per cent from other educational institutions through an established collaborative arrangement.

Respondents in fact used OER in their teaching or course delivery for more practical reasons, such as gaining access to the best possible resources (88.2 per cent), promoting scientific research and education as public open activities (58.8 per cent), reducing costs for students (58.8 per cent) and course development (58.8 per cent), reaching out to disadvantaged communities (53.0 per cent), assisting developing countries (53.0 per cent), creating more flexible materials

(76.4 per cent), conducting research and development (58.8 per cent) and building sustainable partnerships (53.0 per cent).

The majority of respondents did not see any major problems in the technical support environment. They did, however, expect support for OER users in such aspects as searching, credibility and relevance, copyright issues, using and integrating with a learning management system, digitising, uploading, gathering, organising and maintaining, training students, as well as technical infrastructure relating to servers, computers and smart classrooms (71.1 per cent).

The respondents considered the lack of awareness, skills, time, hardware and ability to locate quality OER, and the lack of reward and support from management to be important barriers to the use of OER in teaching by their colleagues.

Although about half of the respondents (53.0 per cent) disagreed that publishing OER would lead students to stop attending lectures, a minority (43.5 per cent) believed that digital resources could substitute for the teaching approaches the respondent normally used, whilst some felt that using OER would either distract from the core goals of the instructor's teaching (33.3 per cent) or would be irrelevant to the instructor's field (33.3 per cent).

Other negative opinions included that OER would help other institutions copy the best ideas from other universities, or that publishing OER could damage a university's reputation via association with inaccurate or inferior materials.

In real life, the major barriers the respondents had faced in publishing or using OER materials were:

- Awareness of the university OER repository and other OER repositories.
- Fear over copyright infringement, ownership and legal barriers other than copyright.
- Time spent.
- Lack of reward and recognition.
- Possible negative impact on reputation.
- Lack of support.
- Relevance of the materials available.

Policy Support and Challenges

Only eight respondents out of 57 thought they could competently comment on their institution's practice of using OER. Four out of five respondents indicated that their institutions currently did not have a policy to encourage or provide incentives for the development and use of OER as teaching and learning resources. A search of the websites of all major public and private institutions also revealed few examples of locally developed OER.

There were three suggestions regarding where training and development facilities provided by the university for the use of OER should be located. Suggestions included the Educational Technology Unit of the Open University of Hong Kong, and the Teaching and Learning Centre of the Institute of Education as training providers. It was also noted that a learning object repository at the

Chinese University of Hong Kong and training are available. All five respondents indicated that their institutions had adequate technical infrastructure to support the development, use and sharing of OER. One respondent knew that the Open University of Hong Kong had an agreement with Apple's iTunes U to have open learning resources available for free download. The Chinese University of Hong Kong had also signed such an agreement with Apple.

Legal Environment

Copyright matters have been regulated by a set of fair dealing clauses in law that allow for the reasonable and fair use of copyright works for educational purposes without infringing copyright (Prabhala, 2010). In Hong Kong, guidelines are in place regarding partial photocopying of printed works. Furthermore, the Hong Kong Reprographic Rights Licensing Society (mostly dealing with printed books) and Hong Kong Copyright Licensing Association (mostly dealing with newspapers) have entered into licence agreements with most schools and universities to allow their practitioners to reproduce printed works for teaching and learning purposes, under explicit conditions. Since 2007, fair dealing has been extended to students, and an additional clause has extended educational copying practices to works on the Internet.[1]

Outside the academic field, however, occasional reports of piracy cases involving printed and digital works such as textbooks, music, video and computer software did cast doubts upon the adequacy of current intellectual property protection regulations and practices (Intellectual Property Department, HKSAR Government, 2010). These reports may have hindered the development of ePublishing, eResources and eLearning in Hong Kong and elsewhere in the region.

A Creative Commons Hong Kong (CCHK) affiliate was launched in October 2008.[2] The Journalism and Media Studies Centre at the University of Hong Kong hosts CCHK to promote the shifting of the traditional "all rights reserved" model to a "some rights reserved" one by means of an open content licence model. The existence of Creative Commons licences has laid a solid ground for the legitimate dispersal of OER and will enable users to freely adopt, adapt and redistribute materials.

From the survey it could be observed that local academic peers are familiar with and adhere to the copyright convention in good faith. However, few had paid attention to the introduction of Creative Commons licensing principles and practices to Hong Kong, and even fewer had taken note of CC's utility for the legal consumption and contribution of OER.

Future Prospects

The survey indicated a favourable environment in Hong Kong's higher education sector to capitalise on OER. Underpinning the potential is a robust technological infrastructure, high level of IT literacy, transparent legal framework, abundance of tools and positive attitude towards the benefits and value of OER. Academic practitioners are also conversant with up-to-date IT skills and their applications. In terms of provision, OER are already thriving and plentiful. Yet availability

[1] www.ipd.gov.hk/eng/education.htm
[2] http://hk.creativecommons.org

of open resources alone does not constitute a paradigmatic shift, and typically there is a "cultural lag" (Brinkman & Brinkman, 1997) that hinges on changes in institutional culture, pedagogical knowledge and non-hardware resources such as funding, personnel and time (Donoghue, 2006). On this foundation, institutional leaders need to play a stronger role in raising general awareness, providing sufficient policy and physical support, and offering incentives for academic members to map technical affordance with pedagogical knowledge and integrate OER into mainstream teaching and learning in a well-defined, consistent and long-term strategy.

Looking ahead, several developments in the general and higher education sectors in Hong Kong are conducive to the adoption of OER on a larger scale in the longer term. The continued massification and internationalisation of higher education based on a "users pay" philosophy implies significant challenges to the pace, costs, methods, curricula and structure of institutional operations. OER may help providers to address the vagaries arising from a heterogeneous student body and rapidly changing needs. The government's recent higher education review has been concluded, with re-emphasis on teaching performance and an appeal for professional development towards a student-centred culture in place of teacher-led, passive instruction. Institutions are urged to enhance student learning, seek pedagogical innovations and strengthen support, with facilities, learning resources and educational climate play an important role.

The secondary curriculum has already been revised in favour of fostering critical thinking and problem-solving skills (Education Commission, 2000). In step with this reform, tertiary institutions are also reorganising their degree studies to incorporate cross-disciplinary, liberal and exploratory approaches in teaching and learning (University Grants Committee, 2002). As a result, it is foreseeable that students will need to navigate between and aggregate vast amounts of resources and learn to master them. This trend will present tremendous opportunities for the development of OER.

The reaffirmation of English language proficiency in Hong Kong's education system and its dominance as the primary medium of instruction in the higher education sector continues to be a major structural advantage that enables and encourages institutions to take advantage of the vast stock of global OER, the majority of which are so far available in English.

In 2010 the government set aside substantial funds for six years to promote eLearning in the school sector, and in particular to develop a Depository of Curriculum-based Learning and Teaching Resources (Education Bureau, HKSAR Government, 2011b). A task force has also been appointed to review issues relating to textbooks and to other learning and teaching materials. The Education City website, under the auspices of the Education Bureau, has also spearheaded a transaction platform for electronic resources.

At the same time, Creative Commons Hong Kong took the lead to create a Liberal Studies Creative Archive that supports developing OER for teachers and students. In the tertiary sector, albeit still in a nascent stage, both the Open University of Hong Kong[3] and the University of Hong Kong[4] have embarked on open courseware projects, whilst the Chinese University of Hong Kong has established

[3] http://freecourseware.ouhk.edu.hk
[4] http://philosophy.hku.hk/think

a learning objects repository.[5] The University of Hong Kong has also created a Scuttle platform for users to collect and store open resources.[6] The trend is set to gather pace, and these initiatives will certainly provide strong impetus for the evolution of OER in Hong Kong.

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[5] http://lor.itsc.cuhk.edu.hk
[6] http://scuttle.cite.hku.hk

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CHAPTER

3

An Assessment of Individual and Institutional Readiness to Embrace Open Educational Resources in India

V. Bharathi Harishankar, Venkataraman Balaji and Sreedhar Ganapuram

Abstract

In India, the phenomenon of open educational resources (OER) is made possible by the widespread use of information and communication technologies (ICT) and open source technologies. Over the last decade, national institutions have embraced the concept of collaborative teaching and learning practices. The idea of shared resources has been successfully mooted by initiatives such as the National Science Digital Library (NSDL), the Open Source Courseware Animations Repository (OSCAR), the National Programme on Technology Enhanced Learning (NPTEL), the Virtual Academy for the Semi-Arid Tropics (VASAT) and Indira Gandhi National Open University's (IGNOU) FlexiLearn. Further, there is substantial policy support and public funding for such initiatives, thanks to the provisions made in the 11th Five Year Plan of the Government of India.

Whilst knowledge resources are widely available, India's OER movement is still in its infancy. This is because the term "open" in OER not only implies availability of educational resources for free use by teachers and learners, but also necessitates the free use of software tools, licences and best practices. Also, the 4Rs of OER (Wiley, 2009) demand a paradigm shift in the way individual teachers, learners and institutions perceive the culture of sharing.

Knowledge, Attitude, Practice (KAP) is a well-accepted method used by social scientists to study prevalent beliefs and misconceptions amongst people regarding any new idea or phenomenon. The KAP approach tells us what people know about certain things, how they feel and how they behave (Kaliyaperumal, 2004, p. 7). By applying the KAP framework to survey responses, we are able to understand perspectives, experiences and insights across an entire range of stakeholders, as well as capture a range of responses from each of the stakeholders.

In this report, we wish to examine the extent to which individuals and institutions in India are ready for the OER phenomenon. Our report is structured around the following signposts:

- Overview of higher education in India.
- Impact of ICT on higher education.
- Precursors to OER in India.
- Quantitative analysis of the survey data.
- KAP as a model for a qualitative study of the sample collected by the project team at Wawasan Open University, Malaysia, as part of the International Development Research Centre-funded PANdora project.
- Conclusions and future pointers.

Keywords: *India, OER, open source technologies, collaborative learning and teaching, KAP*

Overview of Higher Education in India

Higher education in India offers an interesting web of trajectories. Indian higher education is one of the largest in the world, with over ten million students. However, education marks a social divide in that only one in ten young people has access to higher education, according to the World Bank Report on Education in India (World Bank, 2012). Over the last few decades, the focus of Indian higher education has been on information technology and engineering courses. The trajectories do not stop here. Whilst India has the demographic advantage of being home to a large segment of the world's youth population, unemployment is still a major problem. "Whilst, at the top end, India's business schools, Indian Institutes of Technology (IITs), Indian Institutes of Management (IIMs) and universities produce globally competitive graduates, primary and secondary schools, particularly in rural areas, struggle to find [good teaching] staff" (Lall, 2005). This scenario raises questions regarding the extent, type and mode of education to be offered.

Fact File on Indian Higher Education

44	central universities
285	state universities
130	deemed universities
107	private universities
6,014	colleges recognised by the UGC[1]
374	autonomous colleges

Two vantage points are discernible with respect to Indian higher education. One is the Kothari Commission report, which was the first government policy to systematise a "coherent education policy". Formulated in the mid-1960s, the Kothari Commission's recommendations focussed on "free and compulsory

[1] UGC is the University Grants Commission, a national apex body for higher education; these numbers are from www.ugc.ac.in

education for all children up to the age of 14" (Lall, 2005). Whilst this served the national agenda soon after independence, the '80s and '90s demanded more from education, and this resulted in the National Policy on Education (NPE), which aimed to gear India towards the twenty-first century.

Along with the motto of "education for all", NPE aimed to raise educational standards and increase access to education (Lall, 2005). These vantage points converge in the recent policy of the National Mission on Education Through ICT (NME-ICT), formulated as part of the 11th Five Year Plan. This policy seeks to network all higher education institutions through broadband connectivity, thus "using ICTs to meet the double goals of expanding access to and improving the quality of education" ("Harnessing Growth", 2008).

The intention is to weed out factors which debilitate the system (Kaul, 2006), such as:

- Excessive bureaucratisation.
- Underutilisation of funds.
- Unattractive compensation for qualified faculty.
- Outdated curricula.
- Poor infrastructure.

There is a parallel move to introduce affirmative initiatives (World Bank, 2012), including:

- Development of learner-centred educational resources.
- Utilisation of ICT to provide information pathways.
- Introduction of lifelong learning options.
- Encouragement of distance learning and eLearning.
- Total quality management in higher education.

This exercise of self-introspection has resulted in certain well-delineated proposals for the 11th Five Year Plan period (Government of India Planning Commission, n.d., p. 80), such as:

- Campus-based wireless Internet facilities and 24/7 computer labs.
- ICT coverage to all 360 universities and 17,625 colleges, in a phased manner.
- Intellectual hubs — universities and colleges — through networks, eResources, online learning, access to global resources, archiving of content, and eLearning management techniques.
- Broadband, wireless, digital subscriber line, leased line/TDM/FTDMA VSAT/SCPC/DAMA/radio frequency links for establishing connectivity, to create a platform for collaboration amongst teachers and learners and to digitise Indian intellectual content.

The decreasing costs of hardware and bandwidth, the availability of connectivity, EDUSAT (a satellite distance education service), and other information and knowledge resources all provide distinct opportunities for the realisation of the 11th Five Year Plan objectives (Government of India Planning Commission, n.d., p. 102).

Impact of ICT on Higher Education

Over the last decade, especially the last five years, several meaningful initiatives have utilised ICT to augment the quality of education.

- One of the early ventures was the Consortium for Educational Communication (CEC), an inter-university centre of the UGC.[2] With the help of 17 educational multimedia research centres, the CEC produces TV programmes on syllabus-based topics. These are archived in a learning object repository.
- The National Council of Educational Research and Training uploads its textbooks online for free access by teachers and learners through its website.[3] Similarly, NSDL, an initiative of the Council for Scientific and Industrial Research, provides free access to supplementary curriculum-based content.
- Ekalavya is an open educational initiative by the Indian Institute of Technology, Bombay, for content development in Indian languages. It includes OSCAR, which provides web-based interactive animations as teaching resources.
- eGyanKosh, at IGNOU, provides access to over 30,000 modules of courseware in a self-instructional format, and 1,600 videos.[4]
- Towering over these initiatives is the NME-ICT, launched in 2009, and its Web portal — Sakshat — that provides one-stop access to e-content, e-journals and e-books. In addition, the National Educational Foundation, under the aegis of the National Knowledge Commission, seeks to develop web-based open resources.

These initiatives span different levels of education (primary, secondary, tertiary) and different types of providers (government, public, private). However, they converge in their attempts to provide access to quality teaching and learning resources. To this extent, they move towards Marc Eisenstadt's concept of "knowledge media", which foregrounds the processes of storing and sharing knowledge.

Precursors to OER in India

In the Indian context, the growth of ICT and the development of OER go hand in hand. Whilst OER are still nascent, three initiatives have kick-started the phenomenon.

1. The National Programme on Technology Enhanced Learning (NPTEL), a joint effort of the Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc), has created lectures aimed at students and faculty in private engineering colleges. Originally intended as recorded lectures or web-based lectures, they are now popular as YouTube lectures. This is an instance of the open access concept being used in the face-to-face and formal mode of education.

[2] www.cec-ugc.org
[3] www.ncert.nic.in
[4] www.egyankosh.ac.in

2. VASAT, a wing of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), has created open access learning materials on agricultural practices, aimed to promote natural resource literacy. Under a Creative Commons licence enabling reuse, these materials are presented as PowerPoint slides, Flash videos and HTML files. VASAT materials reveal a simple and effective sharing of resources in the non-formal education sector.
3. IGNOU is the largest institution for open and distance learning in India. Its FlexiLearn service provides free access to existing courses to promote personal learning. This offers an instance of open access in the open and distance learning mode.

What Are OER and How Do We Define Them in the Indian Context?

There are several definitions of OER. A commonly accepted working definition reads as follows: "'Open educational resource(s)' (OER) refers to educational resources (lesson plans, quizzes, syllabi, instructional modules, simulations, etc.) that are *freely available* for use, reuse, adaptation, and sharing" (Wiley, 2008; emphasis added). Expanding on this, a more recent definition reads as follows: OER are educational resources that are "openly available for use by educators and students, without an accompanying need to pay royalties or licence fees" (Butcher, 2011, p. 5). All definitions relate OER to educational resources and expand or restrict the scope of the term "resources". What is interesting about the two definitions given above is their perception of "openness". Whilst the earlier definition equates openness to free availability, the latter relates openness specifically to licensing issues. This distinction becomes important in the Indian context because with the development of ICT, accessibility and reachability have emerged as givens. However, whether individuals and institutions will embrace the notion of open licensing is a matter to consider.

Given this context, the defining points of OER have to be reworked for the Indian context. The "4Rs" of OER — reuse, revise, remix and redistribute (Wiley, 2009) — may not pose an academic hindrance, but portability will depend on the extent to which redistribution happens. In other words, what form should OER take in India and what parameters should we adopt to gauge the reach of OER? These were the questions that set us on the present study.

OER Survey Instrument: An Overview

The survey instrument aims to study the current state of play in the use of OER in the Asian region. It contains three sections: the first section seeks information on the individual respondent and the institution to which s/he belongs; the second section focusses on the extent of understanding of and familiarity with digital resources; the third section garners information about the respondent's understanding and use of OER; and the fourth section gathers information on the policy, legal and technological issues related to OER.

In India, our survey sample consisted of 100 respondents drawn from different spheres of academia. The range of the sample was fairly extensive — faculty from universities and colleges, academics from the agricultural sector, and academics

from arts, science, social science and technical disciplines. Further, the sample included respondents from different parts of India, although there is no perfect balancing of all the nation's regions. Our quick finding is that nearly 95 per cent of our respondents answered the second and third sections of the survey instrument, indicating an awareness and extensive use of digital resources in the teaching–learning process and an initial level of awareness regarding the use of OER. In contrast, only two to five per cent of our respondents attempted sections pertaining to the ensuing policy, legal and technological concerns of OER. This is as expected, given the extensive penetration of open source technologies and the nascent beginnings of the open access concept and OER.

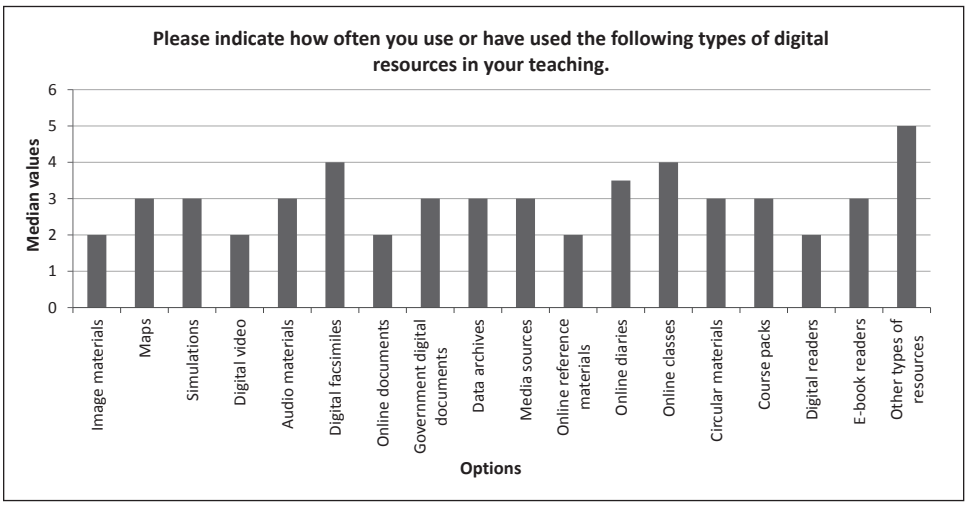
Given this scenario, a quantitative analysis would have been limited in its findings. Therefore, we propose to apply the Knowledge, Attitude, Practice — KAP — model to analyse our sample. Knowledge refers to people's understanding of any given topic. Attitude refers to their feelings towards the subject, as well as any preconceived ideas that they may have towards it. Practice refers to the ways in which they demonstrate their knowledge and attitude through their actions (Kaliyaperumal, 2004, p. 7). Often responses to survey instruments result in numerical and statistical data. As a survey tool, the KAP model's advantage is that it offers holistic qualitative inputs on survey data. The following sections of the report will examine the responses as an indicator of existing awareness and potential use of OER in India.

Understanding of and Familiarity with Digital Resources

In the Indian context, the extensive development of ICT is a precursor of OER. Whilst government policies over the last decade have been favouring the use of ICT in the teaching–learning process, the current Five Year Plan proactively advocates the collaborative creation and sharing of knowledge resources amongst Indian higher education institutions. Given this scenario, we expected an extensive awareness and use of digital resources (DR). Presented below are our quantitative and qualitative findings regarding digital resources.

Types of DR Used

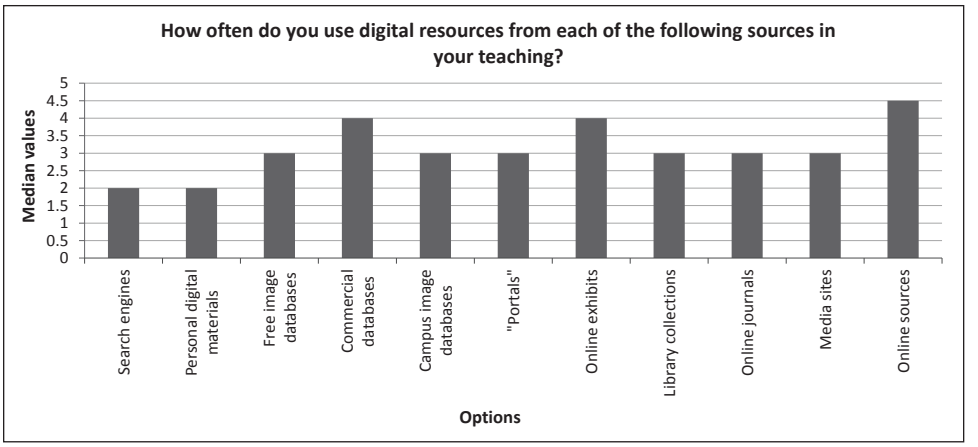
Figure 4.1: Types of DR used



Teachers use digital resources primarily to source images and videos; online documents and references are other important types. A PDF reader is a key software resource used by teachers. Blogs and audio materials are used considerably less, as are eReaders. Significantly, "course packs" and curricular materials are also used much less than images and videos.

Frequency of DR Usage

Figure 4.2: Frequency of DR usage

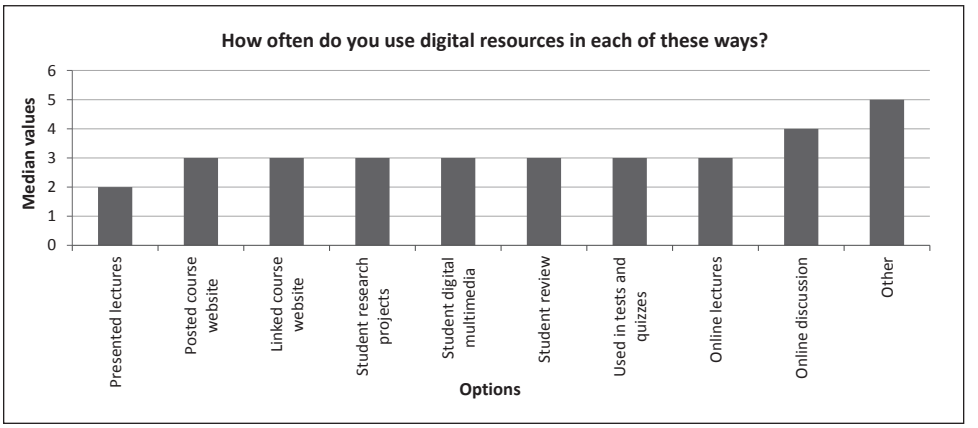


Teachers primarily source digital material directly from the Internet using search engines, or employ their own personal collections. Portals or media sites are not used much in this regard, nor are library collections or commercial image databases.

Functional Use of DR

Digital resources are used by teachers primarily in lectures, and relatively minor use is made in other ways. Online discussions involving teachers and students are not known to take place in significant ways, and DR are rarely used in those infrequent discussions.

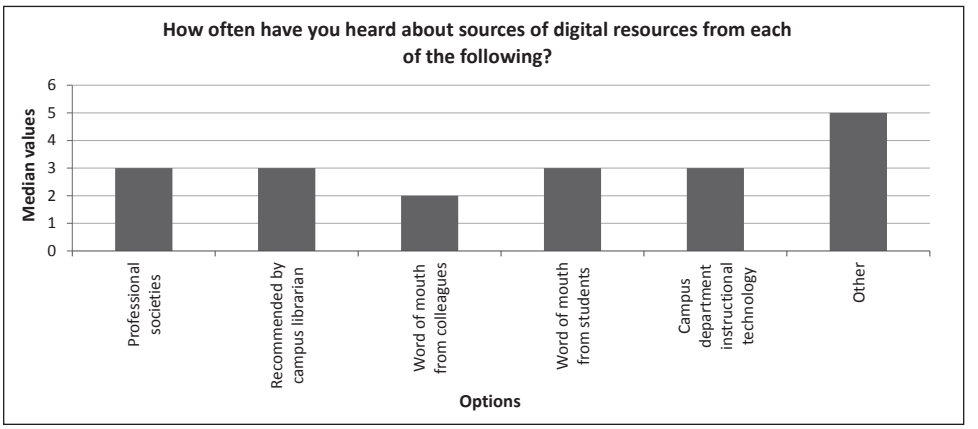
Figure 4.3: Functional use of DR



Sourcing of DR

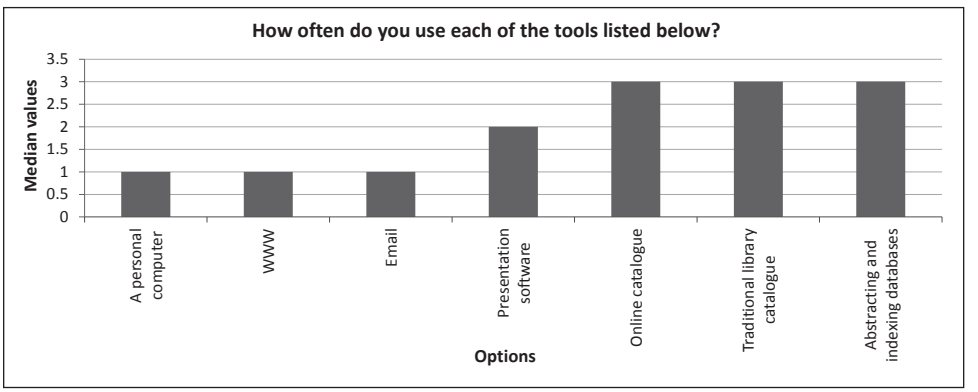
A major source of information for teachers about DR is the knowledge or awareness of other teachers. Well-invested sources such as local Edutech testing and assessment centres or media resource centres are not often used as resources. There is a similarity between this situation and that of farmers. Most farmers are known to source information about new farming inputs or techniques from other farmers rather than from institutional resources. This is indicative of the weakness or absence of organised efforts to deliver information in an accessible way to seekers of DR.

Figure 4.4: Sourcing of DR



Use of Digital Tools

Figure 4.5: Use of digital tools

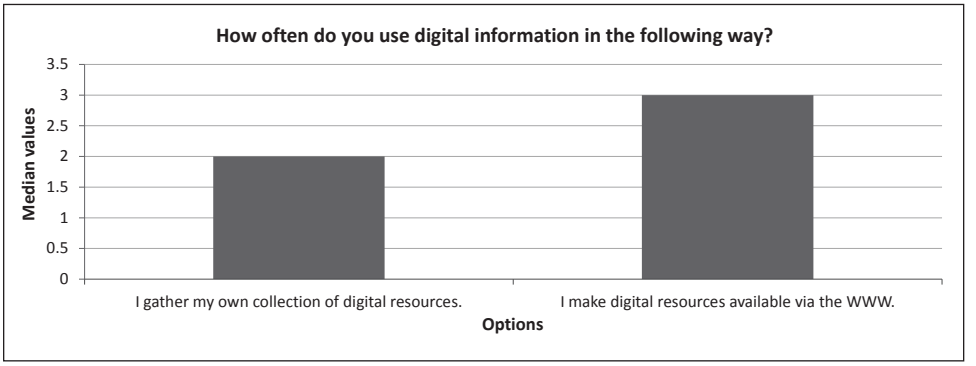


Respondent teachers make modest use of their own collections of DR (consistent with Figure 4.2 above) and make even fewer serious efforts to share DR via the Web.

Use of Digital Information

Positive orientation towards students is a primary factor motivating teachers to deploy DR (mostly in lectures). Teachers are not motivated by possibilities of peer interest or by career advancement opportunities, both of which are considered to be nearly non-existent.

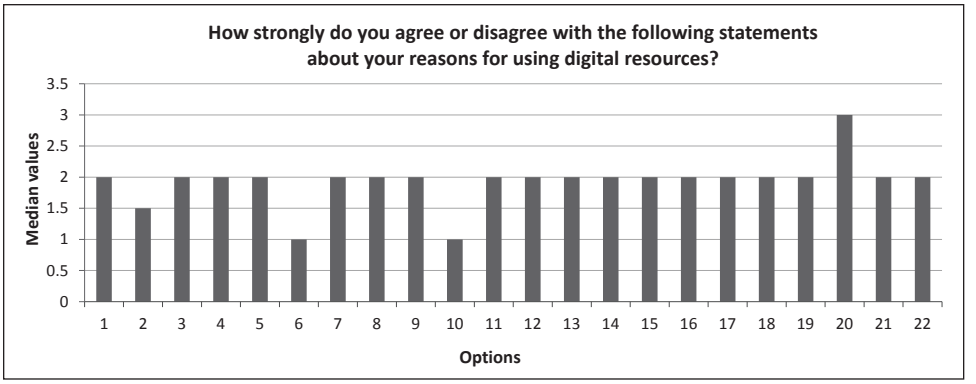
Figure 4.6: Use of digital information



Reasons for Using DR

The responses to the question about reasons for using digital resources are interesting because they reveal the nascent beginnings of possible pedagogical frameworks for the use of OER in India. Teachers are using digital resources not because it makes the job of teaching easier, but because there is a tangible benefit to the learners.

Figure 4.7: Reasons for using DR



Legend

I use digital resources in my teaching...

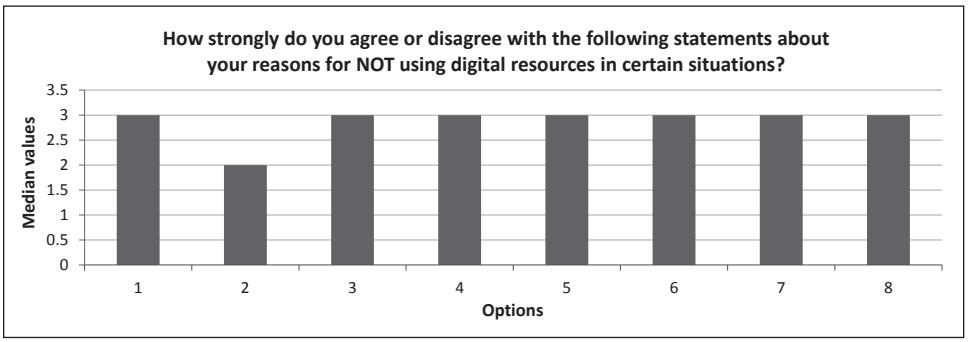
1. To provide students with a context for a topic.
2. To get students excited about a topic.
3. To integrate primary source material into the course.
4. To integrate my research interests into my course.
5. To provide students with both good and bad examples of different kinds of scholarship.
6. To let students know the most up-to-date development of the subject.
7. To teach information literacy.
8. To teach critical thinking skills.
9. To provide students a preview of the course before they register.
10. Because it improves my students' learning.
11. Because it allows my students to be more creative.
12. Because it saves me time.

13. Because it is more convenient for my students and their schedules.
14. Because it creates a sense of community for students enrolled in my course.
15. Because it allows me to do things in the classroom that I could never do otherwise.
16. Because it provides access to resources that we don't have at our college.
17. Because my students expect or ask for more technology.
18. Because it allows me to stay up to date with my colleagues.
19. Because the administration (deans, chairs, provost) encourages me to use digital resources more.
20. Because it may help me get promoted or get tenure.
21. Because I like or feel very comfortable with the new technologies.
22. Because I enjoy having my teaching practices and course materials available to anyone in the world who would like to use them.

Matching the Use of DR and the Context of Usage

The single largest response to this question is that there are very clear occasions when DR do not enhance or supplement the goals of the teaching instance. This is a useful indicator for designing DR and, by extension, OER, because the portability factor alone cannot guarantee usage. The design principles of DR and OER have to be inclusive and flexible at the same time.

Figure 4.8: Matching the use of DR and the context of usage



Legend

I don't use digital resources in certain teaching situations because...

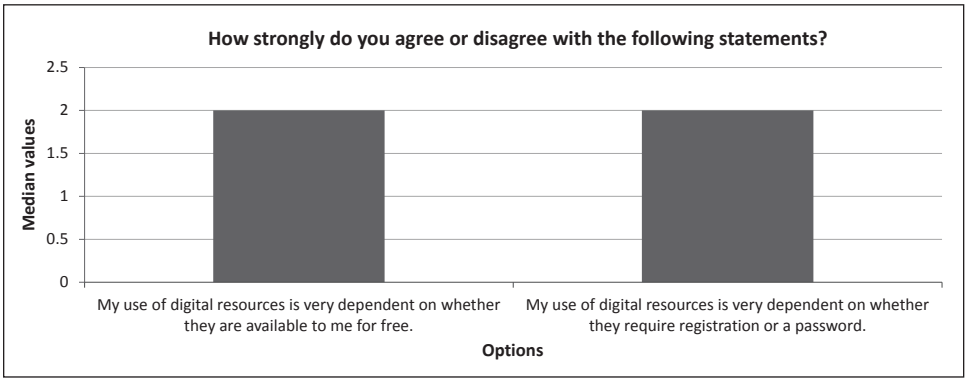
1. I don't have time to use digital resources.
2. They cannot substitute for the teaching approaches I use.
3. Using them distracts from the core goals of my teaching.
4. They are irrelevant to my field.
5. Students don't have the information literacy skills to assess the credibility of digital resources.
6. Accessing digital resources is difficult.
7. Digital material can be presented outside its original context.
8. I don't want my students to copy or plagiarise material from the Web.

Attitude Towards Licensing Matters

Our respondents chose equally both options given in the survey instrument, regarding licensing issues. So, it really does not matter whether digital resources are free to reuse or are protected in some way. If a teacher decides to make use

of a resource online, s/he will! This is likely to pose a problem regarding use of copyrighted material even whilst creating DR or OER.

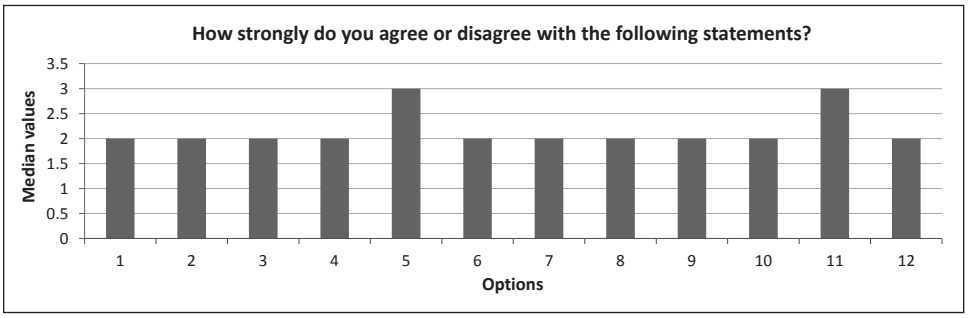
Figure 4.9: Attitude towards licensing matters



Factors Inhibiting the Use of DR

Almost all the "inhibiting" factors below are marginal from the teachers' point of view. It is thus safe to infer that these are not serious factors.

Figure 4.10: Factors inhibiting the use of DR



Legend

I have difficulty using digital resources the way I would like because...

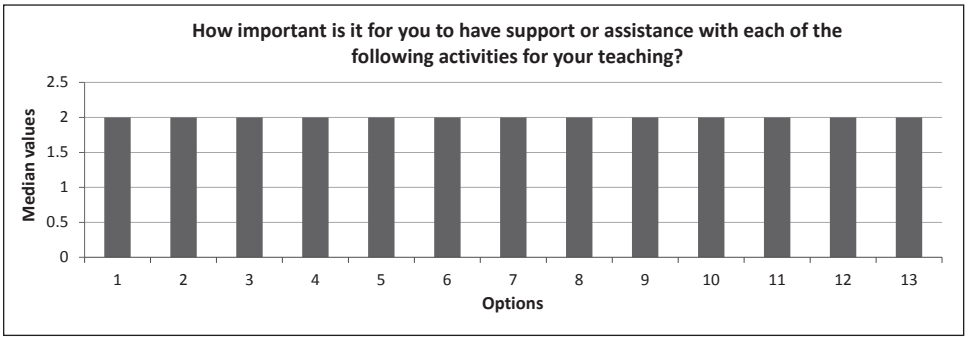
1. Available software is unsuitable for viewing and displaying digital images.
2. Available software is unsuitable for integrating audio or video into my course.
3. My students don't have reliable access to computers.
4. My students don't have reliable access to a high-speed connection.
5. I don't have reliable access to a computer.
6. I don't have reliable access to a high-speed connection.
7. I don't have reliable access to physical resources in my classroom.
8. It is difficult to get server space or access to a server in order to store/host digital resources for teaching.
9. I don't have reliable access to scanners.
10. Course management software packages (e.g., Blackboard, Moodle) are inadequate for my needs.
11. I don't know how to save presentations to my computer so they can be run without a live connection.
12. Web formats (e.g., HTML or PDF) allow me to link to whole documents but not to specific excerpts within a text.

Teachers discount the demotivating nature of two factors somewhat strongly — namely, that they do not have reliable access to a PC or that they would need a "live" connection to the Internet to make use of DR.

Support Mechanisms for the Use of DR

Teachers expect modest support with a large number of activities related to the use of DR. Whether this is due to a lack of knowledge is not clearly discernible from our sample.

Figure 4.11: Support mechanisms for the use of DR



Legend

Support with...

1. Finding digital resources.
2. Assessing the credibility of digital resources.
3. Evaluating the appropriateness of resources for my teaching goals.
4. Interpreting copyright laws and/or securing copyright permission.
5. Creating my own website.
6. Importing resources into a course website or a database.
7. Learning how to use a learning management system (e.g., Moodle, Sakai).
8. Integrating resources into a learning management system (e.g., Moodle, Sakai).
9. Digitising existing resources.
10. Gathering, organising and maintaining digital materials.
11. Training students to find or evaluate digital resources.
12. Obtaining or setting up technical infrastructure (servers, computers, smart classrooms, etc.).
13. Other activities.

Although there is a capacity gap, it is not perceived to be serious. However, this may be an area to focus on when OER are introduced in a formal situation.

From the samples available, the following inferences can be derived:

- There is clear evidence of moderate **knowledge** of digital resources amongst Indian teachers.
- Although the **attitude** of teachers towards the nuances of identification, use and creation of digital resources are rudimentary, there are no major social or psychological inhibitors which will hamper the acquisition of such knowledge.
- The actual use and creation of digital resources are still in their infancy. However, the identification and use of digital resources to suit teachers'

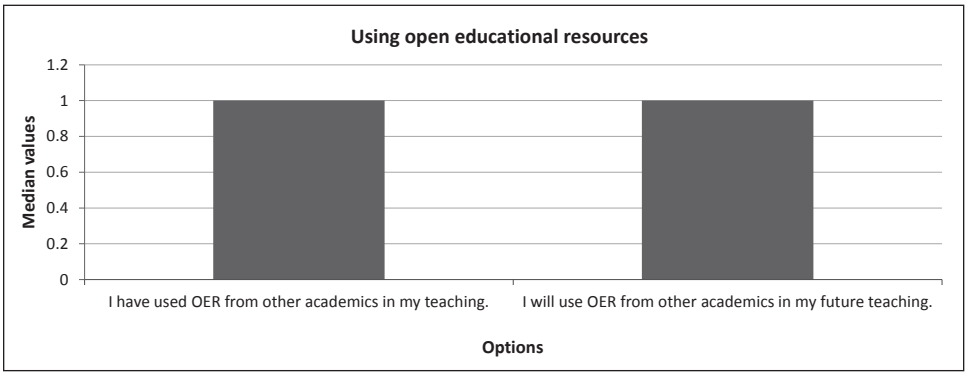
specific classroom needs offer an interesting **practice** or application framework.

The section of the survey instrument on digital resources clearly reveals the readiness of individual teachers to use digital resources. Whether this is transformed into their open welcome of OER will be discussed in the following sub-sections pertaining to the third section of the survey instrument — namely, the extent of understanding of OER as a concept and the use of OER.

Use of OER

The question about OER use whilst teaching attempts to capture existing and intended use. Our teacher respondents have in equal measure either used or are planning to use OER. Given the earlier responses with reference to digital resources, the primary channel for use appears to be the classroom lecture.

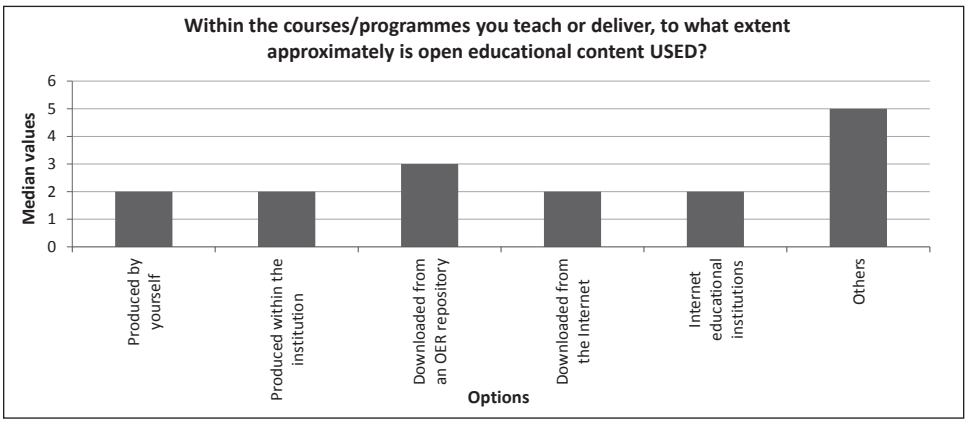
Figure 4.12: Existing and intended use of OER



Extent of OER Use

Teachers use OER produced in their own institutions or from collaborating institutions. To a significant extent, direct downloads from the Internet are used. It is noteworthy that OER repositories are not seen as equally rich sources. A possible explanation for this response is that teachers may not even be defining OER in terms of global open source and open access. An interesting indicator is that in larger or smaller measure, teachers consider sharing of resources as routine — probably like borrowing a book from a library or sharing photocopied material.

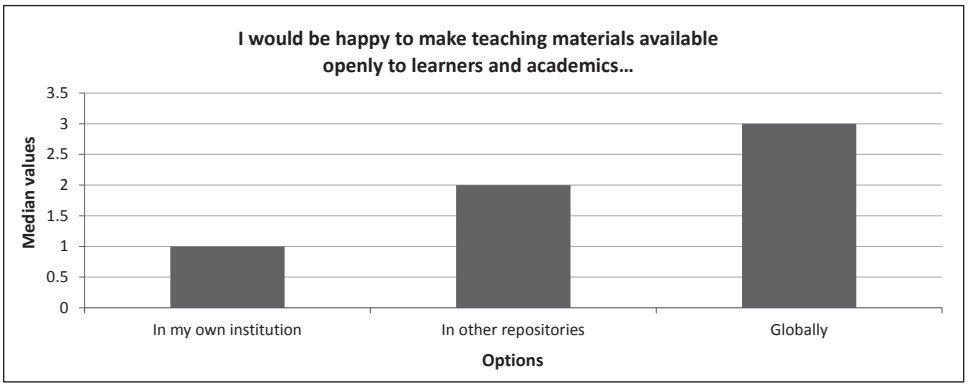
Figure 4.13: Extent of OER use



Sharing OER

The responses to this question have notable variations. Whilst a sizeable number of teachers are interested in sharing their own OER locally (probably amongst friends and colleagues within the institution), very few responses indicated interest in depositing their OER in repositories and making them available globally. A straightforward explanation is that teachers are still in the process of understanding the ramifications of the OER concept.

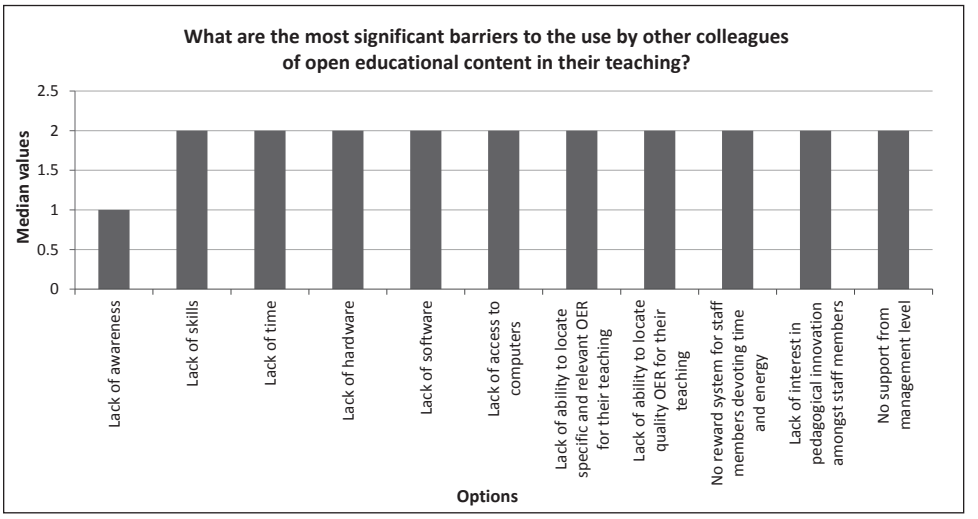
Figure 4.14: Sharing OER



Perceived Barriers to Sharing OER

This survey item also reiterates the fact that OER are in a nascent stage of development in India. Lack of awareness is the most significant factor affecting the use of OER by teachers. As mentioned earlier, capacity-building exercises are needed to initiate teachers into this mode of knowledge management.

Figure 4.15: Perceived barriers to sharing OER

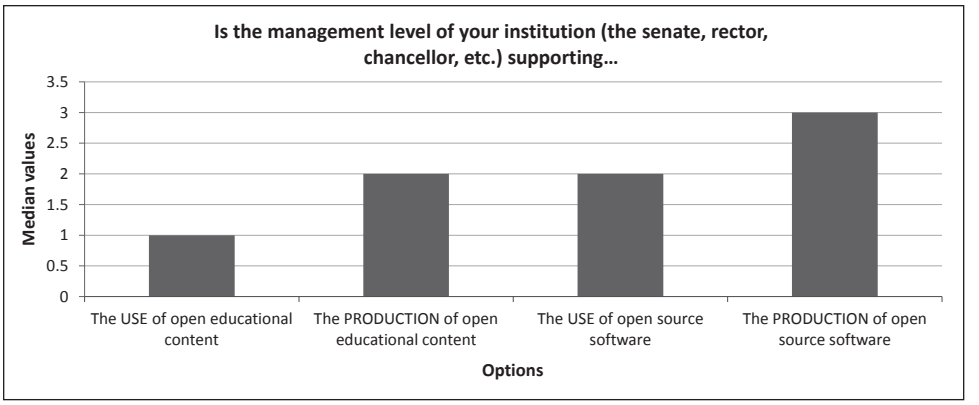


Institutional Support for OER

The spectrum of responses to this particular question is an eye-opener because no new educational practice can flourish without a synchronisation of individual interests and institutional goals. The responses indicate that management is

supportive of OER use locally and is somewhat supportive of their production for intra-institutional needs. Similarly, members of the management group of institutions are slightly supportive of the use of open source software but are significantly less supportive of the production of open source software. Whether this is due to a lack of perception of the potential of openness in education is not clear. However, this is a pointer for OER production in India. For OER to succeed there, benefits to the institution and individual have to be clearly established.

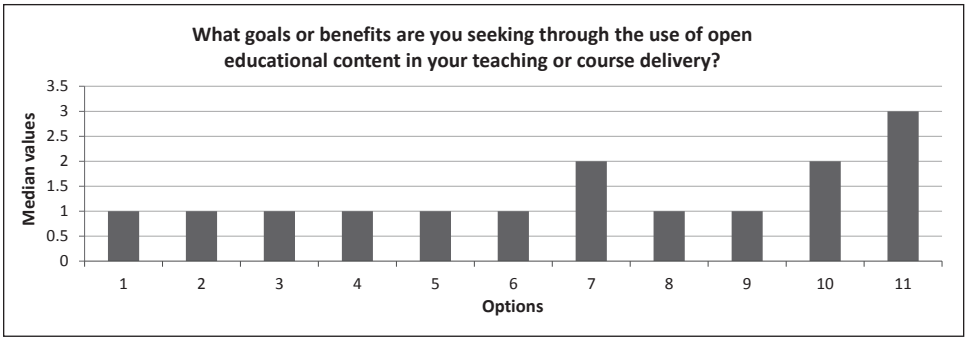
Figure 4.16: Institutional support for OER



Benefit Analysis for the Use of OER

Responses to this query provide clear indication of the factors that motivate the use of OER. A significant number of responses suggest that OER will improve affordability and outreach potential. This is in keeping with the government's policy of creating knowledge networks amongst institutions to bridge the gap in literacy and educational quality. Interestingly, very few respondents view OER as a move to become independent of publishers. This is again an expected outcome. Even though government policies advocate sharing of knowledge resources, institutional policies still demand publications in certain forms whilst assessing individual faculty for promotions and career advancement schemes.

Figure 4.17: Benefit analysis for the use of OER



Legend

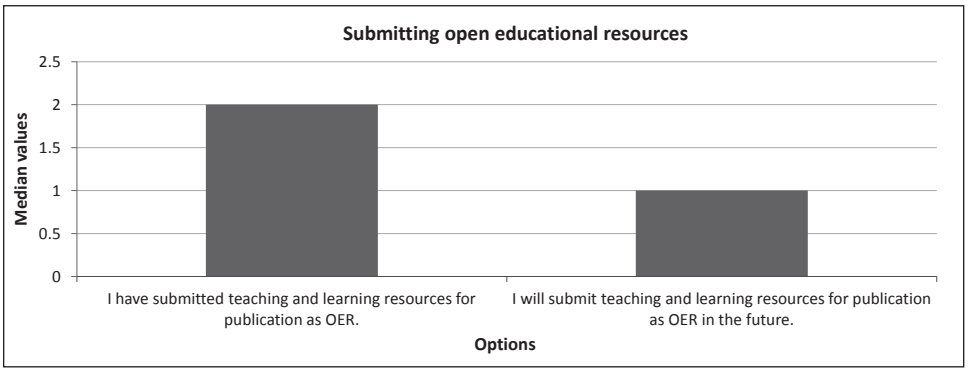
1. Gaining access to the best possible resources.
2. Promoting scientific research and education as publicly open activities.
3. Bringing down costs for students.
4. Bringing down costs of course development for institutions.

5. Outreach to disadvantaged communities.
6. Assisting developing countries.
7. Becoming independent of publishers.
8. Creating more flexible materials.
9. Conducting research and development.
10. Building sustainable partnerships.
11. Any other.

Submitting OER for Publication

Even though the teachers do not indicate a resistance to publishing their OER, the responses do not reveal a high level of motivation either. A primary reason may be a lack of awareness of the potential of such sharing. Therefore, capacity-building exercises are required.

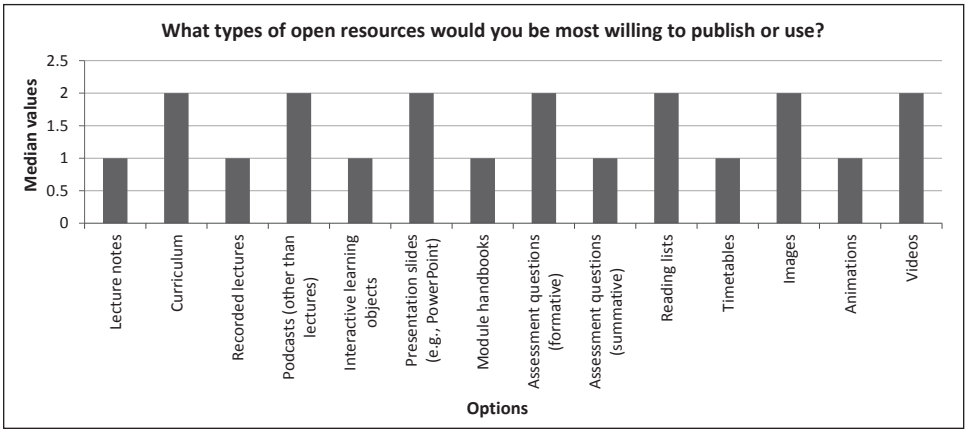
Figure 4.18: Submitting OER for publication



Preferences in Publishing and/or Using OER

This question — "What types of open resources would you be most willing to publish or use?" — is not well formulated: *use* and *publish* should be expected to lead to different sets of preferences. We feel that keeping them together somewhat diminished the value of the responses. Our respondents were also confused in their responses to this question. Images and videos, which were most sought after for use (as evident in responses to an earlier question), were less significant in this set of responses. A possible reason is that respondents were less sure of publishing images or videos they produce, and more sure of utilising the ones available on the Internet or from colleagues and friends.

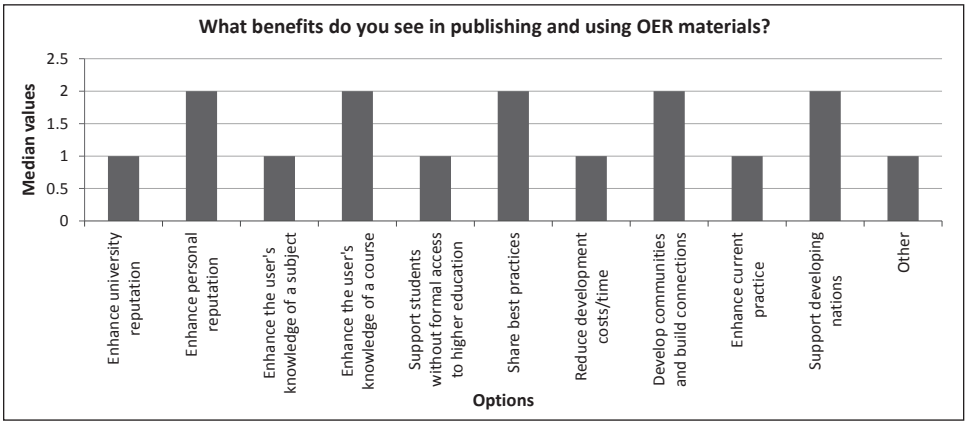
Figure 4.19: Preferences in publishing and/or using OER



Perceived Benefits of Publishing OER

The question "What benefits do you see in publishing and using OER materials?" also received ambiguous responses. Given that there is a lack of clarity over the potential for publishing OER and the institutional sanction accorded to doing so, it is not surprising that respondents were cautious in enumerating the benefits. We interpret this as another important indicator of the need for institutions to assign credit to the creation and use of OER.

Figure 4.20: Perceived benefits of publishing OER



Locating OER and the Effectiveness of Existing OER Searches

The last two questions reveal that generic searches are the most popular approach for teachers in locating OER, and repositories are not perceived as serious sources of knowledge. This is consistent with earlier responses. Our interpretation is that OER repositories are not developed comprehensively or are not marketed well. Specialised search techniques are viewed ambiguously in terms of their usefulness.

Figure 4.21: Locating OER

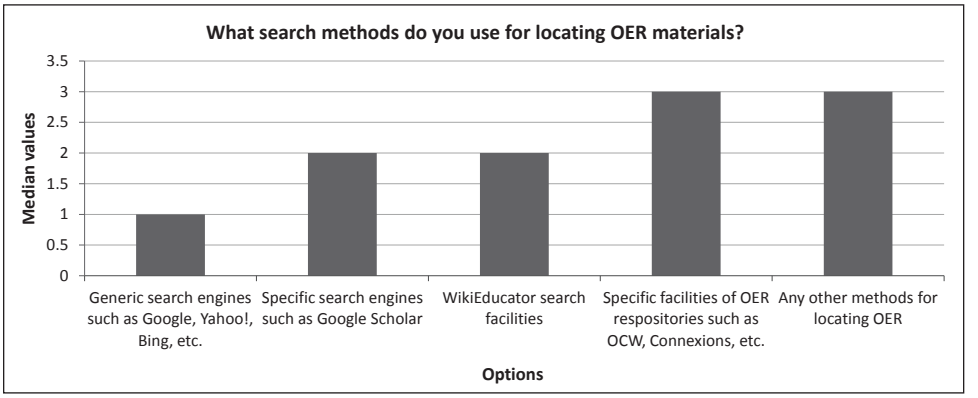
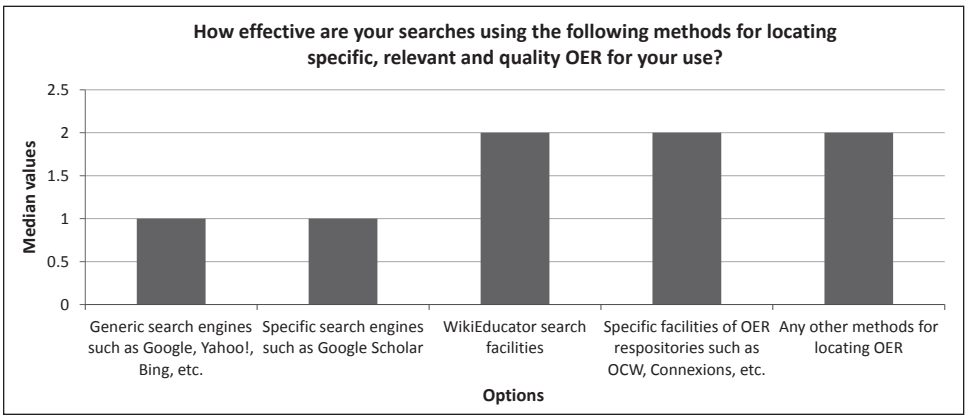


Figure 4.22: The effectiveness of existing OER searches



The responses to the OER section of the survey also reveal a gap between knowledge and practice, similar to the responses to the section on digital resources. Our inferences are as follows:

- There is little to moderate **knowledge** of what constitutes OER and of their potential reach and benefits amongst Indian teachers.
- There is lack of clarity on the types and methods of creating and using OER. However, this is more to do with the lack of knowledge of OER and less to do with inhibiting psychological or social **attitudes**.
- Given that OER are a nascent phenomenon in India, there is a gap between individual practice and institutional norms. At an individual level, teachers are willing to put OER into **practice**, but there is not much evidence of their reach.

Conclusions and Future Pointers

The present survey has a single element that proves to be both a highlight and a deterrent in obtaining clear-cut responses. It is a nested survey wherein several related questions are raised. Whilst it limits the extent of quantitative inferences that can be derived from the results, it proves a veritable goldmine of qualitative pointers. As mentioned earlier, there were 100 responses in all. Whilst 40 were fully completed questionnaires, 30 were partially completed and 30 were

incomplete. This is a major reason why we couldn't arrive at any conclusions regarding policy, legal and technological issues raised in the fourth section of the survey instrument. Based on our analysis, the following conclusions are evident:

- The highlight of the survey in terms of responses is use of digital resources but not really of OER. This is quite clearly due to the differing stages of development of DR and OER.
- Identification of sources of DR and OER is still through conventional modes.
- There is a high instance of use of DR and OER as classroom tools and techniques.
- The individual production of DR and OER is directly related to the lack of career incentive for the activity.
- There is a lack of awareness regarding copyright regulations.
- As of now, what drives the DR and OER initiatives is individual interest, not institutional support or encouragement. This is surprising, given the recent government policies on knowledge sharing and collaborative practices.

DR and OER will remain predominantly acronyms rather than actualities until they are perceived as AER — accessible educational resources. So, what is the way forward?

- Awareness-raising and capacity-building exercises are required for individuals.
- Policy decisions of the government have to be suitably interpreted by individual institutions, leading to career incentives for individuals embracing DR and OER.
- Collaborative resource creation and sharing amongst teachers at intra-institutional and inter-institutional levels have to be encouraged.
- Easy to access repositories with convenient indexing and metadata have to be made available at institutional and national levels.
- Pedagogic parameters for using and creating DR and OER have to be crystallised.

These conclusions and future pointers support our hypothesis that any new phenomenon needs to be pervasive in its reach. Further, the percolation of a new idea amongst individuals and institutions must be symbiotic. More importantly, OER cannot succeed in India as an indicator of social responsibility alone. There has to be a viable model that can demonstrate individual and institutional benefits for synchronising the knowledge, attitudes and practice of OER.

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CHAPTER

4

Prospects and Challenges for Introducing Open Educational Resources in Indonesia

Daryono and Tian Belawati

Abstract

Along with the global movement for open content, a strong open content movement in Indonesia within the past decade is changing the way knowledge is being produced, disseminated and shared in that country. This movement also enlightens people about their rights of access to information and educational materials. Open educational resources (OER) have become a prominent tool for sharing and exchanging educational materials to enhance quality education. However, sufficient information about the extent of OER adoption and practice has not reached Indonesia. A survey across Indonesian universities that actively utilised information and communication technology for their teaching and learning strategies was conducted to collect information about OER practices. The survey revealed that OER have been well received, and the intention to use OER is very strong. Along with various available digital resources, free-to-download Internet sources were commonly used. The respondents were convinced that OER enhanced the quality of teaching and learning by providing free access to the best available resources. In addition, no substantial threat of copyright violation had been experienced, although knowledge about the use of third-party content and Creative Commons licences was still low. Policy on OER was fragmented because co-operation on OER both nationally and internationally was very limited. These views were also reflected in the respondents' low interest in producing OER, compared to their high intention of using them. OER practices in Indonesia were still in the initial stages, due to the lack of established policy and infrastructure to facilitate OER practices within universities. This chapter explores and discusses the prospects and challenges for promoting OER in Indonesia.

Keywords: *OER, Indonesia, policy, open content*

Introduction

Open educational resources (OER) are part of the global open movement to improve quality and promote innovation in teaching and learning (OPAL, 2011). OER have become a powerful tool to promote equality in education and reduce the substantial gaps amongst educational institutions, and will become a new tool to support the growth of intellectual capital. However, one remaining challenge is clarification of copyright law and open licensing practices, and related barriers that might hinder the further development of OER (Bull, Bossu, & Brown, 2011). The main objective of OER is to promote free access to educational resources for noncommercial purposes that enable the exchange, sharing and reuse of educational materials (Iiyoshi & Kumar, 2008). In the last decade, OER practice has grown rapidly and has been well received, as indicated by the large numbers of OER available through the Internet. OER provide a promising tool for information and knowledge exchange around the globe and may serve as the backbone of a future information society. In the current information society, publishers are no longer the sole providers of publications, and individuals have taken a substantial role in creating a more open publication environment. Any individual has an opportunity to be an active publisher, creating information and knowledge flow exchanges through the Internet. However, scholars still have mixed feelings and responses to the open movement. For example, in Indonesia, knowledge about the use of OER is still limited to a small number of institutions and individuals because of personal, cultural or institutional constraints.

The authors conducted a study to explore the extent to which OER are being adopted and used within the academic community, and to identify the challenges and barriers that may exist in promoting OER in Indonesia. The survey was addressed to the institutions and academics that actively engage in online learning. This chapter reports the survey results and discusses the issues identified, as well as possible solutions for overcoming barriers to the optimisation of OER practices in Indonesia.

OER Initiatives in Indonesia

An island nation, Indonesia is located in Southeast Asia, in the Oceania region, and has 17,508 islands (Government of Indonesia, 2012). The islands are governed by 33 provincial governments. With over 238 million people, Indonesia is the world's fourth most populous country (Indonesia Statistics, 2012). According to Indonesia Statistics (2011), Indonesia's gross domestic product (GDP) is about $432.82 per month, with a per capita income of $1,918 and a growth rate of 6 per cent per year. In terms of information and communications technology (ICT) penetration, the current ICT infrastructure is only capable of serving 16 per cent of the population accessing the Internet, but the mobile phone penetration has reached about 250 millions users through 12 mobile communications operators (Kemeninfo, 2010). To accomplish one of the development objectives of "the Indonesia connected plan" in 2014, the government has launched the "village-Internet connection programme", followed by free mobile Internet access in sub-districts (*kecamatan*) (Kemeninfo, 2010). This programme is expected to substantially increase Internet access in the near future.

In the education sector, Indonesia started to introduce eLearning in institutions in the mid-1990s, when Universitas Terbuka (Indonesia Open University) launched its online tutorial programmes for its students. This was followed by the Centre for Information and Communication Technology for Education (*Pustekkom*) in co-operation with the Directorate of Secondary Education, and by the Directorate of Vocational Education when it developed "E-dukasi.net" in 2002. E-dukasi.net has been merged into the school electronic book programme, *Buku Sekolah Elektronik,*[1] to provide free quality learning resources from primary to secondary education. *Buku Sekolah Elektronik* currently provides about 950 titles for compulsory primary and secondary education. It has been expanded to post-secondary education (*Rumah Belajar*[2]) and also includes two eLearning television channels. In addition, the Indonesian Telephone Company (PT Telkom) supports a number of institutions to mobilise eLearning penetration, through the Office for the Research and Application of Technologies, the Association of Indonesian Internet Service Providers, the Network of School Information, Detik.com and ICT Watch.

At the university level, along with its use for eLearning purposes, ICT has also been used to develop a network of electronic libraries to create the Indonesian Digital Library Network (IDLN), initially comprising the Bandung Institute of Technology (ITB) central library, the Eastern Indonesia Universities Development Project (a Canadian International Development Agency project), the public universities' libraries, the Islamic University Library (supported by McGill University, in Canada) and the Indonesian Institute of Sciences (LIPI), Jakarta. On a wider scale, the Ministry of Education and Culture has established a nationwide intranet system to connect universities and schools, as well as district and provincial educational offices known as Jardiknas (*Jaringan Pendidikan Nasional*, or Indonesian Education ICT Network). As a part of Jardiknas, many universities have been connected with each other to form INHERENT (Indonesian Higher Education Research Network). This network has significantly enhanced eLearning as well as the development, dissemination and sharing of educational resources. The INHERENT members have produced and shared numerous OER in recent years.

Universitas Terbuka (UT), as the only open university in Indonesia, has embraced OER practices since the early stages of the open movement. Although they were not termed OER, UT has developed numerous educational materials that it has made freely available on its website[3] since the late 1990s. Further, from 2002 to 2004, when the educational community was fascinated by the potential of the Learning Object Metadata (LOM) phenomenon, UT along with with Sukothai Tammatirat Open University collaboratively developed a number of learning objects in statistics, mathematics, biology and chemistry. The collaboration was funded by the International Development Research Centre (IDRC) of Canada through its PANdora project. Over the years, UT continued to develop local open content to support its students and the general public. In the past two years, UT has also been promoting the use and development of OER through another collaborative research project on OER practices, again funded by the IDRC. Although the project is still at an initial stage, UT has made a promising pathway in advocating OER in the region. The development of the Prudent Teacher Portal (*Portal Guru Pintar*), devoted to improving teaching competence, is one of UT's

[1] http://bse.kemdiknas.go.id
[2] http://belajar.kemdiknas.go.id
[3] www.ut.ac.id

OER initiatives, along with UT Internet TV (ITV), dry laboratories, academic journals and web-based supplementary materials (Belawati, n.d.).

Background of Survey Respondents

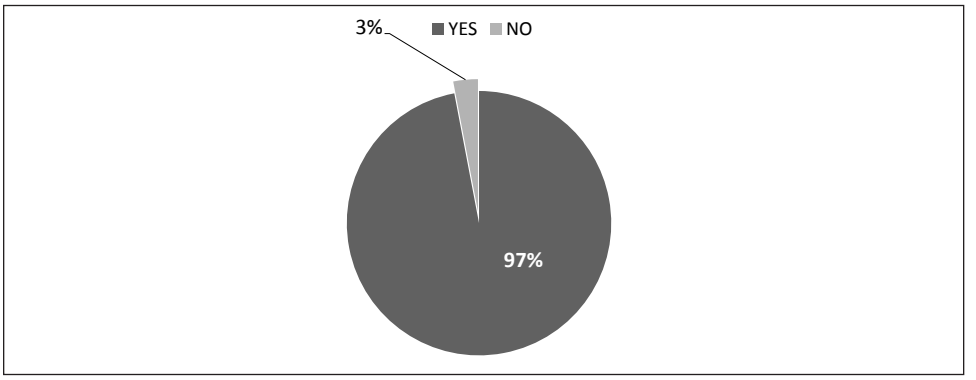
Data was collected through both paper-based and online surveys from selected faculty members and decision makers from Indonesian universities who have actively used ICT in their teaching and learning. The purposeful sampling was aimed at limiting targeted groups to those who were familiar with ICT utilisation. Eleven Indonesian universities and the Southeast Asian Ministers of Education Organization participated in the survey, and 56 out of 200 questionnaires were returned. The respondents' backgrounds varied from junior to senior faculty members at both public and private universities. Most of them taught various courses at the undergraduate level only, whilst a few taught at the graduate level.

Most of respondents were located on the island of Java, with only one university from outside Java participating in the survey. The respondents from UT, however, originated from various locations across Indonesia. The majority of respondents (37 per cent) were affiliated with UT. Furthermore, about 80 per cent of respondents originated from public institutions. Therefore, interpretations of survey responses from these participants may require some caution regarding the generalisability of the findings.

Knowledge of and Familiarity with OER

The creation and use of digital resources in Indonesia has expanded in the last decade, due in part to various government ministries' inter-departmental programmes targeted at e-government, e-education and e-commerce. The education sector is the most progressive in promoting OER. However, access to OER varies across cities and islands. Provincial cities in Java, for example, have more advanced OER access than other places.

Figure 5.1: Access to digital resources



In general, access to open digital resources is still limited because Internet penetration has only reached 16 per cent of the population (Kemeninfo, 2010).

However, the current conditions in Indonesia are promising. Most of the survey respondents had access to digital resources (see Figure 5.1). This may also indicate that familiarity with OER is reasonably high. Even though this survey was not

reflective of the whole population of Indonesia, the respondents were faculty members in seven major universities who had been using ICT actively for teaching and learning and were familiar with digital resources. This finding supports the idea that institutional circumstances determine individual access to digital resources.

It is therefore important to understand what types of digital resources were most often used. The following table shows that survey respondents predominantly used digital resources accessed via the Internet.

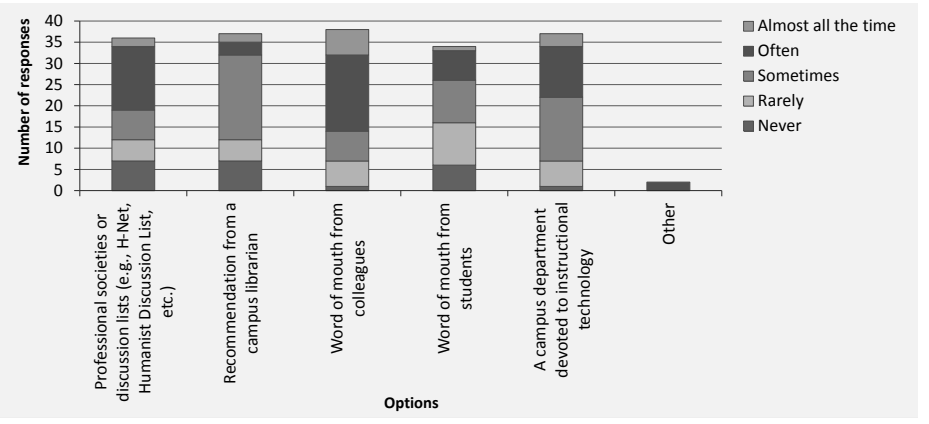
Table 5.1: Types of digital resources used by survey respondents

Mostly used	Rarely used
Online or digitised documents (including translations)	Maps
Images or visual materials (drawings, photographs, art, posters, etc.)	Digital facsimiles of ancient or historical manuscripts
Curricular materials and websites that are created by other faculty and/or other institutions (e.g., MIT's OpenCourseWare, World Lecture Hall, MERLOT)	Data archives, such as numeric databases (e.g., census data)
News or other media sources and archives	
Government documents in digital format	
Online class discussions (including archived discussions)	
Online reference resources (e.g., dictionaries)	

Amongst major digital resources, online documents and curricular materials were used most frequently. Data archives were rarely used because they were generally restricted and also required paid access.

It is interesting, however, that information about the availability of OER came most frequently from individual connections (Figure 5.2). Professional associations and universities were not referred to as major sources of information about digital resources, which might explain why such information was mainly spread through individual relationships.

Figure 5.2: Respondents' sources of information about OER



Further inquiry was made about how digital resources were being used. The survey indicated that digital resources were commonly used in teaching and learning activities, such as lecture presentations, assignments, tests and quizzes, and during online discussions. This finding shows that OER have been used in teaching and learning activities.

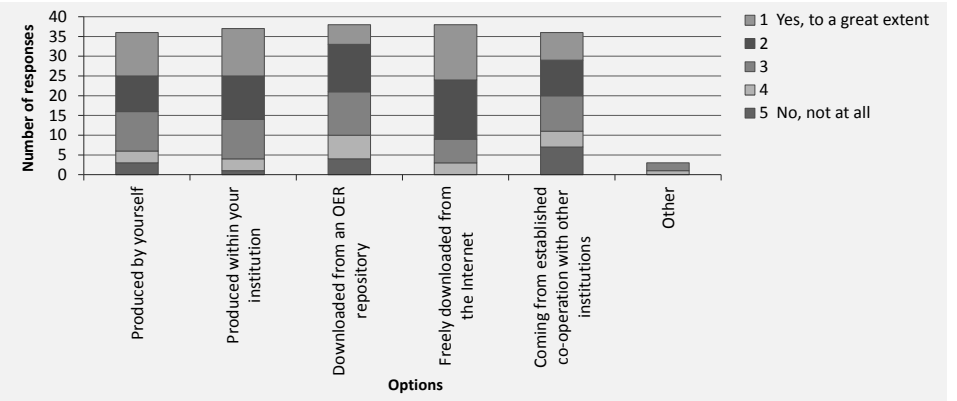
We speculated that it could also be helpful to determine how OER were being used by the respondents. Such information might help explain current practices and help to shape future ones.

The Use of Open Educational Resources

In our survey, the use of OER was often associated with familiarity and knowledge about OER because the majority of respondents had already used OER in their teaching and learning. Encouragingly, respondents were highly confident about using OER in the future. These results are promising for future OER practices in Indonesia.

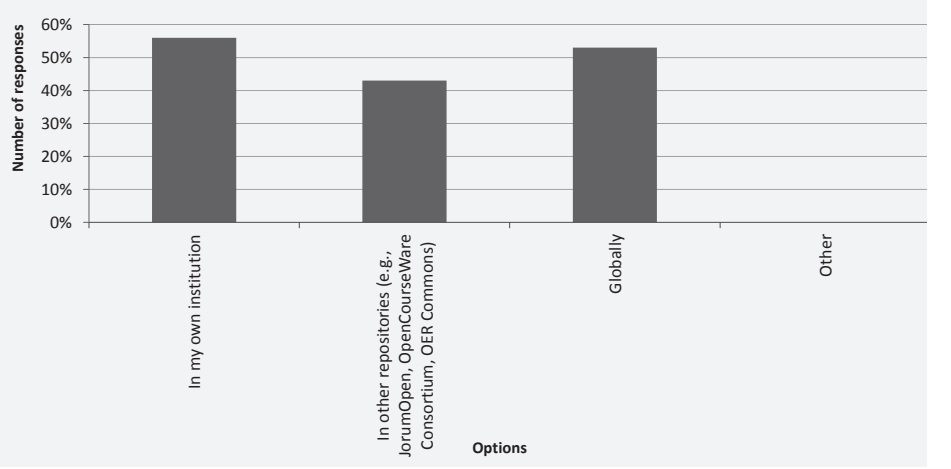
The study also showed that various ways were used to identify OER materials for teaching and learning (Figure 5.3). However, OER utilisation was focussed primarily on freely downloaded OER rather than OER from specialised peer reviewed collections and repositories on the Internet. This may explain why free access to OER is preferable to access from an OER repository. The findings may also be due to limited knowledge in Indonesia about the availability of specialised OER repositories.

Figure 5.3: Respondents' use of OER in teaching and learning



Previous findings also revealed that use of and familiarity with OER were considerably high and that OER were collected through various means. These figures, however, did not clearly reflect on the intention to publish OER.
The present study showed a moderate intention to publish OER (Figure 5.4). Respondents seemed to prefer to publish OER within their own institutions, with only a few publishing globally. This result apparently confirms that OER use is greater than OER production.

Figure 5.4: Respondents' intention to publish OER



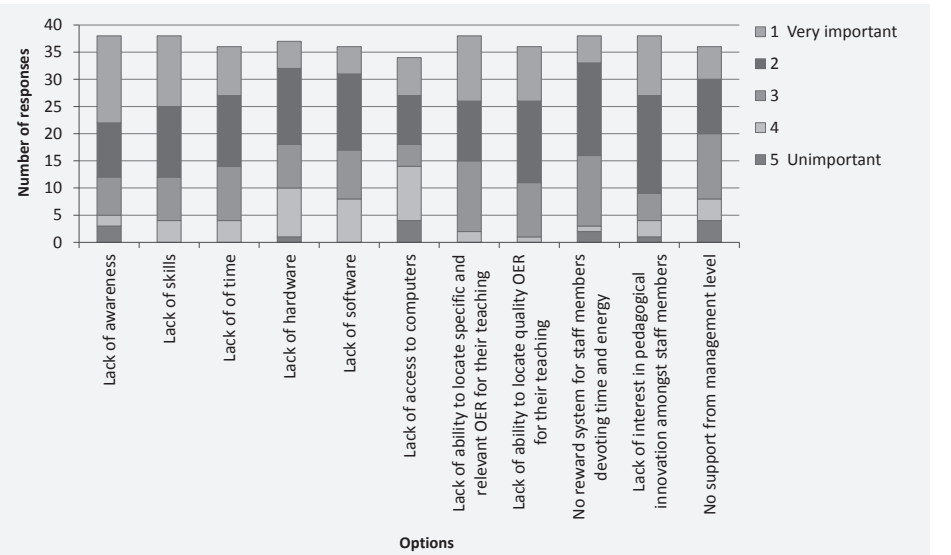
The utilisation of OER by respondents showed considerable promise for advancing teaching and learning. OER have been used as part of the teaching and learning processes, and will be utilised in the future, even though barriers to promoting OER still exist. The following section elaborates on these barriers.

The Barriers to OER Use

Although OER have been accepted as major learning resources, a number of barriers still hinder their utilisation and may impede the use of OER as major sources of information and knowledge sharing. As illustrated in Figure 5.5, substantial barriers to the promotion of OER in major Indonesian universities do remain.

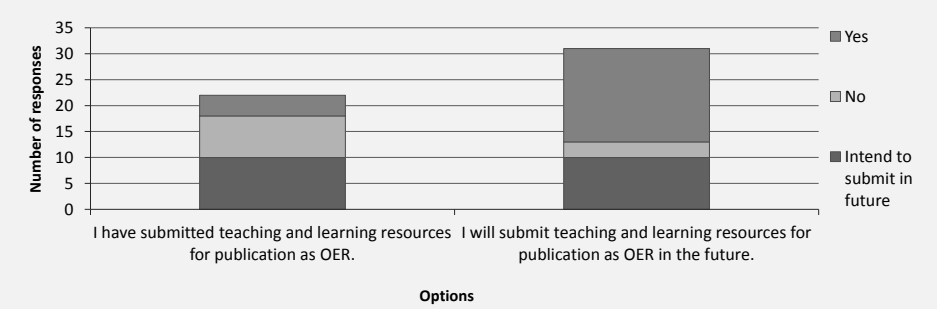
Amongst the respondents, lack of awareness, time and ability, combined with lack of institutional rewards and incentives, created substantial challenges. Furthermore, lack of adequate ICT infrastructure was also a significant barrier. All of these difficulties show that the introduction of OER still entails major obstacles, and requires strategic and comprehensive promotional approaches.

Figure 5.5: Barriers to colleagues' use of OER



All the identified barriers are still present and substantially affect the efforts to implement OER practices more widely. These barriers are also reflected in the low submission rates for OER, as presented in Figure 5.6.

Figure 5.6: Submission of OER by respondents



The figure reveals contrasting features between the submission of OER and the intention to submit OER. Only a small number of respondents had submitted OER, but the number of respondents who intend to submit OER in the future is quite promising.

The barriers to the introduction of OER seem to originate from both individual and institutional circumstances. These barriers may be affecting the current low rate of OER submission.

Policy on OER

As presented earlier, it appears that institutional circumstances constitute substantial barriers to the efforts to populate OER. It is beneficial, therefore, to explore to what extent both individuals and institutions perceive the need for an OER policy. An OER policy is an important way to provide a legal framework for governing OER practices and contributes positively towards the utilisation of OER. This section of the survey report elaborates on OER policy questions.

Figure 5.7: Support of management

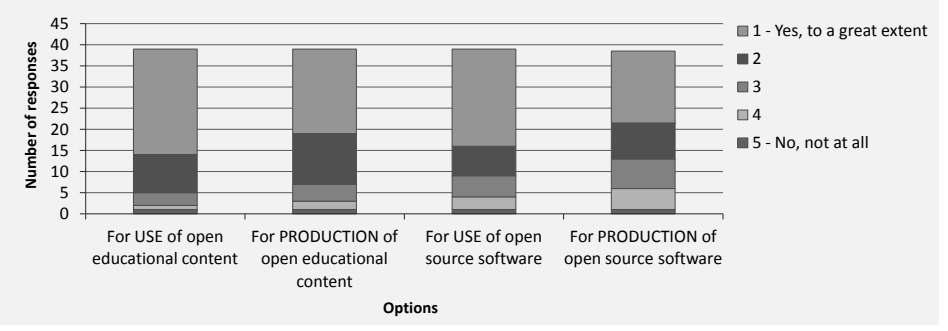


Figure 5.7 shows that support from management is very positive regarding the use and production of OER as open source software. These positive expressions of support, however, are still fragmented if we take a close look at major indicators such as (i) budget, (ii) training and development and (iii) co-operation. Individual responses seem to correspond to institutional responses, and reveal a degree of uncertainty regarding OER policy.

Table 5.2: Comparison between individual and institutional perceptions of OER policy

Issues	Individual	Institution
Sharing and importing OER	Most respondents were not keen to share	Most institutions do not have this policy
Encouragement and incentives to develop OER	Moderate	Half of institutions do have a policy
Active involvement of staff	Active	Less than 20 per cent
Training and development	Limited	Only a few institutions do have a policy
Budgetary allocation	Not yet assessed	Not yet assessed
Technical infrastructure support	Yes	Yes
International collaboration	No	Most institutions do not have international collaboration

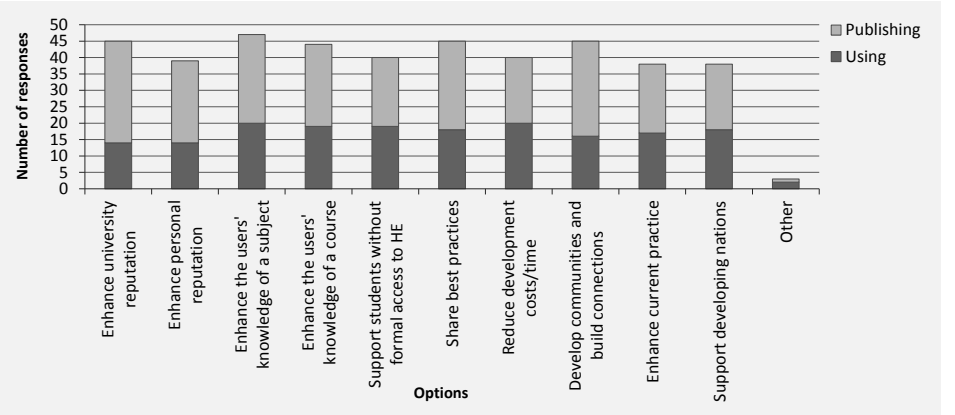
The development of a more sensible policy towards OER is required to address major potential barriers. From individuals' perspectives, training and development needs should be prioritised, followed by effective development incentives. Institutions, however, need to establish clear directions on the utilisation of OER.

Copyright Issues

Copyright principles and laws have governed intellectual property for centuries. Currently, these principles face great challenges related to the introduction of open content on the Internet. Even though freely accessible and transferable knowledge is governed within the principles of fair use and fair dealing, and these principles have been used by educational institutions, such principles often reveal different interpretations of legal opinions. The introduction of OER may strengthen these principles by providing various types of licences that enable efforts to share and exchange educational materials governed by copyright.

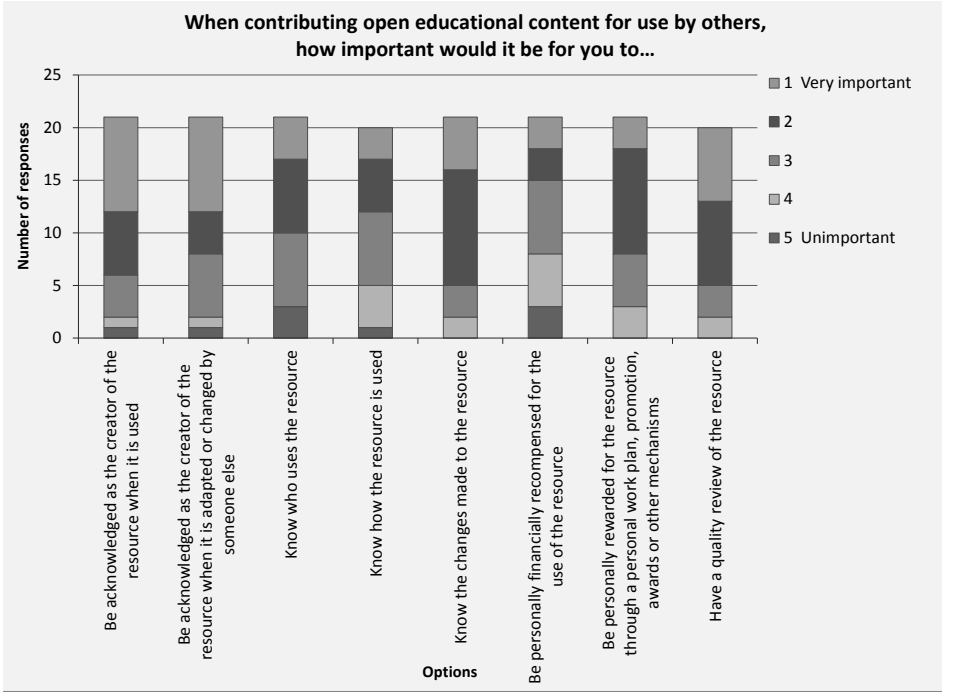
Through understanding the practices and benefits of OER, a common standard to govern OER practices must be developed. Both individuals and institutions recognise that using and publishing OER can contribute to enhancing the reputation of a university. Hence, OER were seen by the respondents as boosting the quality of teaching and learning, and further increasing university networking (Figure 5.8).

Figure 5.8: The benefits of using and publishing OER



Following an examination of the benefits of OER, the study also found that creators needed to be recognised, and that Creative Commons (CC) licences were the preferred mechanism for sharing and for providing attribution, as illustrated in Figure 5.9.

Figure 5.9: The importance of recognition from OER users



The figure shows that all the suggested reasons are important for an OER creator to be recognised and informed about the changes made to his/her OER. Respondents were, however, less demanding about being financially compensated for publishing OER. These findings also reveal that OER production needs to adopt specific and clearly described licences to accommodate creators' needs.

The comparison between individual and institutional perceptions about copyright issues shows that both individuals and institutions prefer to use open content to avoid copyright infringement. However, knowledge about the provisions of copyright law and CC licences is still limited. In general, neither individuals nor institutions perceive a substantial threat regarding copyright violations. Table 5.3 presents these comparisons.

Table 5.3: Comparison between individual and institutional perceptions about copyright issues

Issues	Individual	Institution
Licence to express the rights of others	About half of them do not have a licence, but the other half use open content.	Open content
Knowledge and understanding about copyright	Somewhat confident	Confident
Allegations regarding copyright issues	Rarely	Sometimes
Knowledge and understanding of CC	Limited	Limited
Use of open licence and CC	Sometimes	Sometimes
Knowledge about copyright of third-party content	Sufficient knowledge on inclusion of the licence of copyright and attribution	Sufficient knowledge on inclusion of the copyright licence; removing, annotating or providing a link to the original third-party content
Importance of third-party content	Important	Important

Conclusion

OER have revolutionised the way knowledge is being produced and disseminated. Indeed, they are fostering the transformation of a profit-driven knowledge society into a free-knowledge society. OER not only promote a free-knowledge society, but also serve to advance innovation and quality education. A high degree of familiarity with OER, and the intention to use and produce OER, reveal a promising future for implementing OER practices in Indonesia.

Although OER have been well received by a majority of scholars, OER practices within Indonesia are currently in an initial stage of development. OER policy is still fragmented, resulting in low submission of OER materials. The majority of scholars tend to devote themselves to becoming users rather than producers. Their intention to utilise OER is, however, gaining greater attention as more scholars gain confidence in using OER for various teaching and learning activities.

In summary, major barriers remain, ranging from lack of awareness to lack of institutional support. In addition, copyright and licensing issues have become potential problems, as reflected in the respondents' limited knowledge about third-party content and Creative Commons licences. With respect to the three developmental stages of OER — usage, production and collaboration — Indonesia may currently be best classified as in the first stage. Under these circumstances, a sensible policy must be developed to foster the production and use of OER in Indonesia.

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CHAPTER

5

Open Educational Resources in Japan

Tsuneo Yamada

Abstract

With the progress of information and communication technology implementation in education, digital learning resources have been regarded as an indispensable factor for educational reform and quality assurance in Japan. At the national level, the Japanese government has launched a series of top-down projects, such as the "digital textbook" project in elementary and secondary education, and "good practices" subsidies for universities and colleges. At the institutional level, Japanese course and content providers such as universities and publishers have begun to provide their own online and packaged learning content in a bottom-up fashion, and to share this content with each other.

Nevertheless, the government as well as course and content providers have each lacked the motivation and imperative to make developed content available to the public. Open education in Japan has been promoted in the framework of lifelong learning. The Open University of Japan (OUJ), for example, is supported by the Bureau of Lifelong Learning Policies, under the Ministry of Education, Culture, Sports, Science and Technology (MEXT). From the time of its establishment, OUJ has broadcast educational content for free over terrestrial/satellite TV and radio stations. Meanwhilst, educational content created in other media, such as printed materials and digital media resources, have only been available in a proprietary fashion.

The Japanese first became widely aware of open educational resources (OER) through the MIT OpenCourseWare initiative of the early 2000s. Then, from 2005, leading traditional universities launched the Japan Open Courseware Consortium (JOCW) project, and member organisations began preparing for open courseware sites. A few years later, the National Institute of Multimedia Education (NIME, currently the Center of ICT and Distance Education, OUJ) started a cross-institutional search service to provide access to various OER repositories, including JOCW content.

This chapter presents case reports on the Japanese OER movement, which has been led by three entities: OUJ, JOCW and the TIES consortium. TIES is a homegrown eTeaching system developed by Tezukayama University in 1997. The most representative and renowned of these movements has been led by JOCW. When the first OER projects were being launched, OUJ and other open universities in Asia were renowned as promoters of open education but still lacked the initiative to lead fully-fledged OER movements. TIES built up a number of collaborative frameworks from the mid-1990s, but only for the sharing of digital educational resources inside the consortium.

After presenting the case reports, this chapter will go on to introduce the results of a recent pilot survey. Whilst samples from OER surveys have so far been quite limited in Japan, the results of this pilot survey show clear tendencies. We have remained "innovators" and "early adopters" (Rogers, 1962), both as institutions and as a nation. Most adopters maintain their OER initiatives as an effective publicity strategy.

Keywords: *OER, open content, OCW, open education, open university, repository, federation, learning content, content sharing and reuse, Japan*

Background and Context

Student enrolment at the compulsory education level (in elementary and lower secondary education) in Japan has remained close to 100 per cent since the end of World War II. The proportion of students who go on to a higher level of education, such as senior high school and above, reached 97.9 per cent in the 2009 fiscal year and has exceeded 95 per cent since 1990 (both statistics include students in correspondence courses). The proportion of students who continue into higher education beyond the high school level has also remained high, at a little more than 50 per cent (56.8 per cent in 2010; MEXT, 2010).

Textbooks in elementary and junior high schools are authorised by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and distributed free of charge to students. As a consequence, the demand for open textbooks is very low at these school levels. Various public and private distributors have provided materials for teaching and independent learning, either for no charge or in some proprietary fashion. As the Japanese traditionally perceive it, however, educational resources are far from "open", even if the public sector develops and distributes them free of charge.

To increase the sharing and reuse of the developed content, several public organisations have provided information portals and cross-institutional search services for learning and educational content. After the 1990s, several consortia engaged in the co-development and sharing of digital learning materials amongst universities and related educational sectors in North America, Europe and Oceania, developing a federation of learning material and metadata repositories on the World Wide Web.

In the 2001 fiscal year, the National Institute for Educational Policy Research in Japan constructed the National Information Center for Educational Resources, mainly for K–12 education. Two years later, in 2003, the National Institute of Multimedia Education (NIME) designed a menu of "educational information portal services", mainly for higher education. Both institutions aggregated

Learning Object Metadata (LOM) based metadata for their projects and exchanged metadata periodically for the convenience of their users.

The OER concept was first imported to Japan at the higher education level. The process began when Prof. Shigeru Miyagawa at MIT invited counterparts in Japan to participate in the open courseware (OCW) initiative. From 2003 onwards, Miyagawa started to contact Japanese higher educational institutions to help build awareness and disseminate the OCW initiative to Japan and other Asian countries.

Government Policies on OER for Correspondence Education and Distance Education

The Japanese government has yet to prepare for OER policies or OER implementation at any school level. MEXT has repeatedly supported the development of quality learning content in both higher education and lifelong learning institutions. Examples include the now defunct "Modern Good Practice" programme, implemented in 2004 to facilitate teaching improvements in higher education, and the "Grass-roots eLearning System" programme (2005) to support new service prototypes for vocational training. As a byproduct of the latter programme, quality learning content was developed and provided free of charge, year by year, sometimes in abundance. However, the development efforts were unsustainable and the content was neither shared nor reused. Eventually, funding cutbacks brought the content development to a halt.

One significant roadblock was a lack of awareness at the government and institutional levels that OER are public resources. When granting funds, the government tended to think it was endowing specific universities or university consortia. When receiving funds, institutions tended to think they were being rewarded for their excellence or being subsidised to help them meet specific needs. The content was tailored to the needs of the awardee institutions, and the institutions tried to manage the content as their intellectual property. Had it not been for issues of quality and differences in contexts, the institutions would have attempted content distribution on a proprietary basis.

Another roadblock was a failure to understand the importance of community-based development. Project-based funding has a specified duration. But to assure content quality, the content must be continuously revised and enlarged. From the beginning, the frameworks and organisational structures for these initiatives should have been designed for sustained content development after the funding was gone. The processes after funding were different from those formed in the funding stage by commercial companies. In projects of this type, communities of teachers, professors and academies must contribute through voluntary and autonomous activities.

The Japanese government has allocated huge budgets to educational reforms, some of which have gone to the development of quality educational content. The stakeholders, however, have not sufficiently understood the significance of OER for sustainable knowledge dissemination and quality educational content development. Thus, the effects have been mainly temporal, and the community to sustain the OER movements has not developed to an autonomous level.

OER Movements in Japan

OER movements in Japan have been incited by an overseas organisation and fostered by academic communities in a bottom-up fashion. The JOCW consortium, for example, has received no public funding and operates solely on membership fees from member organisations.

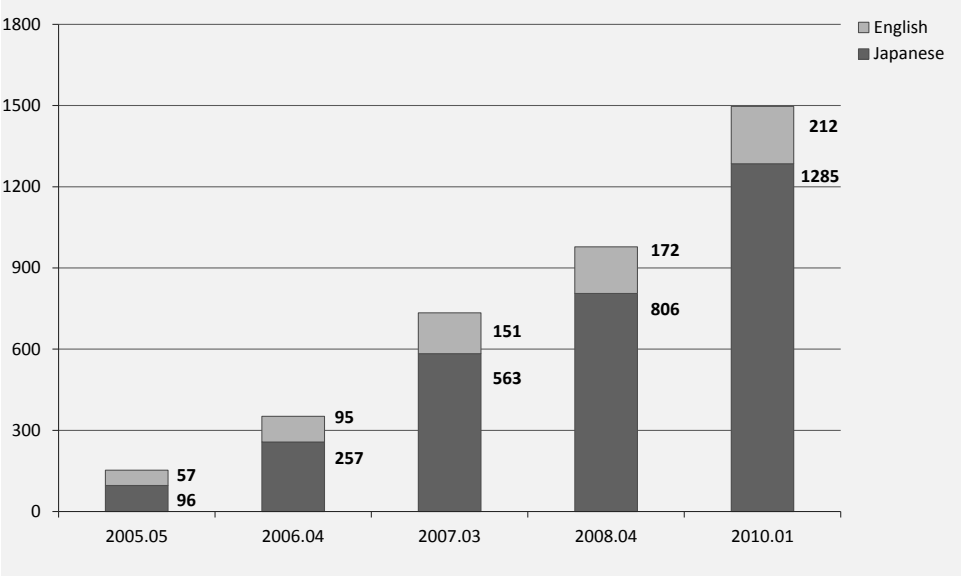
This section introduces three OER movements representative of the status quo in Japan. They are operated respectively by OUJ, JOCW and the TIES consortium. TIES is a homegrown, instructor-centric eTeaching system that was developed in 1997 at Tezukayama University. Of the three, JOCW is the leading promoter of the OER movement in Japan.

Japan Open Courseware Consortium[1]

JOCW was established in 2005 as a closed alliance of six universities: Keio University, Kyoto University, Osaka University, the Tokyo Institute of Technology, the University of Tokyo and Waseda University. By 2006, JOCW had changed to an open organisation mainly for universities launching OCW and had incorporated in its ranks nine universities and one national organisation. In 2007, JOCW opened its membership to the private sector and introduced a membership fee system to sustain its operations. As of February 2012, 46 organisations were enrolled as JOCW members, including 25 universities, four non-profit organisations (NPOs), and 17 companies.

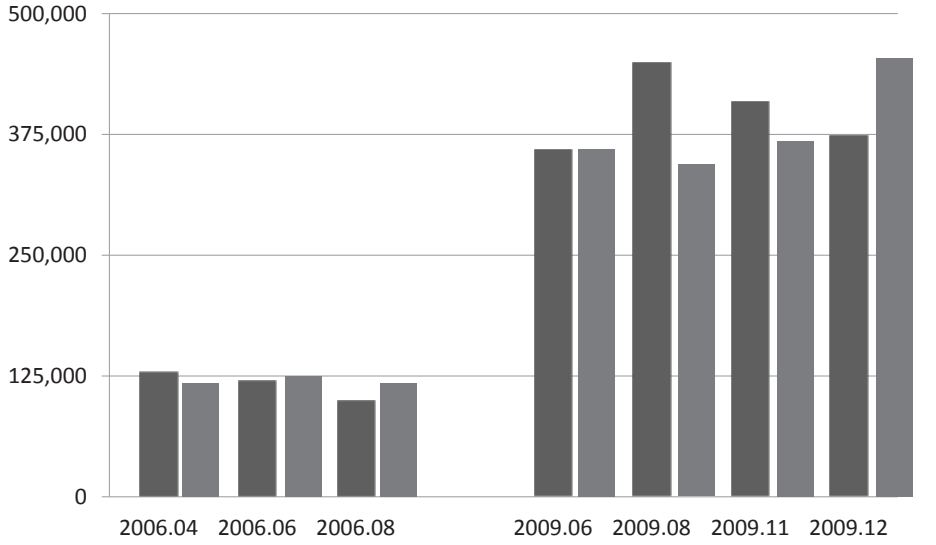
Initially, 153 OCW courses were distributed from Japan, of which 96 were in Japanese and 57 were in English. As of February 2010, the course number had grown to 1,497, of which 1,285 were in Japanese and 212 were in English (Figure 6.1). As the total number of OCW courses increases, the OCW content meets more user needs. Figure 6.2 shows the collective number of visits to all JOCW member sites.

Figure 6.1: OCW courses from JOCW



[1] Information on JOCW in this section is from Fukuhara, 2010.

Figure 6.2: Monthly visits to JOCW sites



NPO CCC-TIES Consortium

The TIES consortium was originally established as an inter-university initiative to improve teaching and learning through collaborations in the community. The TIES consortium developed its own eTeaching and eLearning platform and provides it to members. At the beginning, the content was recorded in classrooms and shared only amongst members, because the main uses were faculty development and supplementary learning by students. Later, as the consortium reorganised itself into Cyber Campus Consortium TIES (CCC-TIES), an NPO, it looked for new lifelong learning missions. In 2008, TIES had an interim project with Sankei newspaper, called Sankei e-college, Minna de Daigaku. According to the project prospectus, the targeted individuals ranged from high school students to the middle-aged and the elderly. The founders of Sankei e-college expect it to become a major lifelong learning platform in the Japanese eLearning market. The ratio of open content (content open to the public) to total content is still limited, though open content is growing in absolute numbers (Table 6.1). Whilst TIES is an associate member of JOCW, its metadata has yet to be shared in the JOCW framework or the Global Learning Objects Brokered Exchange (GLOBE) framework, either domestically or internationally.

Table 6.1: TIES community growth

Years	2005	2006	2007	2008	2009	Feb. 2010
Institutional users	20	33	51	66	73	74
Instructors	82	130	320	801	907	1,016
Students	2,981	7,321	15,099	32,935	46,667	50,409
Lectures	103	205	548	817	1,053	1,305
Videolectures	0	0	660	1,879	3,212	5,988
Shareable content	3,313	7,226	9,861	15,429	20,801	26,714
Lectures open to the public	29	78	134	186	228	265

OUJ as a National Centre of Open Education in Japan

The Open University of Japan is regarded as a national core institution both for lifelong learning (LLL) and for open education in Japanese educational policies. As an open university, OUJ opens its doors to everyone and broadcasts all of its video and audio courseware free of charge through TV and radio media. With the progress of the Internet, OUJ is striving to digitise its content in order to stream most of its TV and radio courseware (about 300 courses as of July 2011) to students online.

OUJ-OCW: Multimedia Delivery of OER

OUJ launched OUJ Open Courseware (OUJ-OCW) in 2010 as a channel for contributing OER to the LLL society. Progress has been slow, however, and only 17 programmes (subjects) were registered as OUJ-OCW by December 2011. One major roadblock has been the copyright issue. The copyright for learning materials at OUJ was originally cleared only for broadcasting or for use exclusively by OUJ students. Thus, additional procedures and costs were required when OUJ opened them to the public. As copyright clearance in Japan is costly, OUJ is unable to offer more OER even if it produces its own broadcasting programmes.

JOCW Search: Cross-Institutional Search System

OER are accumulating at repositories all over the world. To find and retrieve quality content efficiently from these repositories, it will be indispensable to share common platforms and strategies for collecting information and content.

NIME was shut down as an independent administrative institution in 2009 in the midst of governmental reform. Several years earlier, in 2006, NIME had launched NIME-glad (Gateway to Learning for Ability Development), a cross-institutional search service for higher education (see Yoshii, Yamada, & Shimizu, 2008).

At the global level, GLOBE was established in September 2004. GLOBE is a consortium of national hub organisations managing the functions for federated repositories and meta-referatories in various countries and regions. The original members were ARIADNE (EU), education.au Limited (Australia), eduSource Canada (Canada; see McGreal et. al., 2004), Multimedia Educational Resource for Learning and Online Teaching (MERLOT, North America) and NIME (Japan).

Three of the original members have changed. In February 2006, eduSource Canada was replaced with the Learning Object Repositories Network (LORNET). NIME was merged into the Open University of Japan as the Center of ICT and Distance Education (OUJ-CODE) in April 2009, and education.au Limited was merged into Education Services Australia in March 2010. Ten more members joined:

- Korea Education and Research Information Service (KERIS, Korea)
- European Schoolnet (EU)
- The former Center for Open Sustainable Learning, Utah State University (COSL, USA)
- Latin-American Community of Learning Objects (LACLO, Latin America; joined in 2007)

- Institute for Information Industry (III, Taiwan; 2008)
- Institute for the Study of Knowledge Management in Education (ISKME, USA; 2008)
- Thailand Cyber University Project (TCU, Thailand; 2009)
- Inter-University Center for e-Learning (MEITAL, Israel; 2010)
- Eummena and Al-Quds University (Arabic countries; 2010)
- OER Africa (South Africa; 2010)

The current membership now stands at fourteen (see Appendix 6.1). The current numbers of harvested metadata are shown in Table 6.2.

Table 6.2: The number of metadata elements collected by the GLOBE OAI-PMH[2] harvester (as of February 2012)*

Source	Number
ARIADNE (EU)	513,703
European Schoolnet (EU)	185,940
LACLO (Latin America)	40,957
MERLOT (USA)	32,735
OER Commons** (World)	30,903
KERIS (Korea)	7,439
LORNET (Canada)	2,295
OUJ-CODE (Japan)	1,761
OER Africa (South Africa)	1,703
TOTAL	817,436

* Other GLOBE members join using federated search technologies.
** OER Commons is a project of ISKME.

The Open University of Japan inherited these functions and provides a global search system for OER. OUJ manages a common metadata database based on IEEE-LOM version 1.0 (IEEE, 2002). The original metadata are registered and exchanged with international partners through federated search and harvesting.

JOCW Search is a context-specific search system for open courseware provided by member universities of JOCW. Users can search JOCW content cross-institutionally. As of September 2011, the number of registered OCWs stood at 2,804. Each member university tags metadata and sends them to OUJ-CODE. The collection process is expected to operate automatically in the near future.

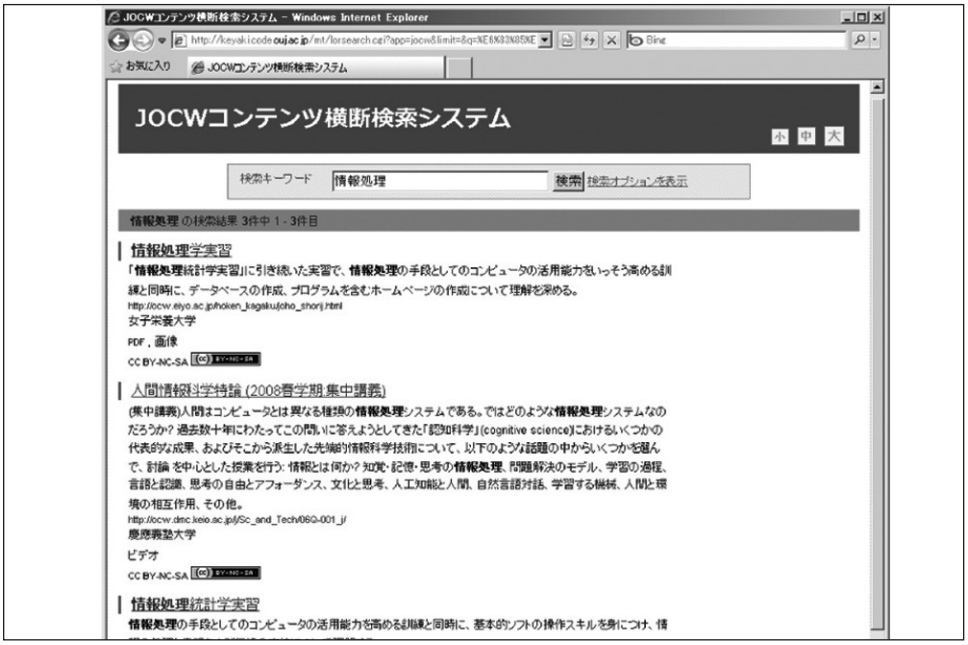
Some member universities control rights under Creative Commons licences. JOCW Search has an element for describing CC licences in the control vocabularies (Table 6.3; Figure 6.3).

[2] OAI-PMH is the Open Archives Initiative Protocol for Metadata Harvesting; see www.openarchives.org/OAI/openarchivesprotocol.html.

Table 6.3: Rights description under Creative Commons (element 19)

Licence System	Value
Creative Commons Version 3.0	Attribution
	Attribution – No Derivative Works
	Attribution – Noncommercial – No Derivative Works
	Attribution – Noncommercial
	Attribution – Noncommercial – Share Alike
	Attribution – Share Alike

Figure 6.3: JOCW search results



A licence description from the Creative Commons system is linked to the site resources.

OER Awareness in Organisations: Results of the Online Survey

OUJ participated in the Project 7 survey and collected and analysed data.

Survey Subjects

By a recent count, Japan has 1,244 institutions of higher education. Yet even at the member universities within JOCW, the sections responsible for OCW often face difficulty in disseminating the OCW concept and getting people on campus to collaborate. In choosing the subjects for our survey questionnaire, we therefore focussed on persons who were in some way involved in the OCW initiative at JOCW member institutions.

Fifteen respondents from 11 institutions took part. Six of the respondents had some representative status for OER initiatives in their institutions (three national

universities and three private universities). Two respondents replied both as individuals and as representatives, which brought the total number of completed questionnaires to 17 — that is, eleven individual replies and six institutional replies. Eight of the 11 individual respondents replied to both the General Questions and the OER Questions in the section for individuals; the other three replied to only the General Questions (Table 6.4). The survey was executed online between January and July of 2011.

Table 6.4: Profile of the respondents

	Responses*	
Institution categories	Institutions	Individuals
National universities (including graduate schools)	5 (1)	8 (2)
Private universities (including graduate schools)	4	4
Independent graduate universities	1 (1)	1 (1)
Open university	1	2
Total	11	15

* Numbers in parentheses are respondents who replied only to the General Questions.

Instruments

The survey instruments — the questionnaires — were translated into Japanese at OUJ and installed at Wawasan Open University (WOU). The questionnaire survey system was operated via an application service provider hosted overseas, without any technical troubles.

Results

All of the individual respondents were able to access digital resources. They were asked to rank their usage of digital resources in different categories using a five-point scale (Table 6.5).

The following digital resources had high usage rankings in both teaching and learning: images or visual materials (average score 4.09); digital film or video (3.55); digital readers (3.55); online or digitised documents (3.45).

On the other hand, the following resources had low usage rankings: digital facsimiles of ancient or historical manuscripts (1.45); e-book readers (1.45); personal online diaries (e.g., blogs) (1.91); course packs (2.18).

All of the respondents were professors or teachers who preferred “materials” for classroom teaching and courseware development.

Table 6.5: Types of digital resources used in teaching and learning (question 1.1)

	Average scores, most (5) to least (1)
Images or visual materials (drawings, photographs, art, posters, etc.)	4.09
Maps	2.09
Simulations or animations	2.27
Digital film or video	3.55
Audio materials (speeches, interviews, music, oral histories, etc.)	2.64
Digital facsimiles of ancient or historical manuscripts	1.45
Online or digitised documents (including translations)	3.45
Government documents in digital format	2.20
Data archives (numeric databases, e.g., census data)	2.36
News or other media sources and archives	2.73
Online reference resources (e.g., dictionaries)	2.82
Personal online diaries (e.g., blogs)	1.91
Online class discussions (including archived discussions)	2.64
Curricular materials and websites created by other faculty and/or other institutions (e.g., MIT OpenCourseWare, World Lecture Hall, MERLOT)	2.55
Course packs	2.18
Digital readers (e.g., Adobe Acrobat reader)	3.55
E-book readers (e.g., Kindle)	1.45

The individual respondents, however, did not seem clearly aware of their use of digital resources in teaching (Table 6.6). In some situations, they used digital resources with clearer purposes: presented during/incorporated in my lectures/classes (3.5); assigned to students for review and/or study (3.2).

Table 6.6: How digital resources are used in teaching and learning (question 1.3)

	Average scores, most (5) to least (1)
Presented during/incorporated in my lectures/classes (e.g., images, audio, MIT lecture, etc.)	3.50
Posted directly on my course website	2.90
Linked from my course website	2.70
Assigned for student research projects or problem-based learning assignments	2.80
Assigned to students to create their own digital portfolios and/or multimedia projects	2.50
Assigned to students for review and/or study	3.20
Used in tests and quizzes	2.20
Presented in my online lectures	2.70
Presented in the context of an online discussion	2.10

The respondents were highly motivated to use their digital resources for educational or pedagogical purposes ("to get students excited about a topic" [3.64]; "to provide students a context for a topic" [3.36]; "to integrate primary source materials into the course" [3.27]; "because it improves my students' learning" [3.18]), but they were not highly motivated to use them for their own purposes as

individuals ("because the administration [deans, chairs, provost] encourages me to use digital resources more" [1.27]; "because it may help me get promoted or get tenure" [1.27]; "because it allows me to stay up to date with my colleagues" [1.55]. See Table 6.7.

Table 6.7: Reasons for using digital resources in teaching and learning (question 1.7)

"I use digital resources in my teaching…"	Average scores, most (5) to least (1)
to provide students a context for a topic	3.36
to get students excited about a topic	3.64
to integrate primary source material into the course	3.27
to integrate my research interests into my course	2.64
to provide students with both good and bad examples of different kinds of scholarship	2.09
to let students know the most up-to-date (or most current) development of the subject	3.00
to teach information literacy (i.e., evaluating the online materials themselves)	3.00
to teach critical thinking skills	2.64
to provide students a preview of the course before they register	2.30
because it improves my students' learning	3.18
because it allows my students to be more creative	2.82
because it saves me time	2.18
because it is more convenient for my students and their schedules	3.00
because it creates a sense of community for students enrolled in my course	2.55
because it allows me to do things in the classroom that I could never do otherwise	3.09
because it provides access to resources that we do not have at our college	3.00
because my students expect or ask for more technology	2.27
because it allows me to stay up to date with my colleagues	1.55
because the administration (deans, chairs, provost) encourages me to use digital resources more	1.27
because it may help me get promoted or get tenure	1.27
because I like or feel very comfortable with the new technologies	2.91
because I enjoy having my teaching practices and course materials available to anyone in the world who would like to use them	2.18

When asked about the need for support and assistance, most of the respondents requested "support with interpreting copyright laws and/or securing copyright permission". Though few respondents were sampled, the needs they recognised were varied. They tended to express a strong demand for most types of support described, except "support with evaluating the appropriateness of resources for my teaching goals" (Table 6.8).

Table 6.8: Need for support or assistance in using digital resources for teaching (question 1.11)

	Frequencies				
	Extremely important	Very important	Somewhat important	A little important	Not at all important
Support with finding digital resources	0	3	2	4	2
Support with assessing the credibility of digital resources	0	3	2	4	2
Support with evaluating the appropriateness of resources for my teaching goals	0	0	1	9	1
Support with interpreting copyright laws and/or securing copyright permission	4	4	0	3	0
Support with creating my own website	2	2	2	5	0
Support with importing resources into a course website or database	1	1	4	4	1
Support with learning how to use a learning management system (e.g., Moodle, Sakai)	2	3	2	3	1
Support with integrating resources into a learning management system (e.g., Moodle, Sakai)	2	1	3	5	0
Support with digitising existing resources	3	2	1	2	3
Support with gathering, organising and maintaining digital materials	2	3	1	3	2
Support with training students to find or evaluate digital resources	1	3	1	4	2
Support with obtaining or setting up technical infrastructure (servers, computers, smart classrooms, etc.)	1	2	2	4	2

OER Questions (Questions 2.1–3.15; Eight Respondents)

Five of the eight respondents replied that they had used OER from other academics in their teaching and that they would continue to do so in the future.

The respondents most frequently used OER they had produced themselves. Seven of the eight developed their own OER as full courses/programmes (one respondent), as parts of courses/programmes (four respondents), or as learning objects (two respondents). Six of them also replied, "I would be happy to make teaching materials available openly and globally to learners and academics."

Table 6.9: Barriers to the use of open educational content by other colleagues in their teaching (question 2.7)

	Frequencies				
	Extremely important	Very important	Somewhat important	A little important	Not at all important
Lack of awareness	3	4	0	1	0
Lack of skills	0	3	2	3	0
Lack of time	1	3	3	1	0
Lack of hardware	0	1	1	4	2
Lack of software	0	1	0	5	2

	Frequencies				
	Extremely important	Very important	Somewhat important	A little important	Not at all important
Lack of access to computers	0	0	0	5	3
Lack of ability to locate specific and relevant OER for my teaching	1	4	3	0	0
Lack of ability to locate quality OER for my teaching	1	6	1	0	0
No reward system for staff members devoting time and energy	2	5	0	0	0
Lack of interest in pedagogical innovation amongst staff members	3	4	0	1	0
No support from management level	2	4	2	0	0

The question on the most significant barriers to the use of open educational content by other colleagues in their teaching showed very clear results: the main barriers were not lack of hardware or software, but lack of recognition, lack of awareness, lack of searchability and lack of organisational support (Table 6.9).

On the submission or publishing of OER, five of the eight respondents had already submitted and would continue to submit their teaching and learning resources for publication as OER. They expected various benefits, especially from publishing (Table 6.10).

Table 6.10: Benefits of publishing and using OER materials (question 2.12)

	Frequency (n = 8)	
	Publishing	Using
Enhance the university's reputation	8	1
Enhance personal reputation	8	0
Enhance the user's knowledge of a subject	6	6
Enhance the user's knowledge of a course	6	6
Support students without formal access to higher education	8	4
Share best practices	7	5
Reduce development costs/time	5	6
Develop communities and build connections	6	4
Enhance current practice	6	5
Support developing nations	5	1

On the other hand, the respondents thought they faced various barriers at the same time (Table 6.11). Copyright issues were perceived as serious in both publishing and using OER.

Table 6.11: Barriers faced in publishing and using OER materials (question 2.15)

	Frequency (n = 8)	
	Publishing	Using
Awareness of the university OER repository and other OER repositories	6	1
Fear over copyright infringement	8	5
Ownership and legal barriers (other than copyright)	5	4
Your time (i.e., lack of time)	4	1
Scepticism over usefulness	2	3
Lack of rewards and recognition	4	0
Possible negative impact on reputation	4	1
Lack of support	4	1
School/institution policy	3	2
Criticism from colleagues	0	1
Criticism from students	0	1
Impact on career progression	0	0
Relevancy of materials available	4	2
Lack of feedback from users	4	1

As contributors of OER, they expected to "be acknowledged as the creator of the resource when it is used", to "be acknowledged as the creator of the resource when it is adapted or changed by someone else", to "know how the resource is used" and to "know the changes made to the resource". They did not, on the other hand, expect to "be personally financially recompensed for the use of the resource" (Table 6.12).

Table 6.12. Requests as OER contributors when contributing open educational content for use by others (question 3.1)

	Frequencies				
	Extremely important	Very important	Somewhat important	A little important	Not at all important
Be acknowledged as the creator of the resource when it is used	1	5	1	1	0
Be acknowledged as the creator of the resource when it is adapted or changed by someone else	2	4	2	0	0
Know who uses the resource	0	3	4	1	0
Know how the resource is used	0	5	3	0	0
Know the changes made to the resource	0	5	3	0	0
Be personally financially recompensed for the use of the resource	0	0	5	3	0
Be personally rewarded for the resource through a personal work plan, promotion, awards or other mechanisms	0	2	5	1	0
Have a quality review of the resource	2	0	5	1	0

Seven of the eight respondents had heard of the Creative Commons licences (question 3.7). Four of them had already used a Creative Commons licence and

one other planned to use one (question 3.2). The respondents dealt with copyright issues "very frequently" (three of the eight) or "frequently" (five of the eight) in producing or assembling educational resources (question 3.5). The types of copyright issues they faced and the level of concern about them both varied (question 3.6, Table 6.13).

Table 6.13: Copyright issues and the level of concern about them (question 3.6)

	Frequencies					
	Very concerned	Concerned	Somewhat concerned	Only slightly concerned	Not concerned	N/A
Remixing different resources legally	0	2	4	1	0	1
Publishing materials that incorporate unlicensed third-party content	0	2	0	0	3	3
Discovering materials you can legally use	0	2	4	1	1	0
Publishing materials you create	2	1	3	1	1	0

As it was unrealistic not to include "third-party content", they used various copyright management approaches in combination (Table 6.14): to "include licence status and attribution on third-party content" (5), to "remove, annotate or provide a link to the original third-party content" (4), to "delete some third-party content" (4), to "create replacement content and license it under Creative Commons or another free/open licence" (3) or to "attempt to identify the copyright holder and get permission to license the third-party content under a compatible Creative Commons or other free or open licence" (3).

Table 6.14: Management of copyright from third-party content when preparing and publishing educational resources (question 3.14)

	Frequency (n = 8)
Decide that the inclusion of the third-party content in your legal jurisdiction is acceptable according to a limitation to copyright	1
Include licence status and attribution on third-party content	5
Create replacement content and license it under a Creative Commons or other free/open licence	3
Attempt to identify the copyright holder and get permission to license the third-party content under a compatible Creative Commons or other free/open licence	3
Remove, annotate or provide a link to the original third-party content	4
Delete some third-party content	4
Include desired third-party content wherever needed, regardless of the licence or copyright status	0
Decide that some or all of the third-party content is not actually copyrightable in your legal jurisdiction and include the content in the published resource	1
Replace third-party content with Creative Commons or other openly licensed content	2
Never include third-party content	1

Viewpoints of Competent Authorities Who Can Comment Holistically on the OER Practices of Their Institutions (Questions 1.1–3.15; Six Respondents)

We had six replies from competent authorities from the surveyed institutions who could comment holistically on the OER practices of their institutions. By their estimates, less than five per cent of the staff members in their institutions were actively participating in the development, use and sharing of OER (question 2.3).

Four respondents had submitted teaching and learning resources for publication as OER materials and had intentions to do in the future (question 1.10). "Lack of time", "no reward system for staff members who devote time and energy" and "no support from the management level" were considered significant barriers by all of the respondents.

No respondent considered "lack of hardware", "lack of software" or "lack of access to computers" as a barrier at his or her institution (Table 6.15).

Table 6.15: Barriers to the use of open educational content in institutions (question 1.7)

	Frequencies				
	Extremely important	Very important	Somewhat important	A little important	Not at all important
Lack of awareness	2	1	0	2	1
Lack of skills	0	3	0	2	1
Lack of time	4	1	1	0	0
Lack of hardware	0	1	0	3	2
Lack of software	0	1	0	3	2
Lack of access to computers	0	0	0	4	2
No reward system for staff members who devote time and energy	4	1	1	0	0
Lack of interest in pedagogical innovation amongst staff members	0	2	1	2	1
No support from the management level	4	1	1	0	0

All respondents cited the following as important goals or benefits sought through the use of open educational content in teaching or course delivery: "gaining access to the best possible resources", "promoting scientific research and education as publicly open activities" and "bringing down costs for students". "Outreach to disadvantaged communities" was also ranked as important.

Table 6.16: Goals or benefits sought through the use of open educational content in teaching or course delivery (question 1.9)

	Frequencies				
	Extremely important	Very important	Somewhat important	A little important	Not at all important
Gaining access to the best possible resources	4	2	0	0	0
Promoting scientific research and education as publicly open activities	3	2	0	0	0
Bringing down costs for students	1	4	0	1	0
Bringing down costs of course development for the institution	0	3	2	1	0
Outreach to disadvantaged communities	2	2	1	0	0
Assisting developing countries	0	2	2	0	0
Becoming independent of publishers	0	1	2	2	1
Creating more flexible materials	2	2	2	0	0
Conducting research and development	1	1	2	0	0
Building sustainable partnerships	1	2	1	0	0

Five of the six respondents believed that OER publishing "enhances the university's reputation", "enhances personal reputation" and "promotes the sharing of best practices" (Table 6.17, question 1.12). They also cited two significant barriers to OER publishing in the institutions: "awareness of the university OER repository and other OER repositories" and "fear over copyright infringement" (Table 6.18, question 1.13).

Table 6.17: Benefits of publishing and using OER materials (question 1.12)

	Frequency (n = 6)	
	Publishing	Using
Enhances the university's reputation	5	1
Enhances personal reputation	5	0
Enhances the user's knowledge of a subject	4	4
Enhances the user's knowledge of a course	4	4
Supports students without formal access to higher education	4	1
Promotes the sharing of best practices	5	2
Reduces development costs/time	1	5
Develops communities and builds connections	4	4
Enhances current practices	3	4
Supports developing nations	4	2

Table 6.18: Barriers to publishing and using OER materials (question 1.13)

	Frequency (n = 6)	
	Publishing	Using
Awareness of the university OER repository and other OER repositories	5	0
Fear over copyright infringement	5	0
Ownership and legal barriers (other than copyright)	4	0
Your time (lack of time)	3	1
Scepticism over usefulness	3	3
Lack of rewards and recognition	4	1
Possible negative impact on reputation	2	1
Lack of support	3	1
School/institution policy	4	1
Criticism from colleagues	2	2
Criticism from students	1	1
Impact on career advancement	2	2
Relevancy of materials available	2	2
Lack of feedback from users	2	1

The institutions surveyed had no policies on sharing and importing OER (question 2.1) and no policies to encourage or incentivise the development and use of OER (question 2.2). Whilst they had heard of Creative Commons licences (question 3.7), they did not always use materials that were licensed under Creative Commons or other free or open licences in creating or assembling educational resources (question 3.9).

Issues Remaining

In spite of the very low number of respondents, the results clearly showed some current trends in OER implementation in Japan.

- Japanese higher education institutions were equipped with sufficient hardware and infrastructure, but have yet to accumulate or reuse quality open educational content.
- The recognition and actual usage of OER was very limited in Japan. The surveyed institutions were all JOCW member organisations and presumably advanced in OER awareness, yet the respondents estimated that less than five per cent of their staff members contributed to OER publishing.
- The roadblocks to OER use in teaching were not lack of hardware or software, but lack of awareness, lack of searchability and lack of organisational support and recognition.
- The respondents' higher education institutions participated in OER movements because OER publishing "enhances the university's reputation", "enhances personal reputation" and "promotes the sharing of best practices". The respondents believed that "awareness of the university OER repository and other OER repositories" and "fear over copyright infringement" were the significant barriers to OER publishing in their institutions.

- The Web survey system ran without any glitches, but the number of questions may have been too large for a bigger survey population with volunteer respondents. We may also need some stratified sampling method in a future survey, as several kinds of stakeholders in OER publication and OER use have been identified.

Prospects

OER can serve as a sustainable development model for developing quality learning resources and assuring the quality of education (D'Antoni, 2007; OECD, 2007). That is, instead of preparing budgets to have learners and institutions purchase proprietary content, the government could fund OER projects and shape the community to develop the content sustainably.

Some requirements will have to be established, however, before society can turn to the OER model as a solution. To clarify the merits of sharing open educational/learning content, the OER community should play a more important role in collecting evidence of OER efficacy, and governments should promote OER through policy implementations. Open universities, which have common philosophies and concepts for "openness", should also be expected to contribute to OER movements through promoting open education.

Appendix 5.1:
GLOBE Member Organisations (as of March 2012)

Name of organisation, URL	Country or region	Date of participation	Notes
ARIADNE (Alliance of Remote Instructional Authoring and Distribution Networks for Europe) www.ariadne-eu.org	EU	2004/09	A founder
education.au Limited – EdNA Online	Australia	2004/09	A founder; closed in August 2009
Education Services Australia www.esa.edu.au	Australia	2009/09	Successor of education.au Limited
eduSource Canada	Canada	2004/09	A founder; closed in January 2006
LORNET (Learning Object Repositories Network) www.lornet.org	Canada	2006/02	Successor of eduSource Canada
MERLOT (Multimedia Educational Resource for Learning and Online Teaching) www.merlot.org	North America	2004/09	A founder
NIME (National Institute of Multimedia Education)	Japan	2004/09	A founder; closed in March 2009
OUJ-CODE (Center of ICT and Distance Education, Open University of Japan) www.code.ouj.ac.jp/en	Japan	2009/04	Successor of NIME
KERIS (Korea Education and Research Information Service) http://english.keris.or.kr	Korea	2007/02	
EUN (European Schoolnet) www.europeanschoolnet.org	EU	2007/09	
LACLO (Latin-American Community of Learning Objects) www.laclo.org	Latin American countries	2007/09	
The former COSL (The Center for Open Sustainable Learning, Utah State University)	USA	2007/09	
III (Institute for Information Industry) www.iii.org.tw/english	Taiwan	2008/04	
ISKME (Institute for the Study of Knowledge Management in Education) www.iskme.org	USA	2008/09	
TCU (Thailand Cyber University Project) www.thaicyberu.go.th	Thailand	2009/03	
MEITAL – Inter-University Center for e-Learning (IUCEL) www.iucc.ac.il/eng/info/units/meital.htm	Israel	2010/02	
Eummena and Al-Quds University	Arabic Countries	2010/02	
OER Africa www.oerafrica.org	African countries	2010/09	

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CHAPTER

6

Open Educational Resources in Korea

Yong Kim

Abstract

The open educational resources (OER) movement allows more people to receive education by offering a wide variety of freely available educational resources. OER provide greater educational opportunities for learners and enable schools to offer quality educational content.

A Korean OER-related survey was conducted with participants who belonged to schools or education-related organisations that had developed or used educational materials by capitalising on OER.

Of the survey respondents, 67.1 per cent replied that they relied on OER to produce every lecture or some lectures or learning objects. The most common types of digital materials used were images or other visual resources, and the predominant sources were search engines or directories. The most prevalent way of using the digital materials was presenting or incorporating them in class, and the primary reason for using those materials was the expectation that they would be of use to students in class.

The biggest barriers to using OER were lack of awareness and fear of copyright infringement. Other barriers included the school or institutional policy and lack of reward and recognition. The majority of respondents did not think that there was full awareness of OER, nor did they consider educational institutions willing to offer full-fledged assistance with OER. Most respondents were cognisant of the terms "copyright" and "Creative Commons licence" but did not have a clear or deep understanding of the terms.

To ensure the successful use of OER in schools, attention must be paid to the development and storage of diverse materials, quality assurance, and guidance on legal issues and copyright. The necessary authoring tools should also be developed, and practices for using OER should be disseminated to make OER more accessible.

Keywords: *OER, quality assurance, digital educational material, information and communication technology*

Technological Environments

The Korean Ministry of Education, Science and Technology has tried to build a next-generation IT infrastructure to boost university adoption of information and communications technology (ICT) practices and the quality of educational services, and thereby bolster the international competitiveness of Korean higher education. An educational network was primarily constructed by Seoul National University's Center for Educational Research in 1991 and was intended to serve as a nationwide backbone network linking nine universities, including Gangwon University.

In November 2006, 1,024 IPv6/32 addresses (Internet Version 6, the next-generation Internet address system) were secured in preparation for a growing demand for Internet protocol (IP) addresses to host websites, and to make it possible for universities to offer ubiquitous information communication services. Given that each university has approximately 4,000 IP addresses, this growth in addresses implies that there will be a drastic increase in the number of IP users for each university.

In 2010, the educational network project was partially funded by the Ministry of Education, Science and Technology (who covered the rental fee for the Internet circuits), and Seoul National University's Center for Educational Research was entrusted with selecting service providers and managing the educational network subscribers. This resulted in a contract with the Ministry of Education, Science and Technology for 38.053 gigabits pre second (Gbps) and the provision of KRW (South Korean won) four billion that accounted for 12.7 per cent of the overall expenses. The number of universities that subscribed to the network was 374, a 24 per cent increase from 2005, and the average data transfer speed was 103.36 megabits per second (Mbps), which represented a 93 per cent increase.

The educational network provided 374 universities and education-related institutions with Internet services as of 2010. As the Internet is the core foundation of academic research and education, the educational network has made a great contribution to the competitiveness of universities by offering Internet services in a stable and efficient manner, and by providing the initiative for making universities more advanced through pushing ahead with the introduction of up-to-date information technology.

The Utilisation of Digital Educational Resources

The survey was conducted involving 64 participants who belonged to schools or education-related organisations and had either developed educational materials by taking advantage of OER or had used OER in their teaching. In this report, 61 completed questionnaires from individuals who had experience in OER were analysed, along with a small number of completed questionnaires representing the institution's opinions or data.

When the respondents were asked to indicate how often they used or had used the given types of digital resources in their teaching, it was found that images or visual materials were most widely in use, followed by online reference resources, news or other media resources, and archives (Table 7.1).

Table 7.1: Responses to question 1.1

Please indicate how often you use or have used the following types of digital resources in your teaching. (5-point scale)	M	SD
Images or visual materials (drawings, photographs, art, posters, etc.)	3.77	0.844
Online reference resources (e.g., dictionaries)	3.54	1.074
News or other media sources and archives	3.41	0.973
Curricular materials and websites that are created by other faculty and/or other institutions (e.g., MIT OpenCourseWare, World Lecture Hall, MERLOT)	3.41	0.901
Digital film or video	3.36	1.017

n = 61
M = mean
SD = standard deviation

In response to the question of how often individuals used digital resources in their teaching from each of the given sources, search engines and directories such as Google and Yahoo! were identified as the dominant sources, followed by portals providing links or URLs relevant to particular disciplinary topics, and also their own personal collections of digital materials (Table 7.2).

Table 7.2: Responses to question 1.2

How often do you use digital resources in your teaching from each of the following sources? (5-point scale)	M	SD
Search engines/directories (e.g., Google, Yahoo!)	4.31	1.009
"Portals" that provide links or URLs relevant to particular disciplinary topics	3.46	0.976
My own personal collection of digital materials	3.44	1.245
Public (free) online image databases	3.26	1.063
Media sites (e.g., NPR, *New York Times*, CNN, PBS)	2.95	1.217

n = 61

In response to the question of how often they used digital resources in each of the given ways, the largest group answered that they presented the resources during their lectures or incorporated them in their classes. The second largest group indicated they assigned the resources for student research projects or problem-based learning assignments. The third largest group posted the resources on their course websites and the fourth presented them to students for review and/or study. See Table 7.3.

Table 7.3: Responses to question 1.3

How often do you use digital resources in each of these ways? (5-point scale)	M	SD
Presented during/incorporated in my lectures/class (e.g., images, audio, MIT lecture, etc.)	3.90	0.851
Assigned for student research projects or problem-based learning assignments	3.13	1.103
Posted directly on my course website	2.98	1.041
Assigned to students for review and/or study	2.90	1.091
Linked from my course website	2.79	1.171

n = 61

In response to the question of how often they had heard about sources of digital resources from each of the given answer choices, word of mouth from colleagues was the most common source, followed by professional societies or discussion

lists, word of mouth from students, a campus department devoted to instructional technology and recommendation from a campus librarian (Table 7.4).

Table 7.4: Responses to question 1.4

How often have you heard about sources of digital resources from each of the following? (5-point scale)	M	SD
Word of mouth from colleagues	3.15	1.108
Professional societies or discussion lists (e.g., H-Net, Humanist Discussion List, etc.)	2.95	1.071
Word of mouth from students	2.41	1.101
A campus department devoted to instructional technology (e.g., media or teaching and learning centre)	2.13	1.118
Recommendation from a campus librarian	1.87	0.991

n = 61

Concerning the reason for using digital resources, the largest group answered they used digital resources in their teaching to get students excited about the given topic, and the second largest group replied they did it to provide students with the context for a given topic (Table 7.5).

Table 7.5: Responses to question 1.7

How much do you agree or disagree with the following statements about your reasons for using digital resources? (4-point scale)	M	SD
I use digital resources in my teaching to get students excited about a topic.	3.70	0.495
I use digital resources in my teaching to provide students with a context for a topic.	3.59	0.528
I use digital resources in my teaching because it improves my students' learning.	3.54	0.743
I use digital resources in my teaching to let students know the most up-to-date (or most current) development of the subject.	3.46	0.647
I use digital resources in my teaching because it allows me to stay up to date with my colleagues.	3.39	0.802

n = 61

Regarding the use of OER, they were asked whether they ever used in class the OER provided by other institutions; 72 per cent replied they had, whilst 75 per cent answered that they intended to use OER provided by other organisations (Table 7.6).

Table 7.6: Responses to question 2.1

	Number of respondents		
Using open educational resources	Yes	No	Unsure
I have used OER from other academics in my teaching.	44	10	6
I will use OER from other academics in my teaching in the future.	46	3	10

n = 61

In response to the question of to what extent the respondents used open educational content in the courses or programmes for which they were responsible, the biggest group replied they downloaded them freely from the Internet. The second largest group produced educational content by themselves, whilst the third group sought the co-operation of other educational institutions.

The fourth group used educational content produced within their institutions. The respondents had a tendency to rely on other sources rather than to produce educational resources on their own (Table 7.7).

Table 7.7: Responses to question 2.2

Within the courses/programmes you teach or deliver, to what extent approximately is open educational content used? (5-point scale)	M	SD
Freely downloaded from the Internet	3.90	1.287
Produced by yourself	3.39	1.307
Coming from established co-operation with other educational institutions	3.21	1.253
Produced within your institution	3.20	1.222
Downloaded from OER repository (such as MIT OpenCourseWare, MERLOT, OpenLearn, Connexions, etc.)	2.75	1.350

n = 61

When asked how they would describe the open educational content they were producing, 33 per cent responded that the content was part of the courses or programmes for which they were responsible, and 26 per cent replied they currently did not produce any open educational content (Table 7.8).

Table 7.8: Responses to question 2.3

How would you describe the open educational content you are producing?	N	%
We currently do not produce open educational content.	16	26.2
As full courses/programmes	6	9.8
As parts of courses/programmes	22	36.0
As learning objects	12	19.7
Others (please specify)	1	1.6
Missing value	4	6.6

n = 61

Barriers to Production, Use and Reuse

Regarding obstacles to the use of OER, they were asked what were the most significant barriers to the use of OER amongst their colleagues in their teaching. Lack of awareness was identified as the most significant hurdle, followed by lack of ability to locate quality OER for teaching, no support from the management, no reward system for staff members devoting time and energy, and lack of interest in pedagogical innovation amongst staff members. In contrast, time constraints, shortage of software, lack of hardware and lack of access to computers were not pointed out as significant, which denoted that factors other than the infrastructure were the biggest barriers (Table 7.9).

Table 7.9: Responses to question 2.7

What are the most significant barriers to the use by other colleagues of open educational content in their teaching? (5-point scale)	M	SD
Lack of awareness	3.89	1.170
Lack of ability to locate quality OER for my teaching	3.52	1.192
No support from management level	3.48	1.324
No reward system for staff members devoting time and energy	3.46	1.219
Lack of interest in pedagogical innovation amongst staff members	3.43	1.204
Lack of skills	3.33	1.338
Lack of ability to locate specific and relevant OER for my teaching	3.25	1.325
Lack of time	3.25	1.247
Lack of software	3.08	1.242
Lack of hardware	2.75	1.220
Lack of access to computers	2.48	1.324

n = 61

In relation to the possible barriers they faced in *publishing* OER materials, fear of possible copyright infringement was most widely cited (59.0 per cent), followed by ownership and legal barriers (other than copyright) at 49.2 per cent and school or institutional policy (37.7%). See Table 7.10.

Table 7.10: Responses to question 2.15 (publishing OER)

What barriers do you face in publishing and using OER materials? (Tick all that apply.)	Publishing	%
Fear over copyright infringement	36	59.0
Ownership and legal barriers (other than copyright)	30	49.2
School/institutional policy	23	37.7
Lack of support	21	34.4
Relevancy of materials available	21	34.4
Your time	19	31.1

n = 61

The biggest barrier to the *use* of OER was the fear of possible copyright infringement (62.3 per cent), followed by ownership and legal barriers (other than copyright) at 59.0 per cent, poor relevancy of materials available (42.6 per cent), lack of feedback from users (42.6 per cent) and poor awareness of the university OER repository and other OER repositories (41.0 per cent). See Table 7.11.

Table 7.11: Responses to question 2.15 (using OER)

What barriers do you face in publishing and using OER materials? (Tick all that apply.)	Using	%
Fear over copyright infringement	38	62.3
Ownership and legal barriers (other than copyright)	36	59.0
Relevancy of materials available	26	42.6
Lack of feedback from users	26	42.6
Awareness of the university OER repository and other OER repositories	25	41.0
Lack of reward and recognition	24	39.3
Lack of support	23	37.7

n = 61

Policy Support/Challenges

In relation to the question of what barriers they faced in publishing and using OER materials, survey participants cited school or institutional policy regarding publishing (37.7 per cent) and lack of reward and recognition regarding using (39.3 per cent). Lack of support was pointed out in relation to both publishing (34.4 per cent) and using (37.7 per cent). In this regard the users felt that the institutions should formulate the necessary policies and offer additional assistance for the utilisation of OER (Table 7.12).

Table 7.12: Top responses to question 2.15

What barriers do you face in publishing and using OER materials? (Tick all that apply.)	Publishing	%
School/institution policy	23	37.7
Lack of support	21	34.4
	Using	**%**
Lack of reward and recognition	24	39.3
Lack of support	23	37.7

n = 61

Legal Environments

In terms of understanding the term "copyright", 55 respondents (90.2 per cent) replied "yes" to the question, "Understanding of 'copyright' varies widely. Does this term mean anything to you?" In contrast, the largest group (37.7 per cent) replied "not sure" to the question, "If you were asked to define copyright, how confident would you be in the accuracy of your definition?" and just 18.1 per cent replied they would be confident. This meant that although they had heard about copyright, the majority did not have an exact understanding of the concept (Table 7.13).

Table 7.13: Responses to questions 3.3 and 3.4

Understanding of "copyright" varies widely. Does this term mean anything to you?	N	%
Yes	55	90.2
No	5	8.2
Missing value	1	1.6
If you were asked to define copyright, how confident would you be in the accuracy of your definition?	**N**	**%**
Not confident	8	13.1
Somewhat confident	19	31.1
Not sure	23	37.7
Confident	9	14.8
Very confident	2	3.3

n = 61

In relation to the question of how often they dealt with copyright issues in producing or assembling educational resources, most (50.8 per cent) answered they did sometimes, and those who answered either frequently or very frequently accounted for 37.7 per cent. These findings seem to indicate that 88.5 per cent took copyright into account (Table 7.14).

Table 7.14: Responses to question 3.5

How often do you deal with copyright issues in producing or assembling educational resources?	N	%
Not at all	7	11.5
Sometimes	31	50.8
Frequently	12	19.7
Very frequently	11	18.0

n = 61

In answer to which of the given choices was of concern to them when they had to deal with copyright issues, they gave the highest marks to discovering materials they could legally use (5.23). See Table 7.15.

Table 7.15: Responses to question 3.6

To the extent that you find yourself dealing with copyright issues, which of the following are of concern to you? (6-point scale)	M	SD
Discovering materials you can legally use	5.23	1.071
Remixing different resources legally	5.11	1.002
Publishing material you create	4.52	1.186
Publishing material that incorporates unlicensed third-party content	4.44	1.103
Any other concerns (please specify)	0.64	1.438

n = 61

In response to the question of whether they had used any licence to express the rights others have to use resources they had produced, the respondents who replied "no" (62.3 per cent) outnumbered those who replied "yes" (34.4 per cent). See Table 7.16.

Table 7.16: Responses to question 3.2

Do you use any licence to express the rights others have to use resources you have produced?	N	%
No	38	62.3
Yes, Creative Commons	19	31.1
Yes, other "open content licence"	2	3.3
Other	0	0
Missing value	2	3.3

n = 61

On the question of whether they had heard of Creative Commons licences, the respondents who said "yes" (59.0 per cent) outnumbered those who said "no" (29.5 per cent). When asked how confident they would be in the accuracy of their definition if asked to explain the Creative Commons licences, 34.4 per cent replied they would not be confident, and 14.7 per cent replied they would be confident or more than confident. As with copyright, they had heard a lot about the term but did not believe they had a correct understanding of it (Table 7.17).

Table 7.17: Responses to questions 3.7 and 3.8

Have you heard of Creative Commons licences?	N	%
Yes	36	59.0
No	18	29.5
Missing value	7	11.5
If you were asked to explain Creative Commons licences, how confident would you be in the accuracy of your description?	**N**	**%**
Not confident	21	34.4
Somewhat confident	14	23.0
Not sure	16	26.2
Confident	6	9.8
Very confident	3	4.9
Missing value	1	1.6

n = 61

In relation to the question of how often they attempted to use materials licensed under Creative Commons or other free/open licences when creating or assembling educational resources, 52.5 per cent replied "sometimes", 18.0 per cent answered "frequently", whilst 26.2 per cent answered they did not attempt it at all.
Thus, the majority of the respondents made use of materials to which Creative Commons or other licences had been applied (Table 7.18).

Table 7.18: Responses to question 3.9

When creating or assembling educational resources, how often do you attempt to use materials that are licensed under Creative Commons or other free/open licences?	N	%
Not at all	16	26.2
Sometimes	32	52.5
Frequently	11	18.0
Always	0	0
Missing value	2	3.3

n = 61

In response to being asked whether they were aware of limitations to copyright in their country's law, 63.9 per cent replied "yes". When asked whether, in the process of creating and publishing educational materials, they found themselves using both Creative Commons licensed materials and materials based on one or more limitations to copyright, 32.8, 24.6 and 39.3 per cent replied "yes", "no" and "not sure", respectively (Table 7.19).

Table 7.19: Responses to questions 3.11 and 3.13

Are you aware of limitations to copyright under your country's law?	N	%
Yes	39	63.9
No	22	36.1
When creating and publishing educational materials, do you find yourself using both Creative Commons licensed materials as well as materials based on one or more limitations to copyright?	**N**	**%**
Yes	20	32.8
No	15	24.6
Not sure	24	39.3
Missing value	2	3.3

n = 61

When asked how they managed the copyright of third-party content and which options they adopted for preparing and publishing educational resources, the largest group (47.5 per cent) chose to decide that the inclusion of the third-party content in their legal jurisdiction was acceptable according to a limitation to copyright. The second largest group (24.6 per cent) chose to remove, annotate or provide a link to the original third-party content. See Table 7.20.

Table 7.20: Responses to question 3.14

We are interested in learning more about how you manage the copyright of third-party content. Which of the following do you do when preparing and publishing educational resources? (Choose all that apply.)	N	%
Decide that the inclusion of the third-party content in your legal jurisdiction is acceptable according to a limitation to copyright.	29	47.5
Remove, annotate or provide a link to the original third-party content.	15	24.6
Decide that some or all of the third-party content is not actually copyrightable in your legal jurisdiction and include it in the published resource.	10	16.4
Create replacement content and license it under a Creative Commons or other free/open licence	10	16.4
Attempt to identify the copyright holder and get permission to license the third-party content under a compatible Creative Commons or other free/open licence	6	9.8
Never include third-party content	5	8.2
Include desired third-party content wherever needed, regardless of licence or copyright status	5	8.2
Include licence status and attribution on third-party content	4	6.6
Delete some third-party content	4	6.6
Replace third-party content with Creative Commons or other openly licensed content	2	3.3

n = 61

Future Prospects

To ensure the success of the OER movement in Korea, what matters the most are (i) resolving the copyright issue and (ii) thorough quality assurance. The copyright issue should be resolved by introducing Creative Commons licences, and the manner in which to secure good quality OER should be studied from diverse angles. For instance, instructors should get permission to use necessary resources from authors or publishers, and an appropriate quality assurance system should be set up to guarantee the quality of OER materials. Such a system would make it possible to ensure the legality and quality of OER by preventing the sharing of materials whose copyright has yet to be determined or which cannot be used for educational purposes. The methods and criteria of quality assurance should be prepared and outlined in detail.

In order for different countries to share OER, common criteria should be laid out, and who will be responsible for particular types of OER should be clearly stipulated. A separate website should be set up to manage and provide OER materials, and should indicate who is responsible for the operation of the website and its quality assurance. These measures would make it possible to guarantee the reliability of OER materials as well as the consistency of services.

To make all this happen, the Asian Association of Open Universities (AAOU) should identify those institutions that intend to make use of OER and should prepare plans for the utilisation of OER and quality assurance criteria in collaboration with the institutions.

For the sake of users, guidelines on the use, development and supply of OER and authoring tools should be provided to make OER materials more accessible. Further, it would be beneficial to inform potential users of actual cases of successful utilisation of OER to prove their effectiveness in higher education.

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CHAPTER

7

Open Educational Resources in Malaysia

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Abstract

Open educational resources (OER) are a relatively new phenomenon in the Malaysian higher education (HE) sector. Although there have been "lone rangers" strongly advocating the use of OER in the country, many HE institutions, including Wawasan Open University, Open University of Malaysia and Asia e University, are yet to make use and reuse of OER a mainstream practice. There also seems to be reticence over making content freely available to the nation or the region, as well as an absence of policy directions. Notwithstanding, some of these institutions, urged on by individual staff, are taking a serious look at adopting an institutional policy on OER and digital resources. A prime example of this new movement is the OER-based, self-directed open and distance learning course material developed by Wawasan Open University as a pilot project leading to an institutional policy on the use and reuse of OER.

Under a grant from the International Development Research Centre of Canada through an umbrella study on Openness and Quality in Asian Distance Education, a team of collaborators from various Asian countries developed an extensive survey instrument to identify the Asian landscape of digital resources and OER. In Malaysia, the instrument was officially made available to 15 public, private not-for-profit and private for-profit HE institutions. A total of 43 valid responses were received from individuals who are using digital resources/OER, as well as institutional authorities who commented on the institutional stand on OER.

This report summarises the findings from the survey responses gathered from Malaysia and provides an overview of the Malaysian HE landscape with respect to digital resources and OER use.

Keywords: *OER, open educational resources, Malaysia, OER Asia, OER Malaysia, open educational resources Malaysia, open educational resources Asia*

Overview of Higher Education

Malaysia is a middle-income country with a population of about 27 million. It is multi-ethnic, multilingual and multireligious. Its economy is mixed, and whilst agriculture and natural resources, including petroleum, have underpinned the economy in the past, over the last two decades manufacturing and services, including tourism, have become the main economic drivers. Malaysia's economic growth (GDP) in the year 2011 stood at about 6 per cent, and its per capita income in 2010 was about USD 14,744.36, each below a number of its Asian neighbours, such as Taiwan, Hong Kong, Japan, Korea and Singapore. The present government seems determined to move out of the middle-income economic tier by the end of this decade and is investing quite extensively in building its human capital. Over the last ten years, some 20 per cent of the national budget has been spent on education. As a result, the participation rates in basic and secondary education are well above the 95 per cent point, whilst the participation rate in higher education (HE) is around 30 per cent of the age cohort (Table 8.1).

Table 8.1: Percentage of the population aged 19–24 enrolled in tertiary education[1]

Year	Population	Enrolment	%
1970	1,420,687	8,633	0.6
1980	1,624,274	26,410	1.6
1990	2,028,100	58,286	2.9
2000	2,626,900	211,484	8.1
2005*	3,353,600	649,653	19.4
2007*	3,474,200	847,485	24.4

* Aged 18–24 (*Source:* Ministry of Education, Pembangunan Pendidikan, 2001–2010)
Source: Department of Statistics and Ministry of Education, educational statistics;. Ministry of Higher Education website.

Post-secondary education in Malaysia is amongst the growth areas in the education sector. "Post-secondary" refers to education past grades 11 or 12 and includes pre-university courses (largely in public institutions) or technical/vocational courses leading to certificates and diplomas from colleges, universities and other HE institutions. Post-secondary studies take the form of pre-university courses such as grades 12 and 13, matriculation programmes, and technical and vocational courses leading to certificates and diplomas. Post-introductory university courses lead to baccalaureate degrees after four years of study. Post-graduation universities also offer programmes of study leading to master's and doctoral qualifications. The Malaysian Qualifications Framework (Table 8.2) precisely defines these programmes' hierarchy of qualifications and expectations in terms of entry behaviour, as well as the length of study required. Programmes of study leading to all of the above-mentioned qualifications are offered in public and private universities, university colleges and overseas branch campuses in a wide range of subject areas. Modes of delivery include single-mode conventional and distance teaching institutions, as well as those functioning as dual-mode institutions with on- and off-campus studies through correspondence and eLearning facilities.

[1] Table from Fernandez-Chung, 2010.

Table 8.2: The Malaysian Qualifications Framework[2]

MQF Levels	Sectors			Lifelong Learning
	Skills	Vocational and Technical	Higher Education	
8			Doctoral Degree	Accreditation of Prior Experiential Learning (APEL)
7			Masters Degree	
			Postgraduate Certificate & Diploma	
6			Bachelors Degree	
			Graduate Certificate & Diploma	
5	Advanced Diploma	Advanced Diploma	Advanced Diploma	
4	Diploma	Diploma	Diploma	
3	Skills Certificate 3	Vocational and Technical Certificate	Certificate	
2	Skills Certificate 2			
1	Skills Certificate 1			

Table 8.3: Overview of Malaysian higher education, 1967, 1999, 2007[3]

	1967	1997	2007
Public universities	1	10	20
Private universities and university colleges	0	0	33[a]
Foreign branch campuses	0	0	4
Private colleges and HE institutions	2	690*	488[b]
Polytechnics	0	8	24
Community colleges	0	0	37
Students	4,560	550,000*	873,238
Post-graduates	398	?	45,888
Foreign students	n/a	4,500	47,928
Malaysian students studying abroad	n/a	30,000*	54,915
Population aged 18–24	n/a	?	3,474,200

[a] Excluding local branch campuses
[b] Including local branch campuses
Sources: *Lee, 2004; Fernandez-Chung, 2006; 1967 data: Interim Report to the Higher Education Advisory Council, 1974; 1997 data: Ministry of Education; 2007 data: Ministry of Higher Education

[2] Table from Malaysian Qualifications Agency, 2012.
[3] Table from Fernandez-Chung, 2010.

The post-secondary sector is made up of some 20 public and 32 private universities. In addition, there are some 450 colleges and six branch campuses of offshore universities (primarily British and Australian). These numbers are expected to increase as Malaysia opens up the private education space to international participation. Scores of investors in the education sector, from almost all of the English-speaking countries, are lining up to establish colleges and universities in Malaysia. Table 8.3 captures an overview of the Malaysian HE sector (data available up to the 2007–2008 academic year).

If Malaysia's desire to escape the middle-income economic tier is to be achieved, it has to greatly improve educational attainment levels for the population in general and its workforce in particular. Currently, semi-skilled individuals comprise the bulk of the labour force; unskilled labour is mostly imported from neighbouring countries, and those with post-secondary and university-level education are relatively few (Table 8.4).

Table 8.4: Number of employed persons by highest certificate obtained, 1985, 1990, 2000, 2001, 2005 and 2008[4]

Year	Total ($\times 10^3$)	Diploma		Degree	
		N ($\times 10^3$)	%	N ($\times 10^3$)	%
1985	5,653.4	150.8	2.7	120.2	2.1
1990	6,685.0	216.8	3.2	165.8	2.5
2000	9,269.2	535.1	5.8	471.3	5.1
2001	9,357.0	564.5	6.0	533.9	5.7
2005	10,045.4	840.7	8.4	733.5	7.3
2008	10,659.6	786.1	7.4	874.1	8.2

Source: Labour Force Survey, 1985–2008

To increase its educated workforce supply, the country needs to expand the HE sector at an even faster rate than it has done over the past ten years (Table 8.5). Expansion is also expected to meet another of the nation's goals: to become a major HE hub for the region by the year 2012. This expansion is firmly embedded in the National Higher Education Strategic Plan (NHESP) launched with much fanfare by the country's prime minister in 2007. The plan envisages a number of goals and objectives. The major goals are:

- Ensuring access to higher education for diverse groups of students, talents and abilities, based on meritocracy in diversity, irrespective of ethnic origin, gender, social status or physical capability.
- Ensuring that no qualified applicant is denied a place in tertiary education for financial reasons.
- Ensuring equity in higher education through various programmes, open entry criteria, improvement in infrastructure and expansion of information and communication technology (ICT) use.

[4] Table from Fernandez-Chung, 2010.

Table 8.5: Expansion in enrolment by educational level, 1985–2008[5]

	1985	1990	1995	2000	2005	2008	Increase in enrolment (%) 1985–2008	Annual rate of increase (%) 1985–2008
Primary	2,191,676	2,447,206	2,827,627	–	3,137,280	3,154,090	30.5	1.3
Secondary*	1,251,447	1,366,068	1,589,584	–	2,217,749	2,310,660	45.8	2.0
Tertiary**	64,025	99,687	146,581	–	463,582	921,548	93.1	4.1
Total	3,507,148	3,912,961	4,563,792	–	5,818,611	6,386,298	45.1	2.0

* Figures include Form Six.
** Figures include enrolment in pre-university and matriculation courses in higher education institutions.
Sources: Ministry of Education; Ministry of Higher Education

ICT in Higher Education

One of the Critical Agenda Projects under the NHESP is the promotion and expansion of eLearning. The use of ICT in HE has kept pace with the development of ICT awareness and investments by both the public and private sectors since the mid-1980s. Massive progress was achieved with the creation of the Multimedia Super Corridor (MSC) in 1996. This is a long-term strategic initiative (1996–2020) involving a partnership between the Malaysian government (as the chief architect of the vision) and the private sector (as the main drivers for its implementation). The intention is to build a competitive cluster of local ICT companies and a sustainable ICT industry (www.mscmalaysia.my). Basically, the MSC is a dedicated corridor (15 kilometres wide and 50 kilometres long) that stretches from the Kuala Lumpur city centre in the north to the new Kuala Lumpur International Airport in the south. Besides offering ICT initiatives, the corridor attracts global ICT companies to relocate their multimedia industries in Malaysia and undertake innovative research and development (R&D) whilst developing new products and technologies for export, keeping this corridor as their base. In other words, the MSC becomes a base for local entrepreneurs to transform themselves into world-class companies. The MSC was further buttressed by ancillary organisations such as the Malaysian Institute of Microelectronic Systems, which assisted in developing a whole range of provisions and protocols to support R&D efforts in ICT-related fields, helped in creating legislative instruments in association with the Ministry of Science, Technology and Innovation, organised dialogue platforms and generally became the backbone of the intellectual repository on matters relating to ICT.

For the first 30 years of ICT growth, Malaysia concentrated on building the right infrastructure to support ICT growth in the country. During the 1980s, most of the ICT infrastructure investment went into provision of basic telephony services to rural and urban people; concerted efforts were also made to increase access to mobile and fixed-line services for a wider segment of the population. One of the key initiatives during this period was the privatisation of the state-owned telecommunication provider, Telekom Malaysia, which helped improve the market reach of telecommunication services. In the last ten years, policy consolidation and further improvement of the infrastructure has also been undertaken, including increased access to the Internet and related services.

[5] Table from Fernandez-Chung, 2010.

Investments into wired and wireless technologies and services through increased privatisation efforts have also continued. This has resulted in expanded broadband services throughout the country, although the conquest of "the last mile" continues to be a challenge; however, there is hope that this will be achieved by 2020 (Kuppusamy et al., 2009). The outcome of all these initiatives is a country well endowed with ICT provisions, infrastructure, legal frameworks, sufficient and adequate technical skills, as well as knowledge to exploit the benefits of the digital revolution (Table 8.6).

Table 8.6: Selected ICT indicators

Indicators	2000 ($\times 10^6$)	2005 ($\times 10^6$)	2010 ($\times 10^6$)
Fixed telephone lines	4.6	4.4	–
Mobile phone subscriptions	5.0	19.5	24
Ownership of personal computers	2.2	5.7	11.5
Internet subscriptions	1.7	4.1	??

Source: Ninth Malaysia Plan (2006–2010), p. 135

From the beginning, ICT provisions for education have been at the centre of these efforts, with the consequence that by the late 1990s ICT-based learning environments were being introduced in Malaysian schools. Portals like MySchoolNet were created to help teachers and students access web-based resources through a variety of technologies. Further encouragement for the use of digital resources came with the creation of a cluster of "smart schools", as well as free or easy provision to own personal computers, tax incentives to connect to the Internet and extensive efforts at training teachers. HE institutions, which have a great deal of autonomy in how they develop policies and practices relating to the application of ICT, were also provided with funding, especially in the public sector, to support the establishment of ICT infrastructure on campuses throughout the country and to induct and train staff.

Despite all of these provisions, as well as policies by the institutions themselves to promote the use of ICT to teach and learn, the impression is that the take-up is slow to modest (Embi, 2011). It is in this context that our study was carried out.

Digital and Open Educational Resources

The cohort of respondents for the survey consisted of academics at various stages in their careers (Table 8.7), teaching at various levels (Table 8.8). Thirty-seven valid responses were gathered from individual users' perspectives and six responses were gathered from an institutional perspective.

Table 8.7: Respondent profile

Participant title	Institution's status			
	Public	Private not-for-profit	Private for-profit	Total
Prof.	1 (100%)	0 (0.0%)	0 (0.0%)	1 (100%)
Dr.	3 (37.5%)	2 (25.0%)	3 (37.5%)	8 (100%)
Mr.	1 (5.9%)	6 (35.3%)	10 (58.8%)	17 (100%)
Ms.	2 (18.2%)	4 (36.4%)	5 (45.5%)	11 (100%)
Total	7 (18.9%)	12 (32.4%)	18 (48.6%)	37 (100%)

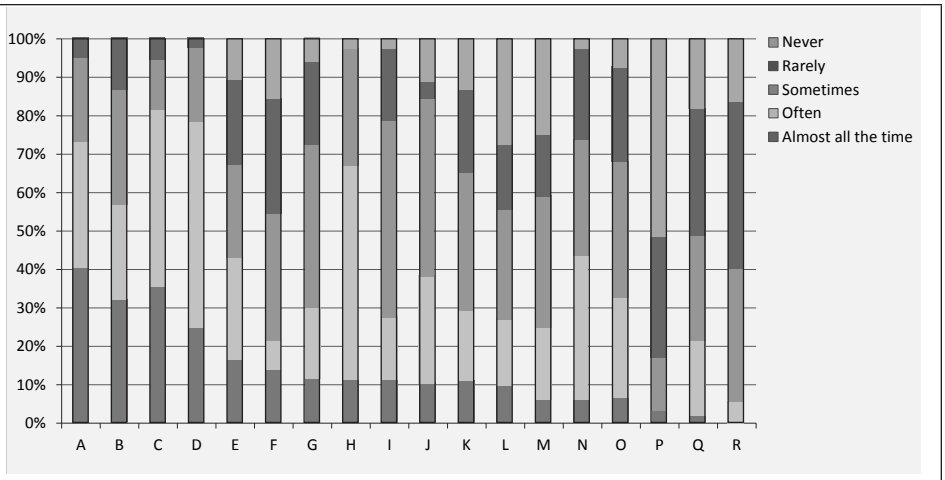
Table 8.8: Level of teaching

Participant title	Level of teaching		
	Undergraduate	Post-graduate	High school
Prof.	–	1	–
Dr.	7	3	–
Mr.	13	4	1
Ms.	10	2	2
Total	30	10	3

Use of Digital Resources

Through the analysis of the data shown in Figure 8.1 it was identified that digital readers (e.g., Adobe Acrobat reader), online class discussions, images or visual materials (drawings, photographs, art, posters, etc.) and news or other media sources were the most widely used types of digital resources. Digital facsimiles of ancient or historical manuscripts, personal online diaries (e.g., blogs) and maps were the least used.

Figure 8.1: Types of digital resources



A: Digital readers (e.g., Adobe Acrobat reader)

B: Online class discussions (including archived discussions)

C: Images or visual materials (drawings, photographs, art, posters, etc.)

D: Online reference resources (e.g., dictionaries)

E: Online or digitised documents (including translations)

F: Data archives (numeric databases, e.g., census data)

G: Digital film or video

H: News or other media sources and archives

I: Course packs

J: Curricular materials and websites that are created by other faculty and/or other institutions (e.g., MIT OpenCourseWare, World Lecture Hall, MERLOT)

K: E-book readers (e.g., Kindle)

L: Other

M: Government documents in digital format

N: Simulations or animations

O: Audio materials (speeches, interviews, music, oral histories, etc.)

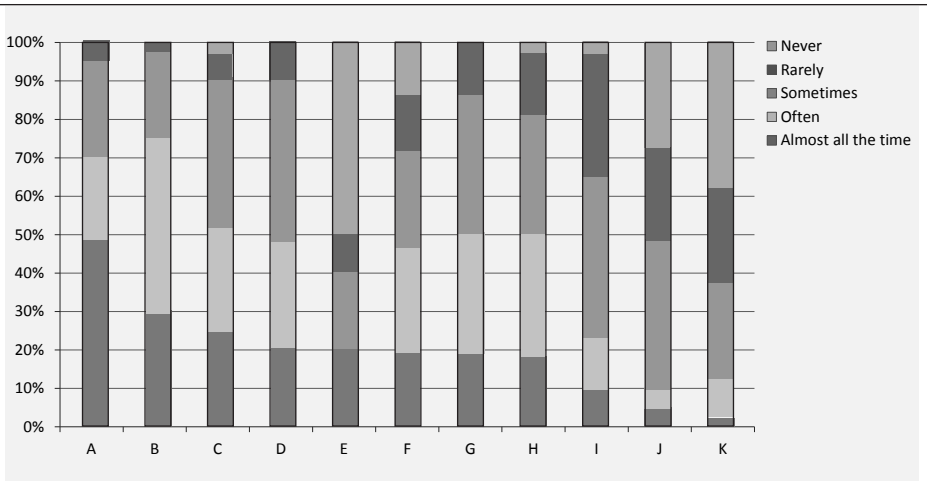
P: Digital facsimiles of ancient or historical manuscripts

Q: Personal online diaries (e.g., blogs)

R: Maps

Search engines/directories (e.g., Google, Yahoo!), personal collections of resources, and online journals were identified as the best sources for finding digital resources (Figure 8.2), whilst incorporating digital resources into lectures/online lectures and using them in project-based or problem-based assignments were found to be the most popular uses (Figure 8.3). However, the majority of the respondents agreed that the use of digital resources would not help them get promoted or obtain tenure. They also pointed out that they do not want students to copy or plagiarise material from the Web. Half of the respondents felt that the use of digital resources distracts from the core goals of teaching.

Figure 8.2: Sources of digital resources



A: Search engines/directories (e.g., Google, Yahoo!)

B: My own personal collection of digital materials

C: Online journals (e.g., JSTOR)

D: Public (free) online image databases

E: Other

F: Campus image databases from my own institution (e.g., departmental digital slide library)

G: Portals that provide links or URLs relevant to particular disciplinary topics

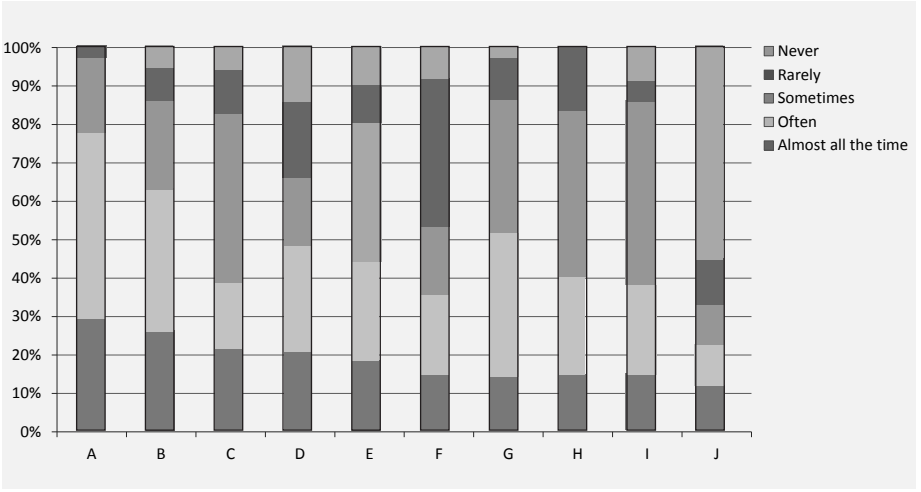
H: Library collections (digital)

I: Media sites (e.g., NPR, New York Times, CNN, PBS)

J: Online exhibits (e.g., from museums)

K: Commercial image databases (e.g., Saskia, AMICO)

Figure 8.3: Use of digital resources



A: Presented during/incorporated in my lectures/class (e.g., images, audio, MIT lecture, etc.)

B: Posted directly on my course website

C: Used in tests and quizzes

D: Presented in my online lectures

E: Linked from my course website

F: Assigned to students to create their own digital portfolios and/or multimedia projects

G: Assigned for student research projects or problem-based learning assignments

H: Assigned to students for review and/or study

I: Presented in the context of an online discussion

J: Other

The respondents felt that more support was needed for them to fully harness the potential of digital resources in teaching and learning. Some of the areas in which support was needed included finding digital resources, assessing the credibility of digital resources, evaluating the appropriateness of resources for teaching goals and interpreting copyright laws and/or securing copyright permissions.

Use of OER

Contrary to the belief that the use of OER is not widespread, 70 per cent of the respondents mentioned that they have used OER in their teaching at some point during their career. Although 13 per cent had not used OER before, 86 per cent mentioned that they would in the future; 17 per cent were unsure whether they had used OER, indicating that more advocacy and capacity-building needs to take place in the country.

OER produced by teachers themselves, produced within the institution, freely downloaded from the Internet and coming from co-operation with other institutions were the main sources for use. Surprisingly, OER downloaded from repositories such as MIT OpenCourseWare, MERLOT, OpenLearn and Connexions were not widely used in Malaysia.

It was encouraging to see that 74 per cent of the respondents were producing OER as learning objects or as part/full courses and programmes (Figure 8.4). This could be due to the support the respondents are getting from the institutions in terms of use and production of open content and open source software. However, as shown in Figure 8.5, there seems to be a lack of co-operation with other educational institutions when it comes to producing and exchanging OER.

Figure 8.4: Production of OER

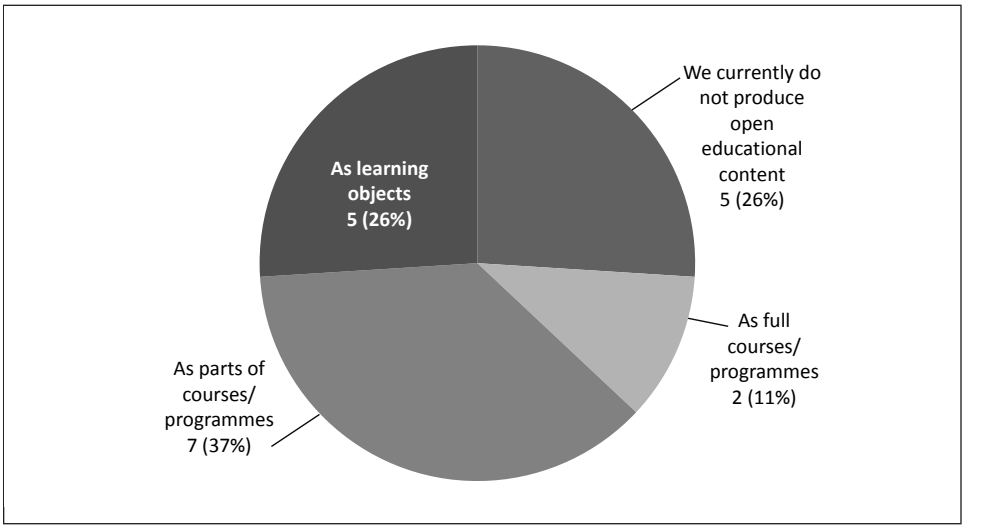
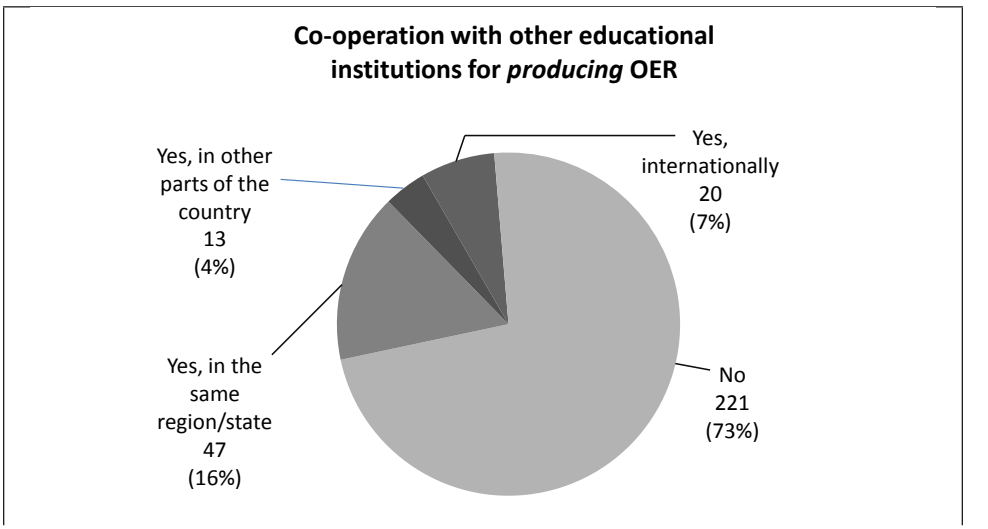
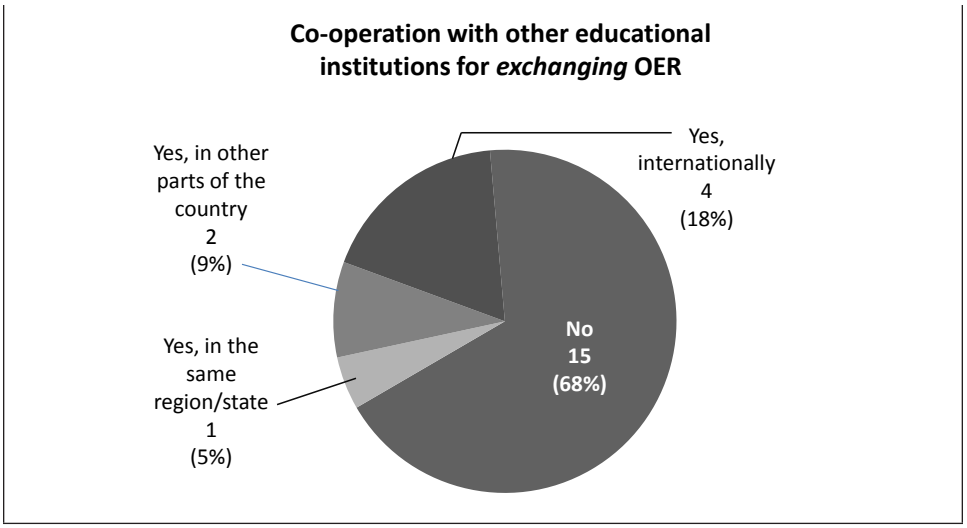


Figure 8.5: Co-operation with educational institutions





The major identified barriers to the use of OER were lack of awareness, lack of skills, lack of time, lack of ability to locate specific and relevant OER, lack of ability to locate quality OER, lack of interest in pedagogical innovation amongst staff members and lack of support from the management level. Figures 8.6 and 8.7 provide more details about the concerns the respondents had with respect to producing and using OER, respectively. The respondents also highlighted that the lack of rewards and recognition for staff devoting their time to OER-based activities was a major deterrent. However, they commented that infrastructure such as hardware, software and access to computers was not an issue.

Figure 8.6: Concerns about producing OER

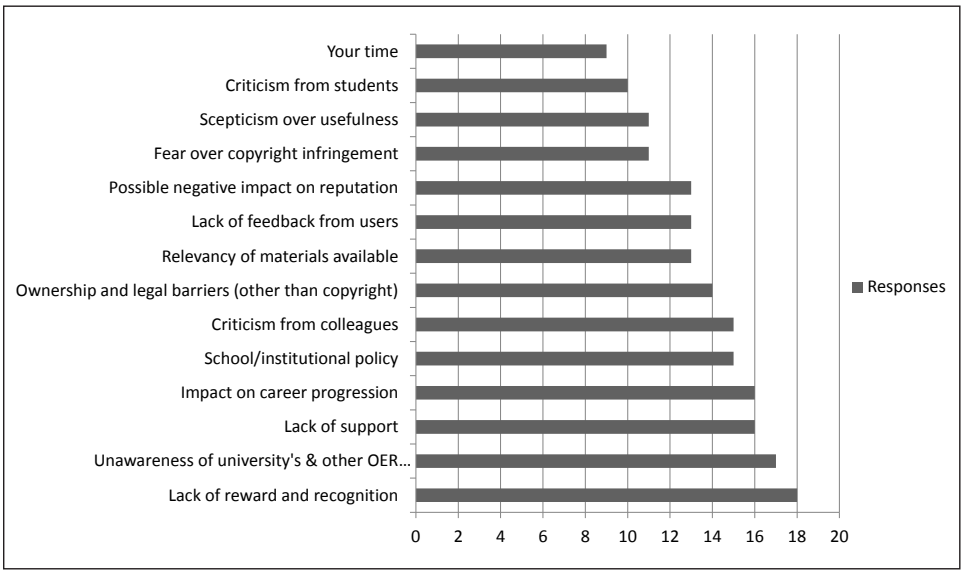
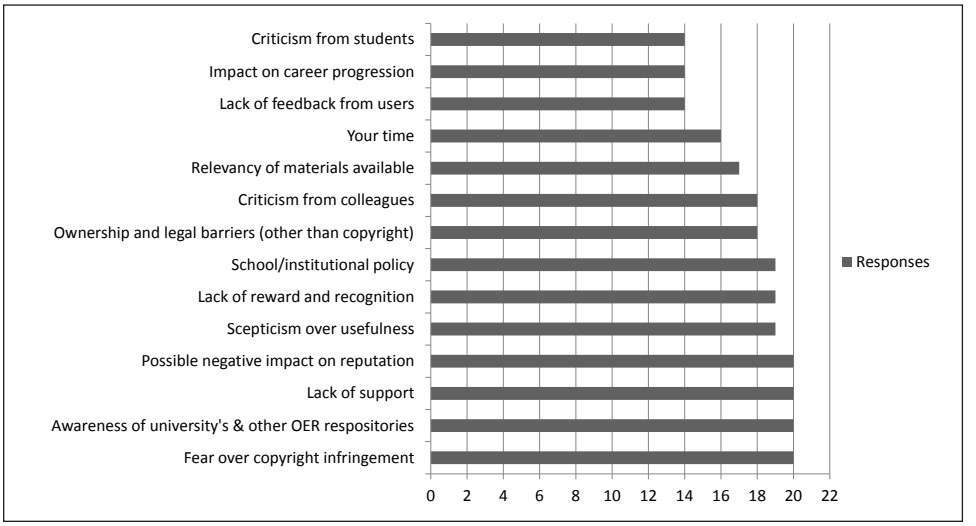


Figure 8.7: Concerns about using OER



The attitudes towards the use of OER were generally positive. The respondents agreed that OER do not help other institutions copy their best ideas. They also agreed that publishing OER would not stop students from attending lectures. However, they were concerned about how others would use the material they had produced. They were also concerned about the damaging effect that poorly developed OER could have on an institution's reputation.

Regarding copyright and licensing, 51.4 per cent of the respondents understood the word "copyright" and 82 per cent had used open content licences. Only six per cent had used Creative Commons licences, even though 44 per cent had heard of them. Major concerns were expressed with respect to remixing different resources legally, publishing material that incorporated unlicensed third-party content, discovering materials that could be legally used and publishing material created.

From an institutional perspective, four of the six respondents mentioned that their institutions do not have a policy on the creation and use of OER and that fewer than five per cent of the staff were engaged in OER-related activities. They also mentioned that even though the use of OER material was encouraged over the use of "copyright" protected material, there was no mechanism to reward or recognise these attempts.

Conclusion and Recommendations

At present Malaysia is placing great emphasis on building a knowledge community by increasing the number of citizens with access to higher education. In this roadmap, ICT funded and nurtured by the government play a major role. With more and more digital resources being developed and made available for use, the question arises whether the academic community is ready to undertake the responsibility of using these resources in their teaching and learning activities.

In general, Malaysian academics seem comfortable with locating, identifying and using digital resources in their day-to-day teaching and learning. However, further support is needed, especially at the institutional level, to facilitate capacity-building in this area. OER, a subset of digital resources, are fast becoming

mainstream practice amongst academics. It is encouraging to see that the majority of academics who participated in this study were knowledgeable about OER, had used them at some point in their careers and were willing to use them more in the future. One area of concern, however, is the lack of co-operation between academic institutions when producing and exchanging OER. This culture of collaboration between institutions needs to be established to harness the full potential of open content.

Special concerns were expressed with respect to copyright and the management of copyright. Even though academics had been exposed to open content licences such as those provided by Creative Commons, there was still a degree of trepidation with respect to using material licensed in this manner. More capacity-building is needed at an institutional as well as national level to familiarise users with the benefits and limitations of open content licensing.

From an institutional perspective, fewer than five per cent of staff are engaged in activities related to OER. As such, most institutions do not have an institutional policy on OER. This in turn has discouraged many staff from undertaking OER-based activities on a day-to-day basis, as there are no rewards or recognition for their efforts. One of the key actions to promote greater adoption of OER in Malaysia would be for institutions to establish policies encouraging the wider use and reuse of open content.

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CHAPTER

8

The Genesis of OER at the Virtual University of Pakistan

Naveed A. Malik

Abstract

The provision of higher education in Pakistan faces familiar challenges of access and equity. This was true in 2000 and is still true in 2012. Only about seven per cent of the college-age population is actually enrolled in tertiary education. Institutions are full to capacity and there is an acute shortage of qualified faculty in existing institutes and universities, making the setting up of additional new institutions an uphill task. In addition, universities are concentrated mostly in the larger cities and the cost of education is, in general, very high. The reduction in funding for the public sector universities in recent years has resulted in higher tuition fees, further exacerbating the equitable access issue.

The Virtual University of Pakistan (VUP) was established by the government in 2002 to address the capacity and access issues by using technology to deliver high-quality education at affordable rates throughout the country. To understand the evolution of VUP towards open educational resources, it is necessary to comprehend the design decisions taken and the strategy adopted towards achieving the objectives laid down for VUP.

Keywords: *Pakistan, virtual university, satellite broadcast, OER, enablers, barriers*

Development of the Concept

The idea of establishing a virtual university was first articulated in the Information Technology Policy that was developed by the Ministry of Science and Technology in 1998–99. This was followed by a pre-feasibility study and then a full feasibility study, both supported by the United Nations Development Programme, in 2000. The establishment of a "virtual IT university" was recommended by the study due to strongly expressed demands in the then internationally booming IT sector and impediments to equitable provision of higher education.

The early part of 2001 was devoted to developing a project proposal for government funding; in late 2001, this PKR (Pakistan rupee) one billion project (USD 20 million) was finally approved. The project envisaged using broadcast television to deliver videolectures to every corner of the country, whilst academic support would be provided over the Internet. The project team was assembled in October 2001, and within just six months the university opened its virtual doors and the first cohort of students was admitted to a bachelors programme in computer science in March 2002.

Design Decisions and Development

To provide access to the university's programmes at all locations within the country, it was decided to opt for a broadcast medium. Distance education in general had encountered some acceptability issues at that time. Thus, it was further decided that to enhance acceptability of its programmes, the virtual university would utilise the services of the best available professors in the country to develop courses in the form of videolectures supported by reading materials, and then deliver the courses using free-to-air television. The well-known professors would constitute the new face of distance education and would go a long way towards improving the general public perception of this new concept.

Support to the students was to be provided over the Internet, and a learning management system (LMS) was acquired and deployed on the university's own servers for this purpose. Examinations would always be held in a strict proctored environment to further improve the acceptability of academic credentials offered by the university.

Broadband availability was still in its infancy in Pakistan in 2001. As a result, all support/reading material was provided to students through the LMS in the form of simple text. It was felt that using richer material such as animations or video would constitute further impediments to equitable access, since the majority of students would be accessing the LMS over a dial-up link.

Another decision regarding equitable access was that the university would not undertake any activity, whether it was course delivery or interaction or support, that would in any way differentiate between large cities and remote areas. A level playing field was to be provided at all times, and the university undertook to continuously improve its pedagogical approach as infrastructure improved.

In the very early days, the university rented television broadcast time for its courses from the national provider, Pakistan Television. It was immediately apparent that this mechanism could not be sustained over a long period due to costs and time constraints. As a result, the university submitted a project to the Government of Pakistan to establish its own television facilities, and in June 2004, two free-to-air satellite channels, fully owned and operated by the Virtual University, started broadcasts using Pakistan's only communications satellite, PAKSAT-I. The capacity was further enhanced shortly thereafter and the university now operates four TV channels of its own: VTV1, VTV2, VTV3 and VTV4.

The Progression Towards OER

Free-to-air broadcasts of the university's courses, initially over PTV and later over VTV1–4, meant that any person or institution falling within the satellite footprint could easily receive, view and, if so inclined, record the broadcast lectures. A healthy debate ensued within and outside the university regarding the protection of its intellectual property, and various suggestions emerged to prevent recording and piracy of the videolectures.

It did not take long to discover that piracy in a broadcast environment could not be prevented. In a moment of clarity, the university decided that all individuals who wanted to acquire knowledge from its courses should be able to do so freely. If anyone wanted formal academic credentials they could register with the university, do the semester work (assignments, quizzes), sit the midterm and final examinations for each course, and be awarded certificates, diplomas or degrees as the case may be. Registration would require the payment of tuition fees that would be kept at an extremely affordable level, and the promise of economies of scale would be fully leveraged.

The Virtual University of Pakistan was designed to operate as a formal university to supplement the capacity of existing conventional institutions and provide equitable access to higher education for all students, regardless of their geographical location. By making its courses freely available to the public at large, VUP had already taken an important step towards OER in 2002, but did not realise it at that time.

Innovation, Methods, Costs and Quality

Once the pedagogical model had been finalised (videolectures supported by online interaction), the question of video format assumed prime importance.

Many examples of a camera-in-the-classroom approach were available on the Internet. An informal psychological study suggested that the viewer of these videos was immediately disconnected from the learning experience and became more of an onlooker rather than a participant in the class. There were also many "talking-head" videolectures available, but these suffered from another psychological lacuna: the body language of the professor was not visible to the students, and it was only possible to stress certain points by varying the audio level or inflection.

It was decided that VUP would use a full-body videolecture format. Lectures would be filmed in a professional studio environment and professors would directly address the cameras. There would be no students in the studio, and custom designed "sets" would be used. Similarly, there was no white-board or any other manual medium in the studio, to ensure that all written material was presented through computer-generated slides in post-production; this was done to maintain high production quality. Professors would be free to move about and could use their body and arms to add stress to points needing emphasis, in as natural a manner as possible. As a direct consequence, a new factor had been introduced into the academic arena: professors would have to undergo "auditions" to ensure that their on-screen presence and voice timbre were both suited to the medium.

Experienced and well-known academics were then invited to develop the courses according to outlines approved by the Higher Education Commission (HEC). These high-profile individuals belonged to other universities in the country and even included Vice Chancellors of at least three different institutions. Course development was a fairly tedious process, with an enormous level of attention being paid to the detailed design, including scripts. It was estimated that the delivery of a one-hour lecture required nearly 12 hours of preparation and a further three hours of post-processing. The resource persons were adequately compensated for their efforts and the production of a single course was an expensive endeavour, but the potential of reuse and delivery to a large number of students made it economically feasible.

In the first instance, eminent academics were invited to develop courses according to the provided outlines, and it was assumed that their standing in the profession was sufficient to ensure a very high-quality product. However, it became immediately apparent that a more systematic approach was required to ensure consistent quality. The new medium (delivering lectures to an unquestioning camera) also posed timing challenges, and professors tended to cover more material in the uninterrupted sessions than what students could be reasonably expected to assimilate. A detailed development framework was therefore drawn up, complete with review and feedback loops, and this framework is continuously reviewed and enhanced by the university.

The videolectures comprise the tip of the academic iceberg that education at VUP has come to imply. However, this is the most visible component and also carries the most academic worth.

Tools and Repositories

The videolectures of all VUP courses are broadcast on the university's own satellite TV channels. Students require a dish receiver to receive and view these courses. A further project, again funded by the government, was used to provide receiving equipment to cable operators throughout the country so that the channels became available in all households over cable networks. Students started demanding copies of the lectures, and after an initial short experiment with videotapes, the university made the lectures available through CDs and DVDs provided through the university's online bookshop at the cost of replication.

The advent of YouTube[1] in 2005 ushered in a revolution in video publishing by providing a free platform for the storage and dissemination of videos without any cost to the publisher; even the cost of bandwidth required to stream the videos was borne by YouTube. It did not take long for this to become the largest repository of video materials ever established. Thus, it was almost a foregone conclusion that VUP courses would eventually end up on YouTube, and it was decided that the university should establish its own YouTube channel,[2] then start uploading its lectures there for easy access from any part of the world.

This added another twist to the development cycle. Lectures now had to be post-processed into several different formats: broadcast television with the highest quality, CDs and DVDs with medium quality and online provision with the lowest

[1] www.youtube.com
[2] www.youtube.com/vu

bit rate. In 2008, VUP started uploading its lectures onto YouTube, and very soon more than 6,000 hours of videolectures had been uploaded. The initial access to these lectures was in random order, but students joined in the effort and started publishing "playlists" that grouped and ordered all lectures belonging to a single course, then made these lists available to the public at large.

A significant effort towards OER was simultaneously taking shape at the Massachusetts Institute of Technology (MIT) in the form of MIT OpenCourseWare (OCW). The MIT OCW site[3] went public in September 2002, with most of the published courses comprising text materials. Some lectures for a small subset of courses were available in video format, but these were the minority. OCW materials were placed on MIT's own servers whilst video content was hosted externally. As the number of courses with videolectures increased, it was obvious that the paths of MIT OCW and YouTube would intersect, as did indeed happen. Currently, most of the video content from MIT courses is hosted on YouTube whilst a small number of video clips (rather than lectures) are still available from MIT servers directly.

The VUP became a member of the OCW Consortium (OCWC) in 2010.[4] As part of the membership requirements, VUP was required to publish at least ten courses under a Creative Commons licence over the next three years. This is when a concerted effort to publish VUP courses in the form of an OCW site started. In a very short time, the VUP Open Courseware site was established.[5] VUP courses were already structured according to the requirements of its LMS, and it was fairly straightforward to publish all courses on its OCW site, complete with assignments and solutions and, in many cases, associated reading material as well, by linking through to the LMS repository. Since the videolectures were already hosted on YouTube, it was a simple matter to link the VUP OCW site to YouTube. Almost overnight, more than 130 three-credit undergraduate- and graduate-level courses were made available by the university under a Creative Commons licence. In 2012 the VUP site received the Outstanding New Site Award for OpenCourseWare Excellence from the OpenCourseWare Consortium.[6]

It is interesting to note that the MIT OCW site started before YouTube came into existence yet now hosts most of its video content on YouTube, whilst in the case of VUP, its lectures were hosted on YouTube before its OCW site was published. With all of its content being made available under a Creative Commons Attribution-ShareAlike licence (CC-BY-SA), VUP has established an important OER site that is proving useful to other institutions and individuals both within the country as well as overseas.

Enablers and Barriers

The prime mover for the OER effort at VUP was that right from the very start, the university was completely based on the innovative use of modern information and communication technologies (ICT). All study materials were designed from the ground up as digital materials, and all assignments and quizzes were handled

[3] ocw.mit.edu
[4] www.ocwconsortium.org
[5] ocw.vu.edu.pk
[6] ocwconsortium.org/en/community/blog/2012/03/29/ocw-consortium-announces-2012-winners-of-site-awards-for-opencourseware-excellence

digitally through the LMS. The only transition required was very much in line with the repurposing philosophy of OER: VUP simply recast its own materials and published them in a different format.

All resource persons and professors were required to assign all intellectual property rights (IPR) to the university at the time of course development, because the university intended to broadcast the lectures and therefore needed the right to do so. This ownership of IPR has also enabled the university to publish its courses as OER without tedious negotiations with course authors.

The recognition of the VUP OCW site by the OCWC has further strengthened the case for the use of these OER by other institutions. Whilst many professors and students from other institutions benefit from VUP courses and videolectures informally, at least one professor has used this material formally at another university in a very innovative manner. He has provided his students with VUP videolectures for his course and prescribed a viewing schedule. He then brings the students together for a discussion session once a week; they are expected to have viewed the lectures and done the required background reading and preparation before coming for the face-to-face meeting. According to the professor, the quality of interaction with the students has improved phenomenally, since the questions they ask are no longer impromptu in-class questions but well-researched problems that require expert input. It is hoped and expected that other professors from other universities within Pakistan will follow suit.

No significant barriers were encountered, and the VUP effort to make its content freely available has been admired by one and all, with the spirit of OER seemingly well understood. The HEC expects that the VUP OCW site will become a role model for other institutions to emulate.

Policy

At the moment, there is no policy on OER in Pakistan. Although one can argue that all materials developed through public funds should be made freely available to all comers, this has not been the practice. Universities and other institutes of tertiary education are self-governing bodies operating under charters granted by the federal or provincial governments, and are free to take their own decisions. The HEC is the regulator, laying down curriculum guidelines and establishing faculty induction criteria. It does, however, provide federal grants to public-sector universities, and these could be used to leverage the roll out of OER. However, the OER issue has not been addressed so far and no policy guidelines have been established.

Strategy and Sustainability

It should be clear from the above narrative that the advent of OER at VUP was due more to a set of serendipitous circumstances than to a focussed effort in this direction. The progression of its study materials towards OER was much more of an evolution rather than a revolution. Almost no additional effort was required on the part of the course authors, and the entire exercise was undertaken by technical staff at the university. This has important implications for the future.

The university is experimenting with new pedagogical approaches whereby discovery-based learning will be stressed and course materials are expected to morph away from the lecture-based format into smaller, topic-based modules, complete with self-assessment exercises, challenge problems and remedial suggestions. The role of the online tutor will also change towards providing more guidance than tuition. It is expected that the "openness" of VUP materials will not be affected by this transition. In fact, the newer materials will fit very nicely into the "repurpose and reuse" philosophy of OER by providing smaller modules as compared to one-hour videolectures.

In terms of sustainability, the university's enrolment trends have amply demonstrated that publishing its courses freely has had no negative impact whatsoever on enrolment. Open publishing of course materials is, in one way, the ultimate peer review. The fact that the VUP materials are mentioned favourably in academic and social circles has given new impetus to this effort, and the uncertainties of the early days have been completely replaced with a new-found confidence on the part of students and faculty alike.

CHAPTER

9

OER in Philippine Higher Education: A Preliminary Study

Patricia B. Arinto and Roel Cantada

Abstract

This preliminary survey of a small cross-section of academics indicates that OER-related practice in higher education in the Philippines is in the initial stages. Whilst there appears to be a positive attitude towards OER, utilisation is not widespread, and OER production and sharing are minimal. The survey results suggest that higher education institutions should pay attention to improving: (i) knowledge and understanding of copyright, (ii) training and skills development in OER use and production, (iii) formulation of institutional policies for the promotion of OER, (iv) provision of the necessary technical infrastructure for developing OER and using them for teaching and learning and (v) institutional collaboration in OER development and exchange. Aside from more focussed studies of OER utilisation by individual academics and institutions, and studies on OER-related policies, design-based research in OER would be useful for identifying models of OER use and development that are effective, appropriate and sustainable in the Philippine higher education context.

Keywords: *OER utilisation in higher education*

The Broad Context for OER in the Philippines

Open education in general, and open educational resources (OER) in particular, pose benefits to all teachers and learners everywhere in the world (Cape Town Open Education Declaration, 2007). But for developing countries like the Philippines, where educational resources are scarce and education for all remains an elusive goal, OER are particularly beneficial. As Rossini (2010, p. 66) has noted, the OER philosophy "places educational materials as common and public goods from which all should benefit, but most especially those who receive the least benefit and support from current systems of education, whether publicly

or privately funded." More concretely, OER can help address problems such as textbook shortages, the high cost of the limited number of textbooks available, inadequate library and other learning facilities, and poor teacher training (Rossini, 2010).

In the Philippines, an estimated 25 million students are enrolled in 72,816 schools at all levels nationwide (DepEd, 2011; CHED, n.d.), and more than 600,000 primary and secondary school teachers (DepEd, 2011) rely on printed textbooks as the main learning material. In 2011 the government allocated PHP (Philippine peso) 1.78 billion for 14.23 million textbooks and teachers' manuals (DBM, 2011). The government plans to spend PHP 2.6 billion for 45.5 million textbooks and teachers' manuals in 2012 (Aquino, 2011). The average unit price of textbooks for public schools has been reported to be about PHP 40 to 45 (Lapus, 2006), PHP 31.56 for primary school texts and PHP 33.72 for high school texts (Chua & Rimban, 2008). Such prices (about USD 1) are a tiny fraction of textbook prices in developed countries, but they are prohibitive in a country where a fifth of the population (around 20 million of the total population of 94 million) subsists on less than USD 1.25 per day (The World Bank, 2011). Whilst textbooks are provided free of charge in the public school system, shortages are a major problem. In addition, although there are stringent policies for the procurement of textbooks, manuals and supplementary materials (Morada, 2010; DepEd, 2004; DepEd, 2009), problems are encountered during procurement and delivery (Lontoc, 2007; Chua, 2011). Sustainability is also an issue as books may be lost, at times on a large scale due to natural calamities.

In Philippine tertiary education, the demand for textbooks and reference books is difficult to determine. Given that English is the medium of instruction in higher education institutions (HEIs), there is no language barrier for the importation of textbooks from English-speaking countries. It is likely that most tertiary education books are imported rather than locally printed. In 2007, 47,780 books, worth PHP 2,314,753, were imported, compared to an export of 1,734 books, worth PHP 123,265 (NBDB, 2008). It is difficult to say how many of these books were for educational purposes. But it is clear that even if all of the imported books were for educational purposes, they were hardly sufficient for the 2.8 million students enrolled in tertiary education in the 2009–2010 academic year. This, coupled with the cost of textbooks, results in rampant photocopying of entire books by college students (Buhain, 2005; Tan, 2011).

The foregoing suggests that OER can be an important resource for education in the Philippines, especially as Internet connectivity becomes increasingly available. In 2011, the World Economic Forum ranked the Philippines 86th amongst 138 countries in the Networked Readiness Index (Dutta & Mia, 2011). It has 29.7 million Internet users, representing about 29.7 per cent of the population in 2010 (Miniwatts Marketing Group, 2010). There were 3.6 million fixed Internet subscriptions (3.93 per 100 inhabitants) in 2009 (ITU, 2011b) and 1.7 million fixed broadband subscriptions (1.85 per 100 inhabitants) in 2010 (ITU, 2011a). The mobile phone penetration is significantly higher, with 79,895,646 mobile phone subscriptions in 2010, or 85.67 subscriptions per 100 inhabitants (ITU, 2011c).

Internet connectivity in schools and HEIs is likewise improving. Around 80 per cent of all public high schools in the country with electricity (around 3,500 in all) now have at least seven computers, and the computerisation of elementary

schools has begun (DBM, 2011). The government has allocated PHP 1.8 billion for the purchase of 5,422 computers and the provision of Internet connectivity (DBM, 2011). In addition, there are reports that the Department of Education is considering doing away with the printed textbook (Casayuran, 2010) in favour of digital resources that can be accessed not only through desktop computers but also through mobile devices such as eReaders and other types of tablet computers. In the higher education sector, there is anecdotal evidence that colleges and universities are exploring eLearning as a mode of delivery. The University of the Philippines Open University (UPOU), a dedicated distance education provider, delivers all of its courses in more than 20 degree programmes online using the open source learning management system Moodle. Several public and private HEIs have sought UPOU's assistance in building their capacity to offer online learning programmes. In addition, a number of individual faculty and staff of other educational institutions have enrolled in UPOU's Master of Distance Education programme, as well as non-formal courses in online teaching and learning.

In brief, conditions for the adoption and development of OER exist in the Philippines. However, there is a need to undertake a systematic study of OER awareness and practice in the country. In the basic education sector, a related study on the utilisation of information and communication technology (ICT) in public secondary schools was undertaken in 2002 by Tinio (2002). This chapter reports findings from a preliminary survey of OER use in the Philippine higher education sector.

Survey of OER Use in Higher Education

The survey was conducted online amongst faculty of Philippine HEIs from November 2011 to April 2012. The respondents were recruited through the "snowball approach" — i.e., email invitations were sent to key people in Philippine HEIs, who were asked to forward the invitation to other people. Therefore, the total number of invitations sent is unknown and it is not possible to calculate the participation rate of the survey.

A total of 50 individuals answered the survey. However, eight respondents were disqualified during the data analysis because they did not answer 98.7 per cent (78 items) of 79 non-profile items in the questionnaire.

The survey questionnaire was divided into two sections: (i) for individuals with experience in OER and (ii) for representatives of institutions who could comment holistically on their institution's OER-related practices. A total of 12 respondents from eight HEIs (32 per cent of the 25 HEIs represented by individual respondents) answered the second section.

Respondent fatigue (see Cape, 2010) may have affected the survey, as indicated by the declining number of respondents as the survey became longer.

Profile of the Respondents

The 42 survey participants who were included in the data analysis came from 25 institutions. Most of the participants came from UPOU (16.7 per cent, or seven respondents), Mindanao State University-Iligan Institute of Technology (MSU-IIT,

14.3 per cent, or six respondents), UP Los Baños (UPLB, 14.3 per cent, or six respondents), University of Santo Tomas (UST, 4.8 per cent, or two respondents) and UP Cebu College (4.8 per cent or two respondents). Almost half (47 per cent or 20 respondents) came from institutions with fewer than 5,000 students, followed by those who came from institutions with 10,001–15,000 students (33 per cent, or 14 respondents). Seventy-one per cent (30 respondents) came from public institutions, 19 per cent (eight respondents) from private not-for-profit institutions and ten per cent (four respondents) from private for-profit institutions.

Most (74 per cent, or 31 respondents) reported teaching at the undergraduate level, whilst 40 per cent (17 respondents) said they taught at the post-graduate level. One respondent (two per cent) indicated teaching in high school. Subjects taught by the respondents included education (36 per cent, or 15 respondents), science (31 per cent, or 13 respondents), communication and languages (14 per cent, or six respondents), and computer and information technology (ten per cent, or four respondents). The most frequently taught subjects amongst the respondents were educational technology (24 per cent, or ten respondents) and environmental science (19 per cent, or eight respondents).

Use of OER

Whilst most of the respondents (83 per cent, or 35 respondents) said they have access to digital resources, slightly less than half (48 per cent, or 20 respondents) said they have used OER from other academics in their teaching, and the rest (52 per cent, or 22 respondents) said they intend to do so in the future. Of the 12 who commented on the use of OER in their institution, eight (67 per cent of 12) said they have used OER from other institutions in their teaching, and nine (75 per cent of 12) said they will use OER from other institutions in the future.

For both individual respondents and the 12 who commented on their institution's OER practice, gaining access to the best possible resources is an important goal for the use of open educational content in their teaching or course delivery. Half (50 per cent, or 21 respondents) of the individual respondents also see bringing down costs for students, conducting research and development, and outreach to disadvantaged communities as important goals in using such content, whilst 11 of the 12 (92 per cent) who commented on their institution's practice of OER consider promoting scientific research and education as publicly open activities, and creating more flexible materials, as important goals in using such content (see Table 10.1).

Table 10.1: Respondents' goals for using open educational content

Goals for using open educational content	Highest frequency of individuals who found the goal important (n = 42)	Highest frequency of respondents who commented on their institution's OER practice and found the goal important (n = 12)
Bringing down costs for students	21 (50%, rank 1)	9 (75%, rank 3)
Gaining access to the best possible resources	21 (50%, rank 1)	11 (92%, rank 1)
Conducting research and development	21 (50%, rank 1)	10 (83%, rank 2)
Outreach to disadvantaged communities	21 (50%, rank 1)	10 (83%, rank 2)
Promoting scientific research and education as publicly open activities	20 (48%, rank 2)	11 (92%, rank 1)
Creating more flexible materials	19 (45% rank 3)	11 (92%, rank 1)

In general, respondents had a positive attitude towards OER, with 76 per cent (32 respondents) indicating disagreement with the statement that using digital resources distracts from the core goals of their teaching, 74 per cent (31 respondents) indicating disagreement with the statement that digital resources are irrelevant to their field and 62–69 per cent (26–29 respondents) indicating disagreement with other reasons for not using digital resources. A third (33 per cent, or 14 respondents) of the individual respondents disagreed that publishing OER would mean students would stop attending lectures.

Table 10.2 shows what the respondents saw as the benefits of OER use.

Table 10.2: Respondent agreement with particular statements about OER

Statements about OER	Highest frequency of individuals who agreed with the statements (n = 42)	Highest frequency of respondents who commented on their institution's OER practice and agreed with the statements (n = 12)
Reusing OER is a useful way of developing new courses.	20 (48%, rank 1)	9 (75%, rank 2)
Exploring the available OER worldwide will enhance respondents' teaching and raise standards across the university.	19 (45%, rank 2)	8 (67%, rank 3)
OER can help build fruitful partnerships with colleagues and institutions worldwide.	18 (43%, rank 3)	10 (83%, rank 1)
The OER in the university repository will help enhance the reputation of the university, attracting better students.	15 (36%, rank 6)	10 (83%, rank 1)
Publishing OER in the university repository will enhance promotion prospects.	13 (31%, rank 8)	10 (83%, rank 1)

Other possible benefits of using OER that the respondents agreed with are shown in Table 10.3.

Table 10.3: Perspectives on benefits from OER use

Benefits seen in using OER	Highest frequency of individuals (n = 42)	Highest frequency of respondents who commented on their institution's OER practice (n = 12)
Reduction of development costs and time	17 (40%, rank 1)	7 (58%, rank 3)
Enhancement of current practice	16 (38%, rank 2)	9 (75%, rank 1)
Support of students without formal access to higher education	15 (36%, rank 3)	7 (58%, rank 3)
Support of developing nations	12 (29%, rank 4	9 (75%, rank 1)

The most common use of digital resources is in lectures and class presentations (64 per cent, or 27 respondents) and as resources for student research projects or problem-based learning assignments (50 per cent, or 21 respondents). Participants said they use digital resources in their teaching for the following reasons:

- To let students know the most up-to-date developments about a subject (81 per cent, or 34 respondents).
- To provide access to resources that are *not* available in their institution (81 per cent, or 34 respondents).
- To improves their students' learning (81 per cent, or 34 respondents).

Often used types of digital resources are images (76 per cent, or 32 respondents), digital readers (67 per cent, or 28 respondents) and online reference resources (64 per cent, or 27 respondents). The least used are digital facsimiles of historical manuscripts (7 per cent, or 3 respondents). This may be due to the fact that few survey participants taught subjects that use this type of resource.

The participants said they are willing to use the types of OER presented in Table 10.4.

Table 10.4: OER that respondents are willing to use

OER participants are willing to use	Highest frequency of individuals (n = 42)	Highest frequency of respondents who commented on their institution's OER practice (n = 12)
Recorded lectures	17 (40%, rank 1)	8 (67%, rank 1)
Videos	16 (38%, rank 2)	6 (50%, rank 3)
Images	16 (38%, rank 2)	7 (58%, rank 2)
Animations	16 (38%, rank 2)	8 (67%, rank 1)
Lecture notes	14 (33%, rank 4)	8 (67%, rank 1)

Sources of OER

The most frequent sources of digital resources are search engines (81 per cent, or 34 respondents), public online image databases (60 per cent, or 25 respondents), personal collections (57 per cent, or 24 respondents) and portals for particular topics (52 per cent, or 22 respondents). Sources least used are commercial image databases (10 per cent, or 10 respondents). Most (62 per cent, or 26 respondents)

gather or maintain their own collections of digital resources, but 43 per cent (18 respondents) rarely make their own digital resources available to others via the World Wide Web. The most frequently used search method for locating OER materials is through generic search engines such as Google and Yahoo! (45 per cent, or 19 respondents), followed by specific search engines such as Google Scholar (31 per cent, or 13 respondents). Generic (45 per cent, or 19 respondents) and specific (40 per cent, or 17 respondents) search engines are perceived as effective for locating relevant and quality OER for the participant's use. However, the Internet searches may not be entirely random, as word of mouth was the most often cited source of digital resources (55 per cent, or 23 respondents). It seems that recommendations by respected experts and colleagues in a field are important in promoting awareness of OER.

In teaching their courses, individual respondents use more open educational content freely downloaded from the Internet (48 per cent, or 20 respondents) than open educational content obtained from other sources such as OER produced by their institutions (31 per cent, or 13 respondents) or by themselves (26 per cent, or 11 respondents). The pattern is similar for the 12 respondents who commented on their institution's OER practice: all 12 (100%) said that within their courses or programmes they used open educational content freely downloaded from the Internet; eight (67%) used content produced within their own institution, seven (58%) used content downloaded from an OER repository, and six (50%) used content through established co-operative relationships with other educational institutions.

Sixty-seven per cent (28) of individual respondents agreed that their use of digital resources was very dependent on the resources being free. Half (21) of individual respondents agreed that their use of a digital resource that was stored in an online repository was very dependent on whether registration or a password was required to gain access to the resource.

Production and Publication of OER

The production of OER amongst the individual respondents is very low, with only 14 per cent (six respondents) producing learning objects, as opposed to the 48 per cent (20 respondents) who reported using OER from other academics. In addition, 19 per cent (eight) said they are currently *not* producing any type of open educational content. Table 10.5 shows the type of open educational content produced by the participants.

Table 10.5: Types of open educational content produced

Type of open educational content produce	Frequency of individuals (n = 42, multiple answers allowed)	Frequency of respondents who commented on their institution's OER practice (n = 12, multiple answers allowed)
As learning objects	6 (14%)	5 (42%)
As part of courses	5 (12%)	6 (50%)
As full courses	2 (5%)	0

Table 10.6 shows the types of OER the participants said they are willing to produce. The types of resources identified by individual respondents might be said

to indicate the current level of technical skill in, as well as the available resources for, OER production that individual academics have. The production of videos and interactive learning objects requires more resources — which may be available at the institutional level — than does the production of slide presentations and lecture notes.

Table 10.6: Types of OER that respondents are willing to produce

OER participants are willing to produce	Highest frequency of individuals (n = 42)	Highest frequency of respondents who commented on their institution's OER practice (n = 12, multiple answers allowed)
Presentation slides/PowerPoint slides	11 (26%, rank 1)	6 (50%, rank 2)
Module handbooks	11 (26%, rank 1)	5 (43%, rank 3)
Lecture notes	10 (24%, rank 2)	5 (43%, rank 3)
Interactive learning objects	6 (14%, rank 6)	7 (58%, rank 1)
Video	9 (21%, rank 3)	7 (58%, rank 1)

The level of publication of OER amongst respondents reflects the low level of OER production. Amongst individual respondents, only seven per cent (three respondents) said they have submitted teaching and learning resources for publication as OER, whereas 36 per cent (15 respondents) said they have not submitted OER for publication. But 38 per cent (16 respondents) said they plan to submit OER for publication in the future. Of the 12 respondents who commented on the submission of OER by their institution, only two (17 per cent of 12 respondents) have submitted teaching and learning resources for publication as OER, whilst six (50 per cent of 12 respondents) said they will submit such resources as OER in the future.

Forty-five per cent (19) of individual respondents indicated that they are willing to make teaching materials openly available to learners and academics in their own institution; about a third (33 per cent, or 14 respondents) would share them globally, and only 21 per cent (nine respondents) would share them in repositories like JorumOpen, OpenCourseWare Consortium and OER Commons. Of the 12 respondents who commented on their institution's willingness to make teaching materials available openly to learners and academics, the first priority is sharing globally (seven respondents, or 58 per cent of 12), followed by making materials available openly to learners and academics in their own institution (five respondents, or 42 per cent) and sharing in other repositories (four respondents, or 33 per cent).

Whilst there appears to be a contrast in the priority target audience of OER production for individual respondents and those who commented on their institution's OER practice (i.e., learners and fellow academics within their own institution for the former, and a more global set of users for the latter), individual participants indicated the enhancement of university reputation (45 per cent, or 19 respondents) as one of the top three benefits of publishing OER, followed by personal reputation (43 per cent, or 18) and enhancement of the user's knowledge of a subject (38 per cent, or 16). Of the 12 respondents who commented on the benefits their institutions see in publishing OER materials, eight (67 per cent of 12) also considered enhancing the university's reputation as a benefit in publishing OER.

Barriers to the Use and Publication of OER

Copyright issues appear in the list of top barriers to OER production for both individual participants and respondents who commented on their institution's practice of OER. The latter indicated policy at the top of the list of barriers, whilst individual respondents who saw policy as a barrier placed it only at rank 4 (see Table 10.7).

Table 10.7: Barriers to producing OER

Barriers to producing OER	Highest frequency of individuals (n = 42)	Highest frequency of respondents who commented on their institution's OER practice (n = 12, multiple answers allowed)
Fear of copyright infringement	14 (33%, rank 1)	7 (58%, rank 1)
Ownership and legal barriers other than copyright	13 (31%, rank 2)	6 (50%, rank 2)
Awareness of the university OER repository and other OER repositories	10 (24%, rank 3)	7 (58%, rank 1)
Lack of reward and recognition	10 (24%, rank 3)	5 (42%, rank 3)
School/institutional policy	9 (21%, rank 4)	7 (58%, rank 1)
Relevancy of materials available	6 (14%, rank 7)	7 (58%, rank 1)

The use of digital resources and OER is also not without problems. The main difficulties participants cited in using digital resources the way they would like are:

- Students do not have reliable access to computers (48 per cent, or 20 respondents).
- Students do not have a high-speed connection (43 per cent, or 18 respondents).
- It is difficult to get server space or access to a server to store/host digital resources for teaching (40 per cent, or 17 respondents).
- They do not have access to physical resources in their classrooms, such as projectors and high-speed connections (40 per cent, or 17 respondents).

Individual participants considered lack of skills in using OER (55 per cent, or 23 respondents) and lack of awareness (52 per cent, or 22 respondents) to be the most significant barriers to the use of open educational content in teaching by their colleagues. Regarding primary barriers to their own use of OER, the participants identified lack of awareness of the university OER repository and other OER repositories (29 per cent, or 12 respondents), fear over copyright infringement (26 per cent, or 11 respondents) and lack of time (26 per cent, or 11 respondents).

Of the 12 respondents who commented on the most significant barriers to the use of open educational content in their institutions, nine (75 per cent of 12) said the most significant barriers were lack of: (i) hardware, (ii) awareness of OER, (iii) skills in using and publishing OER, (iv) time to use and publish OER and (v) support from management. In addition, seven of these 12 respondents (58 per cent) commented that their institutions faced lack of training and management support for using OER materials.

Copyright Issues

As mentioned, participants perceived fear of copyright infringement as one of the major barriers to their use and publication of OER. To provide a context for the discussion in this section, it is important to note that there are limitations to copyright. These limitations are stated in Chapter VII, Part IV (The Law on Copyright) of Republic Act No. 8293, the Intellectual Property Code of the Philippines. Specifically,

> . . . the following acts shall not constitute infringement of copyright:
>
> . . . The inclusion of a work in a publication, broadcast, or other communication to the public, sound, recording or film, if such inclusion is made by way of illustration for teaching purposes and is compatible with fair use . . .

Furthermore, copyright expires and any copyright work that has expired is considered to be in the public domain. The expiry date is set by national law.

Copyright has also been used to grant licences that support the use and publication of OER. Some of these licences are bundled under the set of Creative Commons licences and have been localised or interpreted according to Philippine laws (see the Creative Commons Philippines wiki, at wiki.creativecommons.org/Philippines).

In the survey, about a quarter (26 per cent, or 11 respondents) of individual participants and four out of the 12 respondents (33 per cent) who commented on their institution's OER practice believed that their use of third-party content was important to the educational resources they published.

The participants stated that when contributing open educational content for use by others, the factors listed in Table 10.8 are important to them.

Table 10.8: Factors respondents consider important when contributing OER

Factors that are important when contributing OER	Highest frequency of individuals (n = 42)	Highest frequency of respondents who commented on their institution's OER practice (n = 12)
To be acknowledged as the creator of the resource when it is used	13 (31%, rank 1)	6 (50%, rank 1)
To have a quality review of the resource	13 (31%, rank 1)	5 (42%, rank 2)
To be acknowledged as the creator of the resource when it is adapted or changed by someone else	12 (29%, rank 2)	5 (50%, rank 1)
To know the changes made to the resource	11 (26%, rank 3)	6 (50%, rank 1)

With regard to their perspectives on copyright, only 26 per cent (11) of the individual participants and six out of 12 respondents (50 per cent) who commented on their institution's OER practice said that the term "copyright" meant something to them. Twenty-four per cent (10) of individual participants felt confident in the accuracy of their definition of copyright, and amongst these participants only seven per cent (three respondents) felt very confident that they could define copyright accurately. Of the 12 who commented on institutional practice of OER, four (17 per cent of 12) said they were confident in the accuracy of their definition of copyright, one (eight per cent) said he/she was somewhat

confident, and another one (eight per cent) said he/she was not confident in the accuracy of his/her definition of copyright.

Seventeen per cent (7) of individual respondents said they had not heard of Creative Commons licences, whereas only 14 per cent (6) had heard of them. Four out of 12 respondents (33 per cent of 12) who commented on their institution's OER practice said they had not heard of Creative Commons licences, whilst only two (17 per cent) had heard of them.

About a tenth of the individual respondents (four, or 9.5 per cent) said they were not confident that they could describe Creative Commons licences accurately, and only four (9.5 per cent) were confident that they could. Of the 12 who commented on their institution's OER practice, three (25 per cent) were not confident and one (eight per cent) was somewhat confident in the accuracy of his/her description of Creative Commons licences. Only one of the 12 (eight per cent) was confident in the accuracy of his/her description.

Still, 16 per cent (seven) of individual respondents said that when creating or assembling educational resources, they frequently attempted to use materials that are licensed under Creative Commons or other free/open licences. Ten per cent (four) of individual respondents and three out of the 12 (25 per cent) who commented on institutional OER practice said they did not attempt to use materials that are licensed under Creative Commons or other free/open licences when creating or assembling educational resources. Only one of the 12 (eight per cent) who commented on institutional OER practice said he/she frequently attempted to use such materials.

A quarter (26 per cent, or 11) of individual respondents said they were aware of limitations to copyright under national law, whilst five per cent (two respondents) said they were not aware of such limitations. Five out of the 12 (42 per cent) who commented on OER institutional practice said they were aware of limitations to copyright under national law, and only one out of the 12 (eight per cent) said he/she was not aware of these limitations.

Fourteen per cent of individuals (six) frequently incorporated or repurposed materials under the presumption that they were allowed to do so based on one or more limitations to copyright, whilst five out of the 12 (42 per cent) who commented on institutional practice of OER sometimes incorporated or repurposed materials under the same presumption. Only one of the 12 (eight per cent) who commented on institutional practice frequently incorporated or repurposed materials under this presumption.

Ten per cent of individuals (four) found themselves using both Creative Commons licensed materials as well as materials based on one or more limitations to copyright when creating and publishing educational materials, whilst 19 per cent (eight) were not sure. Two out of the 12 (17 per cent) who commented on institutional OER practice said they found themselves using both Creative Commons licensed materials as well as materials based on one or more limitations to copyright when creating and publishing educational materials, and another two (17 per cent) said they did not do so.

More than a fifth of individual respondents (22 per cent, or nine) frequently dealt with copyright issues in producing or assembling educational resources, whilst two out of 12 (16 per cent) who commented on their institution's OER practice

said they frequently dealt with copyright issues in producing or assembling educational resources. One individual respondent and one who commented on institutional practice said they did not deal with copyright issues in such activities.

When dealing with copyright issues, about a third of individuals (29 per cent, or 12) were concerned about publishing material that incorporated unlicensed third-party content. About a quarter (26 per cent, or 11) were concerned about publishing material they created, and 26 per cent (11 respondents) were concerned with discovering materials they could legally use.

When those who commented on their institution's OER practice found themselves dealing with copyright issues, five out of 12 (42 per cent) were concerned with all of the following:

- Publishing material they created.
- Publishing material that incorporated unlicensed third-party content.
- Discovering materials they could legally use.

Individual participants did the following when preparing and publishing educational resources in relation to managing the copyright of third-party content:

- Decided that the inclusion of the third-party content in their legal jurisdiction was acceptable according to a limitation to copyright (19 per cent, or eight respondents).
- Attempted to identify the copyright holder and get permission to license the third-party content under a compatible Creative Commons or other free/open licence (14 per cent, or six respondents)

When preparing and publishing educational resources, those who commented on their institution's practice of OER did the following:

- Five out of 12 of the participants (42 per cent) decided that the inclusion of the third-party content in their legal jurisdiction was acceptable according to a limitation to copyright.
- Four out of 12 (33 per cent) included licence status and attribution on third-party content.

Institutional Policy and Support

Over half the individual participants (52 per cent, or 22 respondents) considered the following to be extremely important in using digital resources:

- Support with obtaining or setting up technical infrastructure such as servers, computers and smart classrooms (76 per cent, or 32 respondents, said this was very or extremely important).
- Support in interpreting copyright laws and/or securing copyright permission (71 per cent, or 30 respondents, said this was very or extremely important).
- Support with finding digital resources (52 per cent, or 22 respondents, said this was extremely important, and another 12 per cent, or 5 respondents, said this was very important).

Respondents also considered support for the following to be very important:

- Assessing the credibility of digital resources (69 per cent, or 29 respondents).
- Evaluating the appropriateness of resources for their teaching goals (67 per cent, or 28 respondents).

Forty per cent (17) of individual participants said the management level of their institutions was supporting the use of open educational content, 36 per cent (15) said management was supporting the production of open educational content, 29 per cent (12) said management was supporting the use of open source software and only 19 per cent (eight) reported management support for the production of open source software.

Of the 12 respondents who commented on their institution's practice of OER, six (50 per cent) said that the management level of their institution supported the use of open educational content and open source software, and five (42 per cent) said management supported the production of open educational content and open source software.

However, whilst the dominant perception amongst individual respondents was that management was supportive of the use and production of OER in their institutions, amongst the 12 who commented on their institution's practice of OER, eight (67 per cent) said their institution currently had no policy on sharing and importing OER, and nine (75 per cent) said their institution currently had no policy to encourage or provide incentives for the development and use of OER.

Given the lack of a policy, it is not surprising that only three out of the 12 (25 per cent) who commented on their institution's OER practice said that 20–50 per cent of staff in their institution were involved in the development, use and sharing of OER. Six out of the 12 (50 per cent) said that ten per cent or less of staff in their institution were actively participating in such activity.

With regard to training and development facilities for the production and use of OER, five out of the 12 (42 per cent) who commented on their institution's practice of OER said that their university provided no such training and development facilities, whilst only three out of the 12 (25 per cent) said their university did. Three (25 per cent) said their institution had adequate technical infrastructure to support the development, use and sharing of OER, whilst another three (25 per cent) said their institution did not.

Institutional Co-operation

Co-operation amongst institutions and other stakeholders is important for the promotion of OER (D'Antoni, 2008). However, six of the 12 respondents (50 per cent) who commented on their institution's practice of OER said they did not have such collaborative arrangements with other organisations, whereas only two out of the 12 (17 per cent) said they had such arrangements.

Forty-three per cent (18) of individual participants were not involved in any co-operation with people from other educational institutions in producing open educational content. Only seven per cent (three) were co-operating internationally and five per cent (two) regionally. None of the respondents said there was national co-operation in producing open educational content.

Of the 12 who commented on their institution's practice of OER, five (42 per cent) said they were not involved in any co-operation with people from other educational institutions to produce open educational content, three (25 per cent) said they co-operated with people from the same region/state, two (17 per cent) were involved in co-operation with people from other parts of the country and none were involved in international co-operation.

With reference to exchanging open educational content, 40 per cent (17) of individual respondents said they were not involved in any co-operation with people from other educational institutions to exchange open educational content; only seven per cent (three) said they were co-operating at a regional level, five per cent (two) said they were co-operating internationally and only one respondent (two per cent) reported co-operating with people from other parts of the country to exchange open educational content.

Of the 12 who commented on their institution's practice of OER, six (50 per cent) said they were not involved in co-operating with people from other educational institutions in exchanging open educational content, three (25 per cent) said they co-operated with people from other educational institutions in the same region/state, one (eight per cent) said he/she co-operated with people from other educational institutions in other parts of the country and another one (eight per cent) said he/she co-operated internationally.

Conclusion and Future Directions

The overall picture that emerges from this preliminary survey of a small cross-section of academics in the Philippines is that OER-related practice is in the initial stages. Whilst there appears to be a positive attitude towards OER, utilisation of OER is not widespread and OER production and sharing are minimal.

The survey results suggest that to improve this situation, higher education institutions should pay attention to the following:

- Improving knowledge and understanding of copyright to include legal protocols for promoting sharing and modification of original work (in particular Creative Commons licences).
- Training and skills development in OER use and production.
- Formulation of specific institutional policies to promote OER.
- Provision of the necessary technical infrastructure to develop OER and use them for teaching and learning.
- Institutional collaboration in OER development and exchange.

This list is consistent with the priority issues in OER identified by representatives of developing countries who participated in an online discussion hosted by UNESCO and reported by D'Antoni (2008) — namely, awareness-raising and promotion, capacity-development, communities and networking, technology tools, learner support services, research and policies.

As mentioned, the survey reported in this chapter is preliminary in nature and the findings cannot be generalised due to the small number of respondents and the high incidence of survey non-completion, very likely due to respondent fatigue. However, the survey results indicate directions for further research using both

qualitative and quantitative approaches, including research on models of OER use and development that are effective, appropriate and sustainable in the Philippine context.

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CHAPTER 10

Open Educational Resources in Vietnam

Minh Do

Abstract

As a member of the global OCW/OER movement since 2005 and a founding member of the Connexions Consortium in 2009, Vietnam's OER programme has helped educational institutions, their faculty members and students gain awareness about OCW/OER and their related issues (e.g., open licences, CC licences and so forth). As a consequence of Vietnam's participation in the OER movement, faculty members now have more opportunities to freely access local and international sources of OCW/OER materials, and also to contribute to the Vietnamese OER repository by using appropriate OER software tools. Both faculty members and students are expected to improve their teaching and learning methods to adapt to educational reform. However, traditional teaching habits, indifferent attitudes, absence of a sharing culture and other challenges have been obstacles to the widespread use of OER in Vietnam.

This study of the current use of OER in the Asian region, using a survey focusing on two main participant groups (individuals and institutions), has helped us see more clearly the issues of OER use for each of our participant groups in Vietnam.

Keywords: *OER, Vietnam, VOER programme, OER survey*

Overview

Vietnam has a young population, with over 65 per cent under the age of 30.[1] This offers the nation a great opportunity to grow its economy, because a young population can be a key factor in economic expansion. However, Vietnam has not been successfully mobilising this resource due to the low quality of its workforce.[2]

[1] From the General Statistics Office website: www.gso.gov.vn

[2] Ministry of Education and Training, Vietnam. (2009). Report No: 760/BC-BGDĐT. Report on the development of higher education system, the solutions to ensure quality assurance and improve of education quality.

Issues with the education system are preventing students from being adequately equipped with the necessary knowledge and skills for the job market.

Vietnam achieved Internet connectivity in 1997; only four years later, an important affordability policy introduced by the government made the Internet popular amongst Vietnamese users. In addition, Vietnam has rapidly growing telecommunication and mobile networks. Consequently, Vietnam has one of Asia's fastest growth rates in information and communications technology (ICT). From 1997 to 2012, Internet service charges were significantly reduced, making access affordable for most of the population. For example, as of 2012, an unlimited package for 3G Internet mobile is VND 40 per month (~USD 2) and for 3G Internet laptop is VND 120 per month (~USD 6).

Taking advantage of this opportunity since 2003, some leading universities in Vietnam, such as Vietnam National University, Hanoi (VNU Hanoi), the Hanoi University of Technology (HUT), Vietnam National University, Ho Chi Minh City (VNU Ho Chi Minh) and Can Tho University, have gradually applied eLearning systems in their teaching and learning activities.

However, after five years, eLearning in Vietnamese universities is still at a very early stage. For example, the universities successfully installed a simple learning management system (LMS), along with some basic functions such as integrated forums, chat rooms and quizzes. Yet the main functions, as well as the desired functions of the LMS, did not entice many faculty members to use the system in their daily teaching.

The most active function of the system was the forum where students could post their questions and ideas, and share reference materials and e-books. Faculty members did not participate much in the forum activities with the students. From 2008 until the present, the number of universities that have eLearning systems based on the open source software Moodle system has increased, along with a higher number of faculty members using this system for their daily teaching activities. But the number of faculty users is still not high, with young faculty members at IT or technology universities being the primary users.

Along with the development of eLearning in Vietnam, open courseware (OCW) and open educational resources (OER) play an important role in helping faculty members and students have access to valuable online and free resources. Since 2005, Vietnam has adopted MIT's OCW by setting up a local server, as a mirror site of the MIT OCW website, to let faculty members and students access open resources.

Three months after launching the OCW/OER programme, project team members recognised the following obstacles that might limit Vietnamese users from directly using the MIT OCW:

- Different background knowledge of Vietnamese student.
- Limited English language skills of Vietnamese students.
- Different teaching and learning methodologies of Vietnamese faculty members and students.
- Limited access for Vietnamese students to reference books.

Also at that time, the team discovered that Rice University had developed the Connexions software, a strong educational tool that allowed authors to share their educational materials for free use and reuse via the World Wide Web.

An OER website for the Vietnamese educational community, based on the Connexions software, was fully launched in 2008 to further share educational materials. After four years of operation, the Vietnam OER (VOER) programme team has provided software training for more than 1,000 faculty members at about 25 universities. The website, www.voer.edu.vn, now stores more than 20,000 modules that allow faculty members to easily search and retrieve appropriate resource materials to build their lectures or textbooks. These materials are freely available under the Creative Commons (CC) Attribution licence (CC-BY Version 3.0) that was successfully ported into the Vietnamese language in 2007.

Vietnam can take full advantage of opportunities to reform its education system at minimal cost. But it is worth noting that along with the development of high-technology entertainment services and other value-added services, developments such as online games and social networks have captured the public's interest and consumed its time online. As a result, there is an increasing need for a long-term vision for using technology to support education and training goals. In Vietnam we need to identify the main issues affecting the education system and provide more support for the development of the education system generally.

A Survey With Respect to OER Practice

Vietnam participated in the study of the current use of OER in the Asian region, led by Prof. Gajaraj Dhanarajan and colleagues. We helped to deliver a survey focusing on two main participant groups: individuals and institutions in Vietnam. We hope that the results of the study will help us to see in more detail the issues we need to address.

The survey was developed for online response and we forwarded its URL to contacts who were members of the Vietnam Open Learning Technology (VOLT) alliance, including faculty members of 71 universities and researchers at 23 institutes,[3] and then to all faculty members in our network. We informed all potential participants about the purpose of the survey and invited them to respond. We also prepared copies of a Vietnamese version of the survey for anyone who requested it, but people preferred to complete the original online survey themselves, as they were confident of their English reading skill.

The total number of respondents was 53, comprising 22 males (41.5 per cent) and 31 females (58.5 per cent). The number of people with PhD degrees or the title of "professor" was 14 (26.5 per cent), whilst the number of the others was 39 (73.5 per cent). Approximately two-thirds of the respondents were young (faculty members or researchers holding BSc or MSc degrees). Most respondents lived in Hanoi (81.1 per cent), and 83 per cent were faculty members of universities, 84.9 per cent of these being public institutions; 47.8 per cent of the respondents were natural science faculty members, 47.8 per cent were social science members and the remaining 4.4 per cent were in other fields.

[3] The full list is available at http://voer.edu.vn

When we asked how respondents felt about the survey, most of the feedback indicated that the survey was quite long and it took more time than expected to carefully answer all of the questions. Some said that after filling in the form they felt tired, and for some parts of the survey they were not sure whether their answers were correct or not.

Forty-one respondents (77.4 per cent) had experience in OER, and twelve (22.6 per cent) were able to comment on their practice with OER. Forty people (75.5 per cent) had access to digital resources, whilst 13 did not (24.5 per cent).

Below are the results of survey sections that respondents answered regarding the following themes:

- Digital resources and the use of such materials in teaching and research.
- Faculty use of OER.
- Copyright issues related to OER.

We will discuss each theme item for each section to explore the responses and the issues raised.

Digital Resources and the Use of Such Materials in Teaching and Research

The first question was: "Please indicate how often you use or have used the following types of digital resources in your teaching." Responses were:

- Digital readers (93.8 per cent).
- Online reference resources (90 per cent).
- Digital film or video (82.4 per cent).
- Images (81.8 per cent).
- News or other media sources (81.8 per cent).
- Audio materials (81.4 per cent).

It may be easy to understand why digital readers (e.g., Adobe Acrobat) was the top response, because faculty members tend to search for online published papers in PDF file formats. Items such as images, film and media are also popular in Vietnam because faculty members often put them into their PowerPoint slides to teach in their classes.

The following items also had high usage rates:

- Government documents in digital format (78.8 per cent).
- Data archives (77.4 per cent).
- Curricular materials and websites created by other institutions (76.5 per cent).
- Course packs (71.8 per cent).
- Maps (69.7 per cent).
- Online class discussions (69.7 per cent).

Responses to the first question showed that the use of digital resources has been very popular amongst faculty members.

The second question explored the sources of digital resources that faculty members might often use. The responses were as follows:

- Search engines such as Google and Yahoo! (93.9 per cent).
- Personal collections of digital materials for teaching (78.8 per cent).
- Public online image databases for teaching (57.5 per cent).
- Media sites for teaching (51.5 per cent).

The follow-up question was: "How often do faculty members use digital resources in each of these ways?" The responses were:

- Presented during/incorporated in my lectures/class (68.7 per cent).
- Using digital resources to post directly on my course website (36.3 per cent).
- Using digital resources to link from my course website (30 per cent).
- Using digital resources to assign for student projects/assignments (42.4 per cent).

These responses show that using digital resources in interactions between teachers and students in online activities is not popular in Vietnam. Teachers normally use PowerPoint to deliver information in their classes, but other activities explored using the survey have not been used frequently. That means teachers are primarily using traditional methods for most teaching and learning tasks.

The next question asked about the tools that faculty members often used. Responses were as follows:

- Personal computer (100 per cent).
- Email (94.1 per cent).
- WWW (83.5 per cent).
- MS PowerPoint (76.5 per cent).
- Online library catalogue (54.6 per cent).
- Traditional library card catalogue (36.3 per cent).
- Abstracting and indexing databases (41.2 per cent).

These responses were promising because faculty members most frequently cited online or ICT-based tools as the ones they used most often.

A follow-up question asked about how faculty members use digital information. Responses were:

- I gather or maintain my own collection of digital resources (66.7 per cent).
- I make my own digital resources available to others via the World Wide Web (36.4 per cent).

The trend noted is that faculty members store content for their own use. However, they tend not to share information via the Web.

The next question explored the level of agreement or disagreement about reasons for faculty members using digital resources in their teaching. All the items listed in the survey elicited high levels of agreement. The responses were:

- To provide students a context for a topic (93.8 per cent, with 43.8 per cent strongly agreeing).

- To get students excited about a topic (94 per cent, with 45.5 per cent strongly agreeing).
- To let students know the most up-to-date (or most current) developments in the subject (84.4 per cent, with 40.6 per cent strongly agreeing).

These high percentages of agreement show that faculty members understand the role of digital resources and want to apply them in their teaching. The issue here is, after indicating an understanding about the benefits of using digital resources in teaching, how will faculty members apply them in their daily teaching?

The follow-up question explored the level of agreement or disagreement from faculty members about reasons for not using digital resources in their teaching. The responses were:

- Lack of time is not a reason because this item received the highest percentage of somewhat disagree and strongly disagree responses (83.3 per cent).
- Digital resources cannot substitute for the teaching approaches I use (disagree 80 per cent).
- Using them distracts from the core goals of my teaching (disagree 83.9 per cent).
- They are irrelevant to my field (disagree 86.7 per cent).
- Students do not have the information literacy skills to assess the credibility of digital resources (disagree 86.2 per cent).
- Because of the difficulty in accessing digital resources (disagree 86.4 per cent).
- Digital material can be presented outside its original context (disagree 88.7 per cent).
- I do not want my students to copy or plagiarise material from the Web (disagree 77.4 per cent).

These responses once again show that teachers want to use digital resources in their teaching because they know about the benefits that digital resources can bring.

The next question asked the opinion of faculty members on using digital resources. Most (90.4 per cent) agreed with the option: "My use of digital resources is very dependent on whether they are available to me for free." This shows that respondents prefer using free resources rather than having to pay for them, which makes sense.

The next questions asked about difficulties when using digital resources. Responses were:

- Available software is unsuitable for viewing and displaying digital images (agree 45.2 per cent, disagree 54.8 per cent).
- Available software is unsuitable for integrating audio or video into my course (agree 50.1 per cent, disagree 49.9 per cent).

The percentage of those disagreeing rose for the statements:

- Students do not have a high-speed connection (disagree 54.9 per cent).
- I do not have reliable access to a computer (disagree 65.6 per cent).

- I do not have reliable access to physical resources in my classroom(s) (e.g., projectors, high-speed connections, etc.) (disagree 59.4 per cent).
- I do not have reliable access to scanners (disagree 70 per cent).
- Course management software packages are inadequate for my needs (disagree 71.9 per cent).
- I do not know how to save presentations to my computer so they can be run without a live connection (disagree 67.7 per cent).
- Web formats allow me to link to whole documents but not to specific excerpts within a text (disagree 64.5 per cent).
- People seem to have difficulty in getting server space or access to a server in order to store/host digital resources for teaching (agree 53.1 per cent).

These responses show that faculty members are becoming familiar with using digital resources. Although they still experience difficulties in using digital resources, these difficulties are not the most important issues.

The next question asked about the importance of having support or assistance with activities for faculty teaching. Most of the feedback agreed that support is very important. Although respondents had good connectivity and few difficulties in using digital resources, they still wanted to have more support to do their work better. The high percentages of responses that agree with the importance of support are shown in the list below:

- Support with finding digital resources (extremely and very important, 81.2 per cent).
- Support with assessing the credibility of digital resources (extremely and very important, 78.2 per cent).
- Support with evaluating the appropriateness of resources for my teaching goals (extremely and very important, 80.7 per cent).
- Support with interpreting copyright laws and/or securing copyright permission (66.7 per cent).
- Support with creating my own website (59.4 per cent).
- Support with importing resources into a course website or a database (64.5 per cent).
- Support with learning how to use a learning management system (71.9 per cent).
- Support with integrating resources into a learning management system (62.5 per cent).
- Support with digitising existing resources (64.5 per cent.
- Support with gathering, organising and maintaining digital materials (66.6 per cent.
- Support with training students to find or evaluate digital resources (70 per cent).
- Support with obtaining or setting up technical infrastructure (servers, computers, smart classrooms, etc.) (63.7 per cent).
- Support with other activities (60 per cent).

Faculty Use of OER

Seventy-five per cent of respondents reported that they have used OER from other academics in their teaching. A large majority of respondents (94.1 per cent) said they would use OER from other academics in their teaching in the future. These numbers demonstrate that a lot of people have been using OER and want to continue using it in the future.

Looking into details of OER usage, responses to the question "Within the courses or programmes you teach or deliver, to what extent (approximately) is open educational content used?" were as follows:

- Produced by yourself (80 per cent).
- Produced within your institution (80 per cent).
- Downloaded from OER repositories (78.9 per cent).
- Freely downloaded from the Internet (95 per cent).

These responses indicate that OER were used in various ways, both from the Internet and from faculty members themselves.

A follow-up question asked about the open educational content faculty members are producing. The responses were:

- Do not produce open educational content (25 per cent).
- Producing OER as full courses or programmes (15 per cent).
- Producing OER as part of courses and as learning objects (55 per cent).

These responses are understandable because the VOER programme encouraged faculty members to share their best modules (a module being part of a course or a learning object) and then pick up other appropriate modules to create their courses or textbooks by using the Connexions Rhaptos software.

One of the survey questions asked whether faculty members were involved in any co-operation with people from other educational institutions for producing open educational content. Responses were:

- Producing open educational content (yes, 68.5 per cent).
- Exchanging open educational content (yes, 55 per cent).

In response to the statement "I would be happy to make teaching materials available openly to learners and academics (tick all that apply)," respondents answered:

- In my own institution (68.4 per cent).
- In other repositories (73.7 per cent).
- Globally (86.7 per cent).

The percentage of sharing in their institution is less than in other repositories because some institutions already have their own OER repository, whilst the others use VOER as their own repository by using the LENS function. LENS on VOER enables an institution to have a dedicated space for storing modules that have been approved by reviewers of that organisation. The good news from an OER perspective is that faculty members surveyed are ready for sharing their OER globally.

Responses to a question about the most significant barriers to the use by other colleagues of open educational content in their teaching were as follows:

- Lack of awareness (88.9 per cent, with the level of "very important" being 66.7 per cent).
- Lack of skills (83.7 per cent).
- Lack of time (77.8 per cent, with the level of "important" being 55.6 per cent).
- Lack of hardware (66.7 per cent).
- Lack of software (73.7 per cent).
- Lack of ability to locate specific and relevant OER (82.4 per cent).
- Lack of ability to locate quality OER (88.9 per cent).

To break down these barriers, there should be more support activities from the management level to motivate faculty members as well as to improve the quality of OER available and produced.

The next question asked whether the management level of their institution (the senate, rector, chancellor, etc.) supported the use and production of open educational content and open source software (OSS). Responses were primarily affirmative:

- The use of open educational content (yes, 76.4 per cent).
- The production of open educational content (yes, 77.7 per cent).
- The use of open source software (yes, 77.8 per cent).
- The production of open source software (yes, 72.3 per cent).

These numbers show that the management level of the institution understands the importance of OER as well as OSS, and they support both the use and the production of OER and OSS.

The next question addressed the goals/benefits that faculty members seek through the use of open educational content in their teaching or course delivery. The items below had high percentages of "very important" and "important":

- Gaining access to the best possible resources (94.2 per cent).
- Promoting scientific research and education as publicly open activities (67.5 per cent).
- Bringing down costs for students (88.9 per cent).
- Bringing down costs of course development for the institution (94.2 per cent).
- Outreach to disadvantaged communities (83.4 per cent).
- Assisting developing countries (89.5 per cent).
- Becoming independent of publishers (83.4 per cent).
- Creating more flexible materials (89.5 per cent).
- Conducting research and development (88.9 per cent).
- Building sustainable partnerships (88.9 per cent).

These responses showed a very high rate of agreement with the goals and benefits that the use of open educational content can bring for teaching or course delivery.

The percentage of people who have submitted teaching and learning resources for publication as OER and the percentage who will submit teaching and learning resources for publication as OER in the future were each high (77.7 per cent, respectively). A low percentage of people (22.3 per cent) were unsure that they would do this in the future.

When asked about the types of open resources they would be most willing to publish or use, 62.5 per cent of respondents preferred using their own lecture notes, curricula, recorded lectures, podcasts, interactive learning objects, module handbooks, assessment questions and especially presentation slides than using resources from others.

The percentage of survey participants who were willing to publish OER was much higher than the percentage of people willing to use them (60 per cent versus 6 per cent). This may mean that faculty members prefer to share, but using resources from others is still not popular.

The responses to and comments on the survey questions showed us that faculty members may have a good understanding about digital resources and their benefits, and they do not have much difficulty when using them. The problem here is how to provide more awareness of OER principles and practices for faculty members as well as improve the quality of OER overall.

Institutional Policy on OER

One hundred per cent of respondents reported that their institutions did not have any policy on sharing and importing OER. Twelve per cent said that their institution currently had a policy to encourage or provide incentives for the development of and use of OER as resources. These 12 per cent also agreed that the university provided training and development facilities with respect to the development and use of OER, and they further agreed that institutions had adequate technical infrastructure to support the development, use and sharing of OER.

For four years, many universities have been involved in the VOER programme. The VOER infrastructure hardware (servers) and software are provided by the programme. All that the universities can do is support these OER activities and encourage faculty members to attend the OER training courses created by the VOER programme. Unfortunately, there is no policy at the universities on sharing and importing OER. We hope that in the very near future, the number of universities that have their own policies on sharing and importing OER will increase.

For the next survey question, regarding the estimated percentage of staff in their institution who were actively participating in the development, use and sharing of OER, the answers were quite different:

- 25 per cent of participants said that it was one to five per cent.
- 12 per cent of participants said that it was five to ten per cent.
- 37.5 per cent of participants said that it was ten to 20 per cent.
- 25 per cent of participants said that it was greater than 50 per cent.

The variation in response may be attributed to the experience in particular institutions, given that participants were from many different institutions. It is possible that OER activity is greater in some institutions than in others.

Copyright Issues Related to OER

When asked whether it is important to be acknowledged as the creator of the resource when it is used, 83.4 per cent of respondents agreed, whilst 16.6 per cent did not think that it was important.

However, 100 per cent said that it is important to be acknowledged as the creator of the resource when it is adapted or changed by someone else. Eighty per cent wanted to know who used the resource and 60 per cent wanted to know how the resource was used. Sixty-seven per cent agreed that creators should be financially compensated for the use of the resource. Eighty-three per cent said it was very important to have a quality review of the resource.

Regarding the licence to express the rights others have to use resources that they had produced, 50 per cent said that they did not use any licence, whilst 33.3 per cent said that they use Creative Commons licences and 16.7 per cent said that they use other "open content licences".

When asked about the meaning of copyright, participants responded as follows:

- 100 per cent agreed that they had heard the term "copyright" and that it held meaning for them.
- 33.3 per cent were confident they could define "copyright".
- 33 per cent were not sure.
- 16.7 per cent were somewhat confident they could define "copyright".
- 16.7 per cent were not confident.

These numbers indicate a basic awareness of the term "copyright" but show a need for further development of materials defining copyright and the terms of open licences.

The next survey question dealt with some specifics of copyright issues. The responses were as follows:

- 100 per cent of respondents were concerned about remixing different resources legally.
- 83.3 per cent were concerned about publishing material that incorporated unlicensed third-party content.
- 33.4 per cent were concerned about discovering materials they could legally use.
- 85.8 per cent were concerned about copyright associated with materials they created.

These numbers show that faculty members have questions about dealing with copyright issues.

Regarding Creative Commons licences, 83.3 per cent of respondents said that they had heard about these, the same percentage that were aware of limitations to copyright under law, and 66.7 per cent had attempted to use materials that were licensed under Creative Commons or other free/open licences.

CC licences were officially launched in Vietnam in 2007, and the VOER programme is also using CC licences. However, 60 per cent of respondents were not sure about using these licences. Just 20 per cent were confident with CC licences, whilst the other 20 per cent were somewhat confident. This fact shows that CC promotional activities should be encouraged more in Vietnam to help individuals become more confident about using CC licences.

Conclusion

This study of the current situation in the use of OER in the Asian region, using a survey focusing on two main participant groups (individuals and institutions), has helped us see more clearly the issues of OER use for each of our participant groups in Vietnam. The results from the quantitative survey with 53 respondents, and some direct interviews with professors in the universities, revealed the following findings:

1. Most of the respondents were from public universities in the capital, Hanoi, and were teaching undergraduate students.
2. Most of the faculty members had skills for using ICT tools.
3. Most of them had awareness of digital media and the opportunities for using digital media for teaching and learning.
4. However, traditional teaching habits, indifferent attitudes and absence of a sharing culture are obstacles to the widespread use of OER in Vietnam.
5. An overall programme for the integration of policy, technology and other supports could encourage faculty to fully join in the OCW/OER movement.
6. Though leaders understand the need for applying OCW/OER in their institutions, sometimes the bureaucratic management systems slow down this process. This also affects the adoption of new learning and teaching methodologies.

To have the Vietnam OER programme move ahead, all the issues above require solutions. We hope that with full support from the institutions and young, ICT-aware faculty members, the development of OER in Vietnam will help change the educational system, improving the quality of human resources to meet the demands of socio-economic development, industrialisation, modernisation and international economic integration.

PART

III

Case Studies

CHAPTER

11

Development of OER-Based Undergraduate Technology Course Material: "TCC242/05 Web Database Application" Delivered Using ODL at Wawasan Open University

Ishan Sudeera Abeywardena

Abstract

Being one of the youngest open and distance learning institutions in Asia, Wawasan Open University (WOU) recently embarked on the journey towards adopting and adapting open educational resources (OER) as self-directed course material for its adult learners pursuing their undergraduate degrees. Moving away from the economically non-viable model of providing free textbooks along with wrap-around course material, WOU has since adopted the approach of developing self-contained or "stand-alone" course materials, which eliminates the necessity for an accompanying textbook. However, the course development life cycle for such stand-alone course materials spans approximately 12 to 18 months, as all the necessary learning components need to be developed from scratch. As a result, the number of courses being offered each semester is reduced, leaving the students with a lack of options when it comes to the selection of courses for enrolment. This situation results in reduced revenue and inefficient staff (resource) allocation for the university, whilst causing increased degree completion times for the learners. As a possible measure for addressing the aforementioned issues, the School of Science and Technology, along with the Institute for Research and Innovation, initiated a pilot project to investigate the adaption of readily available OER material under a Creative Commons licence to be used as course material for undergraduate learners in the Information Technology discipline. This chapter discusses the development process, licensing issues, institutional policy issues and benefits identified during the development of the OER-based course material, titled "TCC242/05 Web Database Application".

Keywords: *open educational resources, OER, ODL course material development, OER reuse, Creative Commons licences*

Introduction

Brief Overview of Wawasan Open University (WOU)

Wawasan Open University (WOU), established in 2006 as a private not-for-profit open and distance learning (ODL) institution, is one of the youngest ODL institutions in Asia and is amongst the smallest in the world with respect to student population. Dedicated to providing "accessible, affordable and flexible" tertiary education for part-time adult distance learners, WOU offers approximately 39 degree programmes at both undergraduate and post-graduate levels in a variety of disciplines, including Education, Technology, Liberal Studies and Business. With a cumulative student population of around 10,000, WOU is one of the three ODL institutions in Malaysia and has its main campus in Penang. With six regional study centres across the country, WOU focusses on delivering quality education to adult learners and promoting lifelong learning for professional development and self-enrichment (Wawasan Open University, 2011).

WOU uses a blended course delivery method. The learners are provided with self-directed course materials in printed or electronic format, along with a textbook. Subject-matter experts (tutors) conduct short face-to-face tutorial sessions five times in a semester. The complete course delivery process or "course presentation" is conducted over a 21-week semester that comprises 19 weeks of study time. Throughout the course presentation, student support and academic counselling is provided using a Moodle-based[1] online learning management system (LMS) named "WawasanLearn". Administrative support is provided through the regional study centres.

Course Development at WOU

As discussed by Abeywardena and Ho (2011), the development of course material at WOU is the responsibility of a course development team (CDT), which comprises:

- Course Team Leader (CTL).
- Course Co-ordinator (CC).
- Course Writer(s) (CW).
- Academic Member (AM).
- Instructional Designer(s) (ID).
- Editor.
- External Course Assessor (ECA).
- Graphic Designer(s) (GD).
- Representative from Learning and Library Services (LLS).
- Representative from Information Technology Services (ITS).

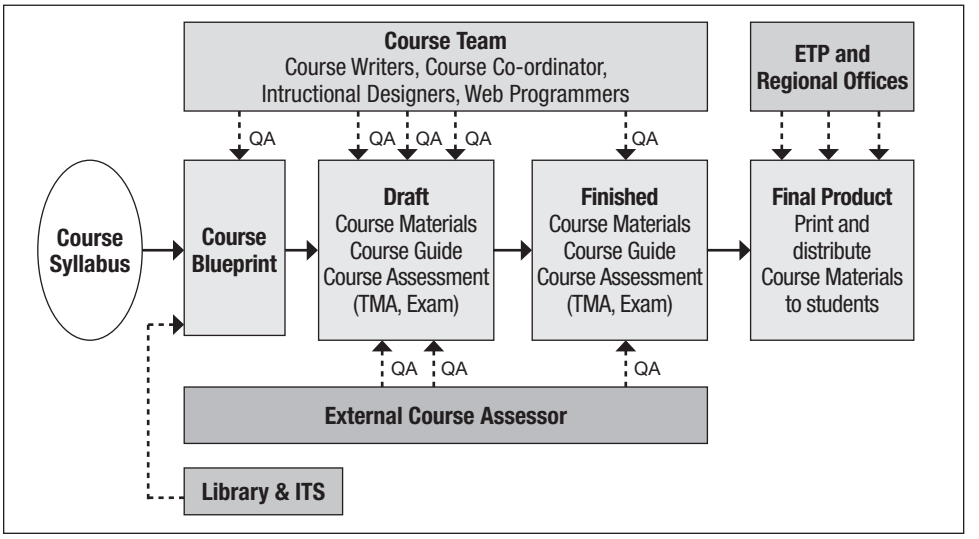
This "inter-disciplinary team model" (Care & Scanlan, 2001) ensures that the quality of the course material as well as the instructional design meet the standards required by the Malaysian Qualifications Agency (MQA) (Quality Assurance Documents, Malaysian Qualifications Agency, 2011) which is the

[1] Moodle is a popular open source online learning management system (www.moodle.org).

governing authority responsible for monitoring and overseeing quality assurance practices and accreditation of national higher education in Malaysia (Malaysian Qualifications Agency, 2011).

The course development life cycle at WOU follows a rigorous quality assurance (QA) process (Kefalas, Retalis, Stamatis, & Kargidis, 2003) and related standard operating procedure (Wawasan Open University, 2010), which starts with the course blueprint and ends with the published course material ready for presentation. The complete development of course materials in a self-contained or "stand-alone" format could take up to 18 months, whereas course material developed as a wrap-around to a textbook could take up to 12 months. Meetings of the CDT are held at various stages, generating a series of interim reports and documents throughout the development process. The whole course development life cycle as practised in WOU is depicted in Figure 12.1.

Figure 12.1: Complete course material development life cycle at WOU



The Need for OER-Based Course Material

Despite being a new institution in the ODL sector, WOU graduated its initial group of undergraduates in October 2011 after only ten semesters of operation. Wawasan has since received full accreditation from the MQA as well as complete recognition from the Ministry of Higher Education of Malaysia for its initial set of programmes. These accelerated achievements came at a great cost because WOU had to ensure that it had a complete set of course material to offer for each programme so that the learners could graduate in the minimum required time. This was also a requirement to obtain full accreditation from the MQA for the programmes. Rather than developing each course material in-house, WOU adopted the methodology of using pre-developed proprietary course material under licence from more established ODL institutions such as the Open University of Hong Kong. In addition, WOU had also adopted the methodology of developing course material as wrap-around material to established textbooks to compensate for the lack of specialist academic expertise and the truncated course development times common to any start-up institution. This in turn resulted

in an education model that provided printed textbooks along with self-directed course material to the students, creating cost implications for the university in addition to the licensing fees paid to the licensors of the proprietary course material. Nevertheless, this was seen as a necessary trade-off if the institution was to establish itself in a short time.

With the end of the first cycle of course presentations, WOU is now in the process of revising the complete set of course materials for its initial set of programmes. It has since also introduced a number of new programmes which are currently on offer. Looking at the long-term financial sustainability of the institution and taking note of the academic growth with respect to expertise available, WOU has decided to move away from proprietary course materials used under licence, and will develop all its course materials in-house. It has also decided to abandon the model that bundled costly textbooks with the self-directed course materials, for a more economically viable model that develops course materials as self-contained or "stand-alone" modules.

Even though the new model of developing stand-alone course materials is a more economically sustainable one, the added requirement of developing all the necessary learning components in-house has given rise to a new constraint with respect to the time required to develop the course material. With the development of each set of stand-alone course materials taking approximately 12 to 18 months, the institution is now facing difficulties in making available enough courses each semester for students to enroll in. This has resulted in a reduction of revenue for the university. Furthermore, the university resources with respect to staff are inefficiently utilised because a single course engages the whole CDT for an extended duration. As a result, the course development model needs to be revised to address these two issues.

The use of open educational resources (OER) is seen as a possible solution for reducing the course development time at WOU. The availability of high-quality, peer reviewed, ready-made content under a Creative Commons[2] licence that permits the free and fair use/reuse of material is viewed as an ideal method for eliminating the complete development of some of the learning components. Using OER could result in shorter development time for course material whilst ensuring high quality due to the peer reviewed nature of OER found in established repositories (Hylén, 2006). Shortened course development time would also enable the CDT to be engaged in developing several courses simultaneously, potentially improving the utilisation of resources.

OER Policy at WOU

At the time of writing this case study, in January 2012, WOU did not have an official policy or monetary allocation for the use and reuse of OER. However, in recent years, through the Institute for Research and Innovation (IRI), the university had been actively advocating and participating in OER-related research activities funded by a number of organisations, such as the International Development Research Centre (IDRC)[3] and the Commonwealth of Learning (COL).[4] The IRI had also facilitated a number of capacity-building workshops for

[2] www.creativecommons.org
[3] www.idrc.org
[4] www.col.org

academics and instructional designers on the use and reuse of OER. Even though the university had factored in the adoption of OER into its eLearning plan, the first official venture into OER was announced at the beginning of 2011 when the WOU Council endorsed the use of OER wherever possible in the development of course material.

Methodology

Course Selection

Further to WOU's movement towards adapting OER as course material, the School of Science and Technology and the IRI initiated a pilot project which would investigate how best to incorporate OER into WOU course material. A five-credit-hour, middle-level core technology course (equivalent to a second-year course in a conventional university) in the discipline of Information Technology (IT) was selected as the candidate for the first OER-based course material development. The course, "TCC242/05 Web Database Application", deals with the development of database-driven Web applications using the PHP[5] scripting language and MySQL[6] databases in the Linux,[7] Apache,[8] PHP and MySQL environments, commonly referred to as the "LAMP" architecture. The reasons behind the selection of this course as the subject of the pilot project include: (i) the availability of required material as OER, (ii) the availability of official technical manuals released by The PHP Group and MySQL which can be used to cross-check the integrity of the OER material, (iii) the composition of the course, which included theory and practical exercises and (iv) the expertise available in the CDT with respect to the subject matter.

Formation of the CDT

As depicted in Figure 12.1, the course material development life cycle at WOU consists of several interconnected stages and stakeholders. Each stage is specifically designed to maintain the quality and integrity of the course materials to a very high standard by subjecting the components to strict QA guidelines. This requires the CTL, CC, CW, AM, ID and ECA mentioned earlier to be subject-matter experts in this particular area of IT. As a result of this requirement, the composition of the CDT needs to be perfect with respect to expertise as well as team dynamics. The selection of CDT members for this project was particularly challenging as the team members needed to have a general acceptance of the concept of OER and a thorough understanding of how to use it within the Creative Commons licence framework. The key CDT members were carefully screened and identified to satisfy both requirements. The competence levels of the key members of the CDT are presented in Table 12.1.

[5] www.php.net
[6] www.mysql.com
[7] www.linux.com
[8] www.apache.org

Table 12.1: Competence levels of the key CDT members

CDT member	Level of competence
CTL/CC	Senior lecturer in IT and computer science
CW	Senior R&D engineer in software development
AM	Lecturer in IT and database management
ECA	Professor in IT
ID	Senior instructional designer

Identification of the Relevant OER Material

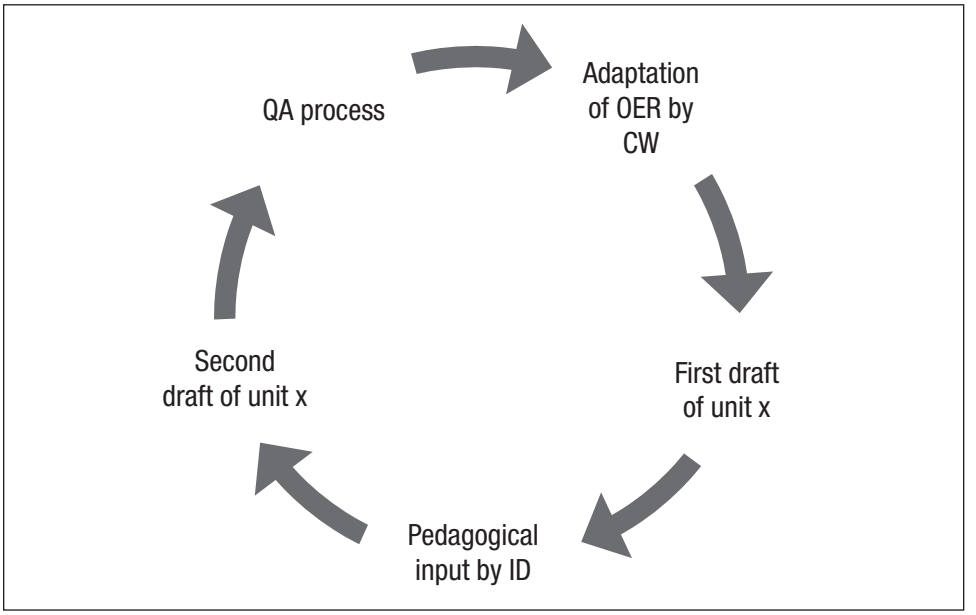
The course blueprint (CBP), as identified in Figure 12.1, is the starting point of the course material development life cycle at WOU. The CBP is a document developed by the CDT which outlines the topics to be covered in the course material, course learning outcomes, unit learning outcomes, summative assessments, formative assessments, laboratory work as well as reference material. Using the CBP, the CC was assigned the task of identifying the relevant OER material for each of the topics. This task was conducted in two stages: (i) a number of reputable and peer reviewed OER repositories were identified and shortlisted after discussion amongst the CDT and (ii) each of the repositories was manually trawled using its native search mechanisms to locate the relevant OER material. Once the required OER material was identified, the CDT assessed the quality and relevance, finalising the material to be used. The copyright licence was also given special consideration when identifying the material. Ultimately the resources available on Wikibooks[9] were deemed to be the best fit due to (i) the peer reviewed nature of wikis, (ii) the availability of the latest updates and (iii) the Creative Commons Attribution-ShareAlike 3.0 Unported Licence (CC BY-SA),[10] which allowed reuse of the material.

Adaptation of the OER Material

The adaptation of the OER material to suit the WOU course TCC242/05 Web Database Application was done by the CW in five stages. At each stage a complete first draft of a study unit was developed. This draft was then sent to the ID for pedagogical input from an instructional design perspective. This input was considered a vital component as the course material needed to be appropriate for self-directed learning by part-time adult ODL learners. The instructional design input was then provided to the CW, who amended the first draft, resulting in a second draft. This second draft was then put through the QA processes to ensure the academic quality of the study unit. The process was iterated for all five of the study units for the course material, as shown in Figure 12.2.

[9] www.wikibooks.org
[10] en.wikibooks.org/wiki/Wikibooks:Creative_Commons_Attribution-ShareAlike_3.0_Unported_Licence

Figure 12.2: Development of OER-based study units

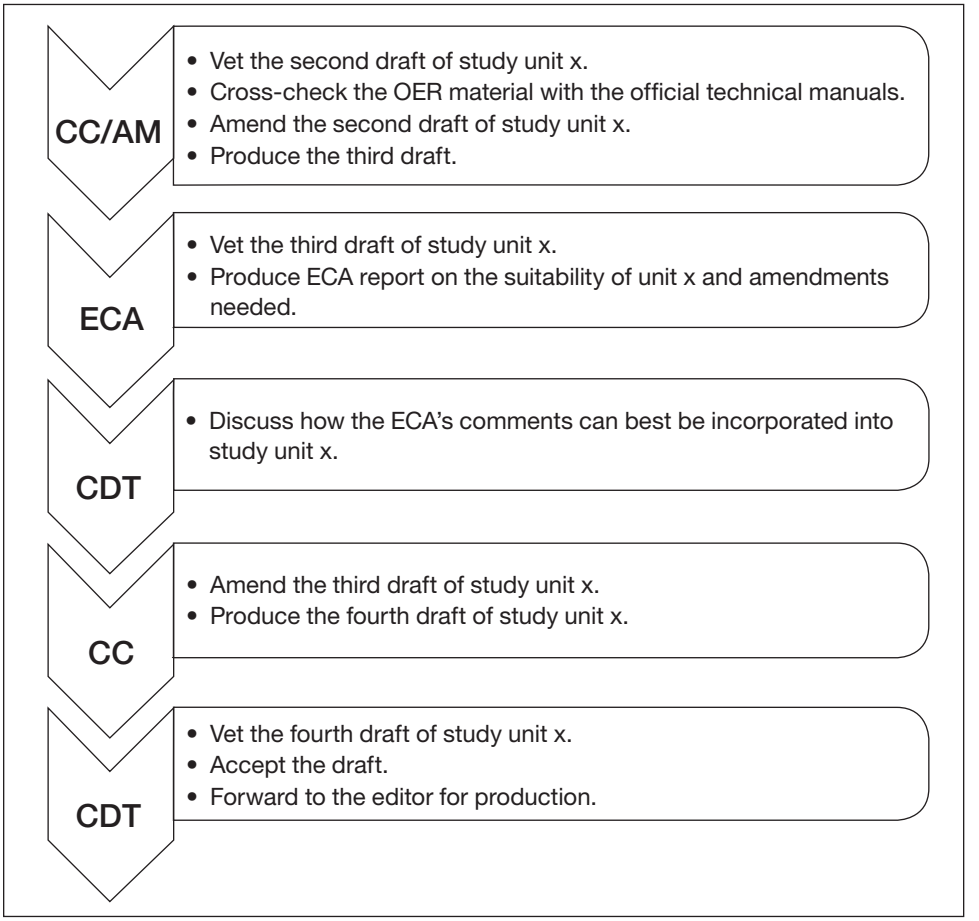


Quality Assurance

The requirements by the MQA and the institutional standards for course development impose stringent QA checks at each stage of the course development process. As shown in Figure 11.3, the complete QA process for each study unit is comprised of five distinct stages whereby multiple amended drafts of the study unit are produced, along with a comprehensive report by the ECA on its suitability. To ensure that the OER material adapted from Wikibooks was technically accurate, an additional QA layer was introduced: the CC and AM cross-checked the technical content, source code and SQL queries with the official PHP manual released by The PHP Group and the MySQL manual released by MySQL.

This "belt and braces" approach was adopted to compensate for the volatile nature of wiki-based resources (Wheeler, Yeomans, & Wheeler, 2008). Once the development and QA processes were completed for all five study units, the edited final draft of the course material was vetted once more by the CC and AM, who produced a course development report on the suitability of the material in addition to the ECA endorsement. These reports were then presented to the Senate of WOU for final approval.

Figure 12.3: QA process for each study unit



Discussion

The Final Product

The course TCC242/05 Web Database Application was approved for presentation by the Senate of WOU in November of 2011. The first presentation of the course was scheduled for the January semester of 2012. The complete set of course materials, including activities, self-tests, programming exercises and installation manuals, was approximately 440 pages. Each study unit was approximately 60 pages and included detailed PHP source code, SQL queries as well as explanations. The OER content adapted from Wikibooks comprised approximately 70 per cent of the complete course material. The remaining 30 per cent was developed by the CDT in-house and included the assessments, manuals, laboratory exercises and course guide.

Course Development Time

The objective of this pilot project was to investigate the feasibility of adapting OER material as WOU ODL course material to reduce the course development time for stand-alone course materials. In contrast to the typical 12–18 months required to fully develop stand-alone course materials from scratch at WOU, TCC242/05 Web Database Application went from the CBP stage to the approval stage in

approximately ten months. Therefore it can be concluded that the adaptation of OER material as course material could significantly reduce course development time at WOU, provided that the appropriate OER materials are located, a strong CDT is formed and the necessary QA oversight processes are put in place to ensure the quality and integrity of the material.

Course Development Costs

It is generally accepted that one benefit of using OER material is the significant reduction in material development costs (Geser, 2007). However, from a course development perspective at WOU, the use of OER in the development of course materials did not result in any significant direct cost savings in comparison to non-OER-based stand-alone course materials development. Table 12.2 presents the cost comparison.

Table 12.2: Cost comparison between OER-based and non-OER-based methods

Course	Type	Completion date	Development cost (MYR*)
TIC304/05 Satellite and Optical Communication	non-OER-based	1 January 2010	21,365.48
WUC116/05 University Mathematics for General Studies	non-OER-based	1 July 2010	20,076.04
TCC240/05 Object-Oriented Analysis and Design	non-OER-based	1 July 2011	16,863.35
TCC242/05 Web Database Application	OER-based	1 January 2012	24,635.79

* MYR = Malaysian ringgit

The primary differences associated with the development of OER-based course materials at WOU were:

- The CW's time saved with respect to writing the course material was spent ensuring the integrity of the OER content.
- The CW needed to develop additional content to bridge the gaps in the disparate OER material.
- The standard WOU QA process needed to be followed to ensure that the course material was produced at an acceptable standard.

Nevertheless, there were indirect cost savings with respect to the shortened course development time, time to market and language editing. The true cost savings for an institution would be visible only when more and more OER-based course materials were developed and shared freely amongst peer institutions through a scheme such as a "partnerships and exchanges" model (Downes, 2007), reducing the need for redevelopment of common modules.

Licensing

One of the major barriers identified during this pilot project was the definition of copyright in the course material. Traditionally, any course material developed in-house would be the intellectual property of WOU. However, as this particular course material incorporated OER content reused under the CC BY-SA licence, WOU was legally and ethically obliged to make the full course material freely available to the public, adhering to the "ShareAlike" clause of the CC BY-SA licence. This was found to be a particular challenge, as it required WOU to amend its copyright policies to facilitate the Creative Commons licence. Further to the feedback from legal experts, WOU agreed to release the course material under the CC BY-SA licence, provided that the provision for claiming copyright for content developed by WOU was retained. The copyright clause used to define the intellectual property rights of the course material is shown in Figure 12.4.

Figure 12.4: Copyright clause

> © 2011 Wawasan Open University. Except where otherwise noted, this work is licensed under the terms of the Creative Commons Attribution-ShareAlike 3.0 Unported License. To view a copy of this license, visit http://creativecommons.org/licenses/by-sa/3.0/ or send a letter to Creative Commons, 444 Castro Street, Suite 900, Mountain View, California, 94041, USA.

An additional caveat, as shown in Figure 12.5, was added so that users of the course materials would understand that WOU will not grant any credit or qualification for the completion of the course material unless the user is a student registered at WOU for the particular course.

Figure 12.5: Additional caveat

> This course material was published to support the learning of students registered with Wawasan Open University. Wawasan Open University does not grant any degree, certification or credits based solely on your completion of this course material.

Locating High-Quality OER Material

Amonst the challenges faced during the development of the course materials, the most significant was locating high-quality OER materials that were academically and technically accurate. The methodology adopted during this pilot project was to manually search through OER repositories. The entire exercise depended heavily on the subject-matter knowledge of the CC to conduct effective keyword searches and filter through content by reading each source to isolate material of acceptable quality. Even though this methodology was successful in this particular project, it was extremely time-consuming and inefficient. It also relied heavily on the CC's technical competence in locating the appropriate material. With the expansion of OER repositories and the proliferation of many disconnected repositories, this method of manually locating high-quality OER material becomes infeasible, giving rise to the need for more research into locating high-quality OER material utilising more effective search methodologies.

Institutional Policy Changes

Resulting from the successful development and approval of these pilot OER-based course materials, WOU was compelled to explore the possibilities of using adapted OER as course materials for future course development projects. As an initial step towards an official institutional policy on the use and reuse of OER, an OER taskforce was assembled, comprising academics, educational technologists, as well as representatives from the library and learning services and IT support services, to identify the infrastructure as well as the capacity-building requirements which would need to be addressed prior to the wider adoption of OER at an institutional level. As a first exercise, the OER taskforce undertook to discover various other models of using OER material in teaching and learning at WOU whilst reserving the intellectual property rights of the content created in-house.

Conclusion and Future Work

OER have become a global phenomenon that promises to make knowledge accessible to the masses. Dedicated to adult ODL, Wawasan Open University has recently embarked on an initiative to adapt and adopt OER as its primary self-directed course materials in an effort to significantly reduce the materials development cycle and time to market.

The middle-level technology course TCC242/05 Web Database Application was selected to be the pilot initiative. The material for this course was developed using OER from Wikibooks, an OER repository sharing content under the CC BY-SA licence. The adapted material was subjected to stringent QA checks to ensure the integrity of the content and its suitability for delivery via ODL.

This pilot project serves as a case study that benefits both WOU and the ODL community, as it provides clear guidelines for the development process, licensing issues and institutional policies involved in the reuse of OER. It further highlights the QA protocols that need to be followed to ensure the quality of the end product.

The use of OER for course materials development resulted in significant savings in development time and resource utilisation for WOU. However, it was noted during the pilot project that there would not be significant cost savings for the university, although the course material is based on freely available resources. Furthermore, manually searching OER repositories was found to be an inefficient method for locating suitable resources.

The author is currently engaged in a research project exploring the use of intelligent algorithms to effectively search for and identify OER material from many repositories worldwide.

Acknowledgements

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WOU. The author further acknowledges the institutional-level support as well as encouragement provided by Prof. Dato' Wong Tat Meng, Vice Chancellor of WOU.

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CHAPTER

12

Quenching the Thirst: Open Educational Resources in Support of Drought Mitigation at the International Crops Research Institute for the Semi-Arid Tropics

William Dar and Venkataraman Balaji

Abstract

Drought threatens the economic well-being of hundreds of millions of people and can have a long-term impact on the ecology in many places across the globe. Recent inter-governmental efforts reveal that preparedness is more effective than relief in mitigating drought's impact. To foster drought preparedness amongst rural communities, highly focussed learning and support processes and systems are required. The International Crops Research Institute for the Semi-Arid Tropics established a group of relevant activities under the rubric of the Virtual Academy for the Semi-Arid Tropics. These activities are anchored by a set of practices for learning content creation that are premised on creating and/or using OER in the form of reusable learning objects. The intended groups of learners are rural women whose exposure to the classroom milieu is nil or limited at best. The process of content creation and the support systems for content delivery were designed to accommodate these learners' requirements. This chapter provides a number of the details of this process, then presents and discusses the results. What emerges is a picture of a value-chain wherein OER from highly regarded technical resources is created for the intended audience, iterated for quality and delivered via rural information centres to the learners; these learners become the new contact points for hundreds of farmers to consult as sources of expertise to solve a range of production-related problems in drought situations. Specially developed techniques involving a geographic information system are also briefly described.

Keywords: *drought, semi-arid tropics, vulnerability, preparedness, reusable learning object, reusability, cell phone, videoconference, village information centre, surface water, rainfall, geographic information system, maps*

Introduction

Drought is a phenomenon that affects the economic lives of hundreds of millions of individuals globally. Extended droughts can lead to serious food shortages for human beings and animals and can damage the ecology for long periods of time. Research in drought mitigation and management reveals that preparedness is better than relief and information is the backbone of drought preparedness. International expert opinion favours the development of an arrangement that blends bottom-up flow of data and information with expert advice from the top and communication with the vulnerable groups (UNSO, 2000).

Based on these concepts, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT[1]), globally recognised for its expertise in agriculture in the dry lands of the tropics, launched a project that brought together advances in information and communication technologies for development (ICT4D) with open and distance learning (ODL), with a view to fostering drought preparedness amongst vulnerable human communities. ICRISAT is an international agricultural research centre in the family of the Consultative Group on International Agricultural Research (CGIAR[2]), which is a multilateral consortium of over 50 governments and organisations.

The Concept

The project that ICRISAT set up is called the Virtual Academy for the Semi-Arid Tropics (VASAT[3]) and is focussed on improving drought preparedness at the level of villages. The project was envisioned as a fusion of three strands: aggregating and adapting content from ICRISAT and partners with related and relevant expertise; delivering learning services through computer-based, Internet-connected village information centres arranged in a hub-and-spokes model; and application of ODL methods in content development, management and learning support delivery (Navarro & Balaji, 2003). In the more contemporary jargon of international development research, this was an attempt to build a complete value chain, starting with information producers (e.g., institutions such as ICRISAT) and reaching masses of people effectively. Such a chain involves ICT mediation and use of non-formal, extension-oriented learning processes to build human capacity.

ICRISAT, as a pre-eminent research institute in plant breeding, has been providing improved parental lines of its five mandate crops to various national programmes in 78 countries of Africa and Asia. These programmes, in turn, create their own crop varieties from the parental lines provided and release them to farmers for local cultivation. The number of such releases in different countries was 735 as of 2011 (The Hindu Business Line, 2012). With this perspective, it was not difficult for ICRISAT to envision a programme that generated high-quality, generic learning materials designed for adaptation and reuse or publication in a local context. ICRISAT also has maintained a consistent "open" approach to all the data, information and publications emanating from ICRISAT research and training projects. It is the only international agricultural research organisation

[1] www.icrisat.org
[2] www.cgiar.org
[3] vasat.icrisat.org

globally to adopt a formal policy on open access[4] to all research publications of its scientists through its open access (OA) repository.[5] Consistent with its emphasis on openness, ICRISAT authorised an open educational resources (OER) approach on the VASAT project. In this case study, we focus on the generation and management of learning content as OER in this effort. We shall pay brief attention to their reuse and adaptation in rural learning. The time period covered in this study is primarily 2004–2008, whilst we touch upon one recent development relating to OER and VASAT.[6]

Producing OER in a Granular Way

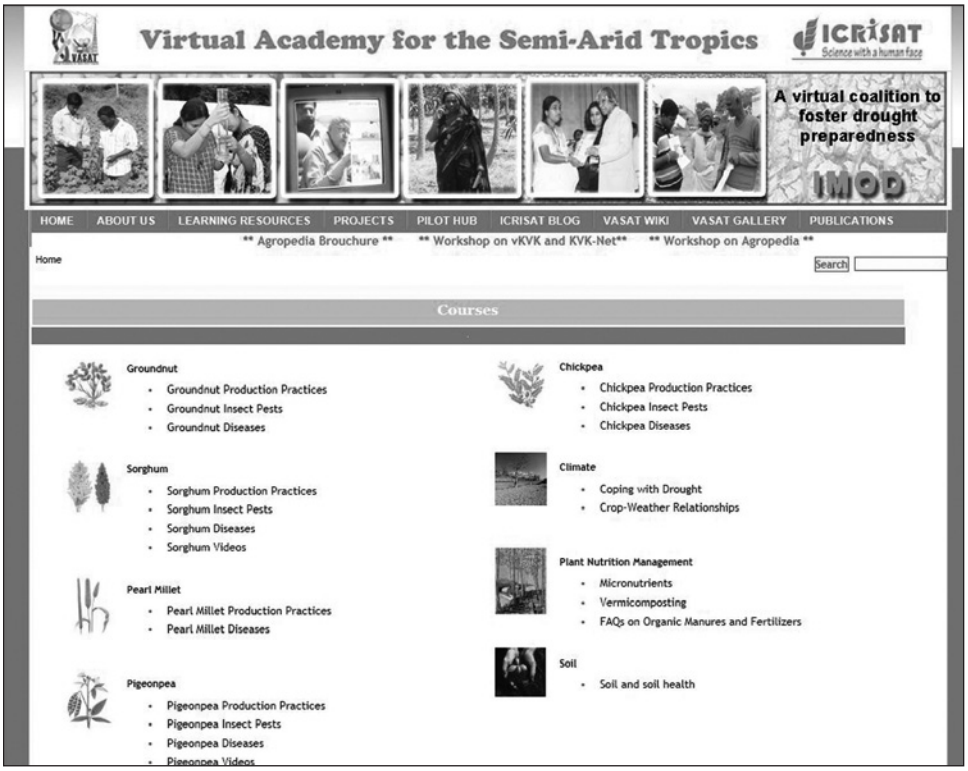
The project developed a reasonable quantum of OER in highly granular form — reusable learning objects (RLOs). ICRISAT designed and built a web-based repository for all the learning materials.[7]

Preliminary studies with the intended users, namely community-based organisations in rural areas and rural and agricultural extension workers, indicated that the materials be designed as granules, each with a possible learning outcome. This model was intended to suit rural learners who had not been exposed to the milieu of a modern classroom or had left it several years earlier. Instructional designers familiar with higher education and training observed that generating viable learning outcomes at that level of granularity would be a challenge, whilst the context demanded doing so. An optimal solution was identified: to develop a lesson plan and position each granule as an element or component in the plan. The relationship between the structure, the plan and the elements — the granules — was thus more visible, enabling the instructional designers to develop the materials.

All learning materials were grouped according to crops (the five mandate crops of ICRISAT), climate and soil. Resources for each of these materials were grouped into modules and each module was a collection of lessons. A lesson, in theory, was an indivisible unit of instruction, an RLO; in practice, it could be used as an information piece as well. The instructional structure thus is: topic → course → module → lesson/RLO. A screenshot of the topics and courses is presented in Figure 13.1. There are nine topics encompassing 22 courses presented as 123 modules, each with an average of four lessons each. Each lesson is estimated to require an average of 30 minutes for field-based learning. All materials are in English.

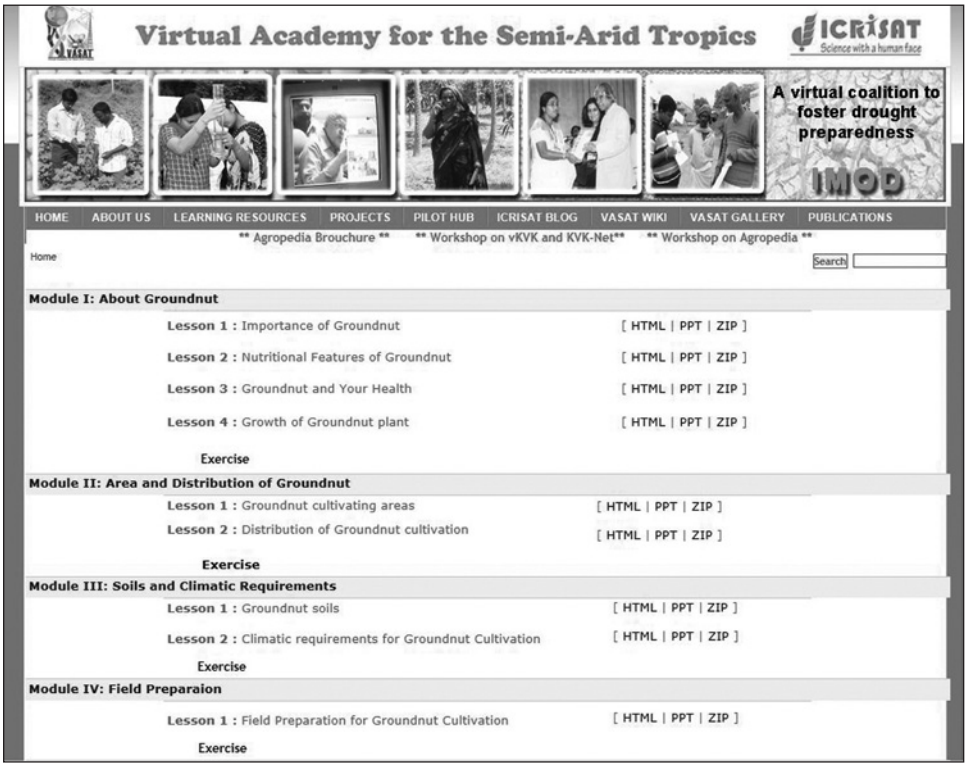
[4] http://roarmap.eprints.org/id/eprint/135
[5] http://oar.icrisat.org
[6] One of the authors (V. Balaji) was on the staff of ICRISAT and served as the co-ordinator of the VASAT project during 2004–2010.
[7] http://vasat.icrisat.org/?q=content/learning-modules-page

Figure 13.1: Screenshot showing VASAT topics and courses



Materials were generated primarily from pre-published training materials and research papers of ICRISAT, and just one full-time expert was involved in compilation and re-authoring. Subject-matter specialists, themselves scientists and researchers of global standing, reviewed and approved the materials for quality. A sizeable number of experts were affiliated with the crop improvement global research theme of ICRISAT, and the rest were affiliated with the agro-ecosystems research theme. For authoring and review, Microsoft PowerPoint (PPT) was used. Although this attracted criticism from the open source software community and from pedagogy experts, the decision was to move ahead with this tool for the simple reason that the barrier to use it was low. PPT was readily accessible in institutions, and most content creators and reviewers were familiar with it. Upon publication on the Web, the PPT format was supplemented with HTML and Flash formats (Figure 13.2). The idea was that making available learning materials in multiple digital file formats would encourage their wider use. The practice of using PPT as an authoring tool and subsequent presentation of the material in Flash format is more widely accepted today, but it was a novelty in 2004 when the work started on this project. Over the period 2004–2008, these materials were revised and updated based on advice from ICRISAT in relevant subjects.

Figure 13.2: Screenshot showing availability of different publication formats (HTML, PPT, ZIP)



Reuse and Adaptation

The modules on pigeonpea, chickpea and groundnut were subsequently adapted and used in preparing training materials for in-service technicians in national agricultural institutions in Eastern Africa. A number of trials were carried out in rural use and the impacts were studied. ICRISAT supported an all-women micro-credit federation, the Adarsha Mahila Samaikhya (AMS), in setting up a computer-based information centre on their rural premises; this centre, in turn, supported a group of six village information centres, which from 2005 onwards also had a PC each. The centre was connected to the Internet first using a low-cost satellite connection and subsequently using landlines and mobile phones (from 2007 onwards). This set-up was used to deliver information to the AMS members and to relay queries from farmers to ICRISAT-based experts to find solutions.

A group of women volunteers, identified by AMS, were trained using the modules. The immediate effect was to improve the quality of farming-related queries they were relaying from the farmers. After the training, women volunteers were able to describe more accurately the field observations from farmers' plots. This improved the experts' own productivity: each query took a shorter time to respond to with a solution, thus enabling experts to handle more queries. A number of trained women were also able to generate their own content for sharing with the farmers in the locality (Figure 13.3). Because of the AMS women's continued interest in learning to solve farming problems, a satellite-based, two-way videoconferencing facility was set up with an in-kind donation from the Indian Space Research

Organisation as part of its Village Resources Centres project (Figure 13.4). This facility enabled an even better learning experience, since women learners could now view things such as disease-affected plant parts or insects that attack plants (Lavanya, Vangala, Sreedhar, Sylvester, & Balaji, 2010).

Figure 13.3: VASAT learning content in Telugu language, adapted by the user organisation

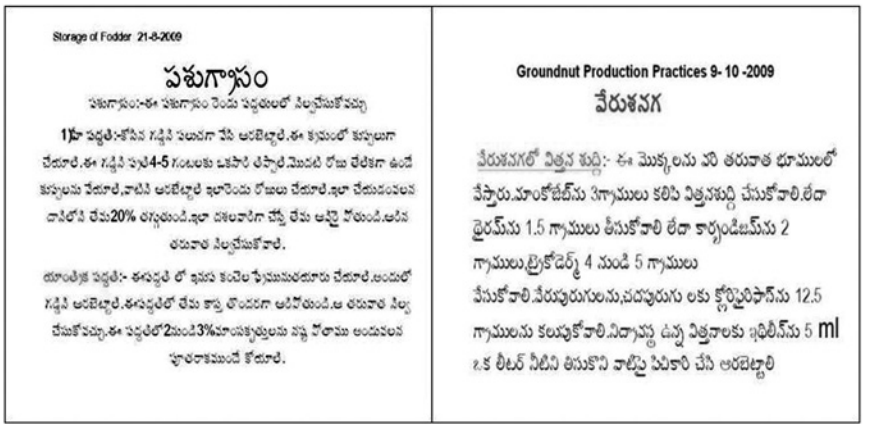
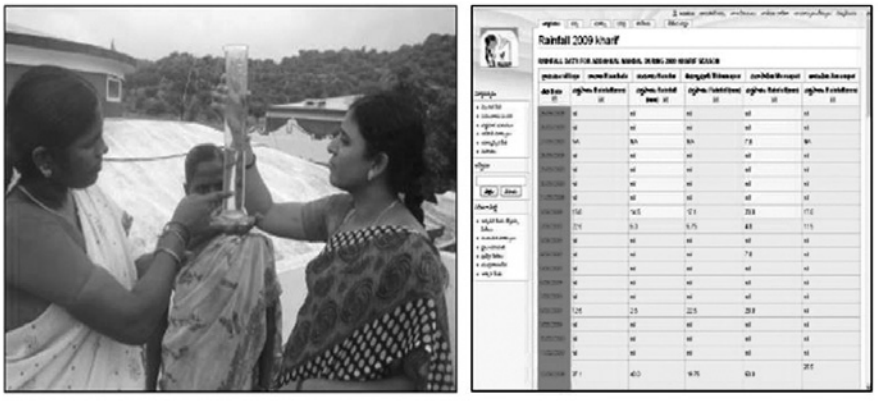


Figure 13.4: (a) Use of two-way videoconferencing in support of learning; (b) use of mobile phones and audioconferencing

The principal purpose of VASAT was to understand how improved knowledge amongst farmers would result in improved response to drought situations. On a separate yet parallel track, researchers at ICRISAT developed a method to forecast vulnerability to drought on the scale of a few villages. This method combines statistical analysis of meteorological data with satellite-derived imagery. The forecast, presented in the form of colour-coded maps, is made available for a cluster of villages and just ahead of the cultivation season. For these maps to be viable, data on rainfall from the localities needed to be made available to researchers. Women members of AMS made this data available from five villages daily during the season because they received training to do so using the Internet and a writable Web interface (Figure 13.5).

Figure 13.5: Learners measure and provide data



The VASAT learning materials were useful in helping women learners use colour-coded maps indicating how vulnerable each of their villages would be to drought in the oncoming season. The process of delivering this information was repeated every year during the main rainfall season in the area where the AMS members operate (Nagarajan, Kumar, Sreedhar, & Balaji, 2009). This report describes how the OER of VASAT were linked to improving drought awareness and preparedness amongst vulnerable families. Independent media coverage showed that as of 2009, this effort had an impact in that fewer people were migrating out of the villages than during an earlier period.

Copyright and Licence Concerns

In creating OER content, ICRISAT used its own materials derived from decades of research and training programmes. As such, there was no concern about material with third-party licences being included in VASAT OER.

Being an international organisation with United Nations privileges and immunities in various countries, ICRISAT could not make use of a popular open licence model such as Creative Commons (CC) since at that time (2005–2007), the CC licences were generally bound to specific national jurisdictions. Instead, ICRISAT made an offer to enable use of OER in a way similar to what was provided in CC 2.5 licences.[8] The applicability of Creative Commons licences to inter-governmental agencies with supra-national rights is still not a fully settled issue, and Creative Commons presently has an interim solution, pending the finalisation of CC 4.0 licences.

Costs

VASAT is an institutional project of ICRISAT and has multiple components with activities and outputs. Its budget allocation is meant to cover the totality of activities and outputs. Consistent with ICRISAT accounting standards, cost computation includes salaries paid to long-term or regular staff, besides costs of assistance and operational matters. Generation of material was a minor activity in a relative sense. With just one full-time expert deployed to create the material in total, the cost during five years (2004–2008) is estimated at approximately USD 45,000.

[8] http://vasat.icrisat.org/?q=content/learning-resources

Scaling Up VASAT OER Effort

The VASAT approach to learning content organisation was subsequently scaled up in a different initiative. The strategy in VASAT was to speed up both production and reuse of learning materials through encouraging granularity. The key principle was also to position the granular learning materials, the RLO, in a relationship with a structure, such as courses → modules → lessons. This approach was generalised for scale-up. The objective was that several hundred courses could be made available, with the opportunity for a user to have access to the whole course or just a lesson or RLO in it. A consortium of Indian ODL institutions, with ICRISAT and the Indian Institute of Technology in Kanpur providing the lead technical advice, have developed the essential architecture of such a repository. The repository design makes use of contemporary semantic Web practices.

The three ODL institutions in India are the School of Agriculture – Indira Gandhi National Open University, the Directorate of Agriculture – Yashwantrao Chavan Maharashtra Open University and the ODL Directorate of Tamil Nadu Agricultural University. The repository, Agricultural Learning Objects Repository (AgriLORE), is accessible at www.agrilore.org. The key step here is to develop a knowledge model (KM) of the subject-matter area. A KM enables a visual representation of various concepts in a subject area and their interrelationships.

In the AgriLORE repository, the theme is horticulture and each crop covered is a topic. A crop KM for tomato is presented here as an example (see Figure 13.6). An author can develop an RLO for a particular concept on the KM. Many others can develop their own contributions and link each to a concept on the model. Using the Web, all that the author needs to do is prepare the RLO and add keywords to it. These keywords are suggested, so to speak, by the KM online. Once the material is saved, the KM forms relationships between the just-added RLO and existing RLOs. These can be located through an online search. This search power enables locating RLO from different topics and modules through exploiting their relationship via the KM. In Figure 13.7, a screenshot from the AgriLORE repository shows how, whilst viewing one RLO, one can locate similar RLOs. AgriLORE also enables a user to sequence RLOs together to create a lesson or course.

Figure 13.6: A crop knowledge model for tomato

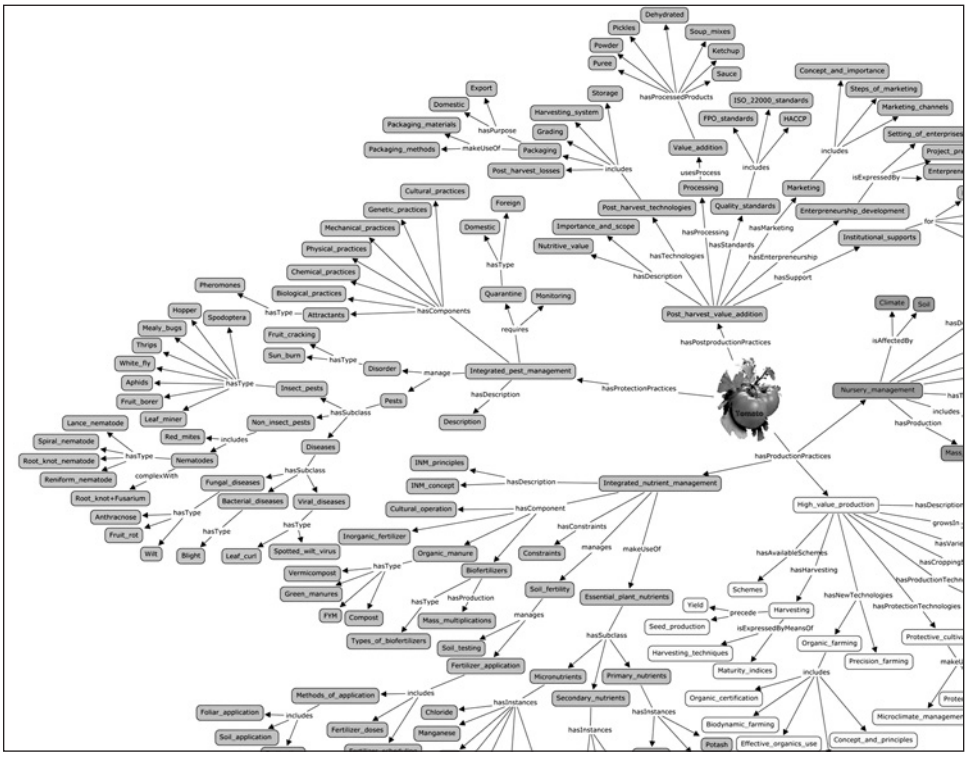
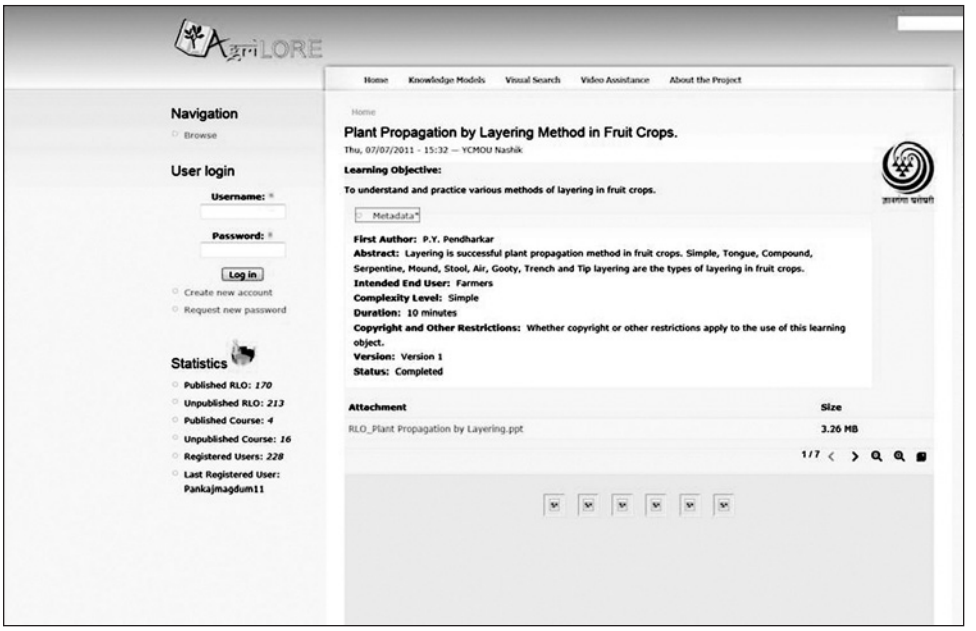


Figure 13.7: Screenshot showing how similar RLOs can be located whilst viewing one RLO



Inferences and Implications for the Way Forward

What can other organisations learn from the VASAT experience of OER and their adaptation and reuse? First, sustained management support is necessary to generate and update OER. Lack of interest from the management leads to lowered incentives for the participants. Second is the importance of using very simple tools for authoring and review. A number of technologies are available to build outstanding presentations on the Web. However, they may invariably have an entry barrier and might require sustained participation of another expert in the content creation and review process that may not always be practical. The more easily a faculty member or researcher can author a piece, the greater is the chance of OER emerging. Third is the careful adaptation of ODL methods in instructional design. Much of this technology-based practice has evolved in contemporary post-industrial settings and has inherent assumptions about the learner's familiarity with classroom or training facility experience. To render this into a supportive tool for outreach requires effort that needs to be recognised. The final inference is that the process does take time since it is linked to development, and a time scale of five years is generally a must to notice impact, provided interest and efforts are sustained. The agricultural sector, generally speaking, has not been as savvy in making use of contemporary Web technologies for training and information dissemination, and that situation added a new layer of challenge to the VASAT project. Others likely will experience less of a challenge in future.

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CHAPTER 13

Open Knowledge Initiatives in the Philippines: The Vibal Foundation

Primo G. Garcia, Alvie Simonette Alip and Joane Serrano

Abstract

The Vibal Foundation is a leading proponent of open knowledge in the Philippines. Funded by Vibal Publishing House, Inc., a major player in the Philippine educational publishing industry, it has developed various open educational resource (OER) projects to disseminate and showcase Philippine works and materials to a bigger and more diverse audience. These projects are: WikiPilipinas (a free online Philippine encyclopaedia); Filipiniana.net (a digital library of Philippine scholarly materials); Philippine Online Chronicles (a Philippine news aggregator); and E-turo (an online repository of teaching and learning tools). Recently, the Foundation has become involved in the publication of e-textbooks through its digital publishing arm. Using key informant interviews and document analysis of both online and print materials, this case study will discuss the initiatives taken by the Vibal Foundation in OER, the tools and repositories it has developed, the barriers and enablers it has met and the efforts it has taken to address the sustainability of these efforts. It will also discuss the Foundation's major contributions to OER, as well as its implications for the growth of the OER movement in the country and the development of new OER business models.

Keywords: *open knowledge, open educational resources, OER and business, Philippines*

Introduction

The Vibal Foundation is one of the leading advocates of open educational resources (OER) in the Philippines. Vibal Publishing House, Inc., a major player in the Philippine educational publishing industry, established the Foundation as a non-profit organisation to "undertake various educational, social, and cultural programs that will contribute to the enhancement of the quality of life of the Filipino, especially the youth" (WikiPilipinas, 2010).

The Foundation is guided by the following mission: (i) revitalise education through interactive and web-based delivery platforms, (ii) stimulate creativity and cultural excellence by creating multimedia platforms and (iii) share knowledge about the Philippines. The Vibal Foundation's products presently include books, information, news and educational resources.

The Foundation's foray into open knowledge began in 2006 when the Vibal Foundation's Executive Director, Gaspar Vibal, introduced the "copyleft" intellectual property rights (IPR) model of Wikipedia to the Philippines by creating Filipiniana.net and later WikiPilipinas. This development was primarily motivated by his desire to counterbalance the Western-centric content of the Web. Since then, the Foundation has initiated other free and open repositories of knowledge.

In this case study, we discuss the initiatives taken by the Vibal Foundation in OER, the tools and repositories it has developed, the barriers and enablers it has met and the efforts it has taken to address the sustainability of these efforts. The Foundation's major contributions to OER as the well as the implications for the country's OER movement are also discussed.

This discussion is based on archival analysis of relevant print and Web resources as well as key informants' interviews with the Foundation's Executive Director and Program Director.[1]

Initiatives

The following OER projects were created and pioneered by the Vibal Foundation to achieve its vision "to create free and open repositories of learning — the Philippine knowledge space — on the Internet" (Vibal Foundation, 2012).

Filipiniana.net is an online digital library and research portal that hosts a comprehensive collection of Philippine books, documents and non-textual materials (e.g., photographs, maps, paintings). It was primarily created to digitise and preserve primary and secondary documents, manuscripts and images on Philippine studies. The digital library supports the open and non-proprietary standards of the World Wide Web consortium[2] — hence, the materials it stores can be freely accessed and used by individuals in their studies (Filipiniana.net, 2011).

WikiPilipinas is a free online encyclopaedia on the Philippines and is an ongoing project written collaboratively by volunteers around the world. It features comprehensive and informative articles on its 12 main portals, including articles about Government and Politics, Philippine History, Media and Entertainment, Culture and Arts, People and Society, Business and Economy, Geography and Travel, Philippine Communities, Religion and Beliefs, Science and Technology, and Sports and Leisure. WikiPilipinas aims to be the largest Philippine knowledge base and the best Philippine resource on the Internet (WikiPilipinas, 2011).

The **Philippine Online Chronicles** (POC) is an online publication that features both mainstream news sources and alternative sources of information (blogs, student newspapers and other alternative publications). The POC makes use of Web 2.0 technology and is licensed under Creative Commons, and as long as

[1] The authors interviewed the Vibal Foundation's Executive Director, Mr. Gaspar Vibal, and Program Director, Ms. Kristine Mandigma, in Quezon City, Philippines, on 25 November 2011.
[2] www.w3.org

licence conditions are met, POC materials may be shared or reposted, unless otherwise stated in an article's footnotes (Philippine Online Chronicles, n.d.).

E-turo is a network of free and open educational resources that users can download, share, modify and print. It focusses on developing an online repository of educational materials for subjects such as English, Filipino, Science, Mathematics and Social Studies, for basic education. E-turo also covers alternative and continuing education. Its content can be shared and customised by Filipino educators and learners for their own use. Through E-turo, the Vibal Foundation aims to alleviate the scarcity of educational materials available to Filipino educators. E-turo encourages educators and learners to participate as an active community by using open source processes for education (E-turo, n.d.).

Innovations

According to UP NISMED (2001), "for millions of Filipino pupils, the textbook remains the basic learning tool, especially in the small barrio school, where it may be the only printed material available." Unfortunately, the lack of instructional materials is one of the many problems affecting education in the Philippines. In many public schools, sharing of textbooks is a beleaguering scenario for the 60 to 70 students squeezed inside a classroom (Racoma, 2010). Moreover, many public school teachers also need educational resources that will help them with their teaching preparation. Because the majority of textbooks are print-based, educational resources tend to be quite costly for the government and for the average Filipino citizen.

This is where the potential of OER can be tapped to make readily accessible the enormous amounts of innovation in education that have been traditionally confined in the silos of educational institutions and publishers. Revitalising education is one of the Vibal Foundation's key themes, and this is evident in its support for formal and informal education for all ages. The Foundation has served as a "laboratory to create innovative new models of informal education and link them to the formal education system" (Vibal Foundation Primer, 2011). Its major contribution lies in delivering "innovative educational experiences straight to the teachers and students" through web-based technologies.

The innovations created by the Vibal Foundation can be summarised as follows.

1. Sharing Knowledge about Philippine Culture

First, the Foundation has been instrumental in making rare historical and cultural documents that are normally stored in public libraries more accessible through Filipiniana.net. The resources are provided with executive summaries, subject headings and publication information, and are fully indexed and searchable. These features provide fast and easy browsing for users, making this source different from traditional and even online digital libraries. Filipiniana.net has also partnered with private institutions to publish select books that popularise knowledge about the Philippines.

2. Largest Filipino Collaborative Writing Project

Whilst Filipiniana.net is focussed on disseminating scholarly works on the Philippines, WikiPilipinas offers popular knowledge on the country, its people and their culture. It is the biggest collaborative writing project in the Philippines, with 83,277 articles in English as of 3 November 2012, and it continues to grow. With few exceptions, contributors can edit the website content anytime, in accordance with the policies and guidelines identified by the WikiPilipinas editors. Articles from this site appear in the top ten research results for any Philippine search term entry.

3. Multiperspective News Source

The Philippine Online Chronicles (POC) differs from other online news sources in that it is both a media network and a news aggregator that presents a multiplicity of perspectives in a single article, making it a platform for alternative viewpoints and a synthesiser of ideas. As well as from the mainstream media, it also gathers information from news sources such as blogs, student newspapers and other alternative publications. By making use of the Web 2.0 platform, the POC encourages its readers to engage in the news by allowing them to share their viewpoints, as well as to watch videos and listen to podcasts.

4. Upgrading Basic Education Teachers Through OER

E-turo has made teaching and learning resources on major subjects in basic education available to teachers. According to the Vibal Foundation:

> E-Turo is different because it focuses on a complete curricula solution, not just textbooks or lesson plans, but a comprehensive course of instruction and assessment. It includes easy-to-use tools for creating learning packets out of content assets available on the site. The content is localized for Filipino teachers and learners and in line with standard curricula in the Philippines. Moreover, it also has some materials for alternative and continuing education. (E-turo, 2012)

With E-turo, users are free to select individual lesson plans, course syllabi, learning activities, scope and sequence hierarchies, and other educational resources to build a complete, fully integrated curriculum, such that teachers who normally do not publish a curriculum now have a platform to showcase how they teach.

Quality Issues

Given the predominance of Western content in both the print media and the Internet, the Vibal Foundation has directed its efforts towards making Filipino scholarly works as well as those written by the larger community more visible and therefore available on the Web. The Foundation works on the premise that "knowledge should be participatory and creativity shared for the benefit of all" (Vibal Foundation, 2012). Hence, the websites that provide books, information, news and education are licensed under the Creative Commons licences and the GNU Free Documentation Licence. For instance, E-turo is licensed under Creative Commons Attribution-NonCommercial-ShareAlike 3.0, which means that its

users are free to copy, distribute, share and modify E-turo contents as long as they credit the source and do not profit commercially from downloaded materials.

As with other OER initiatives, quality remains an issue (Hylén, 2006). The Foundation has addressed this concern by establishing a team of editors that provides publication guidelines for users. In the case of E-turo, a seasoned team of education and technology experts evaluates the quality of E-turo materials. Their experience as teachers, authors and technologists has given them the hands-on understanding of what it takes to make quality and easy-to-use learning materials. Contributors to WikiPilipinas must abide by policies and guidelines set by the editors, in particular that contributions violating Philippine laws — namely, those that are defamatory, libelous or pornographic — are not accepted.

Tools and Repositories

The various projects and initiatives of the Vibal Foundation serve as repositories of knowledge. This section details the different tools employed in storing data and information that can be searched, used and reused by the public for various purposes.

Digital Library

Filipiniana.net serves as a research portal and digital library on Philippine Studies. Soergel (2008) defines a digital library as "a range of systems, from digital object and metadata repositories, reference-linking systems, archives, and content management systems to complex systems that integrate advanced digital library services and support for research and practice communities."

As a digital library, Filipiniana.net has a system for collecting, organising and disseminating Filipiniana documents, texts and books in digital formats. It is organised on behalf of Filipino users who want to learn about Philippine Studies with its wide and comprehensive collections of Filipiniana books and documents from the Hispanic era to the contemporary period. From a library-practice perspective, Filipiniana.net provides free information through the Internet.

It also contains photographs, maps, postcards, stamps, paintings and illustrations. The categories for selection are: Culture, Economy, English, Geography, Government, History, Religion, Science and Society. Its research portal also provides access and links to online primary content sources.

Amongst the tools it utilises are electronic archiving, online browsing and searching facilities, knowledge maps and thesauri.

MediaWiki

The WikiPilipinas is an online encyclopaedia about the Philippines. It features a wide range of subject matter that is grouped into 12 major sections, including Government and Politics, Philippine History, Media and Entertainment, Culture and Arts, People and Society, Business and Economy, Geography and Travel, Philippine Websites, Religion and Beliefs, Science and Technology, Sports and Leisure, and Communities. It also has sections on special topics such as Philippine Music, Native Cuisine and Traditional Filipino Games.

WikiPilipinas uses the MediaWiki application, which is free, open source software. MediaWiki is licensed under the GNU General Public Licence and is developed by the WikiMedia Foundation.[3] MediaWiki, being a scalable software application and a feature-rich wiki application, can handle large projects and can have millions of hits per day. Just like other wikis, WikiPilipinas gets thousands of hits and contributions from many users and volunteers. As a public access system, it allows users to freely create and edit content.

Media Network and News Curator

The Philippine Online Chronicles serves as a media network and a platform for news reporting. It includes comments and feedback features to enable knowledge sharing and collaboration. The content of the POC is internally linked to WikiPilipinas, Filipiniana.net and E-turo.

E-turo Learning Portal

E-turo targets educators, students, parents, publishers, programmers, instructional designers, authors and even public officials to contribute free, quality resource materials. It contains three types of resources: (i) curricula and learning strategies, (ii) lesson plans and (iii) enrichment exercises.

E-turo is an eLearning portal which houses free educational materials that users can download, share, modify and print, a network and a repository of free and open educational resources. Users of E-turo can share and customise the content for their own use. Through its various tools, users are able to collaborate and communicate online. Amongst its tools are blogs, forums and links.

In summary, the Vibal Foundation's OER repositories have facilities for putting (uploading, metatagging — i.e., describing, classifying and keywording) and getting (searching, browsing, locating a known item, downloading, linking to) content (Thomas & Rothery, 2005). Although the Foundation has no single type of repository structure, the contents of the four repositories of learning are internally linked.

Usage and Costing

The usage and costing of the OER projects are shown in Table 14.1. For the period January to October 2011, WikiPilipinas was the application used most frequently, with 17,000,000 hits and a delivery cost of only PHP (Philippine peso) 0.12 per user.

[3] www.mediawiki.org

Table 14.1: Usage rate and costing of the Vibal Foundation OER projects in 2011

Project/website	Number of hits (1 Jan. 2011 to 10 Oct. 2011)	2011 budget (PHP)	Delivery cost per user (PHP)
Filipiniana.net www.filipiniana.net	500,000	1.8 million	3.6
WikiPilipinas www.wikipilipinas.org	17,000,000	2 million	0.12
Philippine Online Chronicles www.thepoc.net	1,000,000	2.8 million	0.35
E-turo www.e-turo.org	250,000	1 million	0.25

Source: Vibal Foundation at a Glance print brochure (2012)

Barriers and Enablers

The concept of OER is relatively new in the Philippines. In a country where higher education is heavily commercialised, opening access to knowledge is an unusual idea to many. In spite of this, there have been opportunities for collaboration between like-minded individuals as well as institutional supporters of OER. In this section, we discuss the barriers and enablers encountered by the Vibal Foundation along the way.

Barriers

Low Access to Internet

One of the significant barriers to OER is the relatively low level of access to the Internet by Filipinos, especially those in the rural areas. Recent data from the Internet World Stats (updated for 31 December 2011) show around 29 per cent Internet penetration amongst Filipinos. This penetration rate is relatively low compared to more advanced neighbouring countries such as Malaysia and Singapore, with 61.7 and 77.2 per cent Internet penetration, respectively (Internet World Stats, 2011).

Commercial Interests Tied Up With Knowledge Product

Many of the educational materials in the Philippines are not fully open. The Vibal Foundation hopes to make education resources open to everyone without any restriction from the government or any other sectors. According to Mr. Vibal, the heavily commercialised orientation of higher education in the Philippines means that the Foundation is having a hard time finding partners for OER creation and use.

Challenges in Quality Assurance

Another significant barrier to OER use is concern about quality assurance. In the case of the Vibal Foundation's WikiPilipinas, anyone can write and contribute. For E-turo, most of the materials are from the Department of Education. A team of writers from the Foundation sometimes rewrites the WikiPilipinas articles, but there is no central team or peer-review system that looks at the quality issues.

Issues of Sustainability and Maintenance

Updating OER content regularly is an important issue that the Foundation tackles daily. The content of all the sites should be updated frequently to insure that quality is kept high and that users can be confident about using the websites.

Enablers

Technology Infrastructure Improvement

In the Philippines there has been a dramatic increase in Internet users, from two million in 2000 to around 29 million in 2011. This means that in just 11 years there has been an approximately 1,000 per cent increase in Internet users. This is a result of partnerships between the government and telecommunication providers to improve technology infrastructure and services.

Technology in Information Sharing

The Vibal Foundation uses technology in information sharing. It continually innovates to ensure that materials will be accessible using alternative technologies, such as mobile devices.

Movement Towards OER

There is now a general movement towards fully open resources. The Foundation has aligned its mission with the worldwide open resource movement. It can use this international network for access to technologies and other collaborative strategies.

Willing Partners

Vibal recognises the importance of collaboration and partnerships in the success of OER. It has partnered with various organisations, including government institutions such as the Department of Education and Department of Health. It has also established linkages with private and public schools, universities and other local partners to "deliver locally-managed and education-focussed programmes to support learners beyond the classroom, in communities around the Philippines" (Vibal Foundation Primer, 2011).

Policy Environment

The establishment of the Foundation's open knowledge initiatives coincided with the launch of the locally ported Creative Commons licensing suite in the Philippines in 2007. The Creative Commons licences, which have been legally adapted to Philippine law, have enabled the Foundation and other authors to make their resources available to the widest audience possible by licensing them under Creative Commons.

Nonetheless, whilst the legal framework allows for OER, the Foundation considers the commercial interest of the privately run institutions that comprise the bulk of the higher education sector to be the biggest barrier to the expansion of OER in the country.[4] As the head of the Foundation has said, "We need to remove the

[4] Of the 2,180 higher education institutions in the country, 1,573 (72 per cent) are privately owned and run (Commission on Higher Education, 2011).

capitalistic intent to dominate and restrict access. We have to get real educators on board. Education is about sharing, but not in Philippine institutions, where education has become a business that's very commercialised, especially in higher education" (Gaspar Vibal, personal communication, 25 November 2011).

Strategies for Sustainability

As the philanthropic arm of Vibal Publishing House, the Vibal Foundation has received funding to support its open knowledge initiatives. In addition, it has partnered with government agencies (e.g., the Department of Education) and non-governmental institutions (e.g., the CK-12 Foundation[5]) to carry out some of its open knowledge initiatives. It continues to conduct training and other promotional activities with various schools and organisations to promote open education.

In 2010, the Foundation adopted a more consolidated approach. It recently launched "Vibe" — a free e-bookstore and free application that is downloadable on PCs, Macs and tablets. Through the e-bookstore, it hopes to make accessible out-of-print or public-domain books, magazines and newspapers.

In addition to open books, Vibe will also produce books that could be sold, depending on the book's publisher. The company has drawn upon Vibal's experience in the use of digital technologies to produce interactive books that have learning objects, activities, illustrations, simulations and embedded encyclopaedic entries. The commercial e-books are expected to be sold 20 per cent more cheaply than the print versions.

The Vibal Foundation promoted OER in the Philippines, and the Foundation's exposure to digital technologies has been crucial in bringing the publishing house to the digital publications market. Vibe can create a strategic synergy between the Foundation and the Vibal Publishing House that may strengthen both organisations in the long run.

Conclusion

Traditional print media in the Philippines, as well as the Internet, have long been dominated by Western authors. The Vibal Foundation's major contribution lies in giving a platform for Filipino narratives and other marginalised perspectives in the cyberworld.

The highly collaborative nature of its wiki project is driven by the Foundation's core mission of highlighting the Filipino voice. In this collaborative activity, the emphasis has been less about technology or the product and more about the stakeholders and the process (Kanwar, 2011). As the head of the Foundation has said, "[T]he point is that Filipinos are writing it. I want Filipino children to use it to remember their forefathers . . . I see it more as a great writing project of the Philippines" (Gaspar Vibal, personal communication, 25 November 2011).

In some quarters, the overriding importance allotted to the process may appear daunting. Given how muted the Filipino perspective has been in the past, however, the open and collaborative projects of Vibal can actually be empowering to "the various types of stakeholders [who] are able to interact, collaborate, create

[5] www.ck12.org

and use materials and processes, that are freely available . . . [thus] reducing costs and improving the quality of education at all levels" (Kanwar, 2011).

As a philanthropic arm of Vibal Publishing House, the Foundation has been supported by a commercial entity, which puts it in a unique position in the field of OER. Whilst it has remained in the line of publishing, Vibal has also espoused open access, an approach that may appear at odds with the goals of a publishing house. However, its recent foray into e-book publishing shows that OER and business are not strictly incompatible (Hylén, 2006; OECD & CERI, 2007). From the "foundation" and "partnership" models, Vibal is now getting into what Dholakia, King and Baraniuk (2006) termed a "conversion" model, whereby some resources are given away for free and others are sold to paying customers (Hylén 2006). Creating a new business model in the country may yet be the Foundation's other major contribution in the OER world.

For OER to have a significant and wider impact in the Philippines, though, more educators and other stakeholders must be involved in the movement. Universities, especially the publicly funded entities, should take the lead and work with other institutions in making knowledge resources accessible and understandable to more people. The higher education sector can learn from the experiences of the Vibal Foundation in translating scholarly texts into forms that the general public can better comprehend and appreciate. Universities can also "provide paths or steps from this informal cloud of learning towards formal study for those who wish to take them" (Bean, 2010, as cited by Daniel, 2011, p. 10).

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CHAPTER 14

Establishing OER Practice in India: The University of Madras

V. Bharathi Harishankar

Abstract

Open educational resources (OER) are a nascent phenomenon in India, enabled by the growth of information and communication technologies and open source technologies. OER herald a context wherein knowledge and education are free in terms of content, teaching–learning practices and technology. OER also demand that there be freedom to access, use, modify and reuse. However, institutional policies, individual mindsets, copyright issues and restrictions of proprietary software hinder the actualisation of this collaborative ideal. At present, there are no clear exemplars of OER in India and no benchmarks either.

The International Development Research Centre-funded PANdora sub-project, entitled, "Evaluation of the Effectiveness of RLO-Based OER in Enhancing Soft Skills of Students" and carried out at the University of Madras, is an attempt to design and create OER, assess them for their reuse potential and evaluate the impact on individuals (teachers and learners) and participating institutions. The underlying belief is that in India, OER cannot succeed only as a social responsibility but must offer frames for collaborative teaching–learning, and provide viable models and mechanisms for reuse. The present study records the different steps in the OER process, from conception to evaluation and reuse, which involve:

- Assessing the readiness of individuals and institutions to embrace OER.
- Devising collaborative mechanisms.
- Matching technologies and pedagogies by creating templates.
- Designing content that has the potential for the four Rs.

Keywords: *OER creation process, collaborative teaching–learning, collaborative mechanisms, reuse potential, open technology tools*

Background

The University of Madras (UNOM) is a 154-year-old liberal arts and science institution. At present, there are 66 departments and more than 170 affiliated colleges. The total student enrolment is about 3,000 post-graduate (PG) students in university departments and over 150,000 undergraduate (UG) and PG students in affiliated colleges. In addition, over 170,000 students at the UG and PG levels are enrolled in the Institute of Distance Education.

In recent years, the UNOM has been involved in placement or employability assistance for our students. The slant of the Indian job market at present is towards information technology (IT) and IT-enabled services (ITES). This sector employs a lot of women and is a potentially large employer of our graduates. In these job fairs, employers find the students lacking in soft skills, not necessarily domain skills. Therefore, providing such skill sets has become a priority issue.

The soft skill curriculum devised by our university consists of courses on language and communication, spoken and presentation skills, foreign languages, computational skills and personality enrichment. Out of these, print-based materials have been prepared for the language-related courses. Soft skills courses are handled by the university and college faculty and also by corporate trainers outsourced for this purpose. Present methods of delivering the soft skills courses at the UNOM are neither sustainable nor scalable. The print medium, along with regular classes, can only reach a small fraction of our students. There is an urgent need to develop a complementary delivery mechanism to reach the thousands of remaining students who are not currently served.

Informing Contexts

The present case study has several contexts that provide its frames of reference. The first frame is that OER is an emerging phenomenon in the Indian and Asian contexts. Since there are no clear exemplars or benchmarks, there is a need to create replicable templates for the process of creating, using and reusing OER. The PANdora Project attempts to answer this need by focusing on "Quality and Openness in Asian Education".

The next frame is to determine the extent of awareness and readiness to use OER across Asian countries and provide a case study of a survey on "The Current State of Play in the Use of OER", carried out at Wawasan Open University, Malaysia. The third and most immediate frame is to study the ways in which OER can be introduced as a successful model of collaborative teaching and learning in the conventional, 154-year-old University of Madras. A micro-frame of reference is evident in the choice of topic for OER creation, namely soft skills, which are highly culture-specific. When resources have to be created and shared collaboratively, the prevalent tendency is to make them culture-neutral to ensure portability. The research question in the present study is whether the resources can be created culture-specifically but made portable by redesigning the structure of the reusable learning object (RLO) when it is placed in an OER environment.

Table 15.1: Summary view of the case study

No	Research issue	Specific objective	Methodology	Outcome
1	Recasting of learning material	Converting existing print material on soft skills into a suite of RLOs	i. Chunking ii. Hierarchical structure iii. Structuring RLOs as independent entities with a. learning objectives b. learning content c. learning assessment	a. 30 hours of teaching–learning material b. Teachers/content providers trained to identify RLOs in the existing print-based information packets
2	Creation of pedagogy-oriented technology	Identifying and using tools that will encode the pedagogical value of RLOs at UNOM	i. Prepare a schema for RLOs ii. Identify keywords to be used for indexing iii. Employ widely used tools to encode schema iv. Create ontology/taxonomy to relate different parts of the RLOs	a. Template for RLO creation b. Template for concept map generation c. Modules accessible in multiple formats d. Modules navigable by the user in flexible ways e. RLOs and knowledge models bound by a well-defined ontology
3	Learning outcomes	Comparing learning outcomes between face-to-face and distance learners	i. Quick assessment tests within the RLOs to check skill acquisition ii. Community spaces (i.e., blogs) to promote teacher–teacher, teacher–learner and learner–learner interactions iii. Questionnaire – 100 users iv. Measure placement (employability) rates at job fairs held at UNOM v. Mock interviews	a. Fine-grained information on skill acquisition b. Basic information on the teacher–learner interaction c. Statistical analysis of user feedback d. Impact assessment of the course
4	Portability of RLOs	Evaluating the reuse of RLOs outside Chennai and outside India to establish accrued benefits in terms of faculty time, cost savings and operational efficiencies	i. Structure of RLOs: a. Concept definition – culture-neutral, gender-fair b. Concept description – modifiable c. Concept application – cross-references iv. Review by peers for culture/gender-sensitive codes: create – review – edit – publish v. Tracking and testing the reuse and repurposing of the RLOs by partners	a. Minimum modification, maximum useability template b. Capacity-building exercise for shared course development c. Case study of the venture

Fact File

Purpose: To investigate the effectiveness and cost benefits of RLO-based OER in enhancing students' soft skills.

Duration: 27 months

Project Budget: USD 70,320

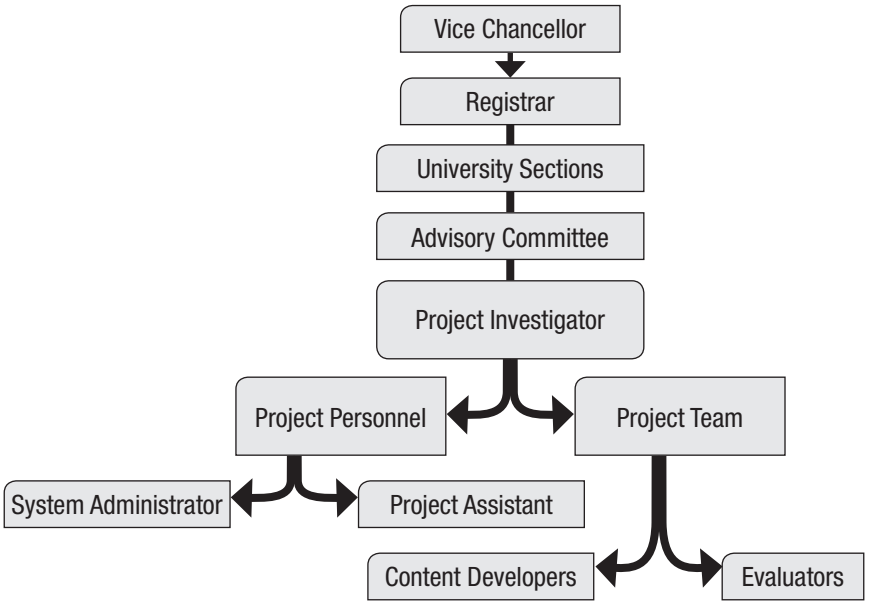
Sign Post I

Establishing Strategic and Boundary Partners

Any new phenomenon requires time, adequate exposure and suitable percolation to gain acceptance. The introduction of the OER concept within the university system is no exception. To address this need, three different working groups were created.

1. **Project personnel** (a system administrator, a project assistant and an external consultant): The recruitment of project personnel involved advertising, screening of applications, interviewing and selection. This phase of project implementation required a balancing of project goals and institutional norms. The external consultant (a professor from the Indian Institute of Technology, Madras, and co-ordinator of the National Programme on Technology Enhanced Learning) has mentored and guided the project.
2. **Core content team** (to create content, edit, review, test and evaluate the RLOs on soft skills).
3. **Advisory committee within the university** (a mixed group of senior faculty, administrators and domain specialists): This committee, as illustrated in Figure 15.1, ensures that the project activities proceed without procedural delays. In practice, I have found this group to be my advocates within the institution. We have regular meetings, with the agenda circulated in advance and meeting minutes presented and approved by university authorities.

Figure 15.1: Structure of the project within the university



Researcher Reflections

Out of these three groups, developing the core content team offered an interesting experience. Whilst younger faculty in colleges were enthusiastic about the project, they were unsure of implementing it in their institutions or braving the power structures. So, I approached senior faculty and heads of institutions to work with the younger members. This gave rise to a problem of hierarchy. I created well-defined roles for each — the younger faculty were content creators and testers whilst the senior faculty were content editors and evaluators. An unexpected outcome was that a not-so-senior faculty member emerged as the leader simply because of that member's experience in creating resources.

Learnings

In the process of creating the core content team, I had to answer the question, "What's in it for me?" for each faculty member. Fortunately, the assessment pattern of the University Grants Commission and National Assessment and Accreditation Council is to award extra points for individuals and institutions creating innovative teaching–learning resources.

Sign Post II

Making Space

In this context, space refers to a spectrum spanning physical, interactive and interpersonal. Activities related to this task included:

- Finding suitable office space for the project — in this case, a 15×15-foot room with required electrical connections and office furniture.
- Procuring equipment — two servers, five personal computers, accessories, printer, handycam, etc.

- Creating suitable infrastructure — telephone and Internet connections.
- Determining the costs of producing RLOs.

Even though there were procedural delays, identifying the physical space was not a problem. Tackling the interpersonal, mainly in terms of changing individual and institutional mindsets, proved a challenge. For instance, the faculty perceived the RLO-based OER as a new idea. Similarly, colleges were unclear of the materials' use for them. For the university, it was an untested idea with no proven viability. As of now, there are no major indicators of cost benefits. This is mainly because we are looking at expenses in getting the first suite of 250 RLOs. Once the use and reuse rates increase, the number of RLO versions and additions will increase incrementally, thus leading to expansion of the knowledge resource base.

Researcher Reflections

In effect, individuals and institutions were asking, "Why OER?" The answer, however, had to be communicated differently to different groups.

1. For individual faculty, two distinct advantages were presented: (i) the RLOs can supplement their supply of classroom resources and (ii) as faculty members, they are the ambassadors of OER in their institutions.
2. For colleges, this endeavour was mooted as a valuable collaboration with the university. The added benefit was that at the end of the project, the resources will be shared with them.
3. For the university, OER are not mooted as revenue generators or as providing a competitive edge, but as a good advertisement to establish the university as a pioneer in sharing and collaborating with other institutions.

Learnings

First of all, I realised the value of empathising with others. I also understood that these questions are not always hurdles, but can arise out of a lack of information and a hesitation to embrace something new. For instance, when I communicated the idea of making the resources created in the project open source material on the institutional website, the first query that came was regarding the copyright. Since these resources will be useful to our learners, I explained how the project requirements are useful to the parent institution.

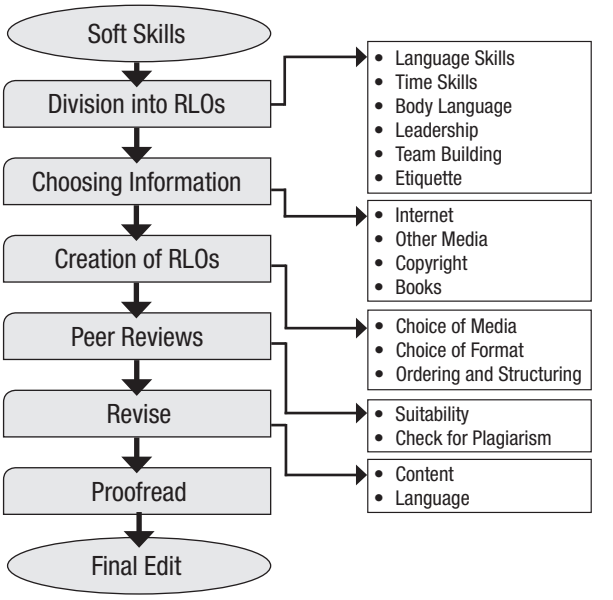
Sign Post III

Creating Frames

Identifying, analysing and creating templates was the next step in the OER process. Templates were created during the project, as illustrated in the workflow diagram, Figure 15.2:

- RLO structure: Can this help in portability?
- RLO divisions and branching: Can we distinguish soft skills from communication skills through this?
- Technology tool — Moodle and FreeMind integration on a Ubuntu Linux platform: Will different versions of different software be compatible?

Figure 15.2: Workflow diagram for the creation of the RLOs



Researcher Reflections

- The basic research premise is that culture-specific OER can be created and made portable if the constituent RLO is designed differently. Each RLO consists of three parts — concept definition (CD), concept explanation (CE) and concept illustration (CI). Of these, CD is culture-neutral, CE is culture-specific and CI is cross-cultural. In this template, CE has to be modified for each culture, and the design ensures the use/reuse potential of two-thirds of the RLO.
- Depending on the content of each RLO and the author, the three parts were rearranged. An unexpected outcome was the emergence of the following pattern:

  new idea = CE-CD-CI
  distinguishing ideas = CI-CD-CE
  known concept = CD-CE-CI

Learnings

The three-part structure of an RLO is based on conventional classroom pedagogy: first give a warm up, then explain the concept, then provide illustrations. (Good teaching practices reinvent themselves!) A resource has to be useful, for the most part, to ensure portability and reuse. Pedagogies can inform technologies — a Moodle I.9+, Xamp Server 1.74 and FreeMind Collaboration module has proved to be a very versatile combination.

Sign Post IV

Devising and Sustaining the Collaborative Mechanism

Introducing the culture of sharing and collaboration amongst faculty required an "unlearning process" of reserving the best for one's own classes. Apart from defining the individual benefits of sharing, mechanisms for collaboration were introduced through group mail, diary entries, archives of resources, pictures and the like. The major challenge was in creating awareness regarding copyright issues, sourcing of material, etc.

Challenges

- Even though the college faculty showed a lot of enthusiasm, that did not translate into the creation of sample RLOs. Lack of time and work pressures were cited as reasons.
- Even after the day-long induction workshop and several rounds of group and individual sessions, faculty had the following problems whilst creating the sample RLOs:
  - Since the RLOs are all about soft skills, how do we differentiate this from language teaching?
  - How do we determine that we have "chunked", made the resource sufficiently granular?
  - Do we completely avoid using copyrighted material? If we make minor modifications to existing text/image/animation can we avoid the copyright issue?
  - Can we have the same RLO content in different formats — text, PPT, GIF, audio, etc.?
  - What do we do with RLOs that overlap — say, gesture in a presentation versus gesture as body language?

Researcher Reflections

- On close scrutiny, I found that lack of time was not the real problem.
- Some of the content developers (college faculty) found it difficult to create material that does not infringe copyright.
- One of the content developers circulated a free downloadable software application to self-check for plagiarism.
- We realised that brainstorming helps, so we encouraged members to dialogue with each other.
- Content team members were encouraged to record their experiences in the form of diary entries.
- Broad topics for the suite of RLOs on soft skills have been identified. Members have chosen the topic they want to work on.
- The project assistant and system administrator help the content developers in creating pictures, audio, video and the like. In fact, they have already developed a small archive of pictures, GIFs and audio/video files created in-house.

Problem Solving

Teachers today are also unaware consumers of information, much like the students they teach. Somewhere along the way, the demands of scholarship, such as acknowledging a source, have been left behind. The OER movement in this region has to contend with this issue. We certainly do not want large-scale plagiarism in the name of openness.

Learnings

Collaborative mechanisms (group mail, sharing diary entries) are hard to create and sustain but can provide unexpected benefits.

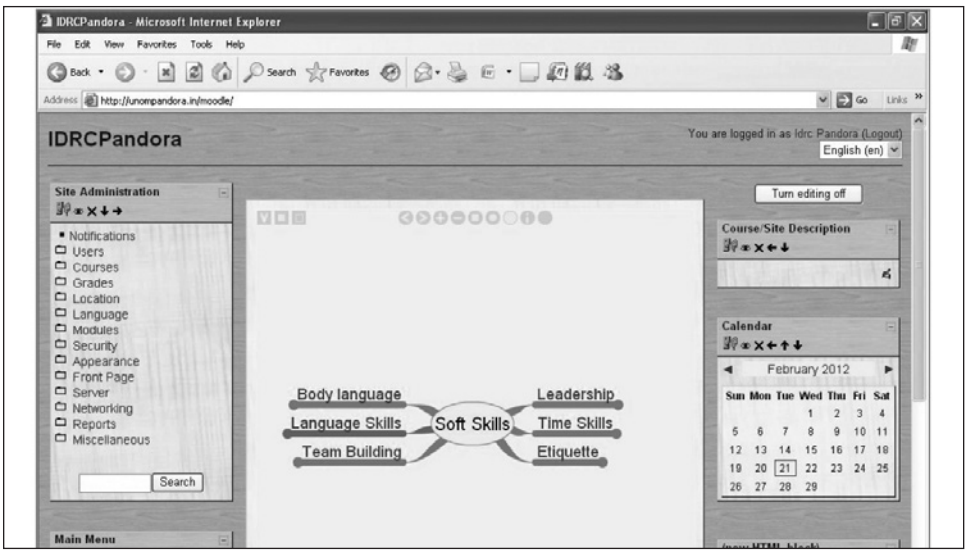
- For instance, decisions on granularity have led to the identification of more RLOs.
- Commenting on each other's content puts a basic level of peer review in place.
- Diary entries are additional sources of information on the process of collaborative resource generation. Diary entries provide more descriptive inputs than a questionnaire.

Sign Post V

Evaluating the Self and Others

A total of 250 RLOs have been created on six important aspects of soft skills, namely body language, time skills, language skills, leadership, etiquette and team building. The suite includes text files and Microsoft Word documents, pictures with annotations, audio files and video files. Figure 15.3 is a screenshot of the online deployment of the soft skills RLOs. Peer review, quality assurance, version control and editing have propelled the project to the final phase of testing and evaluation. The suite has been tested at three sites in Chennai, and one round is planned outside the city. The aim is to obtain evaluations from a sample of 100 users. There are about 120 initial inputs, and at least two more rounds of testing have been planned.

Figure 15.3: Screenshot of the online deployment of the soft skills RLOs



Researcher Reflections

- Very often, versions prove to be simple proofreading and soft editing exercises. Face-to-face meetings of the content developer and the peer reviewer have enabled focussed discussions resulting in finalisation of each RLO.
- Templates have been created for evaluating the testing sessions. We have also videographed entire sessions and plan to add these as a set of resources.
- Questionnaires for evaluation by users have been created for three different groups: learners, teachers and administrators. Questionnaires are divided into two parts — initiators and reviewers — so that we can mark the progression from a first encounter with the RLOs to identifying their use and reuse.

Learnings

As evidenced from the testing activities, learners have been very open to the idea of OER — in fact, more enthusiastic in indicating the additions/deletions they want on a topic. Whilst the response is mixed from the teacher group (they like the resource but are unsure of creating/sharing their own), the administrators have shown cautious optimism.

Forging Ahead

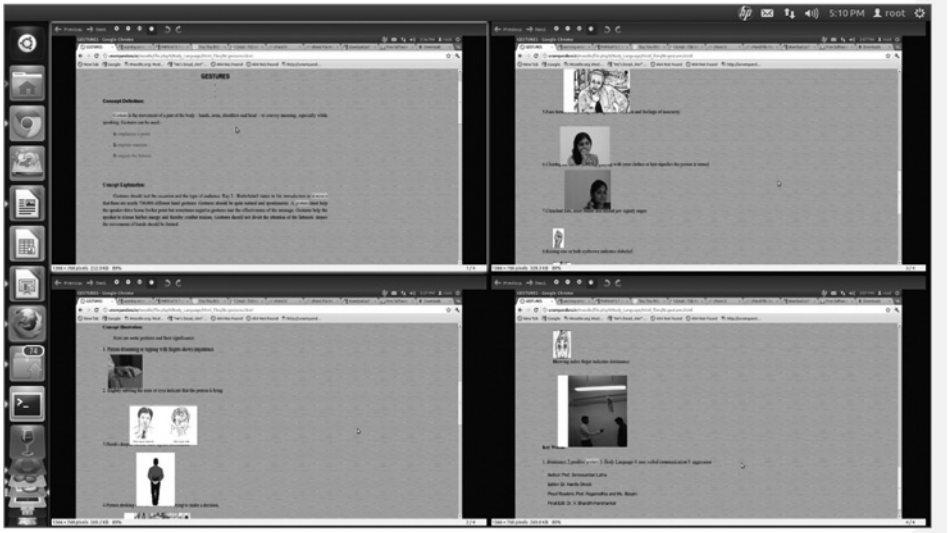
The present case study is an "experience narrative" of the OER process from conception, through creation, to evaluation. This process involves assessing the readiness of individuals and institutions to embrace OER, devising the collaborating mechanism, matching technologies and pedagogies by creating templates, and designing content that has the potential for the 4Rs (reuse, revise, remix and redistribute). The project team is in the process of adding keywords and metadata to index the resource and make it accessible. The preliminary inferences are as follows:

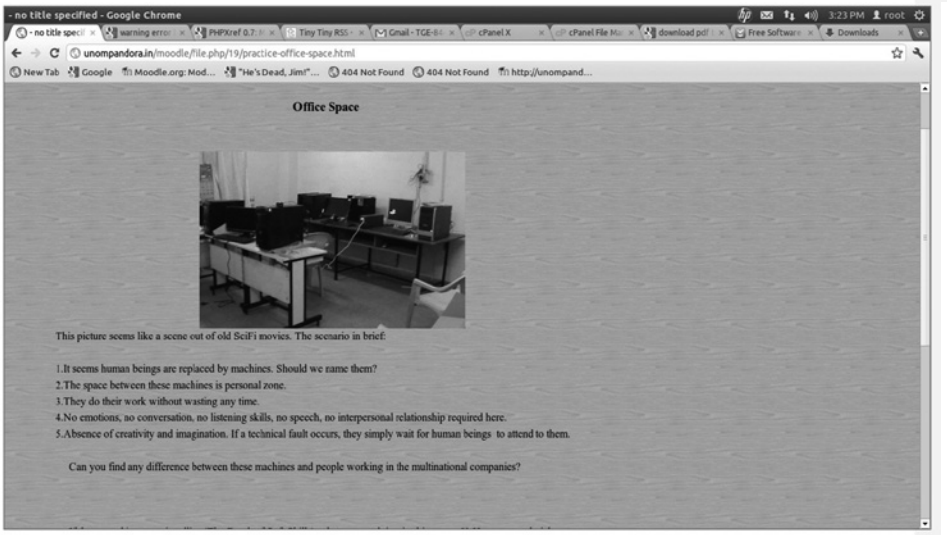
- Given the increased focus on ICT-enabled teaching and learning, OER can emerge as a viable method in education.
- There is ready acceptance of OER from learners. Whether this will amount to independent and experiential learning is a question for the future.
- Teachers and administrators have displayed cautious interest. If they turn into good samaritans, OER will have wider reach and acceptance.
- Cost-effectiveness has not emerged as a key indicator for OER. But costing and pricing have to be defined differently for different media — print, online and other forms.

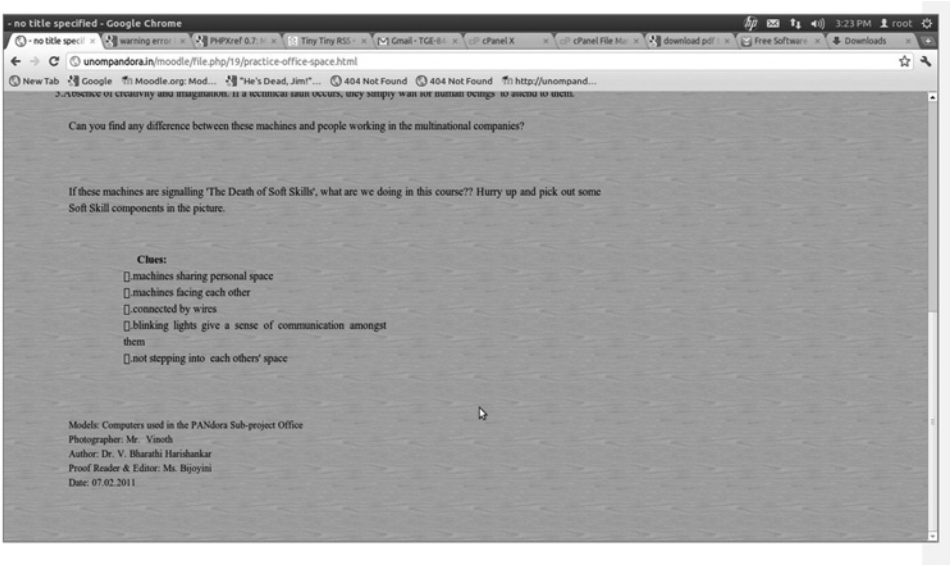
The encouraging situation is that there are enough government policies in place to encourage OER in India. The ultimate aim of efforts such as the present one is to provide catalysts which will turn government policies into educational transformation.

Appendix 15.1

Screenshots of Sample RLOs







Appendix 15.2

Experiences of a Learner as Content Developer

By Bijoyini Mukherjee, University of Madras

I had no prior introduction to soft skills, mind maps or the Moodle learning management system as a student. Here's a record of my experiences as the first reader/learner of the RLOs created in the project, the author/proofreader of some RLOs and one of the project assistants.

Structure and Format of the RLOs

The concept definition, concept explanation and concept illustration structure for a learner seemed complicated as well as difficult to discern. As the first reader of the created RLOs, I found that subconsciously, the pattern beginning with CI helped hold my interest whilst the ones starting with CD did not.

As a learner, I felt that pictures/audios/videos appeared authentic and compelled me to explore other topics. With some, write-up alone brought out the meaning, whereas skills lessons, such as on gestures, postures, eye contact in body language and some other RLOs seemed to bore me with their blandness. Realisations of this kind led to changes in versions of various RLOs. During creation, I kept in mind how every RLO demands different presentation styles, formats, structure and colours to capture a learner's attention. Sometimes PowerPoint can be an eyesore instead of being eye-catching (e.g., the Business Correspondence PPT — there was so much material that it could have been divided into seven different RLOs).

To me as a learner, the brevity of the RLOs is fascinating. However, as a content developer, it means multiple versions, hard editing and mental work to create fun activities and audio visuals that actually teach.

Copyright Issues

It was good that the RLOs were not repeating/quoting long passages from existing works. However, avoiding Google free images and non-copyrighted YouTube videos was a dampener. The creator in me was left with no option but to photograph people, record original audios and capture video. The plagiarism-checking software was a boon, but I don't know how many faculty content creators liked the idea.

Appendix 15.3

Experiences of a Teacher as Content Creator and Evaluator

By Sumathi Shivakumar, Assistant Professor of English, Agurchand Manmull Jain College, Chennai

I have been teaching English at the college level for over 15 years. I was one of the content creators for the print-based resources on soft skills created by the University of Madras. Soft skills in the form of RLOs certainly provided a new and challenging experience, and I have captured some of my observations in this journal.

Soft Skills and/or Language Skills

It is a common misconception that soft skills and language/communication skills are the same species. However, I believe that an RLO on language skills should not look like a lesson in grammar and linguistics, much less a spoken English class. Hence, I chose an aspect of language skills that affects understanding and meaning-making: communication barriers such as jargon, oxymorons and redundancy, and concepts like stress and intonation. When I began with RLOs on fluency, I decided to look at all the factors that add meaning to good fluent speaking and those that hamper fluency. I chose to spread them across concept explanation, concept illustration and activities.

What Is/Is Not an RLO?

Granularity was an idea that required several iterations. RLOs underwent drastic changes because (i) too many ideas were packed into individual RLOs, making each RLO dense, (ii) a new idea required more explanation or illustration and (iii) more variety was needed within a single soft skill element.

Structuring an RLO

Ideas that are easily understandable and can be rendered through pictures and/or anecdotes were placed under CI. Some, such as CE, required expansion in simpler language, whilst others could engage the learner and even propose activities. The concept definition was provided to make the learner familiar with the idea. The order in which CI, CD and CE are presented depends on the popularity of the concept across multiple learners. If it is a known concept, CI precedes CD and CE, whilst an unfamiliar concept begins with CD.

Reflections on Practice

Whilst peer-reviewing this content, I found recurrent instances of plagiarism. I proposed that the team use plagiarism-checking software. Also, I believe that as teachers, our own experiences may serve well for illustrations, thereby keeping copyright issues at bay. Thus, in all my RLOs, several anecdotes from my own experience became a part of either CI or the activities. I was particularly delighted by pictures created using the draw function or photographed by team members to avoid copyright issues.

Correcting Your Own Answer Sheets

Editing an RLO relates to positioning the sequence of CI, CE and CD. This varies with every RLO and the soft skill element concerned. Certain situations demanded that an illustration be moved to another RLO where it was found to be appropriate. A completely new soft skill element, etiquette, was created whilst editing RLOs on public speaking.

From Teaching to Learning

Once the RLOs were created, the task at hand was to execute them in a classroom. The focus here was on introducing the learners to familiar contexts/situations in which the skill elements could be used. The time consumed to teach each RLO will vary with the amount of information in the RLO and with the difficulty level. When I taught some of the RLOs from the body language unit, I could see that the learners were very interactive and came up with additional information on aspects familiar to them. One was the game Dumb-C, which is played entirely with gestures. The second was the sign language used by the hearing impaired. Students made reference to the state channel's popular television news for the differently abled. This helped enhance the RLO on gestures, in terms of both additional information and quality. Learners' input on the RLO alerted me to the kind of collaboration that OER promises.

CHAPTER

15

Digital Repository to Open Educational Resource Repository: IGNOU's eGyanKosh

Uma Kanjilal

Abstract

Since its establishment in 1985 by an act of parliament, the Indira Gandhi National Open University (IGNOU) has contributed significantly to the development of higher education in India through the open and distance learning (ODL) mode. It was established with a vision to serve as a national resource centre for ODL, with international recognition and presence, to provide seamless access for all to sustainable and learner-centric quality education, skills upgrading and training, using innovative technologies and methodologies. IGNOU has emerged as the largest university in the democratic world, serving the educational aspirations of around 2.8 million students in India and 32 other countries.

IGNOU's learning resource repository, eGyanKosh, initiated in 2005 with the intention of digitising self-instructional material, has emerged as one of the world's largest repositories, with more than 40,000 self-instructional text materials, and around 2,000 videolectures covering over 2,200 of the university's courses. The repository has become very popular in a short time and is being used the world over by student and teacher communities for its rich content.

So far, the courses available on eGyanKosh and FlexiLearn have been licensed material available as open access content that one can register to use free of cost, but that is non-derivative, non-reusable and governed by copyright rules. The university has now decided to provide all its learning resources as open educational resources (OER) through its open licence policy. IGNOU envisions that it will be a leading developer of OER, with the use of its own as well as others' OER fully incorporated into teaching and learning at all levels within the university system. This case study provides an insight into the process of eGyanKosh evolving from a digital repository to an OER repository.

Keywords: *open educational resources, open courses, learning resource repository, IGNOU, eGyanKosh*

Introduction

The Indira Gandhi National Open University (IGNOU) was established by an act of parliament in 1985 as a central university under the Ministry of Human Resource Development. During the past 27 years, IGNOU has become the national resource centre for open and distance learning (ODL), with international recognition and presence. It has been providing seamless access to sustainable and learner-centric quality education as well as skill upgrading and training to all sections of society by using innovative technologies and methodologies. The university has recently embarked on various new initiatives, along with consolidation and upgrading of existing systems, to address the massive human resources required for promoting sustained national development through global understanding. IGNOU has the following unique features:

- International jurisdiction, taking IGNOU programmes to African and West Asian countries, including Maldives, Mauritius, Nepal and Seychelles, covering in all 43 countries.
- Flexible admission rules.
- Individualised study with flexibility in terms of place, pace and duration.
- Use of state-of-the-art information and communication technology (ICT) applications.
- A student support service network in the country, as well as at the international level through partner institutions.
- Resource sharing, collaboration and networking with conventional universities and other organisations.
- Socially and academically relevant programmes based on needs assessments.
- Special education catering to underserved populations and the disadvantaged.

Important achievements of the university are:

- Emergence as the largest university in the world.
- Recognition as a Centre of Excellence in Distance Education by the Commonwealth of Learning in 199.
- Award of Excellence for Distance Education Materials by the Commonwealth of Learning in 1999.
- Listed 12th in the Webometrics ranking of Indian universities in January 2010.

The university functions through a network comprising the headquarters, regional centres in all states, and study centres and partner institutions within India and in 43 other countries. It is now widely accepted as a system leader in the field of ODL throughout the world. The university offers 490 certificate, diploma, degree and doctoral programmes through its 21 schools of study, 12 divisions, 14 centres, 67 regional centres, over 3,324 study centres, 80 partner institutions spread across 43 countries, 549 teachers and academicians and more than 1,200 administrative staff. Additional help is also sought from more than 6,000 experts from conventional universities and other organisations and about 46,134 part-time academic counsellors. Today IGNOU has over 2.7 million students on the

rolls, with over 732,000 having enrolled in 2012 alone. IGNOU awarded around 555,920 degrees, diplomas and certificates in 2011, covering a whole range of disciplines and inter-disciplinary areas (Indira Gandhi National Open University, 2011).

IGNOU provides multichannel, multiple media teaching and learning packages in the form of self-instructional print and audio/video materials, radio and television broadcasts, face-to-face counselling/tutoring, laboratory and hands-on experience, videoconferencing, interactive radio counselling, interactive multimedia CD/DVD and Internet-based learning. Apart from the print-based self-instructional material, the educational programmes reach more than ten million homes through Gyan Darshan TV channels, a DTH (direct-to-home) platform, Gyan Vani radio stations and webcasting. The Electronic Media Production Centre (EMPC) of the university has emerged as a major hub for the nation in using electronic media in distance education. The EMPC has produced a cumulative total of 3,718 videos and 1,555 audios, and is the nodal centre for managing the Gyan Darshan and Gyan Vani channels. There are four TV channels under Gyan Darshan and 27 FM radio stations under Gyan Vani.

The university is now shifting its attention towards the development of interactive multimedia content and learner support through web-based platforms. ICT initiatives in the form of eLearning, online student support, digital repositories and open source courseware are now part of the ODL systems. The earlier generations of ODL systems are now moving forwards to new generations which are ICT-dependent for disseminating knowledge without compromising quality; ICT initiatives are also more cost-effective to operate because they adopt the "open mantra" of open source and open access. IGNOU is keeping pace with these developments in ODL systems and is emerging as a leader in the adoption of ICT applications and policies towards open access and open educational resources (OER).

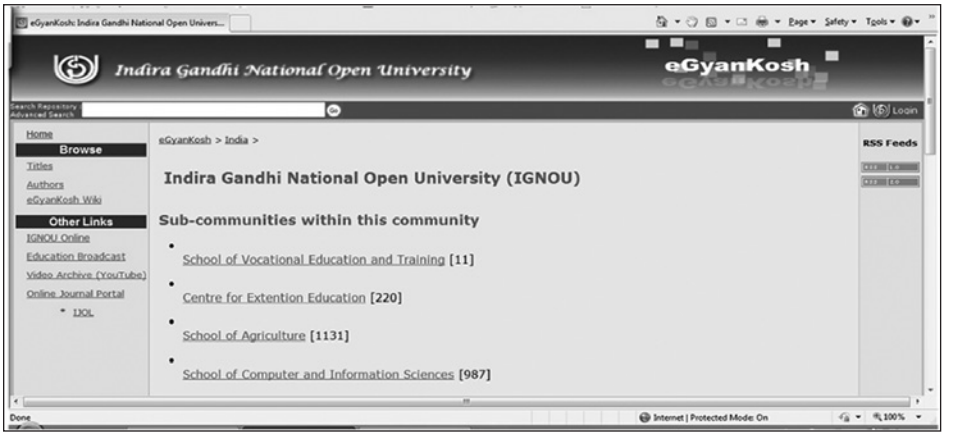
IGNOU's ICT Interventions

Web-based programmes and information systems that provide access to users who are physically remote from resources is emerging as a democratising, emancipating, empowering force, facilitating self-publishing, knowledge sharing and peer-to-peer networking. The Internet has now evolved from being a medium in which information was transmitted and consumed, into a platform where content is created, shared, remixed, repurposed and redistributed. In the same spirit, eLearning has moved from being merely a content repository, emulating classroom teaching, to more dynamic concepts of social networking, do-it-yourself, personal learning environments and mobile learning.

Realising the potential of online learning to reach out to the unreached, IGNOU has embarked on major initiatives towards developing online learning environments for distance learners. IGNOU initiated the development of a knowledge repository in October 2005 to store, index, preserve, distribute and share the digital learning resources developed by the ODL institutions in the country. This repository is called eGyanKosh (Figure 16.1).[1]

[1] www.egyankosh.ac.in

Figure 16.1: eGyanKosh main page



eGyanKosh has emerged as one of the world's largest educational resource repositories. It offers free, open access and is available to the world to facilitate self-learners and empower educators. More than 2,200 courses and 2,000 videolectures are available online in the repository. The print-based contents are available as PDF files and video programmes and are being provided through a special channel of IGNOU on YouTube,[2] with the metadata link in the repository. The YouTube channel established for eGyanKosh is quite popular, with 2,257 subscribers and 191,734 hits on the site as of 4 November 2012.[3] The repository also has a wiki for collaborative content generation.

eGyanKosh is built on the open source application DSpace, which MIT and HP Labs developed for creating institutional repositories. DSpace uses extended Dublin Core metadata standards integrated within the application for indexing the content. It also has a Lucene search engine integrated with the application. Since the application is meant for building open access institutional repositories, major customisation was done on it to suit the requirements of building a learning resource repository.

Initially, eGyanKosh access was restricted to the IGNOU community of faculty, staff and students. The first bold step was taken in June 2008 by facilitating open access to eGyanKosh's content. Now anyone can register for free and access learning resources available in print and video formats from the repository.

The site has already received over two million hits, with an average of 400 visits per day from all over the world. There are 125,000 active registered users of the repository. The statistics clearly indicate the growing popularity of eGyanKosh.

The repository received a tremendous response after its public launch, as is evident from the following blog posting:

> As you can see, I am extremely excited about this initiative. I don't think I am exaggerating when I state that this is the single largest (by far) source of current open educational resources that exists (i.e., not counting the out-of-copyright books scanned by Google and OCA). Instead of providing just a curriculum list with links to books and articles that you cannot access if you are not a member of a rich

[2] www.youtube.com/user/egyankoshIGNOU
[3] www.youtube.com/user/egyankoshignou?feature=results_main

university, it provides everything. And in addition, you get a wealth of material that is unique to India/Asia, etc. (Håklev, 2008).

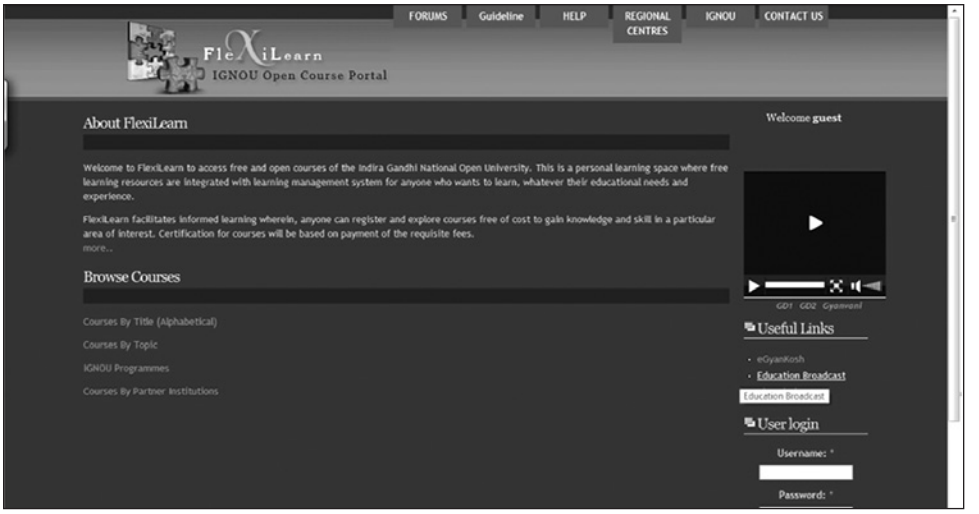
A search on Google about eGyanKosh clearly indicates its popularity, as one can see from the numerous discussion forums, blogs and websites that have provided links to it and recommended that their users visit the site.

The facilities of eGyanKosh have been further extended with a FlexiLearn platform. The FlexiLearn website[4] is an open course portal where one can register and explore courses for free (Figure 16.2). eGyanKosh provides a personal learning space, where free learning resources are integrated with a learning management system for anyone who wants to learn, whatever their educational needs and experience. More than 800 open courses are available on FlexiLearn for self-guided and self-paced learning. FlexiLearn facilitates informed learning by allowing anyone to register and explore courses to gain knowledge and skills in a particular area of interest.

After its public launch on 19 November 2009, the FlexiLearn platform received a tremendous response. The platform was built on multiple open source applications with a single sign-on facility. In the front end it has a content management system (Drupal) and in the back end a learning management system (Moodle) and an e-portfolio system (Mahara). The applications have been integrated with a large number of third-party plug-ins to provide a personal learning environment for learners. The idea is to promote self-learning through community-based interactions with built-in Web 2.0 tools.

Whilst anyone can register for free to access the online courses, for certification requisite fees have to be paid through an online payment gateway. To earn a degree or diploma, the learner will have to fulfil necessary qualifications and complete the programme as per the university's established standards. He or she must also make special application to be considered for the awarding of a degree/diploma.

Figure 16.2: FlexiLearn main page



Whilst eGyanKosh was developed mainly to archive the learning resources of the university, FlexiLearn has been initiated to provide not only learning resources but a complete learning experience.

[4] www.ignouflexilearn.ac.in

Both platforms have links to the live educational channels through the webcasting facility at Education Broadcast,[5] which at present provides access to broadcast channels Gyan Darshan-1, Gyan Darshan-2 and Gyan Vani (Delhi), with many more channels planned for addition. The platform supports multiple operating systems, processors and devices. The user has options to select from Windows Media or Flash players, with multiple bandwidth support ranging from 100 to 256 Kbps.

The university at present is offering 27 major online programmes using an in-house developed eLearning platform, and more than 5,000 students are registered for these programmes. The platform provides a complete virtual learning environment covering all the activities, from registration to certification. The eLearning platform is mainly used to provide interactive services to learners both in real time and asynchronously, whereas eGyanKosh or FlexiLearn are used at the back end to provide access to the course content required for online courses.

Another major initiative on the online education front where IGNOU is participating is the Pan-African e-Network Project. This is a collaborative project of the Ministry of External Affairs, Telecommunications Consultants India Limited and IGNOU, under which IGNOU is to provide tele-education to 53 countries of Africa. The project is now proposed to be expanded to establish the Indian Africa Virtual University. The SAARC (www.saarc-sec.org) and ASEAN (www.aseansec.org) e-network initiatives are involved in a similar manner. For these projects, eGyanKosh and FlexiLearn repositories are functioning as a backbone for the e-content requirement to run the programmes.

IGNOU's OER Policy Adoption

Providing access to quality higher education opportunities is one of the greatest challenges India faces. One of the major recommendations of the National Knowledge Commission (NKC) established by the Government of India was that an important strategy for addressing the pressing problems of education in the country is to make use of globally available OER and open access (OA) research journals as a means of radically increasing the widespread availability of high-quality educational resources. Further, the NKC recommended that distance educators focus on creating a national ICT infrastructure, improving regulatory structures, developing web-based common open resources, establishing a credit bank and providing a national testing service (National Knowledge Commission, 2012).

India is already an active player in the OA movement, as evidenced by increasing availability of OA electronic journals, OA repositories and open source software-based repositories. In contrast to the OA situation, OER efforts in higher education are sparse, with only three or four major initiatives underway, specifically for creating open educational tools and resources. The National Programme on Technology Enhanced Learning project of the Indian Institute of Technology, under the National Mission on Education through ICT, and IGNOU's eGyanKosh are some of the major initiatives in this direction. But these are open access repositories, not yet OER repositories, because the available content is not reusable and is bound by copyright rules.

[5] www.ignouonline.ac.in/Broadcast

The courses available on eGyanKosh and FlexiLearn so far are licensed materials available as open access content that anyone can register to use for free. But the content available in these repositories is non-derivative, non-reusable and governed by copyright rules. In a major decision taken recently by the university's Board of Management, all the learning resources of eGyanKosh and FlexiLearn are to be offered as OER with an open licence policy. IGNOU envisions being a leading developer of OER, with the use of its own as well as other OER fully incorporated into teaching and learning at all levels within the university system. The university plans to adopt an OER policy that will guide the promotion, development and use of OER and further ensure that the highest standards of education are achieved.

The proposed OER repository will be a platform for educators to share educational resources with others worldwide. High-quality resources made available from the OER repository can serve to inspire teachers, be directly accessed by learners and be improved upon or localised by others.

The purposes of IGNOU's OER policy are to:

- Make materials available under Creative Commons (CC) licences.
- Support voluntary participation of faculty and others in developing OER content.
- Advise faculty and other participants on publication rights and licensing issues.
- Provide guidance in development and review of OER materials prior to sharing them on a worldwide scale.
- Define collaborations within and outside the university, with the intent to allow access to open content.

The OER repository will include content available as an entire course, a complete book or a more granular piece, such as a single learning object, based on the following criteria:

- The content will be made publicly available.
- The content will be made available in digital or electronic format.
- The content will be made available free, at least for educational purposes.
- The content will be governed by Creative Commons licences, making it reusable, redistributable and adaptable for other audiences and technology platforms.

The repository will not only comprise educational resources and courses already available on eGyanKosh and FlexiLearn, but also provide a platform for faculty and other members of the academic community to upload content voluntarily created by them as a valued addition to existing course content. This may include class notes, presentations and short write-ups. The platform will also facilitate uploading and sharing of all derivatives or adapted works emanating from the existing content of the repository.

All materials released on the IGNOU OER repository site will be covered under the Creative Commons Attribution-NonCommercial-ShareAlike 2.5 India licence (CC BY-NC-SA), which will allow anyone to freely modify, rework and extend any of the material, and later distribute it, under the following conditions:

- The user provides attribution to the creator of the material (i.e., IGNOU in the case of IGNOU's learning materials).
- Material may be reused and redistributed for non-commercial purposes.
- The derivative version must be licensed under the same licence (CC BY-NC-SA).

This will enable adaptation of IGNOU materials by other institutions for non-commercial use and foster creation of derivative works by other individuals and institutions, to be released under the ShareAlike (SA) licence.

The university plans to provide resources of the highest quality through its OER repository. The reviewing process will be carried out at different levels. All IGNOU curriculum-based self-learning material is developed through peer reviewing and the strict quality assurance mechanisms incorporated within the course development process, and will not require further review before being uploaded to the repository. All other contributions will be peer reviewed before being uploaded to the OER repository. In addition to these processes, users will be able to leave comments and grade content. At the university level, an OER Board is proposed to review policy, as well as the production, delivery and access processes for OER.

All OER materials shared from the IGNOU OER repository to the world at large will carry this disclaimer:

> The material is for educational purposes only and the university absolves itself of any practical misuse of the OER materials or their content. OER materials authored and published by faculty and staff of the university and others do not necessarily reflect the opinion of the university.

Once the policy is adopted, it is proposed that all learning materials published under the CC licence will include the following information in the credit page:

> © [year], Indira Gandhi National Open University. This learning resource is available under a Creative Commons Attribution-NonCommercial-ShareAlike 2.5 India licence (CC BY-NC-SA). Derivatives of this work are not authorised to use the IGNOU logo.

The university, under the OER policy, proposes to support free and open access to all educational resources and make them freely available from the OER repository using Creative Commons Attribution licences for all the content it owns or co-owns, with the following exceptions:

- The university may on a case-by-case basis make exceptions to the sharing of IP addresses it owns, with detailed reasons for limiting the free access to material. Such restrictions should be time dependent.
- IP addresses owned by the university that it considers commercially sensitive may also be restricted.

The faculty member responsible for development of a course (called the Course Co-ordinator) shall be the person responsible for management and adoption of OER in the specific course. In a case where the courses are not provided under the CC licence, the discipline group concerned shall take the appropriate decision and justify why a course will not be offered as OER. This will be done in a formal meeting and will be put on the record.

In a short time, IGNOU has made major strides in adopting up-to-date educational technologies and has kept pace with the latest developments in the open education front.

eGyanKosh, which had a humble beginning as a digital repository to archive learning content, expanded its scope to evolve as a major hub for the university's online services. With the adoption of its OER policy, IGNOU will be the first university in the country to offer all its educational resources under Creative Commons open licences. The university is now in the process of implementing the policy and setting up the OER platform for content development and sharing.

Concluding Remarks

When IGNOU was established by an act of parliament, it was envisioned as becoming a leader in the country's ODL system and serving as a national resource centre. A step towards that goal was accomplished by developing eGyanKosh, a digital repository of learning resources, and making its contents available as open access material. Although the repository is at present providing access to IGNOU course material, it has been proposed to expand the eGyanKosh scope so that it becomes a national digital repository, by including learning resources from other open universities and distance education institutions in the country, in a consortium mode. Adoption of an OER policy will give further impetus to the university to evolve as a system leader on the ODL front. The concept of OER is very new to the country and is at a nascent stage of development. IGNOU will have to play a major role in building awareness about OER, and possibly help other ODL institutions in the country to adopt OER policies.

The NKC has suggested that development of open and distance education and OER is imperative to achieve India's objectives of expansion, excellence and inclusion in higher education. IGNOU is well positioned to spearhead a movement in that direction.

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CHAPTER 16

The Korean Open Courseware System

Yong Kim

Abstract

Korea has more than 19 cyber-universities. To date, content development has been very costly; this has also been the case for traditional universities operating online courses. Korean Open Courseware (KOCW) aims to increase the general public's access to college lectures, thereby providing lifelong learning opportunities. It also is intended to serve as the national hub for higher education eLearning content. The system was created in 2007 by the Korea Education and Research Information Service. By the end of 2012, the KOCW system contained more than 140,000 lectures. The KOCW also has metadata for managing and sharing content amongst universities. This metadata consists of several components, including "information on the provider", "information on copyright", "information on lectures" and so on. All developers keep the metadata before uploading. There are also guidelines to determine whether provided content is suitable for registering with KOCW — for example, "photography skill", "picture quality" and so forth. KOCW is being used to bolster the quality and boost the competitiveness of higher education in Korea.

Keywords: *OER, open courseware, higher education, eLearning content*

Background

In Korea, eLearning involves 19 cyber-universities. The Korean eLearning industry has grown in terms of both quantity and quality, thanks to sustained investment and development efforts. However, existing content has been developed primarily for limited purposes within educational institutions, without being shared. The spheres in which content is used are very restricted, and the effectiveness and efficiency of content use are very low, though a great deal of money has been invested in their development. Under these circumstances, Korea Open

Courseware (KOCW) is proposed as an alternative to promote the sharing and distribution of content (Figure 17.1).

The Purpose of KOCW

KOCW aims to (i) increase the general public's access to college lectures, providing the public with lifelong learning opportunities, and (ii) serve as the national hub for higher education eLearning content.

Figure 17.1: The KOCW website

KOCW is expected to enable 75 colleges to offer separate online services to accelerate their development of information and communication technologies (ICT) and decrease the digital divide. Further, KOCW is also expected to assist colleges and ten eLearning support centres across the nation to share and use content collaboratively and provide an opportunity to bolster the quality of college education. At the same time, colleges will be able to release high-quality lecture content, which will then contribute to creating a knowledge-sharing culture.

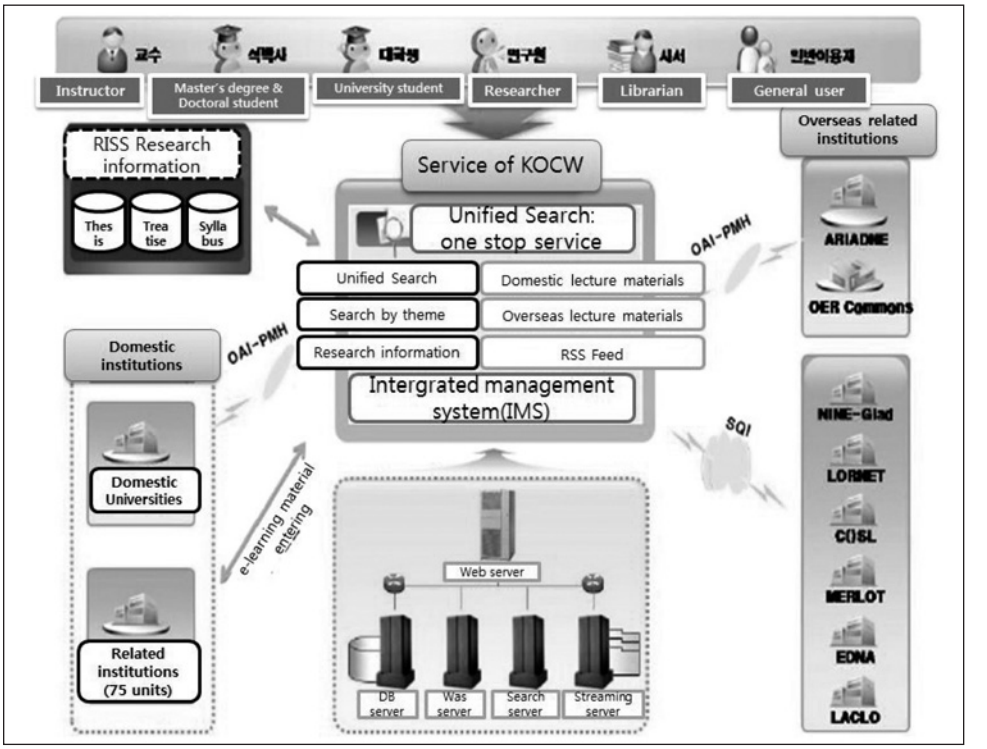
This development can be defined as part of the open educational resources (OER) movement, and the KOCW will make it possible to decrease the digital divide and ensure the availability of knowledge and information by creating the kind of culture in which everybody produces and shares information. Furthermore, KOCW will help instructors take their teaching to new levels, and content providers will be able to improve their standing and reputation when a wide variety of learners makes use of their content.

The State of KOCW

KOCW shares lecture video files with domestic universities and organisations that participate in the OER movement, and tries to develop content in collaboration with them. In addition, KOCW provides academic information search services and makes it possible to search domestic and foreign lecture materials by university, institution and curriculum theme. The KOCW content can then be used via a Creative Commons (CC) licence. Users are able to use, modify, remix and redistribute the content under the conditions specified by the open licence.

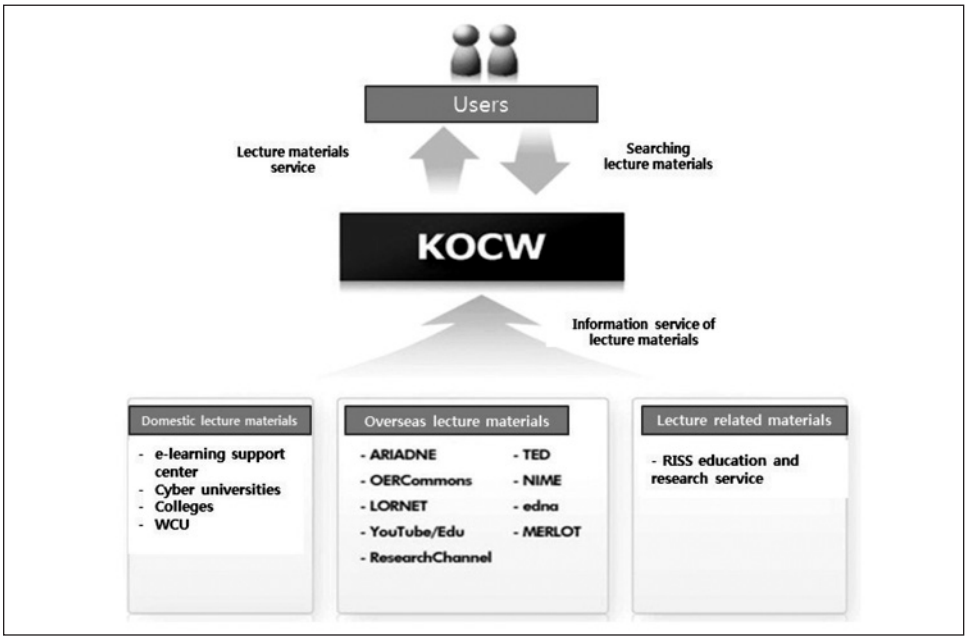
KOCW provides three types of content: open lecture materials, lecture-related materials and other lecture materials. In the case of open lecture materials, users can obtain materials from each lecture session of a course for a semester. Other lecture materials involve lecture notes and teaching plans. Figures 17.2 and 17.3 show KOCW's service structure and system.

Figure 17.2: KOCW's service structure



RISS = research information sharing service
Source: Ministry of Education, Science and Technology & KERIS, 2009

Figure 17.3: KOCW's service system



WCU = World-Class University project

After a plan was mapped out to set up the service system in May 2007, approximately 200 lectures from nearly 40 universities were provided on a trial basis in December of the same year, and assistance for videotaping college classes, as well as actual video clips, have been offered since March 2009.

Table 17.1 shows the preparation process for the services.

Table 17.1: The preparation process for the services

Term	Preparations
May–Sep. 2007	KOCW system planning
Dec. 2007	Launched services on a trial basis Provided a search service for lecture materials involving Japanese National Institute of Multimedia Education (NIME) lecture materials
July 2008	Issued copyright guidelines for the purpose of sharing eLearning services
Sept. 2008	Provided a search service for overseas lecture materials Conducted a survey on demand for domestic open lecture materials
Dec. 2008	Conducted the model operations of a website for sharing higher education teaching–learning materials
Mar. 2009	Offered assistance for making video clips of superb college lectures and started providing the video clips
May 2009	Started providing foreign educational video clips from YouTube EDU, TED, the Research Channel, as well as overseas lecture materials
Oct. 2009	Started providing video clips of the Korea Foundation's KF forum
Nov. 2009	KOCW possessed 535 items of domestic lecture materials, 450 items of overseas lecture materials and 29,052 items of general education materials

Source: www.kocw.net/home/introduce/intro1.do

As of July 2011, 140,000 OER items had been provided, which included 20,245 items of domestic lecture materials and 119,755 items of overseas lecture materials.

Table 17.2: The state of KOCW lectures as of 31 July 2011

Classification		Number of institutions	Number of lectures	Lecture materials
Korea	Colleges	113	1,941	25,648
	• WCU (world-class university)	27	665	6,918
	• Wide area	20	69	1,132
	• Educational capabilities	12	76	1,089
	• Assistance for humanities and social studies	10	13	55
	Related institutions	7	89	166
	Subtotal	120	2,030	25,814
Foreign countries	Overseas open lectures	11	626	781
	OAI collective agency	3	–	118,974
	Subtotal	14	626	119,755
Total		134	2,656	145,569

Source: The state of KOCW lectures, www.kocw.net

Types of KOCW lecture materials:

- Open lecture materials: content provided for each session so that users can take lectures for a semester.
- Lecture-related materials: academic research and information services provided by the Research Information Service System.
- Other lecture materials: related materials, including documents, images and lecture notes.

The State of KOCW Quality Assurance

Video clips comprise the major type of service provided by KOCW. Every instructor or institution that intends to enter into an agreement with KOCW to offer materials also has to provide metadata for the materials. The metadata should include information on the provider, copyright and subject of the lectures (see Table 17.3).

Table 17.3: Metadata of KOCW lectures

Classification	Details	Remarks
Information on the provider	Metadata manager	The manager's name and the institution to which the manager belongs
	Author	The author's name and the institution to which the author belongs
	Institution	The name of the institution
	Instructor	The English name of the instructor and the institution to which the instructor belongs
Starting path of lectures	–	URL containing eLearning content
Year of production	–	The year of production
Semester	–	The year and semester
Information on copyright	Copyright holder	The copyright holder's English name and the institution to which the copyright holder belongs
	Use of the materials for profit	Whether to prohibit or permit them to be used for profit
	Change of the materials	Whether to prohibit changes or permit them on particular terms
Principal/branch school	–	The name of the principal or branch school to which the provider belongs
Domestic/foreign	–	Whether or not the provider offers the materials in Korean
Language used in the lectures	–	What language is used
Type of lecture	–	What lecture type is used
Information on the lectures	Period	The period (length of time) should be written in English as well
	Language	What language is used
	Weekly explanations of lectures	–
	Keywords	–
	Path for each lecture	URL containing eLearning content
	Type of file	Whether the materials are video clips, audio clips, documents or images
	Type of period	There should be a distinction between the leading and additional periods

Source: The form of KOCW metadata, www.kocw.net

Table 17.4 shows a checklist used to determine whether content provided is suitable for registering with KOCW. The evaluators mark the content as good (O) or bad (X) at an interval of five minutes, and the content is regarded as inappropriate when 20 per cent or more of the clips are marked with X.

Table 17.4: The KOCW lecture content checklist

Classification	Details
Photographing skills	Stability of the screen, skill in photographing the lecturer or lecture materials
Picture quality	Monitor of 14–17 inches, and whether brightness, saturation and light intensity are good enough to recognise items at 1024×768 ppi resolution
Stereo	Whether the stereo is has a good signal-to-noise ratio; also, which volume level makes it possible to understand speakers when one listens by regulating the player volume, without going beyond the middle range of the volume of the computer's main body
Subtitles	Presence or absence of subtitles; whether the subtitles are synchronised well with the images; correlation between the subtitles and the contents of a video clip
Introduction	Presence or absence of brief information on the lecturer, such as academic credentials, etc.
Ethics	Presence or absence of objectionable language or slang; whether the language is sufficient for educational purposes
Copyright	Presence or absence of information on the copyright of metadata
Metadata	Whether the metadata form is complete
Lecture materials	Presence or absence of lecture materials

Most content provided by KOCW is in the form of video clips and is available for free. The content can be shared and distributed in accordance with the copyright regulations related to the respective Creative Commons licence.

Future Directions for KOCW

KOCW has attempted to seek diverse ways of boosting the competitiveness of Korean higher education, through its plans to provide user-centred Web services and create an educational culture that encourages professors and researchers to share their information. In addition, KOCW intends to team up with professional overseas eLearning institutions to share materials with them and to develop and supply high-quality content for different academic disciplines.

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CHAPTER

17

National Programme on Technology Enhanced Learning (NPTEL): OER and Beyond

Mangala Sunder Krishnan

Abstract

The National Programme on Technology Enhanced Learning is an Indian national initiative co-ordinated by the Indian Institute of Technology (IIT) Madras with partners from other IITs and the Indian Institute of Science, in Bangalore. The programme is funded by the Ministry of Human Resource Development, Government of India, and is geared towards providing detailed course content, free of charge, to academic institutions and individuals in all branches of engineering, science, technology, management and humanities subjects which form a part of higher education (i.e., beyond Grade 12). At the end of 2012, it is hoped that all major undergraduate and a number of post-graduate curricula of most engineering and technology programmes will be covered with the availability of 40-lecture (or equivalently, one semester long) course content for more than 1,000 courses. The programme will supplement this activity by providing hands-on training to young teachers on curricula and pedagogy. Efforts are also being made to answer users' queries, to provide supplementary materials, online quizzes and assignments, and to collect user feedback so as to update course content on a continuous basis. It is also proposed to set up a virtual technical institution for granting online certificates and degree/diploma programmes in the future.[1]

Keywords: *India, NPTEL, IIT, higher education, professional education, distance education, continuous open learning*

[1] Dedicated to the memory of Professor Paul Goodman, Professor of Organizational Psychology, Tepper School of Business, and Director, Centre for Strategic Learning, who passed away on 24 January 2012 in Pittsburgh. Paul was in many ways more than a friend, philosopher and guide to the NPTEL team, and through his vast experience with technology enhanced learning, influenced the thought processes of several of us.

Introduction

The National Programme on Technology Enhanced Learning (NPTEL) is an initiative in which several Indian Institutes of Technology (IIT Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and the Indian Institute of Science (IISc, in Bangalore) are partners in creating complete, free and open courseware online for engineering, science and management subjects, and in training teachers in Indian technical institutions to help improve the overall quality of technical and professional education and the employability of Indian graduates. The contents are, however, available free to everyone in the world and follow closely the curriculum design adopted by major technical universities in India and abroad.

The NPTEL project originated from many deliberations between IITs, Indian Institutes of Management (IIMs) and Carnegie Mellon University (CMU, in Pittsburgh, Pennsylvania, USA) during the years 1999–2000. A team of directors from IITs and IIMs had visited several institutions in the USA in 1988 to study technology-enhanced learning (TEL) processes and possible roles for these in the Indian educational sector. This was followed by a joint workshop involving nine IITs and IIMs, industry partners from InfoSys, Tata Consultancy Services, Wipro and the National Institute of Information Technology, and members from the government sector, including the Secretary of the IT and Education Ministries. The workshop was held at IIT Madras in 1999 under the co-ordination of Professor Paul Goodman, Professor of Organizational Psychology at CMU, Professor R. Natarajan, Director of IIT Madras and Professor M. S. Ananth, Dean of Academic Courses at IIT Madras. The workshop was funded by CMU. Professor M. S. Ananth put forward a proposal to the Government of India's Ministry of Human Resource Development on behalf of the five IITs (Bombay, Delhi, Kanpur, Kharagpur and Madras) and the IISc, to create content for 100 courses as web-based supplements to be distributed through the Internet (NPTEL, 2000).

The courses would cover lessons that could be delivered in approximately 40 hours. Five engineering branches (Civil, Computer Science, Electrical, Electronics and Communication, and Mechanical) and the core science programmes that all engineering students are required to take in their undergraduate engineering programme in India were chosen initially. Content for the above courses was based on the model curriculum suggested by the All India Council for Technical Education and the syllabi of major affiliated universities in India. The objective was to provide free and open, high-quality, authenticated (i.e., peer reviewed) course content covering the curricula end-to-end at both undergraduate and post-graduate levels, and to create electronic resources that could be used subsequently for launching a virtual technical university (Goodman, 2011).

The basic objective of science and engineering education in India is to devise and guide reforms that will transform India into a strong and vibrant knowledge economy. In this context, the focus areas for the NPTEL project have been (i) higher education, (ii) professional education, (iii) distance education and (iv) continuous and open learning, roughly in that order of preference.

Due to rapid economic growth in the last two decades and the opportunities for private partners to offer educational services, India has witnessed an enormous increase in the number of new professional colleges, with a consequent paucity in highly trained faculty with higher degrees and teaching experience, and poorer quality in the vast majority of its professional graduates.

Student enrolment has increased by an order of magnitude, from 150,000 entrants in 2000 to 1.4 million in 2011. However, the IT service sector has swelled to absorb every "employable" graduate, resulting in fewer graduates pursuing higher education. This has led to an alarmingly sharp decline in the number of teachers as well. NPTEL was designed both to address students' needs for quality content and to train and improve the quality of teachers through nationally designed curricula and massive teacher-training programmes, with the help of premier technical institutions.

The guiding principles for the programme were considered to be: (i) modularisation in the design of course content, (ii) authentication through peer review mechanisms, (iii) freedom for faculty to experiment with different course pedagogies and, above all, (iv) a service-minded approach by the faculty of the IITs and the IISc, including an environment in which any user of the course programme could pose queries and receive the desired response. However, a concerted effort by leading competitive educational institutions in India was an organisational challenge; in addition, a unified approach to providing detailed curricula that would, in future, also enable thousands of new educational partners to excel in their own spheres of education by suitable adoption and adaptation of courseware and training was a challenge for the online course designers. These difficulties could not be wished away, and considerable effort has been made for quite some time to address, if not entirely solve, these challenges.

In 2003 the Ministry of Human Resource Development formally funded the programme for IITs to carry out content development for 200 courses in engineering. A sum of INR (Indian rupee) 205 million was approved for the period 2003–2007 (approximately USD 4 million), and INR 960 million (approximately USD 18 million) was sanctioned for the second and third phases, from 2007 to 2012 (NPTEL, 2012).

At the end of the current project period (2007–2012), the programme expects to provide detailed lecture-wise content of about 40 hours each for approximately 1,200 courses, covering most major engineering and technology disciplines as well as post-graduate programmes in basic sciences and management. They include post-graduate courses in the five major disciplines covered in the first phase at the undergraduate level. All of this will result in a very large number of open educational resources (OER) of high quality and different pedagogies.

However, as stated above, OER are one of NPTEL's several objectives, and unlike in other OER initiatives, training and support are parts of the fundamental design that pose challenges for future scaling (Iyoshi & Vijay Kumar, 2008). Nonetheless, an academic consortium or collaboration of this nature from a single national entity, funded wholly by the government for a sustained period, proposing to involve multiple partners in all aspects of design, development and delivery of course content online for free, is the first of its kind in the world.

The Process and Operational Details

India needs many more teachers for effective implementation of higher education in professional courses. To a large extent, this is true in all developing countries. Therefore, methods for training young and inexperienced teachers to enable them

to carry out their academic responsibilities effectively are a necessity. NPTEL is expected to fill the void in a number of ways, namely:

- NPTEL content can be used as core curriculum content for training purposes.
- In addition, a large number of students who are unable to attend scholarly institutions will have access to quality content through NPTEL.
- All those who are gainfully employed in industries and all other walks of life, and who require continuous training and updating of their knowledge, can benefit from well-developed and peer reviewed course content from the IITs and IISc.
- Lifelong learners have all the more reason to use NPTEL content because it will be threaded quite carefully into content at all levels and into all fields of higher technical education.

To influence these processes in a systematic and sustainable manner, two committees were set up, referred to as the National Programme Committee (NPC) and the Project Implementation Committee (PIC). The mandate for the NPC, headed by the Joint Secretary/Additional Secretary (a senior Indian Administrative Service official in the Ministry of Human Resource Development who was familiar with online educational paradigms), was defined as follows:

- Function as a grants-in-aid committee and release funds.
- Constitute and approve subject-level groups for harmonisation of curricula.
- Ensure quality and certification of courseware produced.
- Ensure inter-institutional and inter-ministry co-ordination of academic activities and with the All India Council for Technical Education.

The PIC — consisting largely of TEL co-ordinators of participating institutions to co-ordinate the project at the institute level, and chaired by Professor M. S. Ananth (Director, IIT Madras, 2001–2011) — was the main body to operationalise the programme at the participating institute level and had the following mandate:

- Prepare the detailed programme implementation plan.
- Allocate activities to different partner institutions and ensure inter-institutional co-ordination.
- Select and approve courses.
- Decide on standards conventions and notation, identify studio hardware/software infrastructure and ensure uniform quality of technical infrastructure.
- Devise strategies for updating courseware already developed.
- Plan and organise orientation and training programmes and workshops.
- Advise subject-matter experts on copyright and intellectual property rights issues.
- Ensure timely and effective implementation.

In addition, two national-level co-ordinators (the present author and Professor Kushal Sen, IIT Delhi) were nominated to co-ordinate the overall development of web-based and video-based course content. The PIC constituted subject-matter

expert groups early on for every discipline, and the members met several times and exchanged emails to arrive at a revised engineering curriculum by taking into account the model syllabi provided by the statutory body for technical education in India: the All India Council for Technical Education. They also examined the syllabi of three major universities with hundreds of affiliated engineering colleges (Anna University, Visvesvaraya Technological University and Jawaharlal Nehru Technological University) and fused their teaching experiences together with those institutions noted to write modular forms of curricula for a large number of courses.

Each module in a course would comprise two to five one-hour lectures, and between ten and 15 modules would comprise a course. About 60 to 80 per cent of this would have strong overlap with undergraduate curricula of most of the Indian universities, and the rest were intended to be optional. The subject-matter expert groups then sought faculty volunteers from all eight partner institutions, and duplication of the same course by multiple faculty was minimised by encouraging teams of two or more such members to develop the course together. In the first phase of NPTEL there were many such teams, often consisting of members from the same department of a partner institute, but there were also a number of teams with faculty from several institutes for the same course. The objective was to develop lecture content for all eight semesters in each and every discipline. The exercise took considerable time and effort, and there were many meetings and exchanges, as no two faculty members' teaching methods were alike. Through many discussions, a general consensus evolved on the details of course development in two formats: the Web and video.

The original NPTEL proposal did not have two formats, only web-based content development. The suggestion to create video-based lectures had been made in 2003 by Professor Murli Manohar Joshi, the then Minister for Human Resource Development. He requested the PIC consider recording lectures and broadcasting them over a television channel that would be created exclusively for that purpose.

Internet bandwidth in many academic institutions and many homes, particularly in rural India, was inadequate or non-existent, whereas television and telephones had major presences in every part of the country. With Ministry funding, the PIC helped standardise recording processes and set up broadcast-quality studios in all partner institutes. The PIC also assisted all partners in the creation of walk-in facilities, with the help of software and hardware infrastructure and technical manpower.

The Institute for Strategic Development, at Carnegie Mellon University (the brainchild of Professor Paul Goodman) was used as the model to create in-house facilities in all partner institutes, where faculty would be given adequate technical support to develop online content and to carry out experiments on TEL through new paradigms. The Web Studio created in IIT Madras is currently an institute- and nationwide facility, and is the co-ordinating and training laboratory for a number of similar programmes developed by other ministries.

The government promised a national satellite TV channel exclusively for broadcasting video lessons, 24/7 (and delivered it on Republic Day —January 26 — in 2004). The channel was named Eklavya, after the iconic distance education student of the great Indian epic, the Mahabharata. Eklavya was said to have practised archery in front of a mud statue of the best archer, Aachrya (guru,

teacher) Drona, whom he adopted as his teacher; this was because Eklavya, born to parents of a lower caste, would not be permitted to learn in the house of his guru along with the children of the king and the other elite members of society. As the story goes, he was asked later by Drona to give his thumb back as the Guru Dakshina so that he would not be able to beat the "on-campus" (Guru Kulam, the House of the Guru) learners of archery. Professor Ananth would promise in every subsequent meeting with students and teachers that this "history" would not be repeated in the present instance.

Current Status and Projections for the Future: Beyond OER

The story of NPTEL Phase I, with interviews from many of the programme co-ordinators, has been recounted coherently in an earlier publication (Walsh, 2011) that also sets the context of opening up education in many leading universities. The NPTEL website was formally launched on 5 September 2006 by the late Shri. Arjun Singh, Minister for Human Resource Development, and has been updated ever since with course content for more than 260 courses. The Web and videolecture content for about 1,000 courses in development under the current phase is being added incrementally. Several IT partners have come forward with offers to host the content on their websites. Google, through its video arm of YouTube, offered an educational channel to IIT in the same manner that it has provided channels to leading U.S. universities such as Stanford, MIT and Berkeley.

YouTube now has many commercial-free educational channels, and NPTEL's (at www.youtube.com/IIT) is one of the best-known academic sites, with more than 5,500 videolectures in streaming media (MPEG-4, H.264, 512 kbps bit rate) on technical subjects under about 130 playlists. The list grew substantially in 2012. Several million viewers have already visited, and tens of millions of visitors have benefited worldwide through hyperlinks to the channel on many other websites.

The official website of NPTEL (http://nptel.iitm.ac.in) hosts all the Web and video content organised according to subjects and also has updates on all activities of the project so far. In addition, the PIC has been meeting periodically and has enabled the present author (the national Web courses co-ordinator for this project) to carry out all its activities and be its spokesperson. The following are some of the activities being taken up:

- Conduct course-specific workshops by bringing together the faculty who developed the course and teachers who are likely to use the lecture material.
- Conduct workshops in selected regions all over the country so that a large body of students can also participate and learn the usage process.
- Create a subject index and keyword search for both video and Web materials so that students can use a search engine to find relevant materials across courses.
- Create course-specific bulletins and discussion boards on the website so that students can ask questions about the course material. Open learning will be supported by permitting answers by interested students and teachers, with occasional moderation of discussions by course developers.

- Create a course-specific Edupedia (similar to the powerful concept of Wikipedia) with the help of qualified teachers across the country, create a digital library relevant to course materials and make both resources available in the course area.
- Create course-specific FAQ through all of the above.
- Encourage teachers in various colleges to adapt the materials so as to prepare localised versions suitable for the examination system of their particular college.
- Share expertise on eLearning, content development and content dissemination with interested institutions so that they can set up their own eLearning portals.
- Distribute the NPTEL content — both Web and video — to any interested institution for its internal use.
- Set up a video-on-demand facility in IITs and the IISc, with sufficient exclusive Internet bandwidth for making videolectures available in the streaming format. This will help not only the students and teachers, but also industry professionals and open learners. Currently the NPTEL site at IIT Madras hosts the video server and needs to be mirrored in multiple locations as the courses and users increase.
- Create text transcripts of all videos to enable indexing of the videos and for future translation of the spoken content into many Indian languages. This will likely improve the learning prospects of a majority of Indian learners having difficulties with English.

This author had realised through conversations with students that often they were unable to distinguish between an inability to understand a concept and an inability to express the concept coherently in English; the student would, for instance, cite an inability to count in English faster than in his or her native language. English language teaching has also suffered a considerable setback in India in recent years, leading to other difficulties in higher education. For a country with more than two dozen official languages, providing educational aids equally in all the native languages is a significant and socially important step. Transcription of spoken text and translation of written text not only would help in addressing this problem, but would, in the long run, enrich Indian languages to build the necessary scientific vocabulary when this effort was taken further to develop courses in all spheres of higher education. It would also enrich the whole world with the reverse process of translation, from native learning and intelligence into English, since the tools for translation would also have been perfected through this effort.

The Mission Beyond

India is a vast country whose engineering student population outnumbers every other country's, with the possible exception of China's. The present objectives of NPTEL are: (i) to create content for science and engineering courses in all major disciplines as well as specialised and newly developing inter-disciplinary subjects for which there is very little academic expertise in private colleges, (ii) to help colleges through workshops and discussion boards for implementing

NPTEL content in their curriculum, (iii) to answer user queries with the help of subject-matter experts and collaborating faculty trained in the subject and (iv) to encourage teachers in other academic institutions to design additional support material.

Thus, NPTEL hopes to go beyond creation and free dissemination of peer reviewed OER by helping others who may need to train themselves in teaching and learning with the Internet. Also, course development is no longer restricted to IIT/IISc faculty, but is open to distinguished academics from all institutions who agree to the norms developed for creating courses, styles, mechanisms of peer review and periodic updating of content. Above all, a model curriculum for new institutions will continue to be built to facilitate threaded learning and make resources available to everyone in the world.

Currently, the distribution and copyright laws for usage are somewhat restrictive, but fair use for academic programmes is being encouraged. The system is moving towards more open copyright formats such as the "ShareAlike" and "Attribution" licence options of Creative Commons or their equivalents. Faculty members are being encouraged and supported both technically and financially to incorporate feedback from the user community in their courses and to revise their courses accordingly.

It is one of the fundamental goals of the project to bring in all the best teachers in the country under the umbrella of NPTEL, and either record their lectures or seek their collaboration with the IITs and the IISc to make their courses available for the community under free and open source licences and agreements. IIT Delhi has already initiated a move to create open virtual laboratories on the Internet for engineering subjects, which is extremely important for our country. Integrated with coursework provided by NPTEL, virtual lab demonstrations will significantly enhance the learning experience. Efforts are underway to link labs to the courses.

Another primary objective is to forge strong ties with major academic initiatives worldwide, such as MIT OCW, the Commonwealth of Learning, The Open University (UK), Open Universities Australia and Digital Library Initiatives (to mention a few), and with industry to develop new technological tools for learning and dissemination. The number of things that must be done simultaneously is enormous. As scholarly institutions of India, the IITs and the IISc must rise to the challenge of quality and open education posed by the nation's unprecedented and rapid economic growth, and the opportunities this provides for globalising India's pool of scientific and technical talent. Together, everyone will prosper.

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CHAPTER 18

Teachers' Online Forum: An Online Interactive Forum for Sustaining Teacher Professional Development, by Universitas Terbuka

Udan Kusmawan

Abstract

During its 26th year (2011), Universitas Terbuka graduated its one millionth student; three-fourths of these alumni are teachers, mostly domiciled in remote areas of Indonesia where the supporting infrastructure for information and communication technologies is limited. This condition has restricted their access to quality educational resources. The development of an online forum for teachers aims to respond to this need, encouraging and facilitating the sharing and exchange of teaching experiences and expertise across the country, and serving as a repository for content in various media. Since its inception in 2010, over 50,000 viewers have visited the forum, and more than 1,000 are active members. A survey was conducted to explore and gain insight into the utilisation and management of the forum. Interviews amongst selected samples reveal that the forum serves more as an institutional content provider than as a medium for user-generated content.

Keywords: *Universitas Terbuka, OER, teacher online forum, Indonesia*

Introduction: The Use of ICT Media for Education

Indonesia is located in the Oceania region of Southeast Asia, and comprises 17,508 islands (Government of Indonesia, 2012), organised into 33 provinces. Indonesia is the world's fourth most populous country at 245 million, with population growth at one per cent per year. The GDP has increased significantly over the past five years, and the per capita income (PPP) is USD 3,000. In terms of public interest in using communication technologies, Indonesia has the world's second largest Facebook community, and mobile phone and smartphone usage is reported to be high.

The use of ICT for e-education in Indonesia started in 2002 when the Center for Information and Communication Technology for Education (Pustekkom), in

co-operation with the Directorate of Secondary Education and the Directorate of Vocational Education, developed an eLearning programme called "e-dukasi". The objective of this programme was to improve the quality of education at the high school and vocational school levels through the use of the Internet. In addition, the Indonesian Telephone Company (PT Telkom) supported a number of institutions to mobilise eLearning penetration, such as the Office for the Research and Application of Technologies, Association of Indonesian Internet Service Providers, Network of School Information, Detik.com and ICT Watch. At this preliminary stage, learning materials were developed for the subjects of Mathematics, Physics, Chemistry, Biology, Electronics, and Information and Communication Technology.

For universities, in addition to meeting eLearning and e-education requirements, ICT has also been used to develop an electronic library network. The Indonesia Digital Library Network (IDLN) is a network of electronic libraries that initially comprised: (i) the Institut Teknologi Bandung (ITB) central library (Digital Library), (ii) the Post-Graduate Study Library of ITB, (iii) the Research Institute of ITB, (iv) the Eastern Indonesia Universities Development Project (a Canadian International Development Agency project), (v) the University of Brawijaya Malang Central Library, (vi) the University of Muhammadiyah Malang Library, (vii) the University of Islamic Religion Library (supported by McGill University, Canada) and (viii) the Central Data Bank of the Science Institution of Indonesia (LIPI), Jakarta. The IDLN is meant to support efforts to improve the quality of university graduates and to increase information sharing amongst institutions of higher learning, as well as research institutions in Indonesia. This has encouraged more universities in Indonesia to launch projects on open educational resources (OER) and to expand the digital network. Another OER initiative is supported by the Ministry of National Education through the introduction of digital textbooks for primary and secondary schools, called Buku Sekolah Elektronik (Electronic School Textbooks). The Ministry purchases the copyrights for selected books to be shared with the public. This initiative is intended to provide more alternative resources for student learning.

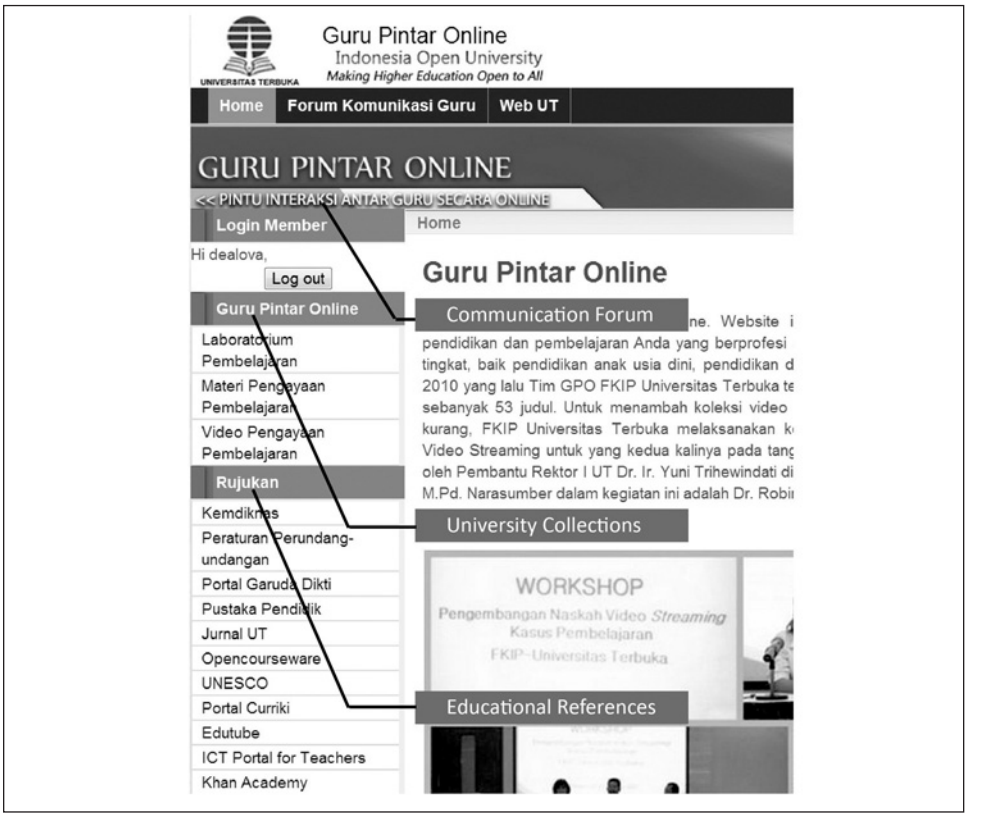
At Universitas Terbuka (UT), some Internet-based media and forums were developed and presented to broaden and enrich student learning resources and services; they were also to some extent aimed at strengthening the process of student learning. Some of the services were provided online, including the Teachers' Online Forum, one of UT's online resources delivering educational discourses and practices. The forum offers OER mainly dedicated to teachers, whilst also being open to education practitioners, education observers and the public. In addition to providing general information concerning education issues, the online communication forum for teachers serves as the main student and alumni service of the portal. It encourages teachers and forum users to register, after which logging in to this forum allows active participation in discussions. Users can also view videorecorded teaching lessons or best practices presented by other teachers. The Faculty of Education hosts the Teachers' Online Forum portal and continues to undertake research and development to improve and enrich it.

About the Teachers' Online Forum

The Teachers' Online Forum (TOF) is a specialised portal through which teachers and other educators and educational practitioners can work on and share professional teaching methods and experiences. The Faculty of Education (FoE) started the development of the TOF in 2007. In 2010, UT launched the TOF through the National Forum for Teachers. UT continues to orchestrate the use of TOF sites through a series of seminars, teacher meetings and workshops. The university encourages staff and lecturers to contribute their professional expertise through the TOF, and motivates UT in-service student teachers to register and participate actively in the TOF as well.

In general, the TOF comprises three information packages, as shown in Figure 19.1. Firstly, TOF promotes university collections that were developed by FoE staff, relating to subject materials offered within the FoE curriculum. Secondly, the TOF offers links to governmental resources, including teacher-related official rules and references for education, online journals and databases, world educational organisations and teacher blogs. Finally, the TOF offers a Teachers' Communication Forum, which is explicitly devoted to teachers sharing best practices and which promotes innovations in classroom teaching and learning.

Figure 19.1: The structure of the TOF



The University Collections section of the TOF presents videos and lessons grouped into three categories: (i) learning and teaching laboratories, (ii) supplementary materials and (iii) teacher success stories on classroom teaching and learning. To enrich and maintain the online laboratory, UT lecturers are assigned to

conduct analyses on curricula and syllabi, as well as on modules as the main printed resources for students. Some content (conceptions, definitions, theories and models) are presented in the module and are designed to facilitate the development of higher-order thinking skills.

Many students consider this content very difficult and require further details to better comprehend it. To offer these students easier ways to reach the intended understanding, lecturers of the FoE have supplemented this content with streaming videos and other forms of interactive learning multimedia. Each medium contains three main presentation materials: (i) an introduction to issues that are to be discussed through the media, (ii) examples or cases of learning and teaching related to the intended concepts and (iii) explanation by connecting the examples or cases presented in the media presentations to the intended concepts. All UT students and registered viewers are eligible to observe and study these media.

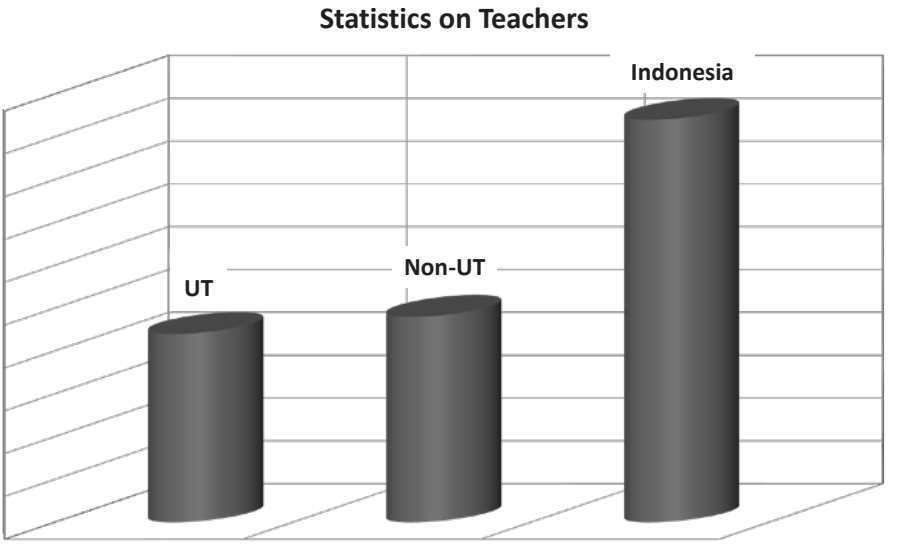
Through the Educational References section, teachers are provided with online resources containing up-to-date official rules and regulations, especially on teacher education, professionalism and appreciation (incentives). Information is provided by the Ministry of Education and Culture. Teachers are able to fully download and print the information because it is presented in PDF format. To offer teachers broader and international knowledge and experiences in education and learning practices, and in the use of ICT in education, the portal facilitates links to other online educational resources. These include: *Portal Garuda Dikti* (Higher Education Department Portal for Scientific Research Database), which presents scientific and popular references written by Indonesian scholars; *Pustaka Pendidik* (References for Educators), which provides lessons and best practices specifically for basic education teachers; *Curriki*, which allows educators and decision makers to participate as a global learning community; *Edutube*, which presents models and lessons on a variety of popular topics, in addition to education categories that include animals, biology, chemistry, guitar lessons, math, politics, space, computer science, food, technology and more; and UNESCO's *ICT in Teacher Education: Case Studies From the Asia-Pacific Region* materials on the use of ICT in Asia-Pacific education (UNESCO, 2008).

Finally, the Teachers' Communication Forum was designed to enable teachers and practitioners to interact and exchange their knowledge and information on educating children. The forum is designed around eight topics: Learning Strategies, Evaluation, Curriculum, Curricular Content, Educational Operations, Students, Research, and Comments or Suggestions. Each topic contains several suggested sub-topics considered popular issues for teachers to discuss and share through the forum. Teachers can simply log in to an intended sub-topic, follow and read discussions on the available issues or titles, and give comments to other forum users' responses in relation to the presented issues. Forum users can also suggest new issues that are pressing, interesting or educationally innovative. A forum user can also simply visit the forum and read available information without joining active discussions; however, we feel that this limits the forum user's opportunity to actively share and contribute to educational innovations via the forum.

Usage of the TOF

The FoE of UT had originally adopted the mission to serve only students who were already actively teaching through an in-service teacher training programme. The Government of Indonesia's Ministry of Education and Culture required teachers to pursue a bachelor's degree whilst still actively teaching. Currently, a formal regulation stipulates that all teachers must possess at least a bachelor's degree, which has led teachers to enrol at UT to meet this professional requirement. As a result, students who are practising teachers dominate (at 80 per cent) the total number of UT students.

Figure 19.2: Teachers at and graduated from UT and other universities



National statistics from the Directorate of PMPTK (a directorate of the Ministry of Education and Culture responsible for quality improvement of teachers and educational personnel) indicate that in 2009, UT graduates comprised almost 50 per cent of all 2,607,311 teachers in Indonesia (Figure 19.2, Directorate of PMPTK, 2009). UT has therefore sourced a large portion of national professional resources for improving the quality of teachers in Indonesia, which will in turn affect national school quality. This situation inspired UT to promote continuing services to teachers in Indonesia.

Through the TOF, driven by the Faculty of Education, UT has provided continuous professional development for teachers in Indonesia. Since its inauguration in 2010, the TOF has increased its collections to support innovations in professional teaching and learning, and to improve the quality of its development. Initially, certain barriers diminished the realisation of TOF, from both the teachers' and UT's point of view. For the teachers, working with information and communication technology (ICT) was still limited and somewhat of a novelty; conventional methods, such as offline meetings, symposia, regular face-to-face training and routine upgrading, were still considered best strategies for professional teaching and learning development. To some extent, this situation will influence existing teacher capacity and skills to maximise the use of ICT for

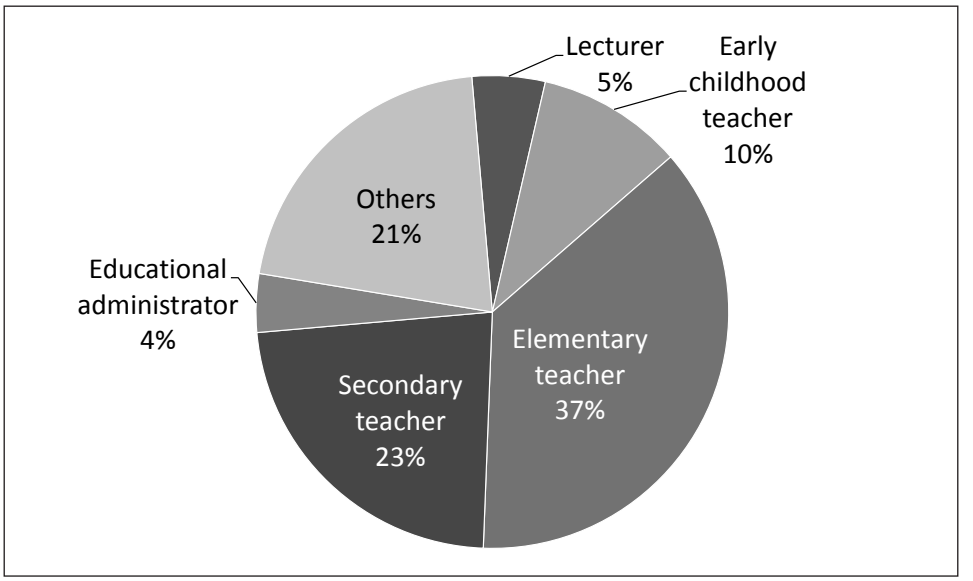
learning, limiting better and wider solutions for professional learning, teaching and innovation. And finally, the lack of infrastructure in many remote areas of Indonesia contributes to inadequate access to online services for teachers. In the meantime, from UT's side, some weaknesses are attributable to limited human resources to develop comprehensive content for the online forum with rich, innovative and satisfying materials.

Various programmes, including intensive training and workshops, were carried out to reduce this limitation. Some activities, such as content analyses, peer review and expert assessment of online forum materials, were conducted for quality assurance. Those programmes involved experts and qualified content writers from partnering universities and selected schools, and were effective in accelerating the development of printed and audio-video collections. Over 53 titles of streaming videos are now available in the university collection. In addition to programming such activities, the FoE assigned and trained academic staff to function as moderators of the online forum. The FoE invited lecturers, especially those whose academic backgrounds and expertise were on the theory and practice of classroom teaching and learning, to participate in online discussions, responding to questions and comments presented by forum users.

Since its inception in 2010, over 50,000 viewers have visited the forum, and more than 1,000 of them are active members, demonstrating success in the TOF design efforts. Figure 19.3 shows membership based on work status. There are six categories of members: early childhood teachers, elementary teachers, secondary teachers (junior and senior school teachers), lecturers, educational administrators and other professionals, plus the general public.

It is apparent from Figure 19.3 that participation is dominated by elementary teachers (37 per cent), followed by secondary teachers (23 per cent). Unexpectedly, non-teachers and lecturers also have a high participation rate. Twenty-one per cent of the participating members are professionals and others. This indicates that the online forum may provide wider benefits not only for teachers but also for those interested in learning about classroom teaching and learning.

Figure 19.3: Profile of participating members of the online forum



In efforts to continuously improve service quality, the FoE conducted case studies using field observations and online surveys. Field observations were focussed on content analysis (including participants' comments, opinions and suggestions) expressed throughout discussions; direct interviews were also randomly conducted with several participating teachers to address their comments concerning topics, materials and Web presentation quality.

In general, the studies showed that teachers were satisfied with the topics of discussion as designed and presented in the TOF. They asserted that the subject-driven materials of the university collections accommodated their needs for quality improvement in classroom learning and teaching practices. Additionally, most of the teachers accepted that the online forum helped them to meet friends from various schools environments with wider school communities and backgrounds in Indonesia.

Analyses and explorations of similar issues — such as children's difficulties in understanding a concept, and teachers' understandings of misconceptions presented by members based on a variety of classroom experiences —enriched teachers' viewpoints and perspectives on the issues. Above all, video presentations were seen as the favourite media. Some teachers suggested that downloading videos and presenting them in group discussions helped make it easier to understand problems. Several teachers offered to upload videos of their classroom practices. Besides promoting a real contribution to the quality of classroom teaching, presenting videos through the TOF could also be expected to elevate teacher reputation.

The results of the field observations were in general agreement with the online survey conducted by email. The FoE administered a membership database to enable staff to reach online members.

Table 19.1 shows the structure of the membership database. Short questions were emailed to all the members. Questions were grouped into four issues: (i) subject-driven contents, (ii) streaming videos, (iii) educational policy linkages and (iv) educational blogs.

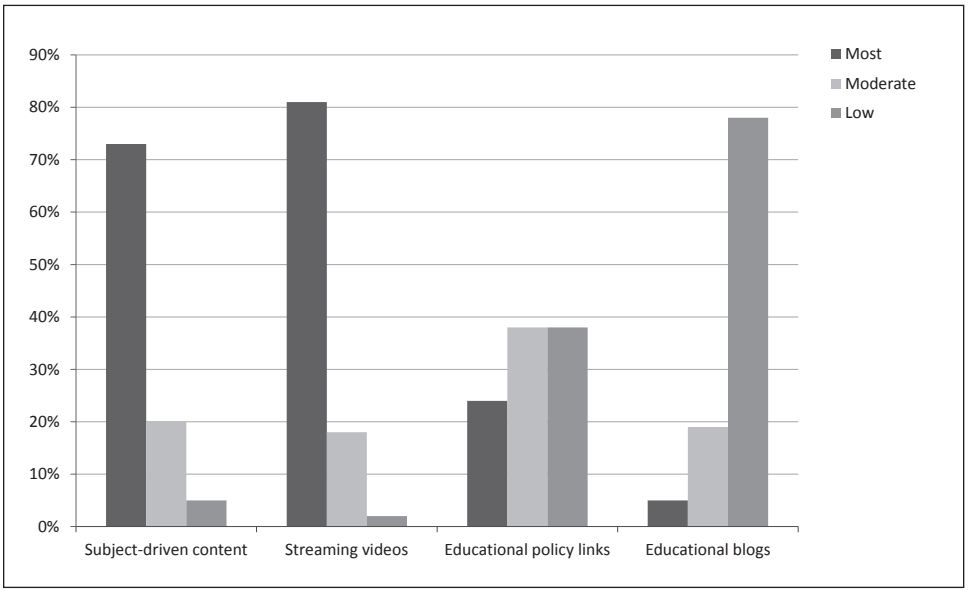
Table 19.1: Structure of the membership database

id	name	username	email	education	workStatus	institution	age	rovin	city	registerDate	lastvisitDate
163	Idha Novianti	anti	anti@ut.ac.id	S2	Dosen	UT	32	DKI Jakart	Tangeran	2011-07-14 06:51:18	2011-11-22 04:06:30
170	daryusman	daryus	daryus7@gmail.com	S1	Dosen	Universitas Terbuka	25	DKI Jakart	Jakarta	2011-07-15 08:38:20	2011-10-14 07:21:03
172	angga sucitra	angga	angga2102@yahoo.com	S1	Dosen	UPBJJ UNIVERSITAS TE	26	Jawa Bara	BANDUN	2011-07-15 10:46:49	2011-07-23 02:52:30
173	nana setiana	nana	nana.cinunuk@yahoo.com	S2	Dosen	upbjj ut bandung	50	Jawa Bara	bandung	2011-07-15 11:07:22	0000-00-00 00:00:00
176	Nana	Setiana	drsnanasetiana@yahoo.com	S2	Dosen	UPBJJ Bandung	50	Jawa Bara	Bandung	2011-07-15 14:07:33	0000-00-00 00:00:00
177	Darmanto S.S. Manurung	DarmantoManurung	Xonia_Nauli@yahoo.co.id	S2	Dosen	FISIP Universitas Jende	50 Tahun	Jawa Teng	Purwoke	2011-07-15 14:50:17	0000-00-00 00:00:00
190	soleh hadiryanto	soleh	soleh-hadiryanto@ut.ac.id	S2	Dosen	UPBJJ UT Bandung	53th	Jawa Bara	Bandung	2011-07-19 10:24:44	2011-07-19 10:41:51
250	Sri Sumiyati	sumi	sumi@ut.ac.id	S2	Dosen	Universitas Terbuka	49	Banten	Tangsel	2011-08-04 04:45:11	2011-10-26 07:59:32
251	Mery Noviyanti	Mery	meryn@ut.ac.id	S2	Dosen	Universitas Terbuka		Banten	Tangeran	2011-08-04 05:36:02	2011-11-28 04:39:46
253	Nunung Supratmi	nunung	nunung@ut.ac.id	S2	Dosen	UT	36	Banten	Tangeran	2011-08-04 06:38:34	2011-10-25 06:49:14
256	Nurul Hidayat	nurul	nurul_unsoed@yahoo.com	S2	Dosen	Teknik Informatika Jur	38	Jawa Teng	Purwoke	2011-08-05 09:53:51	2011-08-05 09:56:00
260	Zulkifli Harahap	zulkifli	zulkifli@ut.ac.id	S2	Dosen	Universitas Terbuka	35 Tahun	Sumatera	Medan	2011-08-07 13:39:19	2011-08-07 14:30:40
275	dodi sukmayadi	dodisy	dodisy@ut.ac.id	S2	Dosen	UT	50	Banten	Tangeran	2011-08-10 02:20:40	2011-10-04 00:55:59
276	Drs. Suharno, M. Pd.	suharno	suharno@ut.ac.id	S2	Dosen	UPBJJ-UT Bandarlampu	53 Tahun	Lampung	Bandarla	2011-08-10 04:45:26	2011-08-10 05:42:56
278	Lidwina S Ardiasih	lidwina	lidwina@ut.ac.id	S2	Dosen	Universitas Terbuka	36 tahun	Banten	Tangeran	2011-08-10 06:35:42	2011-11-15 08:55:32
282	Rina Astarika	astarika	astari@ut.ac.id	S2	Dosen	UPBJJ-UT JAMBI	32 tahun	Jambi	jambi	2011-08-11 02:32:35	2011-08-11 02:35:15

Questionnaires were addressed to seek members' perspectives on each main section of the TOF. Regarding each of the issues, members were asked four questions to which they responded either "mostly agree", "moderately agree" or "rarely agree". The questionnaire centred on questions relating to improvement of their knowledge and skills due to their participation in the online forum.

Figure 19.5 presents the results. Evidently, members were mostly in agreement that their exchange of ideas on subject-driven materials and streaming videos was useful for classroom quality improvement. Also, most members were reluctant to follow educational blogs presented in the TOF. Members gave "moderately agree" responses regarding their perspectives on the section about formal education regulations. This may be because members already had good access to such information using existing channels in their schools.

Figure 19.5: Members' perspectives on the online forum



Sustainability of the TOF

UT will continue to expand teacher professional development through the TOF. In 2012–13, the Faculty of Education plans to make greater efforts to develop streaming videos to highlight good teaching practices. Partnerships with more organisations and agents in IT practices and developments, both national and international, will be strategies to strengthen the TOF and to address wider content coverage, with more actual teaching issues for teacher quality improvement. Additionally, internal consolidation is envisaged to improve the strategy and mechanisms of moderating teacher communication forums, and other tasks associated with the quality of information, website links and networking.

In the meantime, UT is considering participating in licensing the TOF under a Creative Commons (CC) licence. Leaders at UT feel that CC will enable UT to share innovations and creativity with the world. It is accepted that CC develops and sustains legal and technical infrastructure that maximises digital creativity, sharing and innovation. Intensive socialisation on the use of the CC licences has been conducted through several formal and informal meetings and seminars. A team has been working on examining an appropriate CC licence for the TOF. A provisional draft has suggested providing opportunity for others to remix, adjust and build upon the available works non-commercially. The team has proposed to

use the Attribution–NonCommercial–ShareAlike (CC BY-NC-SA) licence. This is expected to allow open creativity in response to the works presented by the TOF, as long as creators credit works and license their new creations under the same licence.

Conclusion

In Indonesia, the TOF has been providing alternatives for classroom quality improvement in teaching and learning. Wider acceptance is apparent from the extensive participant list, which includes teachers and other educational practitioners. This introduces a great opportunity for UT to maintain and improve the quality of presentations in the TOF, so as to strengthen its contribution to quality innovation for professional teachers and teaching practices. Licensing the TOF is considered critical and therefore is being explored by UT. A team has proposed registering the TOF under a Creative Commons licence. UT expects to offer more open participation and non-commercial creativity from users through using a CC licence.

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CHAPTER 19

Opening Up Resources for Open Learning: The Open University of Hong Kong

Alex Jean-wah Wong and Kin-sun Yuen

Abstract

An important mission of open education is to provide unrestricted study opportunities to the widest possible communities of potential learners. To this end, the Open University of Hong Kong (OUHK) has adopted a policy to proactively connect with society at large by opening up its course materials to the public for viewing, sampling or even trying. Whilst the offer of open resources has provided solid evidence of value in inspiring and motivating people of all ages to return to study, the university also benefits from deeper knowledge about users' needs, preferences and behaviours, communicated through distribution and contact information. Pervasive digital tools and networks as well as liberating concepts of copyright are offering new prospects of reaching out and interacting with a wider audience for a more immersive "tasting" of open education. In this chapter, we chronicle how the OUHK incrementally expanded its open resources policies and practices at different stages by taking advantage of emerging technologies and vehicles. Such openness has helped widen participation. In the process, the university has also discovered its potential and strength to facilitate cultural change at a societal level by embarking on an ambitious project to transform the provision and consumption of textbooks with open educational resources.

Keywords: *OUHK, open educational resources, free courseware, copyright, textbooks*

Background

Open learning was first introduced into Hong Kong in the late 1980s. Initially established as the Open Learning Institute in 1989, the Open University of Hong Kong (OUHK) carries the mission of providing "education for all" and aims to include, as widely as possible, people from all walks of life. In practice this translates into efforts to promote lifelong learning, to encourage people who

missed higher education to return to study, and to motivate the well educated to continue learning so as to improve their own skills and qualifications. During the period of OUHK's establishment, Hong Kong was undergoing a massive economic shift, brought about by the opening of mainland China.

The displacement of manufacturing by vibrant service industries entailed strong demand for highly trained professionals and educated managers. At the beginning of the 21st century, the government further mounted an ambitious plan to double the rate of post-secondary graduates to 60 per cent, and in the meantime to promote continuing education for all adults to raise the competitiveness of the workforce. The OUHK is positioned to play a key role in this area. Its system of open access, distance learning, modular courses and flexible schedules is designed to meet the wide-ranging needs of individuals, organisations and society. In over 20 years, we have become the largest distance learning provider in the higher education system, and each year have attracted around 14,000 adults to pursue degrees. Our most prominent accomplishment is successfully targeting learners previously denied higher education, and helping them to attain their goals with innovative approaches.

Even in 2010, fewer than 20 per cent of the current population had been university educated (Education Bureau, HKSAR Government, 2010), so there is much room to raise the standards by encouraging adult learns to take up continuing education. However, to the majority of people who have never tried a university education, perception as well as social and cultural barriers remain a big challenge (Boshier & Pratt, 1997; Kember, 2007). The promise of open education to be equitable and inclusive dictates that we must do our best to extend as widely as possible our appeal and opportunities to the community at large. To do this we need to find effective ways to convince conservative minds that higher education is no longer reserved for the elites, and that studying need not be confined to lectures halls and seminar rooms on campus. Amongst various promotional efforts, the most direct, practical and credible means would be to make our open education course contents visible to the public and let people sample study experiences first-hand.

Opening Prints and Videos

OER are broadly defined by the Commonwealth of Learning as "material that is of use in the curriculum and around it (both curricular and extracurricular), in any format (a printed book or PDF file, a short video film, an audio file), that is shared openly by its creator/s in order that others may use, distribute, and even modify it, without permission" (Prabhala, 2010, p. 9). In this connection we decided at the inception of the Open Learning Institute to make available full sets of the university's printed and multimedia course materials in public libraries' reserve collections for public browsing. In the meantime, TV programmes associated with individual courses were broadcast on a commercial television channel for four hours each week so that both OUHK students and lay viewers could watch them at no cost. These free resources, still accessible and available today, might have gone some way in providing critical information to prospective students, stimulating their interest, desire and passion to pursue open education, and minimising the risk of mismatched expectations. They are, however, subject to constraints by such issues as location, opening and broadcasting hours, and limitation of copies. Moreover, ownership and redistribution are restricted for technical reasons and copyright concerns.

Going Digital

The maturity of information and communication technology in the 1990s and the rapid penetration of broadband connectivity have offered great potential for us to substantially extend the accessibility and enrich the quality of open educational resources (OER). Our important move at this juncture was adding the Internet as an additional vehicle in broadcasting. TV programmes were digitised and uploaded onto the Web as streaming videos, watchable on demand.[1] In so doing we freed learners from the barriers of space and time, and provided higher incentives for watching. The online distribution also provided more accurate data and statistics on user behaviours, thus giving hints on the appropriateness of individual programmes.

Open Courseware

In 2007, the university was inspired by foreign champions of OER, including mostly notably the open courseware (OCW) movement spearheaded by the Massachusetts Institute of Technology (MIT)[2] and other leading distance education institutions, amongst these the University of Southern Queensland[3] in Australia and The Open University[4] in the UK. Feedback from users and research reports (Carson, 2009) has confirmed that these are credible, useful, widely applauded and globally adopted models. They help bridge the gap between formal and informal education, address misconceptions and encourage those wishing and needing to learn. They also help shape teaching and learning communities and respond to societies' overall fervour for knowledge (Gourley & Lane, 2009)

At the OUHK, the management shared the view that making available some course units as OER is an effective means to familiarise the public with the concepts and practices of distance learning, and an ideal platform for demonstrating the quality of our courses. OER can help address the doubts and hesitations of prospective students, and provide useful feedback and comments about existing and future courses. Overall, the OER website will naturally attract a community of people interested in OUHK study. It is in any case inexpensive to develop and convert materials, most of which have electronic files readily housed in our Online Learning Environment platform, a learning management system established to support students willing to do their work through the Web. Lastly, Web access implies global reach, an avenue to project a positive image and pave the way for expansion overseas.

A number of key principles were drawn up after careful research on and reference to exemplary cases:

- OER ingredients should be as rich as possible, encompassing interactive Web demonstrations, complete textbooks, videolectures and reference lists/links.
- Their variety should be broad and comprehensive, able to cater to the diverse interests of people from different backgrounds and disciplines.
- OER should be designed for learning instead of just browsing — enabling users to follow a path of study to obtain desired outcomes.

[1] http://openlearn.ouhk.hk/tv-programmes
[2] http://ocw.mit.edu
[3] http://ocw.usq.edu.au
[4] http://openlearn.open.ac.uk

- OER should be provided at zero cost to anyone having access to Internet connectivity and ordinary PCs, without prior training or technical skills.
- All OER should be converted from existing OUHK courses to take full advantage of costs, expertise, time scale and infrastructure support.

Consultation then occurred with academic colleagues and managers in various departments, to reconfirm institution-wide consensus about the key principles and to outline the chain of actions to be taken. It was agreed that the OUHK version of OER should be compatible with our own institutional capacity and legal boundaries and guided by a combination of altruistic, instrumental and realistic considerations.

The final decision was to launch a suite of units entitled "Free Courseware"[5] and made up of 75 units, each adapted from existing OUHK courses in arts, history, business and management, education, languages, health, information technology and computing, social sciences, and translation and interpretation. The common features of the free courseware are:

- All courseware materials are purpose-developed as self-contained, coherent and independent units aiming to provide sufficient knowledge on a selected topic from the original course.
- They are carried in a variety of media, including texts, audio and video formats and illustrations, to enrich the instructional value and methods.
- All course units are highly instructional, interwoven with learning activities and assessments ranging from quizzes and fill-in-the-blanks exercises to multiple-choice questions that ask for learner input.
- Each unit is much smaller and shorter than a normal OUHK course and typically can be completed in a few hours.
- All units are housed in the university's Online Learning Environment system and are accessible through the Web. Users can bookmark, record, modify and review their learning activities at will.
- Simple registration is required only when a user wants to view the answers to quizzes and feedback or communicate with the university.
- All units should be presented in English or Chinese, or both languages, in keeping with bilingualism in Hong Kong.
- Copyright is retained by the university.

Lessons Learned

As with other course development work, the free courseware was produced by division of labour. Instructional designers, programmers and technologists looked after the packaging and technical functions, whilst faculty and staff took care of the contents and copyrights.

The debut of OUHK Free Courseware in 2007 was welcomed by over 10,000 visitors and more than 800 registered users on the first day. Text links to the courseware were placed on popular public search engines, and publicity was arranged through the local news media, advertisements and international press

[5] http://openlearn.open.ac.uk

announcements. Statistical records of click-through rates were systematically collected and compiled. Within a month there had been over 53,000 accesses to courseware and more than 4,000 visitors registered with the university, providing feedback and seeking further information — results that alleviated the scepticism of critics in the university. The number of visitors rose to over 90,000, with 7.7 million accesses in 2008, then gradually tapered off to about 60,000 visitors and 750,000 accesses in 2011. An additional 75 new courseware units are in the production pipeline, so the above figures are expected to rise substantially later this year.

Overall, a positive response can be summarised from the online questionnaire surveys, evaluations, user statistics and remarks collected since 2007. The general observations are:

- The level and duration of each unit is appropriate and manageable for the majority of first-time users.
- Learners are able to gain richer knowledge about and increased interest in the topic.
- The experience has helped raise learners' confidence and interest in studying a formal course with the OUHK in the future.
- The immersion lets users have better understanding about the modes of distance education and eLearning.
- There is a surge of local demand for Chinese-medium courses, reflecting the political and demographic changes in Hong Kong and its neighbouring regions.
- Interactive exercises and visual materials such as PowerPoint files, diagrams, charts and illustrations were favoured.

Although the courseware was primarily designed with the local audience in mind, we found it had reached out to people from afar, with a notable number in mainland China taking the course, and students as far as South Africa and Europe. We were also delighted to note that the courseware could be used by learners across a great variety of contexts — for example, by teachers as instructional aids, by college students as supplements to their studies, by business managers as references at work and by retirees as a third-age pursuit. This resonates strongly with the pronounced ethos of open education as an inclusive and adaptable path of learning for anyone wishing to study, for whatever personal needs and aspirations.

Challenges and Improvements

The feedback has also pinpointed areas for improvement and further development:

- Providing printable PDF files and downloadable video and audio programmes for offline learning.
- Providing assistance by university staff.
- Providing stronger incentives with some sort of recognition or certification that later can be linked up with formal education.

- Providing leads to more resources available from the university.
- Providing channels for communication with other learners.

These improvements are desirable, but we do not have internal consensus on their affordability, although we agree that closer contact with potential learners will undoubtedly further boost those individuals' motivation and determination to take up formal study.

Despite our university being a lean and self-financed institution, we were able to resort to a culture of innovation and adaptability in addressing productivity challenges. In the following years, new elements were injected into the project to make our OER more relevant and responsive to the needs and requirements of users.

The first important move was partnering with Apple Inc. to place selected free courseware on its iTunes University platform,[6] alongside numerous courses by leading institutions around the world. This connected us with the subscribers and users in Apple's immense databank, and learners were able to download OER to desktop and mobile devices for online or offline access. In a similar vein, we avoided burdening our IT system by using popular online social spaces such as YouTube[7] and Facebook[8] to release video materials and increase our reach to potential users. Furthermore, a digital learning platform[9] was created in 2009 to help users personalise their selected OER, information and records in an integrated, one-stop interface that can be "controlled" individually.

In late 2008, the university piloted a thorough open course initiative by offering the full spectrum of course materials, tutorial support and meetings, online access and assessment services to freely registered persons interested in trying open and distance learning. Naturally, these "free trial" courses were restricted to a quota imposed by limitations of physical and human resources. Using these courses satisfied a desire on the part of learners to experience open education first-hand in an authentic setting. For the university it was a way to understand potential students at close quarters, to offer relevant information, advice and guidance, and to follow up with appropriate participation activities. The fact that ten per cent of these free learners subsequently turned out to be registered students argued strongly for continued investment in opening course resources and activities to the outside world.

In 2008, the university embarked on a post-graduate eLearning course on China Business Law,[10] open to both local and international enrolment. OER have thus become an indispensable vehicle for overseas audiences to get a "taste" of the course on China Business Law.

The Next Move

Reports and research on OER projects in various parts of the world are shedding light on the benefits OER have brought to individuals, institutions and society.

[6] www.apple.com/education/itunes-u
[7] www.youtube.com/openuofhk
[8] www.facebook.com/theouhk
[9] http://openlearn.ouhk.hk
[10] http://ecentre.ouhk.edu.hk/home

There is general agreement that OER stimulate a common quest for learning and increase public participation in education. The potential and possibilities are vast, especially for Hong Kong society, in which people are eager to learn and receptive to innovations. IT infrastructure is robust and ubiquitous and educational expertise abundant. If we pull back and expand our frame of thinking, we realise that our vision and ambition can move beyond one institution. This "outside-the-box" thinking has led us to explore a new project, aiming to take advantage of the collective wisdom, extensive knowledge and powerful synergy of teachers, professionals, researchers, students, institutions and enterprises in a concerted effort to bring OER to a wide arena.

Noting that students, parents and the government were caught in a perennial quandary about overpriced textbooks, unaccommodating suppliers and a lack of alternatives, we decided to take the lead to pioneer a USD 2.3 million project on open textbooks for our colleges and schools at tertiary, secondary and primary levels. The project borrows the disruptive concepts of Connexions[11] and FlatWorldKnowledge[12] in the United States to make available free or low-cost and openly licensed e-textbooks and learning materials to students and learners.

The vision is to grant users permission, using Creative Commons licences, to read, download, modify and post textbooks and associated educational materials for reuse. An implementation plan is underway to set up the online platform, tools and environment in which authors, editors, designers and technicians can contribute various types of content to a growing open textbook database for any interested users. Teachers and instructors can extract, aggregate, mix and create content from the data repository wholesale or partially for specific lessons and classes.

Instead of trying to overuse the capacity and goodwill of a single institution, a consortium will be established to coalesce various individuals and organisations interested or already engaged in textbooks and learning material development to form communities of practice. We envisage that these communities will in turn encourage and empower increasing number of teachers, students, parents, home learners, authors, reviewers and organisational leaders to move away from being passive consumers and contribute their own input to the resources. This will set in motion a dynamic loop of two-way sharing and iterative co-production which in turn might provide the crucial fuel to an expansive cycle of continuous improvement in the quality and usefulness of open textbooks and educational materials (Iiyoshi & Kumar, 2008).

The success of Wikipedia as well as numerous open source software programs provides concrete evidence that this approach is feasible, sustainable and fruitful. We are hopeful that with external sponsorship and projected revenue from derivative services, the project will flourish with a growing number of participants and an expanded scope of use. In the 1980s and 1990s, the introduction of open education kindled a huge latent interest and demand in the local population and triggered the emergence of a thriving continuing education industry. By the same token, the launch of open textbooks today may very likely assemble the inventive enthusiasm and experiences currently dispersed in isolated corners of society and precipitate a new trend of openness in the use and distribution of educational resources.

[11] http://cnx.org
[12] www.flatworldknowledge.com

Conclusion

The OUHK has come a long way in realising its goal of promoting social justice with the provision of education for all. To us, a key performance indicator of openness is widening participation. OER "represent a horizon of learning for marginalised learners who might not otherwise be able to afford or access educational material" (Prabhala, 2010). Different strategies have been adopted since the early days to show and share our course materials and activities with the public. The advent of the Internet has made this process far richer, more extensive, more efficient and relevant. In our role as managers, we appreciate the "long tail" effect of OER as an important online instrument in building up the size and momentum for the later burst of actual student enrolments (Anderson, 2006).

In our more important role as educators, we will discover legitimate peripheral participation (Lave & Wenger, 2002) by the users of OER, for whom we are providing a path to become full members of the learning community through growing involvement. And we believe the evidence is clear and conditions are ripe for us to reach out to the wider community, to pool expertise and enthusiasm from near and far so as to work together on a visionary initiative for open textbooks. We are confident that this new endeavour will give our society the much-needed impetus to transform a culture dominated by rigid publishing conventions and passive mindsets, replacing it with a trend towards imaginative, collaborative and democratic production and consumption of open educational resources.

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CHAPTER 20

Chinese OER Joins iTunes U: Beijing Open University

Li Ying and Li Yawan

Abstract

Open educational resources (OER) are digital content and media resources available for use by anyone under the terms of open licences. Beginning with MIT promoting its OpenCourseWare (OCW) initiative internationally in 2001, the concept and practice of OER have drawn attention from people all over the world. With the support of UNESCO, The William and Flora Hewlett Foundation and other international organisations, more and more education institutions have created OER programmes, including Beijing Open University (BJOU), a technology-based and distance-education-oriented open university in China. Since August 2010, BJOU has formally joined the internationally known virtual educational platform iTunes U, and has started to post free Chinese OER to the world. This case study discusses why BJOU chose to join iTunes U, how it runs its OER programmes and what feedback it has received about these programmes. The chapter is also intended to introduce and discuss topics such as institutional motivation, the content and quality of published OER resources, and costs and sustainability. By using BJOU as an example, we provide a glimpse into the general situation in mainland China's educational institutions with respect to the publishing of OER on the iTunes U platform.

Keywords: *OER, iTunes U, distance education, Beijing Open University*

Research Background

Open Educational Resources (OER) are digital content and media resources available for use by anyone under the terms of open licences. Beginning with MIT promoting its OpenCourseWare (OCW) initiative internationally in 2001, the concept of OER and its practice has drawn attention from people all over the world. With the support of UNESCO, The William and Flora Hewlett Foundation

and other international organisations, more and more educational institutions have created OER programmes. In August 2010, Beijing Open University, together with Sun Yat-sen University, formally joined the international virtual educational platform iTunes U and started to post free Chinese OER to the world. BJOU is a modern technology-based and distance-education-oriented open university in China. Why did BJOU choose to join iTunes U? How does it run its OER programmes? What is the feedback about these programmes? This case study is intended to provide answers to those questions.

A Brief Introduction to BJOU

BJOU, founded in 1960 by the Beijing municipal government, was first called Beijing Television University. It was one of the first radio and television universities in China. Upholding the principle of "providing education to all people without discrimination", BJOU promotes community education, rural education, vocational training and non-degree education to satisfy people's learning needs, to renew or upgrade knowledge and to facilitate new skills training by using radio, television, computer networks, textbooks and audiovisual resources.

Over the past 50 years, BJOU has offered more than 90 programmes to more than 200,000 tertiary students and 120,000 secondary vocational students. In 1999, it carried out a pilot project for talent development and open education, and specialised in modern open distance education based on computer networks. Since then, BJOU's accumulated enrolment has reached 201,000, with 77,000 graduates. Currently, BJOU offers 17 bachelor's degree programmes as well as 40 associate degree programmes to 110,000 active students, which accounts for about ten per cent of the total number of students attending higher education institutions in Beijing, and roughly 30 per cent of the total attending adult higher education and networked higher education (Beijing Open University, n.d.).

BJOU OER Programmes

At present, BJOU has four types of OER programmes:

- iTunes U programme.
- National core courses (NCC).
- Radio and television programmes.
- Programmes on Beijing Learning City.

In addition, the iTunes U programme will publish Chinese OER to the world in co-operation with Apple Inc.

NCC is an OER programme started by the Education Ministry of China that selects national core courses through public appraisal and annually publishes these courses freely on the World Wide Web. In 2010, two courses offered by BJOU entered the list of national core courses. As a distance education university, BJOU offers irregularly scheduled education programmes on a Beijing TV station, and 74 hours of programming per week on radio. The most significant domestic OER programme that BJOU offers is Beijing Learning City (www.bjlearning.gov.cn).

Entrusted by the Beijing Advisory Office for Constructing a Learning City, Beijing Learning City aims to serve as a non-profit educational platform for lifelong learning. Table 21.1 presents details of the programme.

Table 21.1: The Beijing Learning City programme

	Programme information
Start time	2007
Sponsor	Beijing Advisory Office for Constructing a Learning City
Contractor	Office for Beijing Citizens' Lifelong Learning Distance Service Centre, BJOU
Aim	To build up a non-profit educational platform for Beijing people's lifelong education
Policies	1. Horizontal integration: Office for Beijing Citizens' Lifelong Learning Distance Service Centre was established to run and maintain the website, co-ordinate businesses, optimise workflow and improve services. 2. Vertical integration: specialised staff are hired to undertake Web maintenance, including technology, content and forum maintenance. 3. Strategic goals and technology frame are set so as to reach BJOU midterm and long-term plans. 4. An independent informatisation plan is made for Beijing Learning City, adjusted on a regular basis according to the needs of the business department and constructed in line with the overall schedule of Beijing Learning City. 5. A theoretical research team and technical team are built to provide up-to-date and cutting-edge information for the construction of a learning city.
Fund	Received Beijing municipal funding in 2007, 2008 and 2009
Published resources	Up to July 2010, 1,538 episodes of video courses and about 2,200 community OER have been developed and integrated.
Type of resources	Audio and video courses in various formats, streamed courses, Internet courses, live telecasts and recorded telecasts of courseware in various file formats — text, Flash and executable.

Source: www.cio360.net

iTunes U

iTunes U is a specialised area of the Apple iTunes store that allows higher education institutions to make audio and visual content available for download and subscription. It gives users free access to lectures, lab demonstrations and conferences from world-renowned universities, including Harvard, MIT, Cambridge, Oxford and the University of Melbourne. These resources are available for use on Mac or PC and can be downloaded to iPhone, iPod Touch and iPad for mobile learning.

In August 2010, BJOU, together with Sun Yat-sen University, formally joined iTunes U as the first two, and to date the only two, higher education institutions from mainland China on iTunes U.

Figure 21.1: BJOU joins iTunes U

Motivation

Why did BJOU choose to join iTunes U? Publishing free Chinese OER to the world is in accordance with the principle of BJOU to provide education to all people without discrimination. The following are the two major considerations:

- Joining iTunes U contributes to the international development plan of BJOU and benefits BJOU in promoting its image and position in international education circles.
- The programmes that the Apple iTunes store developed for Asian areas are in line with BJOU's strategies to promote mobile learning and contribute to, promote and demonstrate multiple teaching modes with the support of new media technology.

Online OER

Currently, the OER published by BJOU on iTunes U are generally non-degree resources, including visual resources for 15 courses of seven types, centred on the traditional culture of China. The normal length of each video session is about 25 minutes (see Table 21.2).

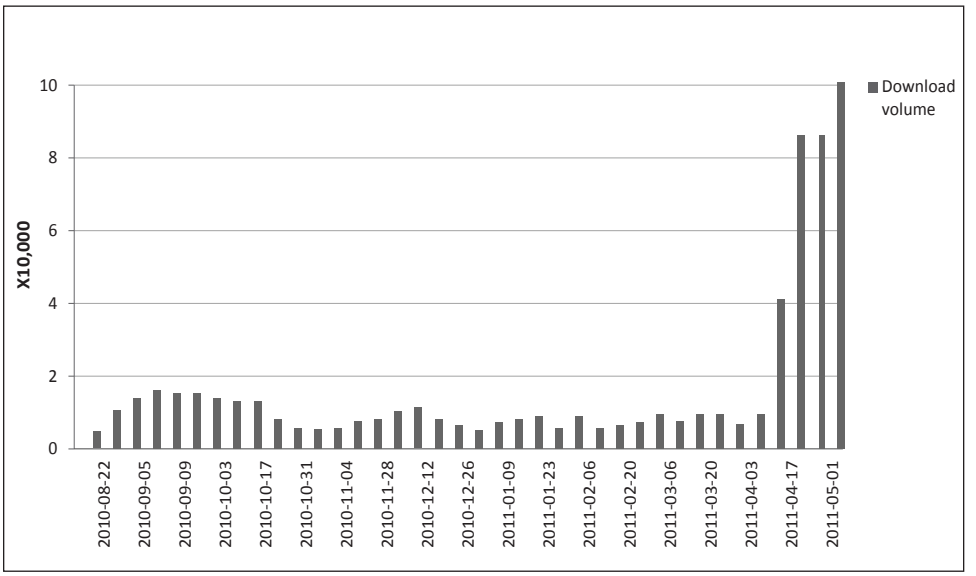
Table 21.2: BJOU iTunes U

Type	Course title	Number of courses
Medicine and health	Systematic Medicine	1
Teaching and education	Emergency Rescue	
	Emergency Aid	4
	Internet Course Design and Development	
Literature	The Bible for Chinese: Lectures on the Analects of Confucius	
	Studies in Ancient Chinese Civilization	3
	Lectures on the Book of I Ching	

Type	Course title	Number of courses
Society	Lectures on Beijing Scenery Tea Ceremony and Tea Culture	2
Social science	School of Law Quotient	1
Art	Beijing City Gates Peking Opera Appreciation	3
Language	English Pronunciation	1
Total	—	15

Figure 21.2 shows the weekly download volume, automatically calculated by the system. The download volume suddenly soared in May 2011 and expanded 100,000 times from May 8 to 14.

Figure 21.2: Weekly download volume



Quality

BJOU, as a distance education institution with a 50-year history, has a core competency of specialised knowledge about educational technology and distance education curricula that helps guarantee the quality of published resources. Here, "quality" has two meanings: (i) the content and (ii) the audiovisual effects. All the resources in the programme are selected from existing resources and technically processed before they are published on iTunes U. The video resources were originally produced with professional recording equipment to meet the needs of distance education. Important factors were taken into consideration. For example, the length of every session was about 25 minutes and the lecturer's attention was directed at the camera. In other words, in the initial stage of OER publishing, the distance education institution has provided access to specialised resources, high-quality production methods and technological support.

Cost

The cost for joining iTunes U consisted of two parts. The first and larger was the purchase of Apple equipment and software. The second was the cost of running the programme. Since all the resources already existed, BJOU was able to save on resource production costs and only needed to convert the formats of the resources according to the standard set by iTunes U. Administration, co-ordination and technological support for the programme fell within the daily duties of the staff and as a result there was no extra cost. It should be noted that distance education institutions enjoy special benefits through their structure, knowledge and existing resources by joining iTunes U.

Benefits

What benefits does joining iTunes U provide to a university? The following are some considerations:

- The influence of BJOU in both domestic and international circles has been increased. Joining iTunes U provided a window for BJOU to promote its image both inside and outside China. The soaring weekly download volume of BJOU's resources published on iTunes U demonstrates that learners and visitors are following BJOU with interest. The Internet protocol (IP) addresses of the visitors showed that more than 90 per cent of the visitors were from mainland China, and the remainder from Hong Kong, Macau, Taiwan and Singapore. In addition, the fact that BJOU and Sun Yat-sen University were the first two higher education institutions in mainland China to join iTunes U as has promoted both schools' reputations and images.
- The university's ability to internationalise its developed resources can be promoted. In the past, the focus of BJOU was to introduce and promote distance education resources to domestic users. Joining iTunes U will undoubtedly increase its ability to introduce and promote its developed resources to the world.
- New teaching modes for mobile learning were explored. The resources on iTunes U are available for download to iPhone, iPod Touch and iPad, for mobile learning, and this constitutes a new teaching mode in the developing trend of new media technology. By joining iTunes U, BJOU was able to explore the new mode of mobile learning and in the process gained a better understanding of user needs. For example, ten-minute visual resources are more suitable for mobile learning; longer resources cost more in terms of time for download and use.

The benefits noted above are non-monetary. To date, direct monetary benefits of the programme have not been reported. Longer-term or other potential benefits are difficult to calculate in monetary terms. Since the programme has been running for slightly more than one year, its potential influence and benefits still await long-term follow-up research and appraisal.

Sustainability

Since direct monetary benefits of the programme have yet to be reported, the situation raises the following questions: How long can free iTunes U OER

programmes be maintained? Does the university have the driving force to keep going and maintain the momentum?

BJOU's iTunes U programme is fully funded by BJOU's internal funds, without support from government or the community. The Beijing Learning City programme, in contrast, received full support from the Beijing Municipal Financial Fund three years in a row. Such differences in funding partially explain why up to now, only BJOU and Sun Yat-sen University have joined iTunes U. The fact that BJOU joined iTunes U indicates the influence of the executive, but the sustainability of the programme faces challenges in policy and technology.

Policy

To run the Beijing Learning City programme, the Office for Beijing Citizens' Lifelong Learning Distance Service Centre was established, but there is no counterpart office for the iTunes U programme. The Beijing Learning City programme has also been included in the university's mid- to long-term informatisation plan, and the programme itself has an independent informatisation plan, whilst no such formal plan has been formulated for iTunes U. By comparison, the iTunes U programme therefore looks deficient in terms of long-term planning.

Technology

The sustainability of the programme also relies heavily on users' feedback and evaluation. The feedback shows that a key question to be answered is whether the resources can be easily downloaded or viewed online. Some users comment that the download speed is too slow, and to some extent download speed affects users' evaluation of the programme. Speed is closely related to the network conditions of the users' region and country, as well as the technological environment of BJOU.

Despite these challenges, there are undoubtedly various factors in favour of the programme's sustainability. The programme is spared the cost of making visual resources and is also equipped with technological support. In addition, the popularity of new products introduced by Apple has increased the number of visits and downloads of iTunes U programme resources. To evaluate the programme's sustainability, follow-up research on visitors needs to be undertaken.

Concluding Remarks

This chapter has used BJOU as an example to evaluate the publication of Chinese OER to the world on iTunes U. We have discussed the motivation for BJOU to join iTunes U, the quality of published resources, as well as the costs, benefits and sustainability of the programme.

BJOU's iTunes U programme is thought-provoking in the context of the following questions:

Is iTunes U posing a threat to the core business of distance education institutions?

In 2006, Sir John Daniel and his colleagues stated:

> By putting the lecture notes of its faculty on the Web with the aid of external funding MIT did not create a threat to its core business . . . However, for a large, high-quality distance-teaching institution like the UK Open University to make its self-instructional materials freely available could create a clear threat to its core business. (Daniel, West, D'Antoni, & Uvalić-Trumbić, 2006)

In this regard, BJOU presently has not felt such a threat, because only 15 courses in all are open to the public as OER. However, with resources being increasingly published online, questions about the iTunes U programme and whether it will threaten the core business of the institution will have to be appraised.

Can people learn more about BJOU from iTunes U?

At present, users can only gain access to the published resources of BJOU on iTunes U, which does not support or provide a direct link to BJOU local resources. Thus, the availability for learning more about BJOU through iTunes U is limited.

Can distance education institutions make more contributions to OER?

Compared with traditional universities, distance education institutions have more advantages in applying new technologies to teaching, and they often possess richer, high-quality visual resources, which enable distance education institutions to excel at using the unique advantages of OER. Thus, the question is how to give more impetus to distance education institutions and facilitate additional contributions to OER.

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PERSPECTIVES ON OPEN AND DISTANCE LEARNING

OPEN EDUCATIONAL RESOURCES: AN ASIAN PERSPECTIVE

Higher education has experienced phenomenal growth in all parts of Asia over the last two decades — from the Korean peninsula in the east to the western borders of Central Asia. This expansion, coupled with a diversity of delivery and technology options, has meant that more and more young Asians are experiencing tertiary education within their own countries. In South, South East and Far East Asia especially, universities, polytechnics, colleges and training institutes with a variety of forms, structures, academic programmes and funding provisions have been on an almost linear upward progression.

Notwithstanding this massive expansion, equitable access is still a challenge for Asian countries. There is also concern that expansion will erode quality. The use of digital resources is seen as one way of addressing the dual challenges of quality and equity. Open educational resources (OER), free of licensing encumbrances, hold the promise of equitable access to knowledge and learning. However, the full potential of OER is only realisable with greater knowledge about OER, skills to effectively use them and policy provisions to support their establishment in Asian higher education.

This book, the result of an OER Asia research project hosted and implemented by the Wawasan Open University in Malaysia, with support from Canada's International Development Research Centre, brings together ten country reports and ten case studies on OER in the Asian region that highlight typical situations in each context. China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Pakistan, the Philippines and Vietnam all receive extensive treatment, as do the multi-regional initiatives of the Virtual Academy for the Semi-Arid Tropics.

While interest in and the production, distribution and use of OER are still very much in the early stages of development in most parts of Asia, OER's potential value to improve the quality of curriculum, content and instruction, facilitate academic collaboration and enhance equitable access to knowledge resources cannot be overstated.

The 25 contributors to this book bring an impressive level and breadth of expertise, innovation and dedication to researching, developing and advocating for OER. Through a combination of quantitative studies and qualitative analyses, they provide valuable, instructive information and insights from throughout Asia. *Open Educational Resources: An Asian Perspective* demonstrates that OER development is thriving in Asia — in different economies, amongst different types of stakeholders and with varied approaches to open licensing.

The diversity and richness of the contexts and approaches make this publication an important advocacy tool for promoting the use of OER.

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