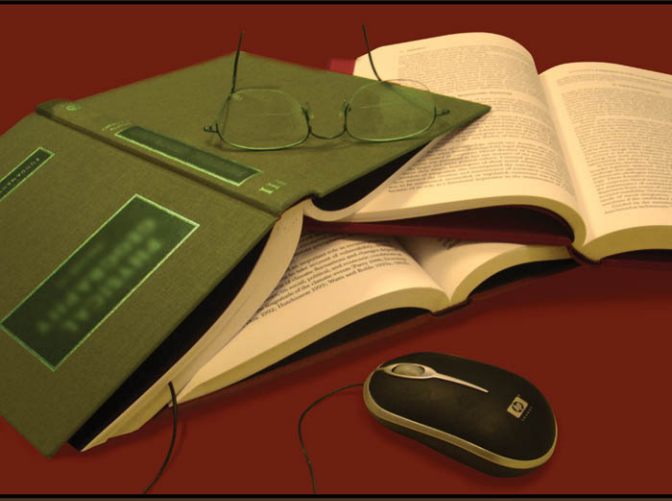
Foreword by
Tan Sri Emeritus Professor Gajaraj Dhanarajan

POLICY and PRACTICE in ASIAN DISTANCE EDUCATION



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Policy and Practice in Asian Distance Education

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Policy and Practice in Asian Distance Education

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representing institutions in 14 Asian countries

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and

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Foreword by
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List of Abbreviations

AAOU	Asian Association of Open Universities
ACM	Author-Contract Model
ADLA	African Distance Learning Association
AIOU	Allama Iqbal Open University
ALS	Alternative Learning Services
AMTEC	Association for Media and Technology in Education in Canada
APA	American Psychology Association
ASTD	American Society for Training and Development
AUQA	Australian Universities Quality Agency
BRI	Bank Rakyat Indonesia
BTN	Bank Tabungan Negara
C/E ratios	Cost-effectiveness ratios
CADE	Canadian Association for Distance Education
CAI	Computer-Assisted Instruction
CBA	Cost-benefit Analysis
CBE	Computer-based Examinations
CCRTVU	China Central Radio and TV University
CDT	Content Development Team
CEA	Cost-effectiveness Analysis
CHEA	American Council for Higher Education Accreditation
CNIE	Canadian Network for Innovation in Education
COL	Commonwealth of Learning
CORE	China Open Resources for Education
COTS	Commercial-off-the-shelf
CPD	Continuing and Professional Development
CT	Course Team
CU	Close-up
DBMS	Database Management Systems

DE	Distance Education
DEC	Distance Education Council
DGB	Directorate General of Budgeting
DGHE	Directorate General of Higher Education
DII PGSD	Diploma II Primary School Education
DLF	Distance Learning Foundation
DLTC	Distance Learning and Telemedicine Centre
DTIs	Distance Teaching Institutions
EADTU	European Association of Distance Teaching Universities
EAI	Enterprise Application Integration
EAQAHE	European Association for Quality Assurance in Higher Education
EC	European Commission
ECU	Extreme Close-up
EFA	Education for All
ELS	European Learning Space
ESPF	English for Special Purposes Foundation
F2f	Face-to-face
FE	Faculty of Economics
FISIP	Faculty of Social and Political Sciences
FKIP	Faculty of Teacher Training and Educational Sciences
FL	Flexible Learning
FMIPA	Faculty of Mathematics and Natural Science
GEM	Gender Evaluation Methodology
GLAD	Gateways to Learning for Ability Development
GPA	Grade Point Average
GSM	Global System for Mobile Communications
HEC	Higher Education Commission
HO	Head Office
HR	Human Resource
HRD	Human Resources Development
HSUM	Health Sciences University of Mongolia
ICDE	International Council for Open and Distance Education
ICT	Information and Communication Technology
ID	Instructional Design
IDE	Institute of Distance Education
IDR	Indonesian Rupiah

IGNOU	Indira Gandhi National Open University
IMM	Interactive Multimedia
INQAAHE	International Network for Quality Assurance Agencies in Higher Education
IVR	Interactive Voice Response
IXPs	Internet Exchange Points
K–12	Kindergarten through 12th Grade
KNOU	Korea National Open University
LIS	Library and Information System
LISA	Localisation Industry Standards Association
LMS	Learning Management System
LO	Learning Object
LPBAUSI	*Lembaga Pengembangan Bahan Ajar, Bahan Ujian dan Sistem Informasi*
LS	Long Shot
MCQ	Multiple-choice Questions
MDFI	Molave Development Foundation Inc.
MDGs	Development Goals
MIT	Massachussets Institute of Technology
M-learning	Mobile Learning
MLS	Medium Long Shot
MMS	Multimedia Message Services
MoE	Ministry of Education
MoF	Ministry of Finance
MoIT	Ministry of Information Technology
MQA	Malaysian Qualification Agency
MS	Medium Shot
NIME	National Institute for Multimedia Education
ODL	Open and Distance Learning
ODLAA	Open and Distance Learning Association of Australia
OER	Open Educational Resources
OM	Outcome Mapping
OM^g	Gendered OM Framework
OOPS	Opensource Opencourseware Prototype System
OS	Over-the-shoulder
OSS	Open Source Software
OU	Open University
OUC	Open University of China

OUHK	Open University of Hong Kong
OUM	Open University of Malaysia
OUN	Open University Network
PDA	Personal Digital Assistant
PDCA	Plan-Do-Check-Act
Project MIND	Mobile Technology Initiatives for Nonformal Distance Education
PRTVUs	Provincial TV Universities
PT	Production Team
PT Pos	Indonesia National Postal Service
PUSMINTAS	*Pusat Jaminan Kualitas*
QA	Quality Assurance
QAA	Quality Assurance Agency for Higher Education
RMB	Renminbi
RO	Regional Office
RTVUs	Radio and Television Universities
SALG	Student Assessment of Learning
SCOP	Standing Conference of Presidents
SDLCS	Systems Development Life Cycle Standards
SEAMEO	Southeast Asian Ministers of Education Organisation
SEAMOLEC	Southeast Asian Ministers of Education Organisation Regional Open Learning Center
SHTVU	Shanghai TV University
SIMINTAS	*Sistem Jaminan Kualitas* (Quality Assurance System) *Universitas Terbuka*
SIMs	Subscriber Identity Modules
SLMs	Self-learning Materials
SME	Subject Matter Expert
SMS	Short Messages Service
SNU	Seoul National University
STOU	Sukhothai Thammathirat Open University
STRIDE	Staff Training and Research Institute of Distance Education
UKOU	United Kingdom Open University

UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
UNIFEM	United Nations Development Fund for Women
USDLA	United States Distance Learning Association
UT	Universitas Terbuka
VUP	Virtual University of Pakistan
VUSSC	Virtual University for Small States of the Commonwealth
WAN	Wide Area Network
WOU	Wawasan Open University
WWW	World-Wide Web

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Foreword

I welcome this volume, the result of four years of collaborative research and analysis involving 24 Open and Distance Learning (ODL) institutions in Asia. Included in the list are some of Asia's and the world's largest universities, as well as a few of the newest and much smaller establishments. Together the materials present a valuable insight into the workings of ODL provisions in the participating institutions and countries. It is all the more interesting simply because the studies are focused on developing country environments where the concerns for digital divides and digital dividends are most talked about.

More than any other part of the world, access to learning and the benefits of learning are much sought-after and valued services in Asia. The 3.7 billion people who make up the Asian continent cannot get enough education and are among the most deprived in terms of access to it. As recently as 2006, an East–West Center report put enrolment in higher education in the continent at below 8 per cent (Hawkins and Ordonez, 2007). This could be misleading as participation in the middle and higher income Asian countries is well on par with their counterparts in the west and the Organization for Economic Cooperation and Development (OECD). Nonetheless, if one includes provisions for lifelong and continuing education, deprivation levels in Asia are considerable. ODL, in its variety of forms, therefore, provides much needed access.

There is little doubt that ODL provisions are gaining ground and respectability, at least in policy-making levels across the continent. That was certainly not the case twenty years ago when the IDRC sponsored a study of distance education in Asia (Nielsen, 1988). That study clearly showed the levels of scepticism that existed, especially at policy-making levels both nationally and internationally, to an educational innovation which had a great

appeal to many forward-thinking educators. From appreciation at policy-making forums to acceptance at the general population level is a very long step, however. Advocates of ODL still have a large task ahead of them. They can be successful in their efforts to promote greater understanding and appreciation of ODL if more knowledge and information is available about the practice. This guidebook is a great help in this.

The practice of ODL, as most other provisions in education, generally evolves with the increasing sophistication of learning technologies. While text material, traditionally the backbone of most open universities, continues to play an important role, the use of print technology for conveying the text is gradually being replaced by other technologies which have added advantages to both the providers and users. However, the uses of sophisticated technologies are not without problems and challenges. These challenges are not unique to Asia but they are exacerbated, in most parts of the continent, by inadequate infrastructure, prohibitive costs and unreliable telecommunication services, as well as a widespread lack of trained technical manpower.

It is therefore very satisfying to note the extent to which the Asian distance teaching institutions and open universities represented in the book are applying learning technologies to their trade. There are valuable lessons to be learned from their experiences. Questions of sustainability, leadership, curricular innovations in a technology-driven environment and the value of the learning experience all matter to those actively engaged in ODL.

Thirty-five years ago, long before the establishment of the Asian Association of Open Universities, about one hundred delegates from most parts of Asia, and a handful of invitees from Australia, Europe and North America met in Penang, Malaysia, to explore a "new" idea called open and distance learning. By then Asia had two open universities (Sukhothai Thammathirat Open University and Allama Iqbal Open University), both a year or so old. Delegates were sharing experiences in distance rather than open learning. Among the subjects explored were technology, curriculum, leadership, management, student support, financing and legislation. Though the technological environment has changed since then, most of the other concerns that confront distance educators today are not dissimilar to those confronted

then, except perhaps for one critical difference. Then, knowledge of ODL praxis came mostly from the North; today, it may not be wrong to say, as this volume demonstrates, knowledge from the South, especially Asia, is prolific and, therefore, even more relevant to the book's readers.

With examples from the mega, older and more established open universities in China, India, Indonesia, Pakistan and Thailand, as well as from emerging and smaller distance education providers in Bhutan, Cambodia, Malaysia, Mongolia, Sri Lanka, Lao PDR, the Philippines and Vietnam, the book is a valuable resource for all those interested or engaged in open and distance learning. It enhances our knowledge of ODL activities in Asia, and contributes enormously to the growing base of distance education literature in the world.

Tan Sri Emeritus Professor Gajaraj Dhanarajan
Wawasan Open University
Penang, Malaysia
January 2009

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Preface

This guidebook has been created to help in the development of distance education (DE) in Asia. Its modular contents can be downloaded from www.pandora-asia.org/guidebook/ for translation into local languages, in keeping with the PANdora network's Open Resources philosophy. The editors will be pleased to hear from anyone who downloads and uses any of this material (e-mail: baggaley@athabascau.ca or tian@mail.ut.ac.id). In reusing material in its original form or in local language adaptations, users are asked to add the following acknowledgement:

> *This material is adapted from 'Policy and Practice in Asian Distance Education' sponsored by the IDRC's Pan Asia Networking Programme Initiative* (www.pandora-asia.org/guidebook/).

The book is one of the outputs of the collaborative PANdora research and development initiative (2005–08) between 24 open and distance learning (ODL) institutions, government departments, and non-governmental organisations in 13 Asian countries. The PANdora project is funded by the International Development Research Centre (IDRC: www.idrc.ca).

PANdora stands for "Pan-Asia Network Distance Open Resource Access". In keeping with the philosophy of open access to educational resources, the contents are made freely available for sharing and local translation. Asian interests in ODL are stressed. The book is modular in design, so that individual chapters can easily be updated and selected according to the user's specific needs.

From 2005–08, the PANdora network has conducted research and development studies in the following areas, stressing the development and evaluation of distance learning (DL) technologies:

1. Accessibility, Acceptance and Effects of DLT in Bhutan, India, Pakistan and Sri Lanka
2. The Viability of Mobile SMS Technologies for Non-formal DL in Mongolia and the Philippines
3. Evaluation and Adaptation of Open Source Software for DL in Cambodia, Mongolia and Sri Lanka
4. Distance-based Teacher Education in Bhutan
5. Instructional Design Training for ICT-based DL in Asia
6. A Repository of Reusable Learning Objects for DL in Indonesia and Thailand
7. E-assessment Methods and Models for Student Evaluation in Pakistan
8. Best practices in DL Technology for Capacity Building in Cambodia, Lao PDR and Vietnam
9. Evaluation of DL Practices for Policy Recommendations in China and Mongolia

Details of the 2005–08 PANdora projects are given at www.pandora-asia.org/. Full project reports to date have been published in the international journal *Distance Education* (2007, vol. 28, no. 2), and in books and journals listed on the PANdora web site.

Institutions contributing to the PANdora network (2005–08) include:

- Allama Iqbal Open University (AIOU), Pakistan
- Beijing Normal University (BNU), China
- English for Special Purposes Foundation (ESPF), Mongolia
- Fisheries College, Bac Ninh, Vietnam
- Health Sciences University of Mongolia (HSUM)
- Ho Chi Minh City Open University (HCMCOU), Vietnam
- ICT4D ASEAN Foundation Collaboratory, Indonesia
- Indira Gandhi National Open University (IGNOU), India
- InfoCon Ltd, Ulaanbaatar, Mongolia
- Institute of Information Technology (IIT), Vietnam
- Ministry of Education, Youth and Sports (MoEYS), Cambodia
- Molave Development Foundation, Philippines
- National Science Council, Lao PDR
- Phnom Penh International University (PPIU), Cambodia
- Royal Government of Cambodia

- Samtse College of Education, Royal University of Bhutan (RUB)
- Science Technology and Environment Agency (STEA), Laos
- Sukhothai Thammathirat Open University (STOU), Thailand
- Universitas Terbuka (UT), Indonesia: *PANdora project co-leader*
- University of Colombo School of Computing (UCSC), Sri Lanka
- University of Hong Kong (UHK)
- University of Philippines Open University (UPOU)
- Vigyan Prasar, Department of Science and Technology, Government of India
- Virtual University of Pakistan (VU): *PANdora project co-leader*

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- Buyandelger Batsaikhan (Learning management systems)
- Chang Yeul Yang (KNOU report)
- Dewi Padmo (Media production)
- Kristanti Ambar Puspitasari (Student assessment)
- Sana Shams, Sarmad Hussain and Atif Mirza (Gender and outcome mapping)
- Santosh Panda (Instructional design and course development)
- Chen Haishan and Li Yawan (CCRTVU report)
- STOU International Affairs Unit (STOU report)
- Ludivica Endang Setijorini and Irma Adnan (UT report)

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Section 1
Open and Distance Learning

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Conceptual Origins*

Tian Belawati

INTRODUCTION

This chapter describes the conceptual development of distance education as an alternative method of education. It emphasises the importance of interaction in DE, and the impact of information and communication technologies in eliminating educational barriers and achieving the idealistic concept of open and distance learning.

EVOLUTION OF THE ODL CONCEPT

Modern *distance education* (DE) is said to have begun in 1963 (Perraton, 2007). In that year, the National Extension Institute was established in the United Kingdom, as a model for an open university. The methodology of DE, more recently known as *distance learning*, has given rise to the principle that education should and can be open to all. Open education, or *open learning*, is a vision of an educational system accessible to every individual with minimal restrictions. This philosophy stresses the flexibility of the system to eliminate problems caused by barriers of, for example, age, geographical location, time constraints and economic situation (Bates, 1995). *Open and distance learning* (ODL) is therefore a system which combines the methodology of DE with the concepts of open learning and *flexible learning*. ODL is, of course, a very idealistic concept which in reality is difficult to implement. DE specialists believe strongly, however, that many ODL principles can be fulfilled better by DE methods than by conventional face-to-face (f2f) educational approaches.

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* The chapter is based on the author's article in *Open and Distance Education* published by Universitas Terbuka (2007).

The development of DE has been dominated by the philosophy of an educational method that uses pre-produced standardised materials to obtain economies of scale. This philosophy represents a paradigm that emphasises access to education, and the learner's need for independence. The desire to increase educational access was the main drive for many countries to adopt DE (Garrison, 1993). Moore (1993) believed that as long as materials have been prepared, learners have full autonomy to undergo their learning process on their own terms. Based on this access paradigm, DE has been considered as an "industrialised" type of education, and as the product of an industrial society (Peters, 1967).

According to Peters, the system of DE has many similarities with an industrial factory, with need for a clear division of labour, mechanisation of activities, orientation to mass production, standardisation of output and centralisation of the system. Owing to these similarities, DE has been accepted by industrial society as a method of mass-producing trained labour. Peters argued that DE methods should also change in response to the changing demands of post-industrial society. This is even more the case in today's information society. Whereas the DE process previously relied on the use of pre-produced learning materials and correspondence, the addition of today's information and communication technology (ICT) to the process makes it possible to make DE individualised and interactive.

The educational needs of the post-industrial society are different from those of the industrial society, however. This is due to the constant changes in skill demanded by occupational and professional fields. The original correspondence-based mass-education model of DE (Chapter 1) does not meet today's demands for a one-on-one, interactive style of education capable of adjusting to educational needs and of developing an effective individualistic style of DE. The new ICTs, however, can add these features that were lacking in earlier DE models.

> Today's production methods, communication technologies, perceptions of problems and problem solving strategies can be overdue and obsolete tomorrow. (Peters, 1999)

On this basis, a DE paradigm is developing characterised by a fully effective two-way communication process between teachers and students, students and study materials and between

students and the educational institutions. A one-way process (that is, presentation of learning materials in printed, recorded or broadcast form) is complemented by two-way feedback between students and the teacher/institution implementing the programme. Holmberg (1983) pointed out, that despite the fact that DE is designed for independent study, it should not be suggested that it can be implemented with no study support services. Even though interaction in the form of *real conversation* may be difficult to achieve in DE, much can be done to ensure that a conversational atmosphere is made available to the students. Holmberg's 1983 concept of *guided didactic conversation* related to an effective two-way conversation in, for example, print over the telephone. The goals and spirit of this atmosphere are implemented in the sensitive design of the learning materials, assignments and study supports. Via good materials, the students can obtain an "atmosphere" as in a conversation with the lecturer who developed them, and this in turn helps the internalisation process whereby the materials assist the students to learn.

Guided didactic conversation emphasises the importance of:

1. a clear presentation of learning materials, using easy-to-understand language;
2. explicit directions on what to do and not to do, and on what to observe, and the reasons;
3. a design that encourage students to discuss, ask questions, and judge the materials to consider;
4. an effort to motivate students so that they are interested in the materials and subject matter;
5. a personalised style of writing, including the use of the first person; and
6. a clear boundary between separate themes and topics: for example, by stating the changes explicitly, or in producing recorded materials by using a different dubbed voice.

According to Sewart (1984), however, pre-produced learning materials can not replace the functions and roles of conventional teachers entirely. The absence of timely feedback for DE students may adversely affect the outcome of their studies. Students have different needs that the learning materials may not anticipate, and which cannot be satisfied by mass-produced learning materials.

Accordingly, Sewart emphasises the importance to students of organised learning support services. One type of support is the tutor–counsellor who acts as a subject matter expert (SME) responsible for guiding students academically and personally. Sewart believes that a tutor–counsellor who functions as both lecturer and mentor can significantly improve the quality of the DE teaching and learning process. The development of new ICTs such as audio/video-conferencing has further enhanced this guided didactic process, by reducing the gap between the *teaching act* and the *learning act* that previously created psychological and *transactional distance* in the learning process (Moore, 1993).

FROM DISTANCE EDUCATION TO OPEN EDUCATION

The benefits of modern ICTs have also generated a broader way of thinking about DE. Solutions to the problems of physical separation between teacher and learner in DE enable the broader use of educational facilities. When the teaching acts and learning acts can be effectively achieved in non-real time (asynchronously), two major problems are reduced: *(a)* the traditional lecturer/students ratio which commonly limits the *absorption capacity* of education and *(b)* the classroom walls that commonly limit the *transmission capacity* of education. Overcoming these hurdles transforms the educational process from one that is closed in nature to one that is physically more open, and education is no longer associated with the physical classroom.

The development of social economies over the last four decades has also modified the typical requirements for an education. Whereas during its early industrialised form, DE was essentially a vehicle for supplying a skilled labour force, the post-industrial society is moving towards improving the quality of human lives. In the post-industrial era, education focuses more on *self-realisation* and fulfillment of personal needs: for example, to improve happiness and satisfaction with life (Peters, 1993). The need for education is no longer limited to a particular "school age" group, but relates to the needs of all people to pursue lifelong needs. This is shown by the increasing popularity of non-formal and continuing education programmes that offer *leisure* rather than accreditations. In addition, the advancement of technology and service

industries has changed the type of skills required in the labour market (Peters, 1999). This has resulted in an increasing need for *professional continuing education*; and the concept of DE itself has been broadened from a simple distance training model to incorporate continuing education.

DE can, therefore, be seen as a method appropriate for the pursuit of various educational objectives, including professional skills improvement, enhancement of hobbies and self-actualisation. In developing countries, whose people live in a limited economy and in isolated rural areas, DE is seen as a means to provide a second chance to those who cannot study in the f2f system. DE has become more than a simple alternative learning system, and is uniquely capable of boosting the openness of education, by minimising restrictions of time, place, and economy, and of demographics such as age and educational background. The concepts of *life-long learning* and *education for all* stress that every person should have the opportunity to study and to receive a lifelong education. An explicit acknowledgement of this open education concept was made by UNESCO (1996):

> Education is a basic human right and a universal human value and should be made available over the entire lifetime of each individual.

The *open university* (OU) model is designed to provide this highly customised, individualised form of education. It requires a network of regional offices and learning centres, a strong central management, organisational structure and operational system, and high initial capital investment (Chapter 2). An estimated 57 universities worldwide have at least 100,000 students (Wikipedia, 2010), and have been labelled *mega-universities* (Daniel, 1996). Of these, 26 are in Asia, including nine in India alone with a combined student population of five million. In July 2010, Wikipedia lists 14 Asian universities among the 20 largest universities (Table 1.1), with a total of approximately 12 million students. It may be argued that the China Central Radio and TV University (CCRTVU), renamed in 2009 as the Open University of China (OUC), with approximately three million students, should be included at the top of this list, though technically the OUC is a combination of separate institutions (see Chapter 18).

Table 1.1 The world's twenty largest mega-universities

Rank	*Institution*	*Location*	*Founded*	*Enrolment*
1.5	Allama Iqbal Open University	Islamabad, Pakistan	1974	3 million
1.5	Indira Gandhi National Open University	New Delhi, India	1985	3 million
3	Islamic Azad University	Tehran, Iran	1982	1.3 million
4	Anadolu University	Eskişehir, Turkey	1958	884,081
5	Bangladesh National University	Gazipur, Bangladesh	1992	800,000
6	Universitas Terbuka	Jakarta, Indonesia	1984	646,467
7	Bangladesh Open University	Gazipur, Bangladesh	1992	600,000
8	Ramkhamhaeng University	Bangkok, Thailand	1971	525,000
9	University System of Ohio	Ohio, US	2007	478,000
10.5	Dr B.R. Ambedkar Open University	Andhra Pradesh, India	1982	450,000
10.5	University of the Punjab	Lahore, Pakistan	1882	450,000
12	State University of New York	New York, US	1948	439,000
13	California State University	California, US	1857	417,000
14	University of Delhi	New Delhi, India	1922	400,000
15	Universidad de Buenos Aires	Buenos Aires, Argentina	1821	316,050
16	State University System of Florida	Florida, US	1905	301,570
17.5	Osmania University	Hyderabad, India	1918	300,000
17.5	Yashwantrao Chavan Maharashtra Open University	Nashik, India	1989	300,000
19	Spiru Haret University	Bucuresti, Romania	2002	311,928
20	Tribhuvan University	Kirtipur, Nepal	1959	290,833

Source: Wikipedia (July 2010).

ENHANCING OPENNESS: SYSTEM DESIGN AND TECHNOLOGY

Although the concept of open education has been widely publicised, no DE provider has yet succeeded in being 100 per cent open. In practice, many institutions offering DE programmes still employ admissions rules that reduce openness. The openness of DE can be enhanced by the design of a more flexible learning system (Belawati, 1999); for example, through:

- **an open entry/exit system:** individuals can start and finish the process at any time of year, according to personal circumstances;
- **no selection criteria**: any person registering for a programme will be accepted as long as s/he meets the minimal basic qualifications required to support the educational process;
- **an open registration system**: each individual can register openly, either for a full programme (for example, certificate, diploma or bachelor's) or for certain disciplines. Open registration should also allow students to accumulate the credits of previous courses in order to qualify.

The design of an educational system that complies with these three points will enhance the openness of DE. The response to DE programmes offered through the Internet shows that public demand and needs for education of this type are high. DE has been a major proponent of new educational media in this manner (Chapter 9). Institutions providing education exclusively by traditional f2f methods *or* by DE methods, as in open universities, are known as *single-mode.*

In the early 2000s, the openness of education has been enhanced by new technologies. *E-learning* has been defined as any learning process which uses Internet, both for delivering learning content as well as for enabling interaction between the students and their teachers (Belawati, 2003). The widespread penetration of e-learning in education has been greatly enhanced by the emergence of open source software (OSS), which makes *learning management system* (LMS) software widely available and often without cost. With such software, ODL can be established and maintained with relatively low investment. E-learning has also made it possible for ODL to be interactive, personalised and inexpensive, while increasing its geographic and socio-demographic coverage. As a result, e-learning has promoted the notion of ODL favourably to educators who previously looked down upon it, and has stimulated many non-ODL institutions to provide DE programmes in addition to their regular f2f offerings. By doing so, they become *dual-mode* institutions. A collaborative arrangement between multiple DE institutions, usually for course-sharing purposes, is known as a *consortium*.

These advances have been enabled primarily by the development of the hardware of DE and ODL, and by major advances

in the *Open Educational Resources* (OER) movement: that is, the free and open availability of digitised materials to educators and students for use and reuse in teaching, learning and research.

The increasing use of sophisticated hardware and software systems cannot wipe out the use of printed materials altogether, of course. Print materials are still the dominant delivery method in many DE institutions, and high-end technologies are used merely as supplementary support for the teaching and learning process. Each technology/medium has a different capability in relation to accessibility and interactivity, and while many sophisticated ICTs are in place to facilitate distance-based interaction, the general public's access to them is still limited. Panda (2005) has reported that online programmes at Indira Gandhi National Open University (IGNOU) in India have only been successful in reaching "the digitally rich who have access to the Internet or can manage to visit learning and teaching centres regularly". Furthermore, the high costs of sophisticated technologies of this sort, for both students and institutions, do not appear to be diminishing and will require "major increases in expenditure" (Perraton, 2007). In addition to the accessibility and cost problems, there are capability, technical support, regulatory, applications and political barriers (Latchem, Lockwood and Baggaley, 2008). These may take many years to resolve in some developing countries, if they ever are resolved. The convergence of systems design and high-end ICT is just one small step towards enhancing the openness of education to the full.

CONCLUSIONS

ODL is a concept that emerged from the correspondence methods of DE's industrial society era. The DE system has since evolved in keeping with the demands of society in the post-industrial era, and is oriented more towards self-realisation and fulfillment of personal needs. In addition, the new era's technological developments have increased the demand for the continued training of professionals, and this shift in orientation towards continuing education has encouraged a more open educational concept of lifelong learning for all. ICT advances have made it possible to enhance the interactive capability of DE. In many countries,

however, focusing on the use of sophisticated technologies can decrease public access to education. The selection of appropriate technologies and the design of learning systems are therefore crucial in determining the level of openness of a DE system. Conceptually, ODL is a system intended to overcome the constraints of distance, both temporally and spatially, economic factors, and demographic limitations, with the ideal of opening up educational opportunities for all.

Financial Management* 2

Tian Belawati

INTRODUCTION

This chapter presents issues of funding and cost classification in open and distance learning (ODL), and strategies to generate financial resources and budgeting procedures. It gives the particular example of practices at the Universitas Terbuka (UT—Open University of Indonesia).

Financial management practices are the basis for political accountability in ODL institutions, and for helping decision-makers to choose the most appropriate methods and media. In developing countries such as Indonesia, the selection of ODL methods is very much a political as well as educational matter. ODL is expected to provide cost-effective solutions to social problems of equality and access to high-quality education. Studies have shown that an ODL system can indeed be as effective as conventional face-to-face (f2f) instructional delivery (Beare, 1989). Classic studies of educational costs have shown that ODL can actually be cheaper than f2f education (Laidlaw and Layard, 1974), assuming that a sufficiently large amount of teaching/learning resources can be produced (economies of scale). Thus, financial management is possibly ODL's most important aspect.

FUNDING AND BUDGETING PROCEDURES AT UNIVERSITAS TERBUKA

As Latchem and Hanna (2001) have stressed, ODL management requires sophisticated strategic and financial planning, and an

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*This chapter is based on a paper by the author to the Forum on Open and Distance Learning: Revisiting planning and management (Penang, February 2006, *Educom Asia 12*, 1).

entrepreneurial culture that encourages innovation and embraces change. As a state university, UT has two main financial sources: government and students. The government funds personnel (salaries) and some capital expenditures, including physical development and procurement (land, building, heavy equipment, etc.), maintenance and utility costs, and new initiatives (experiments, research and development, etc.). Income generated from students includes tuition fees, learning material sales, f2f tutorial fees (when applied) and scholarships for in-service teacher training from provincial and district governments throughout the country.

The general expectation that ODL involves low costs has limited budget allocations at the UT. The government allocates a lower budget to UT than to conventional state (f2f) higher education institutions. Students also expect to pay less for UT tuition than at conventional universities. It is, therefore, important for ODL institutions such as UT to be creative in generating funding. For the past 15 years, UT has been collaborating closely with the government to upgrade the qualifications of primary school teachers from teacher training programmes at high-school level to two-year diploma and full-degree bachelor's programmes. Besides these sources, UT also generates funding from research and collaboration activities with other institutions, though this amount is not significant in UT's overall budget. The most recent average ratio of funding generated from government and students has been 25:75. This is the reverse of that in the f2f state universities, which tend to be heavily government subsidised.

As a large organisation, UT follows a policy of decentralisation in its budget planning, with a combination of top-down and bottom-up approaches. Via the top-down approach, the University Rector defines programme and budget priorities for the guidance of the institution's units, based on the University's Strategic and Operational Plans and on estimated revenue. The bottom-up approach is used by each unit in developing its annual programme and budget plan, based on its roles and functions (job responsibilities and descriptions). For example, the programmes and activities of an academic department within a faculty include, but are not limited to, development and revision of master copies of course materials, and development of assignments and examination items. This meets one of the Strategic Plan's key objectives about the need for course materials to be novel and up-to-date.

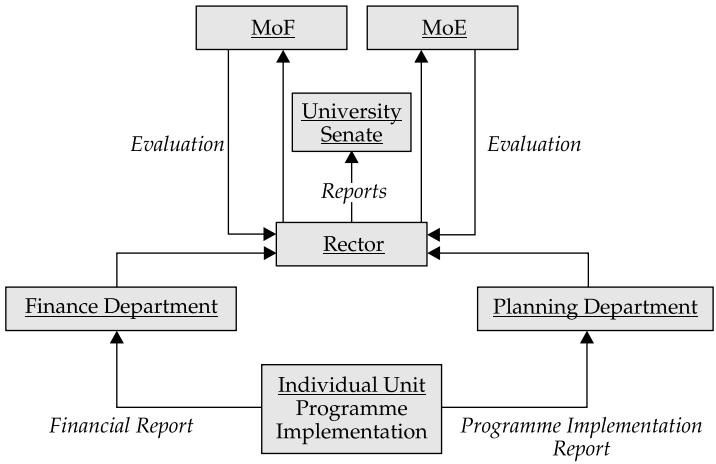
The budget for each programme and activity is based on the standardised cost that is applicable to all units. These unit costs are based on feedback from resource personnel such as content experts, tutors and supervisors, and on external costs and prices that UT must cover (postal and courier costs, transportation cost and printing, etc.). They are reviewed and adjusted at least every two years. As a state university, UT has to obtain approval from the Ministries of Education (MoE) and Finance (MoF) for the implementation of this planning, and all income generated has to be reported and deposited in the government's central account before it can be used. This mechanism involves intensive reviews by UT, the MoE through the Directorate General of Higher Education (DGHE), the MoF through the Directorate General of Budgeting (DGB) and UT's head office in Tangerang. Once the budget is approved by the MoF, it is disbursed to UT's Finance Department via certain schedules throughout the year. The planning process usually starts about four months before the new fiscal year in January. The approval and disbursement process is time-consuming, however, and the first funding disbursement does not usually occur before April. This can hinder the punctuality of programme implementation.

In the course of the year, each unit submits two annual reports (mid-year and end-of-year) to the Rector through UT's Planning and Finance Departments. The mid-year report is intended to monitor whether the plan is being implemented as designed, or whether any problems have occurred necessitating changes. The unit's end-of-year report consists of a financial statement of expenditure and income (submitted to the Finance Department), and a programme implementation statement submitted to the Planning Department. The Rector is responsible for passing on the annual unit reports to the University Senate (Figure 2.1).

THE STRUCTURE AND CLASSIFICATION OF COSTS

The cost structure of an educational institution depends primarily on the institution's main programmes and activities. In f2f institutions where teaching and learning take place in classrooms, funding needs vary according to student numbers and on the resulting demand for sufficient teachers and classrooms. For

Figure 2.1 UT's financial reporting mechanism



Source: Author.

ODL institutions where teaching and learning is via the use of instructional media, funding is less sensitive to student numbers and more influenced by the types of media used. The selection of media determines the initial funding needed for course development. ODL funding is also influenced by the methods of learning support with which the students are provided. The use of real-time (synchronous) support technologies such as audio/video-conferencing requires higher funding than asynchronous methods (for example, the post). Synchronous learning support such as tutorials require a carefully designed tutor/student ratio; and in the case of f2f tutorials, a sufficient number of classrooms.

United Nations Educational, Scientific and Cultural Organisation (UNESCO, 1977) defined the costs of education as technical, economic, accountability and financial. Technical costs relate to the technical operation; economic costs consist of fixed and variable items; accountability costs include capital and operational charges; and financial classification refers to direct and indirect costs. Tsang (1988) grouped the costs of education more globally into household and institutional costs. Household costs are direct and indirect charges, labelled by Tsang as *opportunity costs* or *foregone earnings*, and also referred to as private costs, paid by students. Students' opportunity costs refer to the estimated income

that the students could earn if they were working full time, and to the time devoted to study which could otherwise have been spent in leisure and with family. The concept of opportunity costs is important since it represents the real cost of education, and because monetary price does not always reflect the true economic value of an educational resource (Jamison, Klees and Wells, 1978). In a more general definition, opportunity cost refers to the value a resource would have in its best alternative use. Institutional costs include recurrent and capital charges. Table 2.1 follows Tsang's classification, and gives the example of UT's cost structures.

The fixed and variable costs model has been the most commonly used in studies that compare the costs of educational institutions using different teaching/learning systems: for example, between ODL and f2f systems.

Fixed costs are usually defined as those expenses that are independent of student numbers, whereas variable costs are the expenses affected by student numbers. Fixed costs are commonly divided into capital and recurrent costs. The fixed capital costs relate to expenses with an expected life of more than one accounting period (usually one year); and fixed recurrent costs relate to expenses with less than one year's expected life (Jamison, Klees and Wells, 1978). For cost–benefit analysis purposes, the total annual cost is calculated based on the sum of the annualised fixed and variable costs.

Figure 2.2 illustrates the fixed and variable costs in UT's 2006 budget plan. The fixed capital costs are those for land and buildings, equipment, course materials development, and research and development. The fixed recurrent costs include general and academic administration, personnel and human resources development, and non-personnel maintenance and utilities. Variable costs relate to course materials production and learning support.

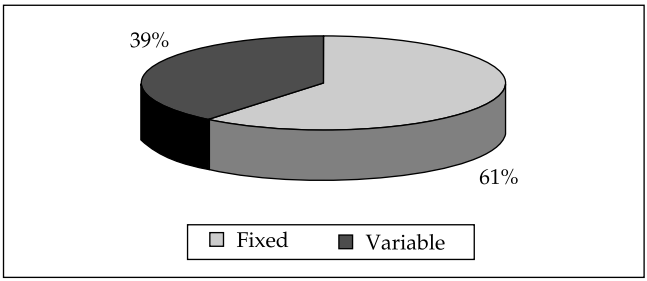
As shown in Figure 2.3, the fixed cost makes up over 60 per cent of the total budget plan. For budgeting purposes, this fixed cost is not annualised. The high proportion of fixed costs is due to the fact that fixed costs included both fixed capital (26 per cent) and fixed recurrent (74 per cent) costs such as budget for buildings, equipment, and development of course materials masters. In UT's 2006 budget as a whole, the fixed capital, fixed recurrent and variable costs accounted for 16 per cent, 45 per cent and 39 per cent respectively.

Table 2.1 Cost structure of Universitas Terbuka

Household costs/Private costs		*Institutional costs*		
		Fixed		*Variable*
Direct	*Indirect*	*Capital*	*Recurrent*	*Recurrent*
Registration/tuition fees	Opportunity costs/ foregone earnings	Land and buildings (if applied)	General and academic administration	Course materials production
Examination fees		Equipment (computers and peripherals, audio and studio equipment, copy machines, etc.)	Personnel (salaries and wages) and human resources development	Learning support (course materials delivery, distance tutorials, etc.)
Face-to-face tutorial fees (if applied)		Development of course materials master copies (for example, practicum kits)	Non-personnel (maintenance and utilities)	Student assessment
Transport		Development of student assessment items		
Course materials		Research and development		
Practical work (for example, practicum kit charges)				
Supplies				

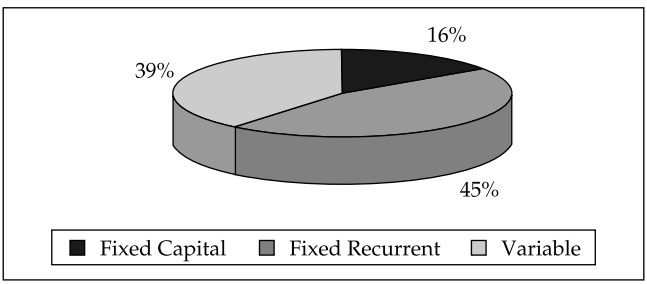
Source: Author.

Figure 2.2 Budget breakdown by fixed and variable costs



Source: Universitas Terbuka internal data (2006).

Figure 2.3 Budget breakdown by fixed capital, fixed, recurrent and variable costs



Source: Universitas Terbuka internal data (2006).

For accountability purposes, as classified by UNESCO (1977), UT's cost structure can also be categorised as capital and operational costs. Table 2.2 sub-divides this classification into the main activities conducted by DE and ODL institutions. UT's operational activities, for example, can be differentiated into academic, administration, and maintenance and utilities.

When classified according to capital and operational costs, UT's 2006 budget plan comprises capital (7 per cent) and operation (93 per cent) costs. Figure 2.4 shows the breakdown of UT's budget when the operational costs are further divided into administration (48 per cent), academic (42 per cent), and maintenance and utilities (3 per cent).

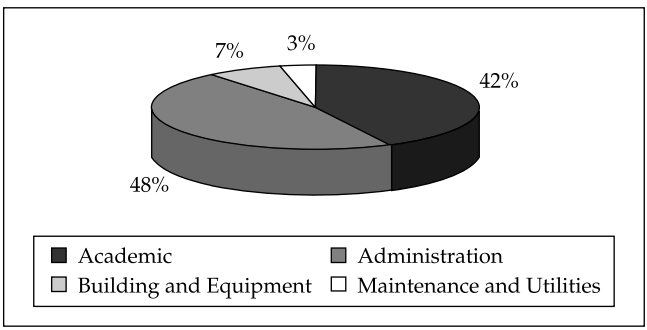
Figure 2.5 illustrates academic activity costs, relating to learning support (44 per cent), course development (36 per cent), student assessment and evaluation (13 per cent), and research (7 per cent).

Table 2.2 Cost classification by capital and operational costs

	Operational		
Capital	*Academic*	*Administration*	*Maintenance and Utilities*
Land and buildings (if applied) Equipment (computers and peripherals, audio and studio equipment, copy machines, etc.)	Development of course materials master copies (for example, practicum kits) Course materials production Learning support (course materials delivery, distance tutorials, etc.) Student assessment Research and development	General and academic administration Personnel (salaries and wages) and human resources development	Maintenance Utilities

Source: Author.

Figure 2.4 Budget breakdown by capital and operational costs



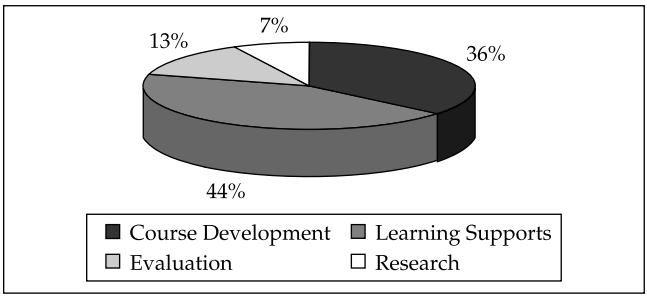
Source: Universitas Terbuka internal data (2006).

Figure 2.6 illustrates administrative activity costs, relating to salaries/wages and human resources development (67 per cent), general (28 per cent) and academic administration (5 per cent).

The overall breakdown of UT's 2006 budget plan, based on all capital and operational cost categories, is shown in Figure 2.7.

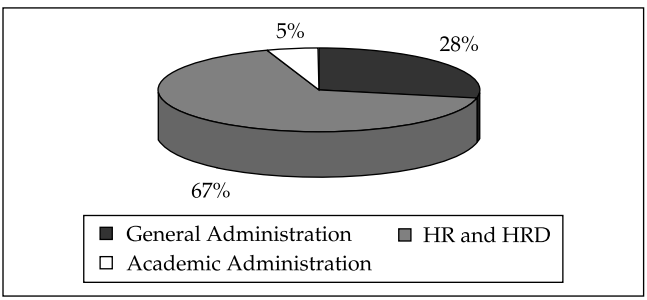
It is important to note that the largest proportion of UT's 2006 expenses was for Human Resource (HR) and Human Resources

Figure 2.5 Academic budget breakdown



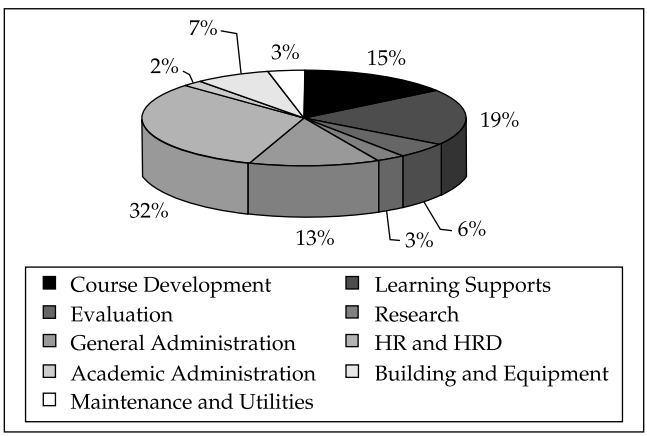
Source: Universitas Terbuka internal data (2006).

Figure 2.6 Administration budget breakdown



Source: Universitas Terbuka internal data (2006).

Figure 2.7 Budget breakdown by all capital and operational costs



Source: Universitas Terbuka internal data (2006).

Development (HRD) (32 per cent). This is because UT has over 1,700 staff in 2006, including 751 academic and 1,025 administrative/support staff. The costs for course development, learning supports and general administration were also high, since the course development budget included new course developments as well as revisions. UT has a policy of revising its course materials every seven years. Thus, with over 1,000 courses, an average of 143 courses has to be revised annually. Learning support and administration are also high cost factors at UT, for the University's nationwide operations in these two categories cover expenses throughout Indonesia, including those managed by its 36 regional offices.

The final breakdown of UT's annual budget is shown in Table 2.3. While changes in the individual cost categories occur from year to year, the 2006 breakdown was typical.

Table 2.3 Overall budget breakdown in percentages

	Fixed			
Category	*Capital*	*Recurrent*	*Variable*	*Total*
Course development	3.97	–	11.27	15.29
Learning support	0.51	0.95	17.14	17.28
Evaluation	1.07	0.56	3.98	5.27
Research and development	2.56	0.46	–	3.02
General administration	0.54	6.31	6.12	14.29
Academic administration	–	2.23	0.18	2.43
HR and HRD	–	31.44	–	31.44
Maintenance and utilities	–	3.03	0.45	3.74
Building and equipment	7.24	–	–	7.24
TOTAL	15.88	44.98		
		60.86	39.14	100

Source: Universitas Terbuka internal data (2006).

In relation to the specific media of ODL, costs can be classified into three types: production, distribution and reception. While specific educational contexts may involve unique cost structures, Bates (1990, 1995) indicated that the typical costs of any given educational technology or medium are influenced by:

- fixed costs (that is, those that do not relate to levels of production, utilisation or overheads);
- production and delivery costs;
- the amount (volume) of materials produced;

- the number of students;
- the life expectancy of the materials; and
- support costs (administration costs, local costs and institutional overheads).

For example, Table 2.4 shows the classification of UT's course material production costs into capital, recurrent, initial, fixed and variable costs.

Table 2.4 Cost structure of the UT's learning materials development

	Fixed		
Category	*Capital*	*Recurrent*	*Variable**
Print materials			
Production	Building	Personnel	Blueprint development and review Content development and review
	Equipment	Maintenance	Layout (illustrating) Supplies (paper, printing ink, etc.) Communication and coordination
Transmission			Post/courier
Reception***			Supplies
Non-Print Materials			
Production	Studio building	Personnel	Blueprint development Script development
	Equipment	Maintenance	Production (editing, previewing, mixing, revising, etc.) Supplementary print materials** Supplies (audio and video tapes, CD, light bulbs, etc.) Communication and coordination
Transmission		Broadcasting fees (when applied)	Supplementary materials delivery Postage/courier
Reception***	Televisions Radio sets		Supplies

Source: Author.

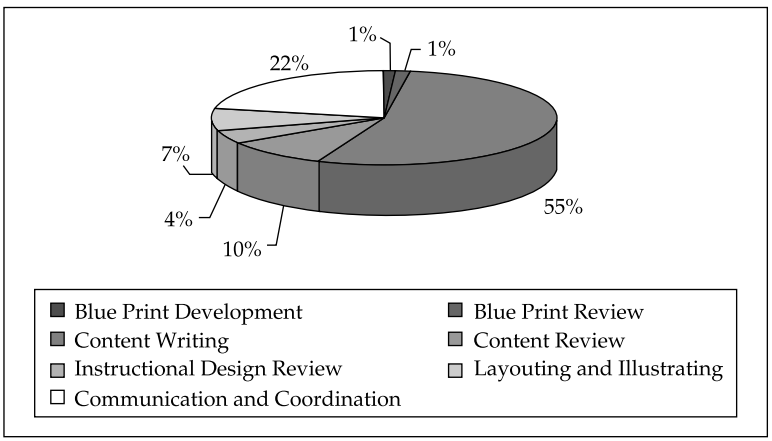
Notes: * Variable to the number of credit unit programmes produced, and not to the number of students;

** Audio/video graphic programmes requiring supplementary print materials (graphics, diagrams, etc.)

*** Reception costs are students' private costs of using broadcast/prerecorded programmes.

UT has never calculated the total costs of producing specific learning materials, but has set overall unit costs for materials production relating to each element/activity. The capital costs of building and equipment and the recurrent costs for personnel and maintenance are parts of the total university budget, and it is difficult to sub-divide them for the purpose of calculating specific media production costs. Based on the standardised unit costs, however, it is possible to estimate the cost of producing a UT print material master copy (Figure 2.8). The largest print materials development costs relate to content writing, and communication and coordination. At UT, only 5 per cent of content experts are full-time academic staff, and 95 per cent are hired from other universities. Regular monitoring and progress checking is therefore needed, which usually involves extensive travel and meetings. In 2006, the average cost of producing print material for a one-credit learning unit was approximately 8.4 million rupiahs (USD 840), while for a three-credit unit it was USD 2,500.

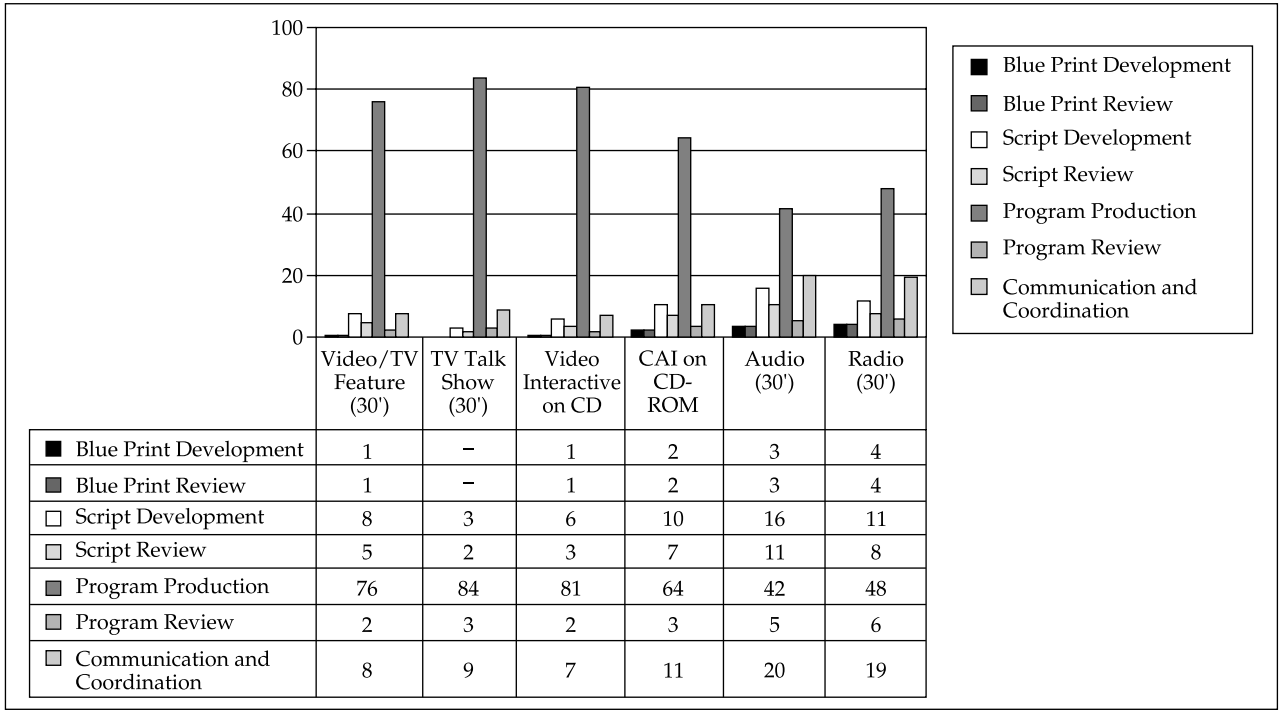
Figure 2.8 Cost breakdown of print materials development



Source: Universitas Terbuka internal data (2006).

The breakdown of variable costs for producing non-print course materials/programmes at UT in 2006 is shown in Figure 2.9. The cost of producing master copies of audio/video and computer-based programmes ranged from 1.3 to 6.4 million rupiahs (USD 130 to USD 640). When the print and non-print course material

Figure 2.9 Cost breakdown of non-print materials development



	Video/TV Feature (30')	TV Talk Show (30')	Video Interactive on CD	CAI on CD-ROM	Audio (30')	Radio (30')
Blue Print Development	1	–	1	2	3	4
Blue Print Review	1	–	1	2	3	4
Script Development	8	3	6	10	16	11
Script Review	5	2	3	7	11	8
Program Production	76	84	81	64	42	48
Program Review	2	3	2	3	5	6
Communication and Coordination	8	9	7	11	20	19

Source: Universitas Terbuka internal data (2006).

expenses are combined, the cost of producing a three-credit unit multimedia course package ranged from USD 2,630 to USD 3,150.

CONCLUSIONS

This chapter has shown the common procedures for classifying costs in DE and ODL. Universitas Terbuka's financial management system uses both top-down and bottom-up approaches. The budget planning is based on activity-based costing, which is derived from the university's Strategic and Operational Plans and is based on the estimation of revenue. As at other educational institutions, UT's costs can be defined in fixed capital, fixed recurrent and variable categories, and as capital and operational. The operational cost category can be further classified as academic, administration, and maintenance and utilities. The academic costs include those for course materials development, learning supports provision, student assessment or evaluation, and research and development; and the administration costs relate to general and academic administration, personnel and human resource development, and maintenance and utilities. These cost elements vary between institutions according to the organisational and operational systems used.

The measurement of effectiveness and benefits in educational institutions is discussed in Chapter 4.

Associations and Partnerships 3

Tian Belawati

INTRODUCTION

This chapter lists major professional associations in distance education (DE) and open and distance learning (ODL). International organisations include the:

1. Commonwealth of Learning (COL);
2. International Council for Open and Distance Education (ICDE); and
3. United Nations Educational, Scientific and Cultural Organisation (UNESCO).

Regional organisations include the:

4. African Distance Learning Association (ADLA);
5. Asian Association of Open Universities (AAOU);
6. Canadian Association for Distance Education (CADE);
7. European Association of Distance Teaching Universities (EADTU);
8. Open and Distance Learning Association of Australia (ODLAA);
9. Southeast Asian Ministers of Education Organisation Regional Open Learning Center (SEAMOLEC); and
10. United States Distance Learning Association (USDLA).

The information presented in this chapter is abstracted from the organisations' web sites.

Recognition has been expanding rapidly of the major role that DE and ODL can play in the development of human resources. The establishment of single- and dual-mode DE institutions and consortia (Chapter 1) demonstrates that DE and ODL are now perceived as acceptable and reputable means for providing

education to all. The increasing number of institutions offering DE programmes has increased the need for institutions to share their experiences and to collaborate. Regional, national and international organisations are continually under development in the field, and are playing significant roles in developing DE concepts and implementation methods.

INTERNATIONAL LEVEL

Commonwealth of Learning (www.col.org)

COL is an inter-governmental organisation created in 1989 by Commonwealth Heads of Government to encourage the development and sharing of DE and ODL knowledge, resources and technologies. Dedicated to facilitating technological change in education and training, COL and its network of international partner organisations have helped the Commonwealth's 53 member nations to realise widespread access to quality, current education and training. COL is financially supported by Commonwealth governments on a voluntary basis. Based in Vancouver, Canada, COL is the world's only inter-governmental organisation dedicated solely to promoting and delivering DE and ODL, and is the only official Commonwealth agency located outside Britain. COL works co-operatively with national and international, public and private development agencies, non-profit organisations and banks. Its partners include other Commonwealth agencies, members of the UN System (UNESCO, UNICEF, UNIFEM, UNDP and the World Bank), national and regional DE associations, and industry. Partners on specific programmes and projects include donor and recipient governments and agencies.

COL responds to Commonwealth needs through in-country and regional programmes and initiatives, and by fee-for-service consulting for international agencies and national governments. COL has:

- helped to introduce and enhance hundreds of teaching/training programmes in over 40 countries;

- influenced the conception and development of open schools and universities;
- conducted training seminars and studies on educational needs;
- established an extensive network of education and technology specialists around the world; and
- facilitated systemic changes in the delivery of education, and influenced government policy.

A major COL objective is to empower the development of learning systems by governments, institutions and individuals without relying on donors. It helps governments and institutions to expand the scope, scale and quality of learning by using new approaches; it promotes policies and systems to make innovation sustainable; and it works with international partners to build models, create materials and enhance organisational capacity in support of development goals. COL's initiatives and research aim to be inherently sensitive and responsive to needs of gender equity, sustainable development, environmental protection, civil rights and the appropriate use of low-cost and innovative technologies. While drawing upon the Commonwealth's developed countries for experience and expertise, COL encourages significant South–South co-operation in its projects.

In all parts of the Commonwealth, COL is currently broadening and deepening the scope of its approach, moving from limited-term, individual project-based activities, to ongoing, integrated programme-based operations. *Learning for Development* is the theme of COL's Plan for 2006–09. It is a development agenda that includes the UN's Millennium Development Goals (MDGs), the goals of Education for All (Dakar) and the Commonwealth's objectives of peace, democracy, equality, good governance and the needs of small states. Increasing and improving human learning is the key to fulfilling most aspects of this development agenda. Conventional instructional approaches simply cannot expand quickly enough to meet the challenge. COL's role is to help countries use a range of appropriate and available approaches and technologies to foster learning at scale. A significant development in the DE and ODL field is COL's Virtual University for Small States of the Commonwealth (VUSSC), launched in 2007.

International Council for Open and Distance Education (www.icde.org/)

The ICDE was established in 1938 in Norway, which has been its permanent host since 1988. ICDE is recognised by the UN as the global non-governmental organisation responsible for the field of ODL. It is affiliated with UNESCO and with the Southeast Asian Ministers of Education Organisation (SEAMEO), and is a World Bank partner organisation. In 2003, ICDE signed an agreement with the Organization of American States/Organizaciön de Estados Americanos (OAS/OEA) on capacity development of human resources throughout the Americas, and are using DE and flexible learning (FL) methods in this work.

An important aim of ICDE is to promote worldwide intercultural co-operation through the unique knowledge and experience of its members, and by its status in UNESCO as the major non-governmental organisation with formal consultative relations in DE and ODL. Specific ICDE activities focus on the development of FL methods. These include:

1. contributions to the development of new methodologies and technologies in order to improve lifelong learning;
2. fostering international collaboration;
3. supporting and developing networks at national, regional and global levels;
4. fostering collaboration between public and private sector organisations;
5. providing a forum where individuals, corporations, institutions, governments and associations can engage in professional interaction; and
6. encouraging the development of good practice and standards.

ICDE has participated in several European Commission (EC) projects, facilitating and fostering the establishment of educational institutions and networks beyond Europe. Since 1938, usually every two years, ICDE has organised world conferences on DE and ODL. Each year, it arranges networking and strategic partnership opportunities for its member institutions through

annual meetings of the Standing Conference of Presidents (SCOP), attended by rectors/presidents and senior policy-makers.

There are four types of ICDE membership:

- educational institutions;
- educational authorities and agencies;
- corporations; and
- individuals.

ICDE disseminates information and professional articles and news about DE in publications including the journal *Open Praxis*.

UNESCO (portal.unesco.org/education)

UNESCO promotes international cooperation among its 192 member states and 6 associate members in areas of education, science, culture and communication. Since its creation in 1945, UNESCO has worked to improve education worldwide through technical advice, standards setting, innovative projects, capacity-building and networking. It functions as a laboratory of ideas forging universal agreements on emerging ethical issues, and as a clearinghouse for the dissemination of information and knowledge relating to the development of human and institutional capacities in diverse fields. UNESCO works to create conditions for international dialogue, based on respect for shared values and the dignity of each civilisation and culture. The principle of Education for All (EFA) by 2015 guides UNESCO's actions in the field of education and intersectorally in all of its activities.

Through its strategies and activities, UNESCO is actively pursuing the MDGs, particularly those aiming to:

- halve the proportion of people living in extreme poverty in developing countries by 2015;
- achieve universal primary education in all countries by 2015;
- eliminate gender disparity in primary and secondary education;
- help countries implement a national strategy for sustainable development; and to

- reverse current trends in the loss of environmental resources.

UNESCO's educational priorities are:

- basic education for all, with special attention to literacy, HIV/AIDS prevention education, and teacher training in sub-Saharan Africa;
- secondary education, including technical and vocational education and training, and science and technology education;
- promoting quality education, with special reference to values education and teacher training; and
- higher education generally.

UNESCO publishes numerous books, guidelines and research findings arising from its projects, in education fields including DE and ODL.

REGIONAL LEVEL

African Distance Learning Association (www.physics.ncat.edu/%7Emichael/adla/)

ADLA is a newly formed association that is currently calling for educators, professionals and students to become members. The organisation is based on the philosophy that stand-alone, self-sufficient open education institutions cannot succeed without the support of grass-root organisations, professionals, educators, students and the general public. ADLA follows the same approaches as other international DE associations, and aims to become the major professional body supporting open colleges and virtual universities in Africa.

Asian Association of Open Universities (www.aaou.net/)

AAOU was founded in 1987 by open universities in the Asian region who realised the significant contribution of DE in democratising education for mankind. It is a non-profit organisation of higher

learning institutions primarily concerned with DE using by a variety of media. AAOU's objectives include:

1. widening the educational opportunities available to all Asia's people;
2. exchanging management information, teaching materials and research;
3. promoting education by DE methods and developing its potential;
4. promoting professional and ethical standards among distance educators;
5. consulting with official bodies and others interested in DE education; and
6. facilitating cooperation with similar regional and international bodies.

AAOU currently has a total membership of 71, including 38 full institutional members, 31 associate institutional members and 2 individual supporting members. Its full members are ODL institutions in Asia, whose primary mode of instructional delivery is DE. Its associate members are active in delivering or promoting DE through departments, faculties, centres and external/off-campus programmes. AAOU's supporting members include:

- *Donor supporting members*: individuals and organisations wishing to make significant financial contributions in support of ODL.
- *Association corporate supporting members*: business corporations wishing to be linked to the Association in a mutually beneficial way.
- *Individual supporting members*: individuals wishing to contribute to the Association's activities.

The AAOU Annual Conference, hosted in turn by different member institutions, is a forum for all associated with ODL in Asia, including academics, administrators and students. The Conference provides a focal point for updating the issues, ideas and developments in Asian ODL. Participants come from Asia and other parts of the world. The increasing presence of delegates from outside Asia demonstrates the Conference's prestige as a forum for academic exchange among international ODL practitioners.

AAOU offers annual awards including the Meritorious Service Award, which recognises distinguished DE/ODL contributions to research; development of instructional methods; development of student support services; and institution building. The Annual Best Paper Award is awarded to the outstanding annual conference presentation originating from an Asian institution.

Canadian Association for Distance Education (www.cade-aced.ca/)

CADE is the professional body of Canada's DE community. It is bi-cultural (English and French) in its Board of Directors and membership, and bilingual in its activities. In 2007, CADE merged with the Association for Media and Technology in Education in Canada (AMTEC) to form a new bilingual organisation, the Canadian Network for Innovation in Education (CNIE). The objectives of CADE/CNIE include:

1. responding to the diverse and changing needs of its anglophone and francophone membership;
2. embracing diversity and fostering inclusiveness by meeting the needs of people in all cultures and circumstances;
3. basing decisions and actions on fundamental principles of integrity and justice;
4. fostering a diverse community in which the ideas, expertise and perspectives of each individual are valued and appreciated;
5. sharing skills and knowledge for the benefit of members, colleagues and partners;
6. acting as a catalyst for the creation of partnerships among stakeholders and others;
7. being committed to excellence and efficiency in the management of its resources;
8. achieving global recognition in DE and ODL;
9. working to increase access to educational opportunities in Canada and beyond;
10. pursuing innovation in service delivery in an environment of change;
11. embracing change, taking risks, and stepping out of traditional roles and practice.

CADE/CNIE holds an annual conference attended by DE and ODL specialists from Canadian and international institutions.

European Association of Distance Teaching Universities (www.eadtu.nl/)

EADTU is the association representing ODL universities and consortia of higher education institutions in European DE and ODL. It was established in 1987 by principals of Europe's major DE institutions, to foster cooperation dedicated to higher education using DE methodology. EADTU members include 21 national non-profit institutions in 19 countries, which provide DE programmes to a total of over 2 million students.

EADTU actively promotes DE, ODL and e-learning through its position in Europe and internationally, the framework of its activities is the European Area of Higher Education (Bologna) Declaration, a statement of European policies regarding lifelong learning, development of skills by European citizens and innovations in e-learning and teaching. The Association's secretariat in Heerlen, the Netherlands, provides a strategic platform for member institutions in relation to educational cooperation and common projects. EADTU has initiated activities aimed at furthering the goals of the Bologna agreement through the creation of a European Learning Space (ELS) supported by e-learning and ODL. This vision is known as *e-Bologna* and covers issues including mobile education for "virtual students".

EADTU plays a useful role in determining the future of higher education in Europe. It organises annual conferences with relevance to the development of the knowledge-based society and the continuation of the Bologna process. The conferences discuss priority areas of ODL institutions, and are of interest to higher education institutions and the e-learning industry generally.

Open and Distance Learning Association of Australia (odlaa.une.edu.au/)

ODLAA is a non-profit organisation managed by an elected executive committee of volunteer members. Its aims and objectives are to:

- advance the practice and study of DE in Australia;
- foster communication between distance educators; and
- maintain and extend links with other national and international associations with related objectives.

Members of the Association are individuals involved or interested in open, flexible, distributed, distance-based education and training, and e-learning. ODLAA arranges and supports frequent professional development events, including annual conferences, in locations across Australia, and is currently extending the scope of its electronic and online professional development events. ODLAA publishes the international journal, *Distance Education*, and recognises excellence in DE and ODL through a series awards presented at its major biennial conference. These include: Excellent Practice in Open, Flexible and DE, Education and Training; and Excellence in Research in Open, Flexible and DE, Education and Training.

Southeast Asian Ministers of Education Organisation Regional Open Learning Centre (seamolec.org/)

The Southeast Asian Ministers of Education Organization (SEAMEO), established in 1965, is an international organisation dedicated to promoting cooperation in education, science and culture in Southeast Asia. SEAMOLEC is the name given to individual SEAMEO regional centres, of which there are currently 12, operating for the benefit of Southeast Asian people in Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. The SEAMOLECs were established with the rationale that conventional institutions cannot meet the challenge of education for all. A SEAMOLEC is conceived as a centre of ODL expertise with a mission to help SEAMEO member countries to identify educational problems and solutions for sustainable human resource development. The SEAMOLEC goal is to conduct programmes that are responsive to current national and regional requirements. Its objectives include assisting:

1. SEAMEO member countries to promote and foster ODL as an means of meeting education and training demands

(for example, by complementing or substituting for conventional classroom instruction); and
2. ODL providers in SEAMEO member countries to:

   - accelerate student participation, lower dropout rates and increase the number of qualified graduates;
   - establish cooperative links for mutual help and in the formation of an ODL network.

SEAMOLEC fulfils these objectives by:

1. providing training in the development and practice of ODL systems;
2. conducting needs assessments, research and evaluation on ODL and educational technology;
3. disseminating information on ODL and the use of technology to make learning more effective;
4. fostering collaborative links with regional and national agencies, and with external ODL specialists;
5. facilitating inter-institutional ODL courseware acquisition, exchange, development and adaptation;
6. promoting sharing of expertise and other resources for the improvement of ODL quality; and
7. helping ODL providers in member countries to identify, acquire and use appropriate technologies.

The intended ultimate beneficiaries of these activities are:

- trainees, students and participants in all sectors of Southeast Asia who are unable to benefit from traditional education and training systems;
- men and women who are already in the workforce and wish to upgrade their skills in order to increase their career development and employment opportunities;
- adults who wish a "second chance" to improve their educational qualifications; and
- traditional educational and training institutions which utilise DE materials in their instruction.

United States Distance Learning Association (www.usdla.org/)

The goals of USDLA are to:

1. provide national leadership in the field of DE;
2. advocate and promote the use of DE;
3. provide current information about DE;
4. represent the DE community before government policy and regulatory bodies;
5. serve and support the state, consortium and individual organisations that belong to USDLA;
6. provide annual recognition and awards of outstanding DE achievements;
7. act as a catalyst for the formation of partnerships among education, business, health care and government organisations;
8. achieve a global leadership role through liaisons with international organisations;
9. promote equity and access to lifelong learning through DE; and to
10. promote diversity in the organisation and its programmes.

USDLA membership categories are: student, individual, organisational and sponsorship.

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Section 2

Evaluation and Assessment in Distance Education

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Cost-effectiveness* 4

Tian Belawati

INTRODUCTION

This chapter discusses the measurement of cost-effectiveness in ODL, and gives the particular example of practices at the Universitas Terbuka (UT—Open University of Indonesia).

Procedures for measuring educational effectiveness are not as well defined as those for calculating the general costs of running educational institutions. The measurement of effectiveness involves more subjective judgments of "outcome" and "output". The measurement of educational outcomes requires a well-designed procedure and careful controls so that the effects measured are (as far as possible) due exclusively to the educational process. In ODL operations, as throughout the literature of modern educational technology, a major focus of effectiveness studies has been on the question of whether one medium is superior to another. While researchers including Salomon (1979) have shown that the matter cannot be defined so simply, cost-effectiveness studies have persisted in maintaining this approach.

COST-EFFECTIVENESS OUTCOMES

Cost-effectiveness assessments typically involve an analysis of the institution as a whole, or of a particular teaching/learning outcome. A university has three main products (Wagner, 1982):

- men and women with degrees;
- research; and

* The chapter is based on a paper by the author to the Forum on Open and Distance Learning: Revisiting planning and management (Penang, February 2006).

- storage of knowledge and maintenance of cultural standards.

On this basis, the outcomes of an ODL institution in a given period can be defined as including:

- the number of students;
- the number of graduates;
- the number of course materials produced; and
- the amount of research conducted.

Over long periods, ODL products can be defined in terms of graduates' earnings, promotion and social status. As indicated in Chapter 2, in developing countries such as Indonesia, the use of ODL methods is a political as well as educational issue, for they are expected to provide cost-effective solutions to social problems of equality and access to high-quality education. A subtle additional measure of effectiveness is thus the incalculable value of the ODL system itself. Owing to the non-measurable outcomes of ODL, the value of comparing its overall effectiveness with that of conventional f2f education is therefore debatable.

To measure the effectiveness of learning outcomes due to the use of particular media, empirical research methods are commonly used. These allow the researcher to control the learning condition(s) and to measure, as the learning outcome, the effects of specific treatments. The teaching/learning output can be measured by specific gains in cognitive ability and skill (entry level versus exit level), the number of papers written, etc. (Wagner, 1982). The effectiveness of specific instructional media can be measured in terms of, for example, the number of students who have access to the media, and the degree of control the students have over the frequency and duration of media usage.

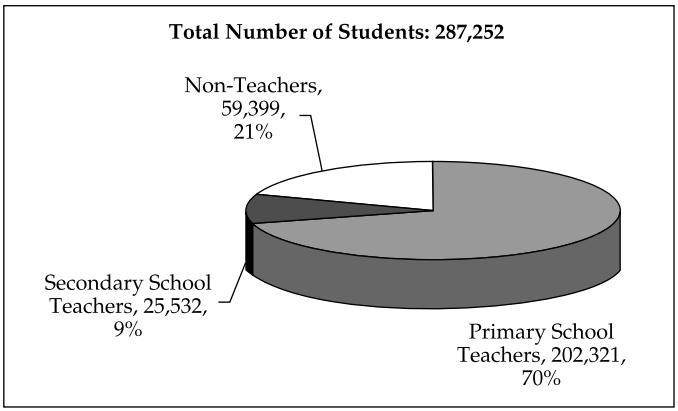
Experimental methods, however, are not without weaknesses, for the control procedures they involve can make the learning conditions artificial and unnatural. Bates (1981) suspected two main reasons for the empirical method's lack of success in determining the effectiveness of educational media. First, the researcher may fail to control all variables apart from the main treatment variable whose effect on the learning outcome is being measured. Second, experimental methods are often inappropriate in educational

decision-making situation. An educational experiment may overlook the potential of a medium to present material in different ways, variables of presentation quality, differences in response by individual students and the context in which the media were used. In addition, problems of effectiveness measurement over time are encountered, as in the measurement of learning gained. It may be impossible to isolate the specific effects of an experimental treatment from the numerous other effects that can occur after the student has been exposed to the treatment (Wells in Wagner, 1982). The measurement of cost-effectiveness of ODL has to begin, therefore, with a definition of the goals of the analysis, and by identifying the most appropriate outcome indicators for meeting them. The process ends with an estimate of cost-effectiveness in terms of these indicators.

UT has two main missions: to increase access to higher education for Indonesia's people; and to upgrade teachers' qualifications from high-school to diploma and bachelor's levels. When the minimum teaching qualification was increased to the two-year diploma level in 1990, approximately 1.2 million teachers needed to upgrade their qualifications. As an ODL institution, UT is regarded as the most suitable system for these professionals, because it allows them to complete their education without having to leave their teaching jobs. Since that time, the Diploma II Primary School Education (DII PGSD) has been UT's largest programme; and since UT began offering a full degree in Primary School Education (S1 PGSD) in 2001, some teachers have gone on to take that programme also. The S1 PGSD will also soon become a major programme, for the government has recently raised the minimum requirements for primary school teachers to bachelor's level.

Major effectiveness indicators at UT are therefore the number of students taught and the number of teachers taking the in-service teacher training programmes. Figure 4.1 shows that the number of active students at UT in the January–March 2006 semester was 287,252, and that almost 80 per cent of this number was teachers taking in-service training programmes. These included 227,853 student teachers, of which 202,321 were primary school teachers in two-year diploma and full-degree (Bachelor's) programmes.

Figure 4.1 UT's student body (2006)



Source: Universitas Terbuka internal data (2006).

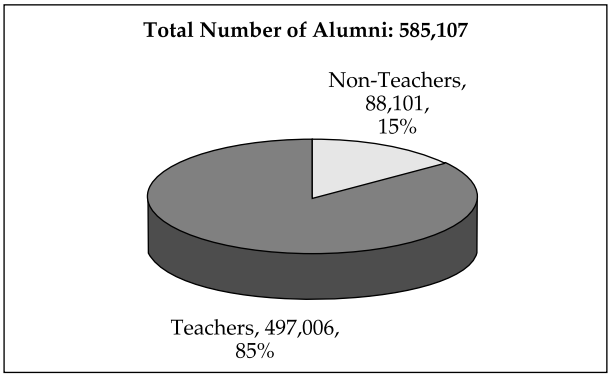
Figure 4.2 shows that the total number of UT graduates up to December 2005 was 585,107, of which the largest percentage was teachers (85 per cent).

COST-EFFECTIVENESS AND COST-BENEFIT ANALYSES

Cost-effectiveness analysis (CEA) and cost-benefit analysis (CBA) are the most common techniques for evaluating project outcomes (Peterson, 1986). Although both techniques compare the costs and the probable outcomes of an alternative, they differ in terms of objectives and approaches.

CEA is a tool for estimating the effects expected from different alternative methods of achieving an objective, especially when the outcomes cannot easily be measured in monetary terms. The usual concern of CEA is not to find out whether the objective being evaluated is economically feasible, but rather to explore how it might efficiently be achieved, and which costs are attached to reaching different levels of the desired outcomes. CEA is therefore commonly designed to include an assessment of several different plans for meeting a specified objective that is assumed to be worthwhile. The results of a CEA usually take the form of comparisons between the effects of a plan or course of action and

Figure 4.2 UT's alumni (to end 2005)



Source: Universitas Terbuka internal data (2006).

the costs of specified alternatives. To conduct a CBA, the probable outcomes must be estimated and calculated in terms of their "dollar" values. In a CBA, all tangible and intangible phenomena are based on estimating and comparing the total costs with the total benefits. The objective of CBA is usually to determine if the project being evaluated is economically feasible.

According to Peterson (1986), a CEA involves three approaches:

- *Constant-cost analysis* focuses on the optimal outcomes that can be achieved within a particular budget amount. The analyst determines the degree to which the objective can be attained within the limits of the cost involved.
- *Least-cost analysis* focuses on identifying the cheapest alternative method of attaining a pre-determined level of the objective. The analyst finds the alternative that achieves the stated level of objective in the least expensive way.
- *Objective-level analysis* estimates the costs of achieving performance levels via a specific alternative method. The analyst determines costs according to different levels of objective attainment (10 per cent, 20 per cent, 30 per cent, etc.).

Regardless of which type of analysis is used, CEA is always about efficiency. Coombs and Jacques (1977) divided efficiency into: *(a)* external efficiency or productivity and *(b)* internal efficiency.

Wagner (1982) and Tsang (1988) divided efficiency into internal, external, technical and economic categories. Tsang stated that, in education, internal efficiency compares the costs of education with the outputs or effects of education such as the acquisition of cognitive and non-cognitive skills. External efficiency, on the other hand, compares the costs of education with its external benefits (for example, productivity in post-schooling work). According to Wagner, technical efficiency measures the relationship between physical inputs and outputs; and economic efficiency attaches monetary values to the inputs and outputs, and is therefore the same as the concept of CBA. Above all, education should be economically efficient:

> [W]hen, given prices, technology, and financial resources, the maximum amount of… outcome is produced by selecting the right combination of inputs… [and] is economically inefficient [when]… outcome can be raised without incurring additional cost, just by altering the combination of inputs. (Tsang, 1988)

There are eight detailed steps to conducting a CEA:

1. stating the general problem situation;
2. defining the objectives;
3. identifying alternatives to reach the objectives;
4. determining a common measure of effectiveness;
5. formulating a model for analysis;
6. estimating and recording the costs of each alternative;
7. calculating the effectiveness of each alternative; and
8. performing cost-effectiveness computations.

The way the CEA is reported depends on the analytical approach. If the constant-cost approach is used, the report might state that for a given budget (for example, USD 200,000):

- 100,000 students can be reached via tutorial centres at a cost of USD 2 each (that is, USD 200,000/100,000) per year; or
- 150,000 students can be supported at a cost of USD 1.5 (USD 200,000/150,000) by study groups; or
- 300,000 students can be reached at a cost of USD 0.6 (USD 200,000/300,000) by providing study guides.

If the least-cost approach is used, the report might state:

- tutorial centres will cost USD 160,000 per year to run, and will reach approximately 100,000 students (that is, USD 2.13 per student per year); or
- study groups will need USD 150,000 per year to run, and will serve approximately 150,000 students (that is, USD 1 per student per year); or
- pre-produced study guides will cost 100,500 per year, and will reach 300,000 students (or USD 0.3 per student per year).

Cost-effectiveness (C/E) ratios are useful tools for helping decision-makers to choose the best alternative for implementation, though not without certain considerations. For example, the production of study guides involves little costs and only increases the students' grade point average (GPA) by 0.25 point. The more costly process of providing tutorial centres is estimated to increase the GPA by 0.75; and study groups seem to be the most effective method of increasing students' GPA (1.5 points). In terms of actual ability to reach students, however, study guides seem to be the most effective method. Decision-makers have to decide, therefore, whether they are willing to trade a loss of 150,000 students not reached by study groups for an increase of 1.25 points in the GPA. In other words, which is more important—equality of provision (number of students reached by the method), or quality of the learning outcomes (GPA)? In the UT example, it seems that tutorial centres are the least favorable alternative.

Using the constant-cost approach, the cost-effectiveness of UT's operations can be calculated as the cost per student. Based on the 2006 budget plan, the number of registered students (Semester 2006.1) and the estimated number of students (2006.2), the total institutional cost per student was approximately 1.2 million Indonesian Rupiah (IDR) (USD 102) for the year. This low cost was due to UT's reliance on print materials and asynchronous communication, which are therefore considered to remain the most suitable and accessible system for most UT students. If UT decides to use more synchronous teaching strategies, these costs will certainly increase. For example, in the Primary School Teacher Training Programmes, requiring intensive f2f tutorials,

the operational cost per student is approximately IDR 2 million (USD 200) per year.

CONCLUSIONS

The chapter has discussed the problems of measuring educational effectiveness empirically. Principles of cost-effectiveness and cost-benefit analysis have been highlighted, and the methods of constant-cost, least-cost and objective-level analysis. Using the example of the Universitas Terbuka (UT) budget and the number of UT students served in 2006, it can be argued that UT is a highly cost-effective system, notably in teacher training; for the average cost of studying in Indonesian state f2f universities is approximately four times higher, at IDR 8 million (USD 800) per year. In fact, this is only the cost paid by the students, covering approximately 25 per cent of the total institutional cost. Thus, the cost of ODL in Indonesia can be estimated at 30 per cent of the cost of conventional f2f education. The difference is even greater between the low cost of ODL and the high cost of private f2f education.

Quality Assurance* 5

Tian Belawati

INTRODUCTION

This chapter discusses the standard, reflexive model of quality assurance, and its role in ensuring increasingly high standards in open and distance learning, and the public's confidence in it. The particular example of practices at the Universitas Terbuka (UT—Open University of Indonesia) is given.

Open and distance learning (ODL) has evolved rapidly, resulting in concerns about the quality of its course provisions. As a result of consumers' increasing demands for high-quality education, quality assurance (QA) has become a major concern of educational leaders, policy-makers and teachers, and has become a fundamental aspect of ODL planning and management (Belawati and Zuhairi, 2007). QA in higher education is a set of management and assessment procedures designed to compare performance with objectives, and to ensure achievement of quality outputs and quality improvements (Harman, 2000). It is a systematic and continual internal process combined with external evaluation in the attempt to ensure that expected levels of quality are reached and stakeholders' confidence maintained.

THE SHEWHART CYCLE OF QUALITY ASSURANCE

One of the most widely used paradigms for QA management is the classic PDCA (Plan-Do-Check-Act) approach (Figure 5.1). The PDCA model was originally developed by Walter Shewhart in

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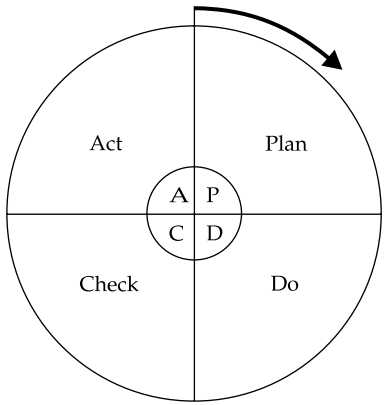
*The chapter is based on the author's previously published article, 'The practice of a quality assurance system in open and distance learning' in *The International Review of Research in Open and Distance Learning* (IRRODL), Vol. 8, No. 1, 2007.

Figure 5.1 The Shewhart Cycle



Source: Gabor (1990).

Notes:
1. *Plan*: establish the objectives and processes necessary to deliver results in accordance with specifications.
2. *Do*: implement the processes.
3. *Check*: monitor and evaluate the processes and results against objectives and specifications, and report the outcome.
4. *Act*: apply actions to the outcome for necessary improvement. This stage involves reviewing all the previous PDCA steps and improve the process before its next implementation.

the 1950s, and known as the Shewhart Cycle. It has since been promoted as the central approach of "total quality management" by Shewhart's student, W.E. Deming (Gabor, 1990).

PDCA should be repeatedly implemented, as quickly as possible. Our knowledge and skills are always limited, and can be continually improved. It is better to be approximately right rather than entering "analysis paralysis" in the attempt to get something perfect the first time. Over time and with greater knowledge and skill, PDCA can help to define the ideal goal, as well as helping to attain it. The PDCA model allows an institution to achieve the fastest rate of improvement, and *Kaizen* (the Japanese concept of "continuous improvement").

The basic principles of PDCA are:

1. The management's thinking and actions should be focused on quality.

2. The management's thinking and actions should be focused on stakeholder satisfaction.
3. Everyone's work in the institution should be assumed to have direct impact on stakeholder satisfaction.
4. All decision-making should be based on data.
5. All decisions should be made through a participative process (*upstream management*).

In its essence, the PDCA model is identical to the educational process of "formative evaluation" (Chapter 6).

COMPONENTS OF QUALITY ASSURANCE

The demand for quality has caused ODL organisations and associations to develop criteria to assist QA efforts. Educational QA guidelines have been developed by the:

- American Council for Higher Education Accreditation (CHEA);
- American Psychology Association (APA);
- Asian Association of Open Universities (AAOU);
- Australian Universities Quality Agency (AUQA);
- Commonwealth of Learning (COL);
- European Association for Quality Assurance in Higher Education (EAQAHE);
- International Network for Quality Assurance Agencies in Higher Education (INQAAHE);
- United Kingdom Quality Assurance Agency (QAA) of Higher Education; and the
- United Nations Educational, Scientific and Cultural Organization (UNESCO).

The web sites of COL (www.col.org) and UNESCO (portal.unesco.org/education) provide comprehensive information about QA guidelines and practices.

Although QA guidelines may classify the components of QA in different ways, all educational QA guidelines stress the importance of policy and planning, human resources, programmes, learning media, student support and student assessment. For example, the

QA framework established by the AAOU reflects a comprehensive need for high-quality DE programmes in terms of 107 statements of "best practice" under nine headings:

- Policy and planning (7 practices)
- Human resources recruitment and development (9 practices)
- Management and administration (21 practices)
- Learners (10 practices)
- Programme design and development (6 practices)
- Course design and development (14 practices)
- Learning support (18 practices)
- Assessment of student learning (15 practices)
- Learning media (7 practices)

Jung (2004) has compared the differences and similarities of the QA systems of 14 ODL institutions, including eight of the world's "mega-universities" (that is, having at least 100,000 students: Chapter 1). Three types of organisational structures were observed.

1. *A centralised total QA system*: ODL providers using a centralised QA system include:
   - Athabasca University, Canada;
   - Hong Kong Open University;
   - Monash University, Australia;
   - Open University of Malaysia;
   - Sukhothai Thammathirat Open University, Thailand;
   - United Kingdom Open University; and
   - Universitas Terbuka (Indonesia Open University), Indonesia;
2. *A collective QA system*: Some ODL institutions use boards, committees and councils to coordinate their QA system. These include:
   - Anadolu University, Turkey; and
   - Indira Gandhi National Open University, India
3. *A dispersed QA system*: Other ODL institutions implement QA as the responsibility of separate administrative offices. These include:

- China Central Radio and Television University;
- Korea National Open University;
- Shanghai Television University;
- PUCRS Virtual, Brazil; and
- US PS Campus.

Jung's comparison of QA procedures in the Asian ODL institutions is summarised in Table 5.1.

Table 5.1 Quality assurance at Asian ODL institutions

ODL Institution	*QA Areas/Components*	
Allama Iqbal Open University (AIOU), Pakistan	Course effectiveness Assessment system Course production methods Courses and programme outcomes	Administration Tutorial support system Student problems Servicing/operational departments
Anadolu University, Turkey	Academic and professional enhancements of programmes and courses (specifics not given)	
China Central Radio and TV University (CCRTVU)	Policy and planning Learner support services Media and technology	Course design and development Learner assessment Unified requirements
Indira Gandhi National Open University (IGNOU), India	Programme needs and objectives Programme duration Presentation of the content Programme delivery	Programme content and level Language of the course material Transforming content into DE format Assessment of students
Korea National Open University (KNOU)	Learner support services E-learning Broadcasting programme development	Tutorials Textbook development
Shanghai TV University (SHTVU), China	Teaching Teaching affairs Academic staff Course design and development (textbooks, online courses, etc.) Study centres	Students (learning resources, online courses, digital libraries, telephone, e-mail, bulletin-board systems, teaching platform) Media for learning (telephone, audio/video, video-on-demand, Internet, etc.)

(*Table 5.1 Continued*)

(*Table 5.1 Continued*)

ODL Institution	*QA Areas/Components*	
Open University of Hong Kong (OUHK)	Development of new programmes Ongoing programme review Development of new courses	Ongoing review of course presentation Learner assessment
Open University of Malaysia (OUM)	Policy Planning Human resources Course design and development	Learner support services Learner assessment Media and technology Other (delivery, records, scheduling, etc.)
Universitas Terbuka (UT), Indonesia	Policy and planning Human resources and HR development Management and administration Learners Programme design and development	Course design and development Learner support Learner assessment Learning media

Source: Adapted from Jung (2004).

QA ACCREDITATION

Quality is often a subjective perception, and quality assessments resulting from internal QA processes may need to be validated by external auditors. This is why internal QA is usually combined with external evaluations. External quality assessments allow institutions to prove the validity of their QA systems (Belawati and Zuhairi, 2007), and usually lead to the attainment of an accreditation status.

Definitions of accreditation vary according to the priorities of different professional organisations. The UK ODL Quality Council defines accreditation as a validation of quality through peer review based on certain standards. The role of peer review in accreditation is also emphasised by the US Council for Higher Education Accreditation. The International Council for Open and Distance Education (ICDE) defines accreditation in terms of its goal to promote public confidence in ODL standards and

services to students. The Commonwealth of Learning (2007) lists the QA and accreditation bodies for ODL institutions at regional, national and international levels:

1. National Levels
   - Australia: the Australian Universities Quality Agency (www.auqa.edu.au);
   - India: the Distance Education Council (www.dec.ac.in);
   - New Zealand: the NZ Universities Academic Audit Unit (www.aau.ac.nz);
   - South Africa: the SA Institute for Distance Education (www.saide.org.za);
   - UK: the Quality Assurance Agency (www.qaa.ac.uk); and
   - USA: the Council for Higher Education Accreditation (www.chea.org).
2. Regional Levels
   - Asia: the Asia Pacific Quality Network (www.apqn.org); and
   - Europe: the European Association for Quality Assurance in Higher Education (www.enqa.eu).
3. International Level
   - The Distance Education and Training Council (www.detc.org); and the
   - International Council for Open and Distance Education (www.icde.org).

QA AT UNIVERSITAS TERBUKA

The QA procedures at ODL institutions usually include a Strategic Plan, and Vision and Mission Statements, and a systematic mechanism for implementing them. UT, for example, operates the following QA system, introduced in 2003:

1. *A QA System Committee*: The Committee has 10 members supervised by UT's Rector and Vice Rectors. The Committee's initial assignment was developing the University's QA system framework.

2. *Identification and selection of a QA framework*: After intensive analysis and discussion between UT's staff and senior officials, the Committee decided to adopt and adapt the QA framework developed by the AAOU. This was appropriate in that the University was one of the AAOU's founding institutions.
3. *Adapting the framework to the UT context*: The contextualised framework became UT's *Sistem Jaminan Kualitas* (Quality Assurance System) *Universitas Terbuka* (SIMINTAS), stated in 2002. The policies were formulated in a QA Policy Manual, in terms of the 107 "best practices" statements defined by the AAOU (see the section "Components of Quality Assurance" of this chapter).
4. *Dissemination of QA policies*: All UT staff and regional offices receive copies of the QA Policy Manual at the annual National Coordination Meeting. This procedure is designed to create a sense of ownership of the policies and to obtain recommendations for improvement.
5. *Translation of QA policies into Self-evaluation Instruments*: It is important for UT to understand the differing perceptions of "quality" in its sections, and to compare them with the best practices articulated the QA Policy Manual. A self-evaluation instrument has been created using quality indicators and Likert scales to measure attitudes to the best practice statements listed in the Manual.
6. *Development of QA job manuals*: In order to support continuous improvement throughout the organisation, UT has documented its mechanisms and procedures via in-depth job manuals. These are designed as reference standards, listing the University's systems and procedures, activities, and instructions to guide staff in their daily activities. The job manuals describe UT's work-flow, performance standards, expected output, and the resources and skills needed for each job.
7. *Establishment of QA Centre*: To manage the complexity and comprehensiveness of the QA implementation, the original QA System Committee has developed into a QA Centre (the *Pusat Jaminan Kualitas*, or PUSMINTAS).
8. *The"Spirit of Quality Assurance System"* (*Gelora SIMINTAS*): This is a University-wide campaign to accelerate awareness and implementation of the QA system.

9. *Continual evaluation of QA implementation*: Effective implementation of QA requires significant change in the institution's collective mindset and work culture. QA requires everyone in the institution to appreciate, respect and apply quality measures. The challenge of the University's leadership is to manage its innovations and changes, and to ensure that the culture maintains commitment to the highest quality on a daily basis.

An institution's implementation of QA involves a significant role for its human resources staff. Units and individuals meeting/exceeding high standards of performance need to be fairly assessed and rewarded for their efforts. For this purposes, UT has developed a performance appraisal system consisting of:

- clearly defined job descriptions;
- clearly defined performance standards;
- fair performance assessment procedures;
- an equitable appeal process;
- an incentive system tied to performance; and
- confidential feedback mechanisms.

The self-evaluation activity is carried out step-by-step using a consensus approach, in the lower unit levels (for example, academic departments) as well as the higher administrative levels. At each level, the members are asked to give honest and consistent estimates of their activities on each quality indicator. This level of self assessment was intended not to "point fingers" but to identify realistically the institution's strengths, weaknesses, mistakes and achievements. The self-assessment exercises have indicated both low- and high-perceived quality levels as measured by the "best practices" statements in the QA Policy Manual.

Over 200 members of UT's academic and administrative staff worked intensively to produce, pilot-test and implement the QA job manuals. They were drawn from the University's various units and divided into small groups. It is significant that the manuals were developed by the users themselves. This has helped them to give realistic job details and to provide constructive guidelines for activities. These teams determined the manual's scope and outline, wrote the first draft, reviewed and revised subsequent drafts and implemented the final version. As each UT unit has

specific working procedures, the number of QA job manuals has increased to address the institution's needs. By December 2005, UT has developed 198 job manuals to guide various tasks.

It is also important to note that the institution expects its definitions of quality to evolve continually. While the QA job manuals document existing procedures and practices, all UT staff members are asked to reflect critically upon their activities and to strive to incorporate new quality standards into them. They are asked to evaluate whether or not the formally stated performance standards and indicators laid down in the job manuals are actually achievable. This reflective activity has helped UT's staff to identify obstacles in their progress towards "quality". Throughout the process, UT's senior leadership has been active in setting examples for staff, providing learning and training opportunities, and giving guidance and supervision as necessary. The ultimate goal of this "self-examination" is a staff that challenges and changes outdated work practices which might otherwise remain fixed.

UT's self-evaluation activity has been administered twice, in 2002 and 2005, using the same instrument. Results of UT's self-evaluation have been encouraging, with an increase over the three-year period in the average scores of all 107 best practices in the survey instrument. The average increase was from 2.46 in 2002 to 3.83 in 2005, and some staff members felt that the increase should have been greater. This has been discussed at length in the institution, with the general conclusion that some people expected to achieve more than was possible. By these measures, UT seeks to reward its high-quality performers and to offer assistance to the under-performers so they can reach acceptable performance levels. In sum, UT's goal is to provide its staff with the means to increase the University's overall performance and to support its continual quality improvement efforts.

Since first introducing QA in 2003, UT has evolved steadily into a true "learning organisation". Critical evaluation and self-reflection, achieved initially during the drafting of the QA Job Manuals, has motivated UT staff to work more efficiently and effectively. Many UT staff members even seem to have become obsessed with performance, improvement and quality, in fact. This is evident in the fact that the QA Job Manuals have been revised three times in less than three years. In each revision, one can read an increasing number of credos such as "*quality begins*

with us". The University's membership as a whole appears to be thinking constructively and acting to produce the high-quality ODL products that are needed to satisfy the ever-increasing consumer demand.

CONCLUSIONS

Quality assurance is a vital aspect of DE and ODL management, ensuring that expected levels of quality are reached and stakeholders' confidence is maintained. The standard approach to QA involves constant reflection on the institution's activities and standards, and on ways to improve them. Self-evaluation is an important aspect of QA, for it can promote personal involvement in and concern for quality improvement. The example of QA implementation at Indonesia's UT demonstrates that staff members can improve their activities in terms of numerous "best practices" identified as essential to high-quality DE and ODL performance.

Student Assessment

6

Kristanti Ambar Puspitasari

INTRODUCTION

This chapter discusses the methods and marking criteria used for student assessment in distance education, and gives examples of the assessment procedures employed at the Universitas Terbuka (UT—Indonesia Open University), Indonesia.

Student evaluation and assessment is one of the key aspects in distance education (DE). Evaluation provides information not only about the performance and progress of the student, but also about the effectiveness of the educational programmes, media and methods. Student assessment in higher DE slightly differs from evaluation in traditional face-to-face (f2f) education owing to the different type of interaction between the teachers and learners in the DE environment. In an f2f situation, teachers have the luxury of many indicators by which to evaluate students' learning, in addition to their written work. The type of participation and quality of questions can be observed, as well as numerous body language cues such as a puzzled look or pause in note-taking (Champagne, 1998; Dominguez and Ridley, 1999; Kerka and Wonacott, 2000). In DE, the formal mechanisms of written assignments and tests usually provide the dominant methods of student assessment.

DESIGNING DE STUDENT ASSESSMENT

Assessments may measure the students' mastery of knowledge, competence in performance, and practice or practical applications. They can be used to measure the fulfilment of the learning objectives either during the educational process (*formative evaluation*) or afterwards (*summative evaluation*). The assessment method should be designed for that the students' strengths and

weaknesses are apparent. The results of the assessment can also help instructors to evaluate the effectiveness of their instruction. Accurate and timely feedback is critical to the process so that the students can assess the adequacy of their responses to assessment exercises, and the teacher can identify if adjustments to the instruction are required. The feedback can also help teacher to help the students to become more confident and self-directed in their learning, through the information they gain about the correct answers, their performance and the steps they should take next. The importance of timely feedback makes the formative evaluation more powerful than summative evaluation, for it is conducted while there is still time for modifications to be made to teaching and learning process. The evidence of a summative evaluation, in taking place after the process is complete, can come too late to be of immediate value.

Most of the assignment types used in f2f instruction can be used in DE. The selection of an assignment method, however, may be restricted by the accessibility of the delivery media and the availability of student resources and time. In DE, formative evaluation can be conducted in the form of mid-term tests, self-assessments and web-based questionnaires. Teachers can use online quiz methods to construct convenient ways of asking the students about their progress and about the parts of the learning material they find easy and difficult. Summative evaluation can be conducted in the forms of final assignments and exams, portfolios and practicum work.

It is important to explain to the students about the assignment process in advance, to ensure that they understand the requirements for successful completion of the course. Information should be provided to help the students plan for the assignment in relation to:

- type of assignment;
- purpose of the assignment;
- nature and scope of the topic(s);
- size (number of words or pages);
- citation and referencing style;
- presentation standards (layout, typewritten, cover sheets, etc.);

- marking criteria and weightings;
- deadline for submission;
- penalties for late submission and plagiarism; and
- means of obtaining guidance and feedback (tutorials, e-mail, telephone, etc.).

The number of assignments in a course depends on the subject matter and the academic calendar. Too many assignments make it difficult for both teachers and students to deal with the workload, especially in view of DE's extra emphasis on written forms of assessment. Too many assignments can also cause delays in providing the students with feedback, and may reduce its benefits. For the teacher, the problem of marking written assignments is particularly serious with large groups of students. The amount of time the students may require to obtain the resources they need for their work must also be anticipated. This can take longer than in conventional education where library and other resource centres are close at hand. DE teachers usually anticipate this factor by informing the students of all necessary reading and resources at the beginning of the course. Many teachers, however, value the freedom to recommend additional resources when unpredicted topics emerge during the course, and this can influence the size and number of assignments that can reasonably be set. Two or three assignments may be appropriate for a one-semester course requiring reports or long essays, especially if there is no final examination.

Using e-mail and online file transfer techniques, receiving assignments from students and returning marked copies to them can be a very rapid process. Otherwise, the teachers and students are restricted to the slower processes of fax and 'snail mail'. Just as DE students may require more time to gather the resources they need for their work, so too the teachers may have difficulty in providing quick return delivery of marked assignments to students in remote areas who do not have Internet access. Institutions new to DE may overlook the especial workload and problems the DE process involves. For students who are new to DE, shorter, easily marked assignments can be useful, initially at least, because they generate frequent feedback to motivate the students in building the new skills required (Nouwens and Towers, 1997).

ROLE OF MARKED ASSIGNMENTS

Assignment marking has a special function in DE. In f2f education, the teacher can provide feedback about assignment issues and report common problems to the class; and students can learn from discussing the feedback with the teacher and each other. In DE, however, it is conceivable that assignments may sometimes be the only means of teacher–student interaction, and the marking process must ensure adequate feedback via as much meaningful, in-depth feedback as is necessary and possible. Nouwens and Towers (1997) indicated that feedback can be presented in various ways:

- Model answers can be provided in writing, or by audio/videotape. The preparation of model answers may also help the lecturer in clarifying assignment tasks and reducing the amount of marking time.
- Audio-conferences and telephone calls can be used to provide students with the necessary feedback.
- Voice-mail can be used to leave messages both for individual students and for the whole class.
- E-mail and mailing lists can be used to provide quick feedback and dialogue opportunities.

Since the 1990s, online text-conferencing methods have also become a common feature of DE courses, at least as an option for those with online access. Online methods also provide students with the useful option of exchanging assignments for critical comment and peer-assessment.

The contribution of an assignment mark to the final course grade should be carefully determined and maintained. For example, an interim assignment might each contribute up to 30 per cent to the final grade, while the final exam might be 70 per cent of the grade. In a course with no final exam, two interim assignments might be set, each contributing 30 per cent to the final grade, with a final paper contributing 40 per cent. If student participation by online methods (for example, text-conferences) can be ensured, the level of participation might account for 25 per cent of the overall grade. In addition, participation in group activities, and collaboration in tutorials might be defined as important factors contributing to the

final grade. Morgan and O'Reilly (1999) give examples of marking criteria and weightings:

1. Quality of content (50 per cent)
    - evidence of reading
    - well developed argument
    - sound analysis
    - understanding of key concepts
2. Quality of presentation (30 per cent)
    - introduction
    - body and conclusion
    - logical flow of paragraphs
    - clarity of expression
    - layout
    - style
3. Technical Features (20 per cent)
    - bibliographic conventions
    - referencing
    - grammar
    - spelling
    - punctuation

THE EVOLUTION OF E-ASSESSMENT

The use of online methods in DE has a major impact on the quality of interaction between teachers and learners, and on the development of online assessment methods (e-assessment), both formative and summative. E-assessment offers advantages including:

- ease of course delivery;
- tighter control of scheduling (assignment deadlines, etc.);
- timely marking and feedback;
- more in-depth individual feedback;
- tracking of participation in discussions; and
- increased teacher–student and student–student interaction.

A major issue in online testing is authenticating the identity of the person taking the test. Methods that can be used to increase if not completely ensure test security include:

- conducting online tests in a proctored setting;
- restricting test access through passwords and user names; and
- generating randomised questions via test item banks.

Previous assignments submitted through e-mail and online tutorials may familiarise teachers with the writing styles and abilities of individual students, so that a difference in writing style during an exam can be checked as possible evidence of cheating. Online plagiarism checking facilities (for example, www.turnitin.com) can also be useful if a student is suspected of copying the work of others without acknowledgement. Dealing with suspected plagiarism requires a carefully designed institutional procedure, to ensure that all ethical aspects of the situation are respected (Baggaley and Spencer, 2005).

In 2005–07, the PANdora network has conducted a detailed study of the procedures and security measures required by an online assessment system in Asian institutions. Further details may be obtained at www.pandora-asia.org, and in Chapter 7.

STUDENT ASSESSMENT AT UNIVERSITAS TERBUKA

Student assessment at the UT includes formative and summative assessment. Formative assessment is conducted in the form of tests included in written materials of every learning unit. In addition, students are provided with online self-tests with immediate feedback about their performance. Students are expected to complete the online self-test before taking the final examination so that they can make decisions about how to proceed in their study of the course materials. Summative evaluation is conducted at two levels:

- the programme level, at which the student must pass a comprehensive examination to be awarded the degree; and

- the course level, in which the passing grade is based on a combination of tutorial assignments, reports, practical work and final examination scores.

The contribution of each assessment to the final grade is decreed by the Rector, as follows:

- f2f tutorial assignments/practical work (if applicable): 35 per cent;
- online tutorial assignments (if applicable): 35 per cent; and
- final examination: minimum 50 per cent.

As tutorials are not compulsory, a student's final grade can be achieved solely based on the final examination. The examination is intended to measure the student's mastery of the course content as stated in the course objectives. Final examinations are supervised and conducted twice a year, simultaneously throughout Indonesia, at the end of each semester. They include written tests (multiple-choice or essay type) and, in some language courses, oral tests. In addition, computer-based examinations (CBE) are provided for students who for various reasons cannot take the sit-in examinations at the scheduled times. The CBE is an online examination which allows students to attend the final examination on a flexible basis but is not allowed to replace the f2f examination system completely. The f2f and online examinations are both proctored.

Examination items are selected from test blueprints according to specific criteria. The items are developed by UT academic faculty and staff, or by hired specialists from other universities, and are stored in UT's Item Banking System, classified according to their instructional objectives. The exam manuscripts are generated by the Examination Centre at UT's head office from items representing these objectives. They are then sent to the regional offices through UT's secure couriers and mail services, in sealed envelopes that are opened at the time of the examination in front of the students. The completed exam papers are packaged by the regional offices and sent back to the Examination Centre, which processes them for grading. This centralised system of examinations data processing is secure but time-consuming.

The Item Banking System also allows UT to conduct secure online examinations. The online exam items are prepared in the head office for downloading by appointed exam administrators on the staff of the regional offices, one day before the exam date. Students are required to register for online examinations through the UT web site, and, once approved by the administrator, receive exam password(s) by e-mail so that they can access the exam items. The online examination scores are processed by the Examination Centre. When a student's sit-in and online exam grades vary, the higher of the two grades is recorded. The final course grades are published on the UT web site for the students to access, and are also e-mailed to the regional offices for printing and distribution to the students. In addition, students can access their grades by phone through an interactive voice response (IVR) system and short messages services (SMS). Any problems arising from the grading are to settled through the regional offices.

CONCLUSIONS

The procedures used to assess student performance in DE are generally the same as those of the conventional f2f education, though involving different workloads and safeguards. Teachers and students need to anticipate the special conditions of DE, and institutions need to create security measures to protect the system's integrity. Assessment exercises and examinations need to be designed according to fixed criteria, and students need precise information in advance about the types of assessment and grading criteria that will be used.

E-assessment* 7

Nazir Sangi

INTRODUCTION

This chapter discusses the principles and methods of electronic assessment in education, and the challenges facing institutions seeking to implement them.

As described in Chapter 9, the evolution of distance education (DE) includes the use of online technologies including databases and automated response systems. Known as the *intelligent flexible learning model* (Taylor, 2000), this approach is designed to reduce the costs of educational administration. A major feature of the model is the use of electronic methods of student assessment. Many assessment techniques are used in educational institutions, and ways of presenting assessment questions via a simple, easy-to-use electronic interface is increasingly important. This is especially the case in Asia, where the number of DE students is massive, and manual grading of their assessment items is increasingly impossible.

In seeking to implement e-assessment methods, however, educational institutions face numerous challenges. These include: secrecy and security of assessment documents, authenticity of students at a distance, and the ability of the automated system to conduct a fair assessment. E-assessment infrastructure (computers, networks and software, etc.) must be available simultaneously at all test locations, and this poses economic and technological challenges. The student's skill to use the technology must also be ensured; and the possibility of plagiarism in online testing needs to be carefully monitored. The current report discusses the typical formats and methods of e-assessment, and institutional challenges in implementing e-assessment. These are discussed

*The chapter is based on the author's PANdora project report in Baggaley and Belawati (2010).

in terms of economic, technological, administrative and social/ethical issues.

E-ASSESSMENT FORMATS

E-assessment methods provide numerous question/answer formats to support many types of assessment. For example:

- *Closed-ended choice formats*. For example,
  - simple binary choices (yes/no, true/false);
  - multiple-choice (choose one correct response);
  - multiple-response (choose all correct responses);
  - numeric entry (enter the correct number);
  - slider (move pointer to the correct value); and
  - hot spot (click on an image to identify a correct response).
- *Open-ended formats.* These usually require text-based answers varying from a single word or value to sentences and paragraphs; for example,
  - fill in the blank (insert the missing words or values);
  - short answer (free-form text field); and
  - essay answer (long-response text field, likely to require manual grading).
- *Ordering formats.* The question demands a response involving rank ordering: for example,
  - drag and drop: place objects into the correct locations;
  - order objects: rank objects according to the given criteria;
  - match item: connect the objects in pairs; and
  - connect the points: create an ordered connection of a set of points.

The general methods used in e-assessment include:

- *Attitude surveys*: Opinion-related assessment is obtained through attitudinal surveys. Attitudes in this context relate to different aspects of learning such as the course and its elements, the learning process, and the discipline. The simple

Likert Scale or modifications of it are commonly used. Attitudinal surveys take many forms though usually involve a statement requiring a scaled agree/disagree response. Obtaining accurate attitudinal ratings can be difficult, however, as opinions can be formed by obscure biases and elements such as family pressure and economic or political conditions.

- *Student Assessment of Learning (SALG)*: The SALG is an example of a web-based instrument used to grade levels of achievement or understanding. It consists of statements about the degree of "gain" (on a point scale) which students perceive they have made in aspects of the class. Instructors can add, delete or edit questions. The instrument can be administered electronically with summary results made instantly available in statistical and graphic form. Such instruments are powerful tools and can easily be customised for efficient formative evaluation during a course or for faculty assessment.
- *Conceptual diagnostic tests*: Students are often required to memorise theory, and can easily overlook sub-concepts. A conceptual diagnostic test presents items in a multiple-choice or short-answer format designed with common misconceptions in mind. Such tests can be applied to assess how well students understand and apply key concepts. Immediate feedback on the level of class understanding is available. Instructors have reported substantial improvements in class attendance and attitude towards the course through the use of such tests (Zeilik, 2007). Self-diagnostic tests can be created, and can aid in refining the thought process and overcoming biases. Diagnostic tests can easily be automated in an e-assessment mode, and can have a direct impact on the student's development.
- *Performance assessments*: These measure a student's ability to use specific knowledge and skills. They usually require the student to manipulate available knowledge to solve specific problems or to perform a conceptual analysis of various situations. Multiple-choice and fill-in-the-missing items questions can be used. An efficient performance assessment can reveal various problem-solving approaches, and provide insights into the student's level of conceptual and procedural knowledge. Performance tests can be useful

in disciplines involving solving of scientific problems. However, a student's analytical growth can be difficult to measure accurately, and a more complete picture of student achievement can be achieved when performance assessments are used in conjunction with traditional forms of assessment.

- *Rubrics*: Rubrics (scoring tools) are a way of describing evaluation criteria (grading standards) based on the student's expected performance and outcomes. Typically, rubrics are used in grading written assignments or oral presentations, though they may be used to score any type of performance. Each rubric consists of a set of scoring criteria and point values associated with them. In most rubrics, the criteria are grouped into categories so that the instructor and student can identify the categories with specific levels of performance. In classroom use, the rubric aims to provide an objective external standard against which student performance can be compared. Rubrics sometimes generate conflicting scores on a given evaluation criterion, but generally provide an accessible means of communicating and developing assessment learning goals.
- *Portfolios*: These are a collection of evidences prepared by the student and evaluated by the faculty member, to demonstrate mastery, comprehension, application and synthesis of concepts. In creating a portfolio, students organise, synthesise and describe their achievements, and communicate what they have learned (Slater, 2007). Portfolio assessment strategies provide a useful structure for long-duration, in-depth assignments. The use of portfolio techniques transfers much of the responsibility for demonstrating concept mastery from the teacher to the student. Online methods of e-portfolio development are rapidly emerging.

E-ASSESSMENT ISSUES AND CHALLENGES

Economic Issues

E-assessment data can be costly to collect when travel is required. If an analysis can be automated by coding the questions and responses, such costs can be avoided. On the other hand,

e-assessment also involves the added costs of electronic equipment (for example, computers), software, bandwidth, specialised manpower, training and the time involved in developing test questions. Additional costs of maintenance, secrecy, security and trouble-free operations are also involved (Scottish Qualifications Authority, 2004). In the short to medium term, e-assessment tools can be expensive to implement, and traditional assessment methods may be less expensive. Once created, however, e-assessment applications become less expensive, being easy to operate and score, and reusable from year to year in different combinations (Ridgway, McCusker and Pead, 2004).

Technological Problems

E-assessment systems must be stable in order to generate valid and reliable assessments results (Qualifications and Curriculum Authority, 2007). The system requires reliable hardware, software, network and power systems at all testing centres. Data management and operational security issues can jeopardise the system's reliability. When conducting tests at multiple locations, synchronisation between centres is also important. Depending on the specific e-assessment system in use, dedicated testing centres may be needed with an ongoing requirement for technical support throughout assessment periods.

Administrative/Operational Issues

The administration of e-assessment requires careful and continual record-keeping within a failure-free/fault-tolerant system. To ensure the system's reliability, a well-trained staff is needed at all testing centres (Scottish Qualifications Authority, 2004). In addition, automated polices and security procedures are essential, with electronic and manual student authentication procedures. Specialised skills are required to produce high-quality e-assessments, and many teachers fear that e-assessment will "de-skill" their profession. Some are threatened by the introduction of e-learning and e-assessment, and suspect the motives involved. Such fears need to be handled by the institution.

Social/Ethical Issues

The electronic manipulation of information in e-learning systems raises major social and ethical issues (Marais, von Solms and Argles, 2006). An e-assessment system should above all be fair to students. The student's ability to respond electronically can affect his or her capacity to succeed in the assessment, and the collection of e-assessment data may prejudice the interests of non-computer literate students. In addition, losses of service in automated systems through power, equipment, software or network failure may cause loss of time and mental composure for the students, as well as actual loss of data. Thirdly, there is the danger that expert computer users could gain access to, manipulate, copy and misuse the answer scripts.

Sample Solutions

The above problems require careful policy decisions and preventive measures. Typical solutions to problems of plagiarism and reliability, for example, include creating random sequences of assessment items (Gaffar and Sangi, 1998). Multiple-choice questions (MCQ) have also been applied to increase the reliability of the e-assessment process, though with qualified success (Quellmalz and Moody, 2004). The reliability of frequently reusing the same electronic questions in e-assessment is debatable anyway; and when e-assessment methods are used at a distance with diverse types of learners, the need for localised language and cultural versions can become a major obstacle.

PRESENT STATUS OF E-ASSESSMENT

Two universities in Pakistan represent useful examples of the types of e-assessment currently in use and under development in Asian education. These are Allama Iqbal Open University (AIOU) in Islamabad, with over 750,000 students, and the Virtual University of Pakistan (VUP), with over 15,000 students. AIOU mainly practises traditional (print-based) DE with audio/video and computer multimedia support. It offers e-learning (online)

programmes in the computing and social science disciplines. AIOU staff have approximately 20 million answer scripts to check each semester; and more than 400 AIOU examination centres are managed nationwide, approximately half of them being women-only centres. Most of the examination and assessment practices are manual. The examination period takes about five months from initial preparation to the declaration of results.

The VUP is using a relatively comprehensive e-assessment system. VUP is a new university devoted to technology-based education. It operates four satellite-based TV channels, and broadcasts lectures to its students. VUP uses e-assessment methods for all of its students, and campus labs to conduct the electronic examinations using a customised e-assessment system. VUP tutors conduct both formative and summative assessments via a robust e-assessment system, which nonetheless faces the usual challenges of online security and cheating on an ongoing basis (Chapter 22). A detailed profile of the two universities is provided by Samaranayake et al. (2010).

From 2005–07, the PANdora research network has conducted a survey of educational institutions in Pakistan and Sri Lanka to determine how far institutions have progressed in their e-assessment activities. This chapter summarises the study's findings about the experiences and difficulties encountered by the Pakistani institutions (Sangi, 2010).

- *Examination and evaluation system*: Most institutions do not currently have a computerised examination system. The main reasons given for this are lack of funds, resources and skilled manpower. Most assessment activities (paper-setting, examination implementation, script evaluation, grading and results sheet preparation) are currently performed manually.
- *Technology failures*: Only a few institutions are using any form of e-assessment, as it relies heavily on technological infrastructure. When asked about the causes of frequent failure in e-assessment technology, the survey respondents stressed network faults, unreliable software, power and hardware failures.
- *Cost-effectiveness and institutional investment*: The PANdora survey showed that the majority of respondents currently

consider e-assessment an expensive option. The main investment items for institutions in e-assessment are: hardware, software and manpower.

- *Types of evaluation support needed*: Institutions use different combinations of question format in assessment. These include descriptive/essay-type and objective types: MCQs, fill-in-the-blanks, true/false, etc. MCQ-type assessment is the most commonly automated, while the most difficult to automate is the essay-type descriptive answer which requires individual evaluation by a faculty member. Considering the great volume of essay scripts in DL institutions, this is a critical area for consideration in e-assessment planning.
- *Software support for e-assessment administration*: For the institutions surveyed, three major requirements of examinations administration are: software and operational support for the implementation process, secrecy of assessment documents, and authentication of students at distance. Common implementation issues include: development of examination centres, the need for assessment documents and staff at the centres, and student lists. Security and secrecy of assessment documents (question paper and answer scripts, etc.) and authentication of students are common issues.
- *Student authentication in e-assessment*: Authentication of students is a sensitive issue in e-assessment implementation. The survey showed almost unanimous agreement on the importance of this issue. Solutions favoured include password access, finger-printing and camera-based authentication.

CONCLUSIONS

The 2005–07 PANdora study of e-assessment experiences in Pakistani educational institutions has identified a general need for automated assessment methods, particularly in institutions with high student enrolments, and in DE. At present, electronic support for assessment is usually limited to the examinations section of institutions. Other uses of e-assessment tend to be located in individual sections of the institution and used experimentally without full acceptance by the management. This is changing, however, as many institutions are beginning to recognise the

value of e-assessment systems. Faculty members would like the scope of e-assessment methods to be extended to include new assessment methods other than simple quizzes and tests. E-assessment systems currently under development include applications for operational purposes, guaranteeing secrecy and student authentication, and maintenance of students' results and records. The wider use of e-assessment systems in Asia clearly depends on the identification of solutions to the technical and procedural hurdles that threaten their stability.

Conducting and Reporting Distance Education Evaluations

8

Jon Baggaley

INTRODUCTION

This chapter examines the design and administration of distance education (DE) research and evaluation projects. It stresses the types of evaluation study most commonly demanded by funded projects relating to DE in developing countries. The design, analysis and reporting of evaluation studies is discussed, with details of common procedures ensuring reliability and validity. Emphasis is given to the problem of plagiarism in research and evaluation reports.

Research is a wide-ranging concept covering numerous types of study with varying degrees of scientific rigour. Comprehensive research studies aim to explain observed results and to predict future observations in specific situations. They do this by taking account of as many variables as possible that might influence the study's results. In studying the effects of a technology on DE students, for example, the researcher may need to compare the responses of students who have/have not had previous experience with the technology, and/or with the educational material carried by it. The researcher will need to anticipate such variables in the design of the questions and other measures used in the study.

In situations capable of a high degree of control, the effects of the variables likely to influence a study may be examined via an experimental design. In many areas of DE research, however—when an educational technology is new and unfamiliar, for example—it may be impossible to anticipate all the relevant variables, and total reliability and validity may be impossible to achieve. In this situation, a more limited level of analysis may be

all that is possible: for example, an evaluation study capable of producing conclusions restricted to the particular situation under examination. Such studies may not fulfill the requirements of rigorous and publishable scientific research, but, in pioneering projects such as those commonly mounted in DE, they may nonetheless produce useful guidelines for future research and development. Even relatively non-scientific evaluation studies require careful design, for without it they may produce no useful conclusions at all. With careful design, they may fulfill not only the immediate requirements of the project evaluation, but also the higher criteria of scientific research.

The current chapter focuses on procedures that safeguard the scientific rigour of the evaluation studies commonly required by DE projects, as in international development contexts. Such projects may be funded by a sponsor that requires evidence that project funding has been well spent. Evaluation studies may be required at the beginning of the project (for example, needs assessment), during the project (for example, formative evaluation) and/or at the project's conclusion (for example, summative evaluation). These concepts have been explained in Chapter 7. To ensure that a project evaluation is as sound as possible, the following safeguards are valuable during its design phase, and in the analysis and reporting of its results.

DESIGN OF EVALUATION INSTRUMENTS

Evaluation studies typically involve presenting participants with questions and/or statements inviting a response in terms of, for example, agreement and disagreement. Such measures can be presented as, for example, items in a printed or online questionnaire, or as points to be covered in an interviewer's checklist. The rigour of the evaluation instrument can be protected by the following procedures:

1. Explanation of Study

An important principle affecting the design of research and evaluation studies is that participants are often *extremely anxious about the ways in which the data that they give might be used against them.*

Whether in a printed questionnaire, or in a face-to-face interview/discussion, the evaluator should begin by explaining his or her identity and involvement in the study, the study's purpose, the identity of the organisations involved in the study and the study's sponsor. The purposes for which the participants' responses will be used should be described. The participants should be assured that their responses will be both *anonymous* and *confidential*, and will not be used for any purpose beyond those of the study—as, for example, in determining student grades, teacher promotion, etc.

2. Instructions about Participation

The participants should receive general instructions at the beginning of the study about the types of information that will be collected (for example, personal, prior knowledge/learning, attitudes). During each section of the study (pre-test, post-test, etc.), these instructions should be repeated, to reassure the participants that the same general rules and procedures apply throughout.

3. Time Required for Participation

The amounts of time required of the participants can differ greatly from one study to the next. The participants should be accurately informed in advance about the amount of time they will be expected to provide. This information should be given in the face-to-face and/or written instructions presented at the beginning of the study. Not to provide the participants with this advance information could be regarded as unethical and exploitative, even when no negative motives of this type are intended.

4. Informed Consent

In certain situations it may be decided that the above explanations should be presented in a written statement of "informed consent" requiring the participants' signatures, in order to record that they have understood and accepted the study's conditions. This may be considered important when, for example, participants are paid

for their contribution to the study: for example, to anticipate and resolve disputes about payment. In other situations, however, involving, for example, rural participants who are unfamiliar with the research and researchers, written/signed statements might prove intimidating. The benefits and problems of formal consent statements should be carefully weighed in advance of the study.

5. Types of Test Item

The most common types of information collected during evaluation studies are:

a) *Personal details* (for example, Age; Gender; Education), typically collected by multiple-choice items.
b) *Descriptive information* (for example, about an educational medium's ease of use), typically collected on multi-point scales (Good to Poor; Easy to Difficult, etc.).
c) *Attitudes* (for example, to issues discussed in an educational presentation), typically collected on "Likert-type" scales providing a choice of responses (for example, Agree to Disagree).

6. Multiple-choice Items

(Female/Male; 25 years or less/26–35/36–45/46 or older; grade levels, etc.).

a) These items usually require one response only. Other items (for example, Occupation) may require more than one response. The number of responses required should be clearly stated before each question or set of questions.
b) Online questionnaire and quiz items should be carefully programmed to allow one or more response(s) as appropriate.
c) To avoid confusion, the number of responses for a single item should not usually exceed 10.
d) Care should be taken to ensure that alternative responses do not overlap (as in this example: 26–35 years/35–45 years).

7. Descriptive Scales

The most common descriptive scale in evaluation studies is the *semantic differential*, designed to allow the participant to describe something in terms of "shades of meaning".

a) A 7-point semantic differential scale is typically used, with the midpoint carefully worded as appropriate to the study (Neutral; Don't Know; Neither; Not appropriate; etc.).
b) Care should be taken to ensure that the responses on each side of the midpoint are worded with equal weighting (for example, Very good; Good; Quite Good [versus] Quite Poor; Poor; Very Poor).
c) Extreme responses (for example, Excellent; Very Poor Indeed) are often avoided by participants, and their use reduces the range of responses collected to the less extreme options towards the middle of the scale.
d) Most attitude scales carry positive and negative levels of meaning. When a series of attitude scales is presented in sequence, some should read from positive to negative, and others in the opposite direction. The sequence of scales should be determined at random, with approximately half in each direction. This procedure avoids "response bias": that is, accidentally biasing participants towards either a positive or a negative overall response.

8. Attitude Scales

The most common attitude measure is the Likert-type scale, designed to allow the participants to express different levels of, for example, agreement and disagreement.

a) A 5-point Likert scale is typically used, with the midpoint carefully worded as appropriate to the study (Neutral; Don't Know; Neither; Not appropriate; etc.).
b) Care should be taken to ensure that the responses on each side of the midpoint are worded with equal weighting (for example, Agree; Agree Slightly [versus] Disagree Slightly; Disagree).

c) Extreme responses (for example, Agree Strongly; Disagree Strongly) are often avoided by participants, and their use reduces the range of responses collected to the less extreme options towards the middle of the scale.
d) Attitude statements usually carry subtler, more specific levels of meaning than descriptive scales (for example, "The cell-phone is a familiar personal tool"). Response biases of the type described in point number 7 (Descriptive scales) can be avoided by carefully wording the attitude statement, while keeping the different scales in a consistent sequence (for example, Agree to Disagree; or Disagree to Agree). This avoids confusion for the participants.
e) The sequence of scales should be determined at random, with approximately half in each direction. This procedure avoids "response bias": that is, accidentally biasing participants towards either a positive or a negative overall response.

9. Rank-order Items

It may occasionally be useful to create evaluation items that require the participants to place different objects or ideas in order: for example, "Please give the following cell-phone features a value from 1–10 (where 1 is Most Useful, and 10 is Least Useful): Telephone | Texting | Internet | Camera | Calculator…" Rank-order items of this kind, however, are often misunderstood by participants, and should be avoided if there is another way to obtain the information.

10. Wording Evaluation Items

If the items are not carefully worded, their value can be seriously reduced.

a) In designing attitude statements, wordings should be avoided that require complex and confusing "double negative" responses (for example, "I disagree that cell-phones are not familiar tools").
b) The wording of any one attitude item should be limited to a single statement. An item containing more than one

statement (for example, "The cell-phone is a familiar tool, and text-messaging is easy to use") may generate different attitudes for each sub-statement, which would be impossible to record on a single scale.

11. Open-ended Items

These should be kept as simple as possible, and the space for responses to them should be as brief as possible, to indicate the length of the response that is appropriate. Participants dislike long, open-ended questions which do not specify whether a single-line or an essay-type answer is required.

12. Sequencing Evaluation Items

If more than one type of item (for example, points 6–9 of this list) are used in a study, the evaluation instrument can become tedious and confusing. To avoid this:

a) individual types of item should be presented in clusters: descriptive statements in one, attitude scales in another, etc; and
b) each cluster should be preceded by instructions containing a sample item and the type of response that would be appropriate.

13. Controversial Items

Some participants can object to being asked for information that they regard as private (for example, Salary; Political Preferences). Such items should only be included when they are essential to the study, and they should be carefully justified in a statement on the evaluation instrument itself. If such items cannot be avoided, it may be tactical to present the section in which they occur (for example, Personal Information) at the end of the questionnaire, to avoid annoying participants before they have provided the other information required by the study.

14. Other Issues

Other issues in the design and wording of evaluation instruments (for example, gender sensitivity) are discussed elsewhere in the book.

ANALYSIS AND REPORTING OF DATA

15. Descriptive Statistics

The most basic statistical analyses in evaluation studies involve:

a) the number of specific responses to an item (for example, female participants = 48; males = 32);
b) the number of responses to each item on a descriptive or attitude scale;
c) the average response of a group of participants on a descriptive or attitude scale;
d) the percentages of responses in different categories (for example, females = 48/80 (60 per cent); males = 32/80 (40 per cent); and
e) combinations of the above (for example, the number of female participants agreeing versus disagreeing with a particular statement).

Computer packages for statistical analysis commonly generate the above simple descriptive results side-by-side with more complex results (for example, standard deviations), regardless of whether all of these measures are actually essential to the study. The more complex measures should be not included in the analysis or subsequently reported, unless their relevance is clear and their meaning is fully explained.

16. Inferential Statistics

More complex evaluation analyses involve drawing conclusions ("inferences") about, for example, the extent to which two groups of participants (for example, Female and Male) give "significantly

different" responses to an item. Such questions involve higher levels of statistical analysis that are not usually required in basic research and evaluation studies. For the record:

a) when inferential analyses are required, the data obtained from measures such as those described above are usually *non-parametric*; and
b) appropriate statistical techniques may include the Chi-square, Wilcoxon and Mann–Witney U-tests. Simple procedures can be found online for conducting analyses of this type.

[Note: The term "significant" is usually reserved to describe levels of *statistical significance* in research and evaluation reports, and other terms—for example, a "substantial" difference—should be used when a non-statistical meaning is intended.]

17. Tables and Figures

Most quantitative evaluation studies require a descriptive summary of the data collected in terms of frequency totals and/or average scores, as appropriate. These may be presented:

a) in the body of the report, as tables, or, when extensive data were collected though not all reported, in appendices; and
b) in figures, as graphs. Computer packages for statistical analysis commonly generate a range of graphs (line diagrams, bar diagrams, pie-charts, etc.) for every test item. These should only be included if they contain meaningful information that cannot be adequately expressed in a simpler form (for example, a table). For example, a pie-chart illustrating the female/male breakdown of a participant group adds no useful information to the simple statement "Female participants = 60 per cent; Males = 40 per cent".

18. Percentage Scores and Decimal Points

Computer packages commonly generate far more specific information than is actually useful or meaningful in specific studies. For example,

a) Percentage scores are often superfluous when the number of participants is small (for example, 10 or less). For example, a description of the males in a group of participants as "89 per cent" can be easily recognised by skilled readers as indicating that the group contained only nine persons, including eight males.
b) In particular situations—for example, analyses involving a large number of participants—it may be useful to accept computer-generated statistics involving decimal places (for example, "88.9 per cent"), though it is rarely useful to include two decimal places (for example, "88.89 per cent"). As a rule, statistical quantities including decimal places can be rounded up or down to the nearest whole number.
c) Computer packages for statistical analysis can also generate results that are complete nonsense (for example, a group average score of 1.25, "where 1 = Female and 2 = Male")! The evaluator should guard against accidentally recording uncritical and meaningless computer analyses of this kind.

19. Reporting the Study

In the social sciences, the most common set of convention for reporting research and evaluation studies are those defined by the American Psychological Association (APA format). Otherwise, the precise rules and procedures may differ between the organisations requiring the report (funding agencies, journals, conference organisers, etc.). In general, the results of a study should follow this basic sequence:

a) **Introduction**. The general background to the study is described (for example, the national and local context in which it takes place; similar work reported in the literature; justification for the current study). In general, all of the relevant literature sources should be introduced in this section.
b) **Methodology**. The procedures adopted for data collection, sampling and statistical analysis are described *in sufficient detail for the study to be replicated by others in future*.
c) **Analysis of Results**. The relevant and meaningful results should be presented in tabular and graphical format as

appropriate. Results lacking a clear meaning should not be reported unless alternative results were specifically expected. The presentation of results in this section should avoid editorial comment and interpretation.

d) **Discussion of Results**. The meaning of the results is interpreted in relation to the study's objectives. Explanations should be suggested about, for example, results that were expected though not actually observed. The literature sources that are used to explain the results should have been introduced, wherever possible, in the previous Introduction section, because the introduction of new literature evidence in the Discussion/Conclusions sections can look like an afterthought. Recommendations are likely to be most appropriate in this section.

e) **Conclusions**. The overall conclusions of the study are summarised by paraphrasing the most meaningful findings and recommendations reported in the previous sections.

20. The Problem of Plagiarism

For researchers and evaluators outside North America, Europe and Australia, major difficulties are caused by the fact that English is not their first language. Otherwise valuable and rigorous studies can be denied their rightful place in the international literature solely because of the researcher's lack of written English. To cope with this problem, researchers can be tempted to copy material by other writers into their presentations and reports. When the source of the previously published material is not precisely and openly acknowledged, this practice is commonly regarded as *plagiarism*: that is, the dishonest use of unattributed material by other authors.

With the increasing availability of relevant previous material online, the trend to use practices resembling plagiarism appears to be on the increase. Not all plagiarism is deliberate, however. In particular cultures of the world, for example, there may be little or no awareness that copying other people's writings can be perceived as dishonest. The practice may even be regarded as a compliment to the previous writer. This is not the case in western cultures, however. When writing formal reports (for publication, funding, grading, etc.), it is crucial to acknowledge in

detail the source of all non-original material, inserting quotation marks around the phrases and passages used, and identifying the quotations' original date, volume and page numbers. Unintended plagiarism can occur when these procedures are overlooked.

Plagiarism can also be completely deliberate, of course, and designed to give a false impression that the work is original. Whether deliberate or accidental, the consequences for a writer found to have plagiarised can be serious. They can include being disgraced, fired from a job, and barred from future publication and/or funding. Similarly, the reputation of a journal can suffer if it is found to have published plagiarised material; and an agency can lose its reputation if it allocates funding based on a proposal or report copied from material previously used elsewhere. Writers who copy their own previously published material into a report can also be guilty of plagiarism, because when their earlier material was published its copyright is likely to have become the property of the publisher.

To prevent these problems, editors and funding officers are increasingly submitting the proposals and articles they receive to online plagiarism checking services. On submitting a manuscript to Turnitin.com, for example, one obtains within a few minutes a detailed analysis of all online sources from which sections of the manuscript were copied. The writer of this chapter has submitted examples of his own online publications to Turnitin.com, and has found that it has since been reused by dozens of other writers (for example, into student papers and theses) without any acknowledgment of the original source. Reports and proposals tested by this method in the context of Asian distance education research have been found to be copied from the work of numerous earlier reports and proposals.

Sometimes, plagiarism is so obvious that one is forced to conclude that the plagiarist has not realised the seriousness of the problem. Even without using an online plagiarism checker, it is easy to recognise different styles of English from one section of a manuscript to the next, and the conclusions of work conducted a decade ago and widely discussed in the meantime. It is also easy to recognise material copied from commonly used online sources, and the phrases it typically includes. To an experienced editor of international development publications, for example,

the phrase "X is a landlocked country" immediately suggests material copied from Wikipedia.com!

In the effort to ensure the integrity and source credibility of their work, authors should take great care to avoid even the accidental appearance of plagiarism in their work. If authors are new to a particular field, as is the case with many international development researchers, they should seek guidance as to sources of information that are not regarded as academically credible. Wikipedia, for example, is frequently cited in the proposals and reports of the international development field, though is not a credible scientific source, for anyone can enter material into the online Wikipedia database without giving any evidence of the information's accuracy and topicality.

Careful attention to the above measures and safeguards will help to ensure that submitted proposals and disseminated reports are perceived as accurate, original, valid and reliable.

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Section 3

Media Usage in Distance Education

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History of Distance Education Media Usage

9

Tian Belawati and *Jon Baggaley*

INTRODUCTION

This chapter introduces the third section in the book, which focuses on the selection, design, production and evaluation of media materials in distance education (DE). The chapter discusses the media technologies of DE, and their evolution from the early correspondence models to the automated online delivery systems of the present day.

The *educational technology* field, and the media it uses, have been vigorously studied and evaluated for over fifty years. Thousands of research studies have been published on which the selection and usage of media in DE and open and distance learning (ODL) can be based. Much of this literature cannot be found in the literature of DE or ODL, however, since these fields have only emerged since the 1990s, without extensive reference to the previous educational media literature. From the 1970s, however, the literature of educational broadcasting, educational video and audio, print design, computer-based instruction, multimedia, programmed learning and communication studies have provided numerous insights into "best practices" for today's teachers and students. The long tradition of educational media research and evaluation is of value in both distance- and campus-based education. Even though today's educational systems use new technologies (for example, Internet and cell-phone methods), the demands they seek to satisfy are relatively constant in all educational situations. This chapter focuses on the particular needs of DE media to overcome students' constraints of time, geographical location and study pace, and the need for effective interaction with the teacher.

EVOLUTION OF DE HARDWARE

As new media technologies have emerged, they have been adopted for educational use with varying degrees of success. With its special dependence on technology platforms, DE has seen intensive uses of all media technologies. Taylor (2000) described the range of DE technologies in terms of five evolutionary stages:

1. **The correspondence model**. This approach is associated with the modern DE initiatives of the 1970s. By sending the students print materials in the mail, teachers aimed to solve the problems of other commitments (time), geographical distance (place) and preferred speed of learning (pace) that many students face. The disadvantage of these methods, however, is the lack of direct interaction between the teacher and student.
2. **The multimedia model**. In the 1970s and 1980s, combinations of print, audio-visual and computer-assisted methods were developed. These enriched the learning experience, though direct interaction with the teacher was still restricted to, for example, the mail and telephone.
3. **The tele-learning model**. This model involves methods of synchronous interaction (for example, audio/video-conferencing) between teachers and distant students. In its original form, the approach combined audio-visual media with telephone conferencing, though with a loss of flexibility in relation to time, place and pace.
4. **The flexible learning model**. The previous models are combined in this model with particular support from the Internet and World-Wide Web (WWW). Teacher–student and student–student interaction can be created by methods including e-mail and synchronous and asynchronous online conferencing. A wide range of solutions to the problems of time, place and pace can be applied without losing the advantages of synchronous interaction.
5. **The intelligent flexible learning model**. The only major difference between this model and the previous one is the use of online technologies including databases and automated response systems to reduce the costs of educational administration.

Table 9.1, taken from Taylor (2000), compares the advantages of these five generations in terms of their ability to deal flexibly with students' problems of time, place and pace. His classification system helps to advise the appropriate selection of media for DE purposes. It must be stressed, however, that Taylor's analysis, as the international literature of educational technology in general, is primarily based on an understanding of conditions in western-style education. In North America, Europe and Australia, most media are more universally accessible and more reliable than in Asia. Taylor's summary is useful as an introduction to the range of technologies for consideration in Asian DE institutions; but no medium can be assumed to be appropriate in a new regional context without testing. Internet-based e-learning, for example, offers solutions to all of the traditional educational obstacles of time, place and pace, but it needs careful evaluation before being adopted in a new geographical area and culture.

As Table 9.1 shows, the first generation of DE media was used in *correspondence education*, an independent study system using printed materials as the main learning medium (for example, study guides sent by the instructor by mail, and student assignments returned by mail for grading). The second generation was characterised by the use of audio and video technology (*multimedia model*), and by interactive computer-based technologies such as interactive video. The United Kingdom Open University (UKOU) was established during this generation in 1969. The UKOU was the world's first open university, and gave birth to the third generation of DE media characterised by the use of broadcasting and recording techniques (*tele-learning model*). This evolutionary period developed educational delivery systems using TV, radio and audio/video cassettes, together with audio/video-conferencing and audio-graphic methods.

Textbooks and media such as TV and radio have wide coverage but are still not effective in facilitating interaction between teachers and students. On the other hand, audio/video-conferencing provides two-way communication, but its coverage is limited by the complex and expensive equipment required (Bates, 1995). An important priority in planning DE, therefore, is to choose educational media capable of increasing the intensity and interaction qualities of the teaching/learning situation, without forfeiting the educational programme's need to have

Table 9.1 The five generations of DE technology

Models of distance education and associated delivery technologies	*Characteristics of delivery technologies*				*Institutional variable costs approaching zero*
	Flexibility			*Advanced interactive delivery*	
	Time	*Place*	*Pace*		
First Generation—The Correspondence Model					
• Print	Yes	Yes	Yes	No	No
Second Generation—The Multimedia Model					
• Print	Yes	Yes	Yes	No	No
• Audiotape	Yes	Yes	Yes	No	No
• Videotape	Yes	Yes	Yes	No	No
• Computer-based learning (for example, CML/CAL)	Yes	Yes	Yes	Yes	No
• Interactive video (disk and tape)	Yes	Yes	Yes	Yes	No
Third Generation—The Tele-learning Model					
• Audio-teleconferencing	No	No	No	Yes	No
• Videoconferencing	No	No	No	Yes	No
• Audiographic Communication	No	No	No	Yes	No
• Broadcast TV/radio and Audio-teleconferencing	No	No	No	Yes	No
Fourth Generation—The Flexible Learning Model					
• Interactive multimedia (IMM)	Yes	Yes	Yes	Yes	Yes
• Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes
• Computer-mediated communication	Yes	Yes	Yes	Yes	No
Fifth Generation—The Intelligent Flexible Learning Model					
• Interactive multimedia (IMM)	Yes	Yes	Yes	Yes	Yes
• Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes
• Computer mediated communication, using automated response systems	Yes	Yes	Yes	Yes	Yes

Source: Taylor (2000).

wide coverage. The fourth generation of educational media (*flexible learning model*) satisfied, for the first time, all of these needs simultaneously. Emerging in the early 1990s, it is based on extensive usage of the Internet, notably for the interactive functions which Taylor (2000) referred to as computer-mediated communication. The fourth generation has developed rapidly, and has combined the capabilities of all of previous media generations to cope with the needs for flexibility of time, place and pace, and for choices between synchronous (real-time) and asynchronous interaction as appropriate.

The fifth generation (*intelligent flexible learning model)* differs little from the fourth, though has added useful automated facilities (databases, response systems, interactive web sites, etc.) to increase student access to resources and learning support services. It is within the fourth and fifth generations of ODL that the popular jargon terms *e-learning*, *mobile learning* and *open educational resources* have been generated. The fifth generation of educational media is rapidly gaining ground in DE and ODL, owing to the significant cost reductions it offers for DE implementation. Earlier approaches involving the pre-production of print materials required institutions to make substantial monetary investments, and ODL could only be cost-effective if economies of scale could be achieved—by the production of a sufficiently large amount of teaching/learning materials, for example (Chapter 2). In the fifth generation of ODL, however, ODL systems can be implemented with minimal investment and without restrictive economies of scale.

MEDIA CONVERGENCE

In the first few years of the 21st century, the rapid developments of media technology are generating innovative combinations of the media (*convergences*) with significant implications for educational users. These include hybrid combinations of wireless technology, mobile computing methods, and cell-phone-based short messages services (SMS) and multimedia message services (MMS). Mobile devices including the smart phone, personal digital assistant (PDA) and other handheld gadgets have generated the *mobile learning* or *m-learning* era (Mobile Learning Group, 2004).

Alexander (2004) has described the mobile media as ideal for "just in time" education, another term for the need of students to acquire information with maximal convenience, whenever and from wherever they wish, as from the Internet and automated response systems.

A more traditional form of convergence takes place whenever different media are combined in the same curriculum. In many DE and ODL institutions, the five generations of DE media technology exist side by side, and a single curriculum may have all of the following components:

- learning materials (print; non-print multimedia; online);
- learning support (face-to-face; telephone; fax; online; radio and TV); and
- student assessment (supervised and self-assessment; face-to-face and at a distance).

In North America and Europe, however, many of the traditional media have now been abandoned in favour of online methods. This process began in the mid-1990s as educational TV and radio studios were closed in the belief that the WWW is now all that their teachers and students need. E-learning in these parts of the world has come to be defined in the narrow terms of education via the WWW exclusively, and educational convergence is actually being prevented. In developing countries, however, WWW materials are inaccessible to substantial majorities of the population, and educators must avoid interpreting e-learning in the narrow, WWW-oriented terms of western DE. In such countries, the traditional media permit "electronic learning" to occur more openly, reliably and democratically than may ever be possible by Internet-based methods. E-learning in Asia can now evolve in more imaginative terms, as a convergence of traditional media such as TV and radio, and new online media as appropriate.

Creative media convergences of this type have been practised in India, for example, with the use of the railways for broadening educational access. Government-sponsored educational trains including Vigyan Rail (2003–04) and the Science Express (2009–10) have carried multimedia information and education to millions of people throughout the nation. The term "online" in India also has a broader meaning than in the west, for it

represents the convergence of all media, not just WWW-based, via Internet connections. The value of delivering all media over the Internet is only now beginning to be appreciated in the west with the introduction of streaming TV devices to the domestic market; whereas the China Central Radio and TV Universities are using such techniques in education already (Chen Li et al., 2010). In Russia and Ukraine, the convergence of new media and the railway system for education and social development dates back to Lenin's development of "film trains" in 1919 (James, 1996a, b). In Mongolia, it is pointed out that Chinggis Khan created a mobile information and communication system when he sent his horsemen across the steppes to deliver the mail 800 years ago!

OPEN EDUCATIONAL SOFTWARE

The rapid convergence of old and new media is also being facilitated by the increasing availability of media materials, downloadable from the Internet free of charge. A new form of course material sharing has evolved, known as open content, open courseware, or open educational resources (OER). The OER term was coined at a UNESCO meeting (2002) on the use of OER in developing countries, and refers to:

- *learning content* (full courses, courseware, content modules, learning objects, collections, journals);
- *software tools* (development, use, reuse and delivery of learning content; searching and organisation of content; content development tools and learning management systems; and online learning communities); and
- *implementation resources* (for example, intellectual property licenses to promote open publishing of materials, design and best practices, and content localisation). A major proponent of OER is the Massachussets Institute of Technology (MIT), which has made its course content freely available to the general public since 2001 (ocw.mit.edu).

Six years later, countless repositories offer free learning content. (Entering "open educational resources" into the Google search

engine in late 2007 yields 314,000 entries/web sites.) Wiley (2006) has listed active OER initiatives including:

- over 150 universities in China participating in the China Open Resources for Education (CORE) initiative, with over 450 courses online (www.core.org.cn/core/default.aspx);
- eleven universities in France under the ParisTech OCW project, with over 130 courses (graduateschool.paristech.org/);
- seven universities in Japan under the Japanese OCW Alliance offering over 140 courses (www.jocw.jp/);
- six universities with OER projects in the United States, at MIT (ocw.mit.edu/); Rice (cnx.rice.edu/); Johns Hopkins (ocw.jhsph.edu/); Tufts (ocw.tufts.edu); Carnegie Mellon (www.cmu.edu/oli/); and Utah State University (ocw.usu.edu/), offering total of over 1,400 courses.

Wiley also reports important translation efforts that will broaden the impact of OER initiatives, including:

- Universia's Spanish and Portuguese translations (mit.ocw.universia.net/ and www.universiabrasil.net/mit/index.jsp);
- CORE's simplified Chinese translations (www.core.org.cn/OcwWeb/); and
- the Opensource Opencourseware Prototype System (OOPS) traditional Chinese translation community (www.cocw.net/).

In addition to these course-based OER facilities, numerous non-course OERs include:

- Rice University's Connexions Project, which currently hosts over 2,700 open learning objects;
- the Textbook Revolution (textbookrevolution.org/) containing links to hundreds of freely available, copyright-clean textbooks;
- Math World (mathworld.wolfram.com/); and
- freely available (though not quality-controlled) encyclopedias such as Wikipedia (wikipedia.org/).

This explosion of materials publishing and sharing has been made possible by the development of easy-to-use authoring

software and learning management systems (LMS). Online publishing is now possible for anyone with internet access, without the need for software programming skills. This software has have become widely available as non-commercial programmers have successfully created LMS products rivalling proprietary packages costing USD 20,000. The open-source software (OSS) movement is revolutionising institutional software production, and techniques such as "blogging" and "podcasting" are providing teachers and students with facilities for instant online publication.

DIGITAL LEARNING OBJECTS

The individual units of course material are known as "learning objects" (LOs). Wiley (2000) defines an LO as "any entity, digital or non-digital, which can be used, re-used or referenced during technology supported learning". To enable efficient object sharing, numerous LO repositories have been developed.

- The Library and Information System (LIS) based in Singapore is a repository enabling teachers and students to share syllabi, lesson plans, LOs and teaching materials (Chaudhry and Khoo, 2006).
- Educators in Thailand have developed a digital objects library in order to share learning resources among K–12 (Kindergarten through 12th grade) teachers and students (Hasan, 2007).
- Indonesia, through one of the Ministry of National Education's centres (Pustekkom), has developed online content for K–12 education through its Edukasi.net portal. This initiative is providing teachers and K–12 students with enriched learning materials and help in the preparation of lesson plans.
- A Japanese initiative (Shimizu, 2006) has developed a Gateways to Learning for Ability Development (GLAD) portal at the National Institute for Multimedia Education (NIME-Glad). This system provides learners with links to all LOs accessible through the Internet. The functions of GLAD are: searching and retrieving information, providing learning and course management functions, a

course authoring system, learner registration and enabling international collaboration.

To this point, however, relatively few Asian educational institutions have been able to develop their own LO repositories, or to take advantage of existing English-based LOs available worldwide. In an effort to assist Asian educational institutions in developing appropriate DE media in general, the 2005–07 PANdora studies across Asia have evaluated a wide range of LOM methods, OSS software, cell-phone techniques and old/new media convergences (Chapters 12 and 13).

SOFTWARE LOCALISATION

A major hurdle to the widespread use of open courseware and digital objects is the lack of software localisation. The problem does not merely refer to the need for software translation into local languages. The Localisation Industry Standards Association (LISA) defines localisation as "…taking a product and making it linguistically, technically, and culturally appropriate to the target locale where it will be used and sold" (LISA, 2007). Esselink (2003) describes the following localisation activities, not necessarily a part of traditional translation:

- multilingual project management;
- software and online help engineering and testing;
- conversion of translated documents to other formats;
- translation memory alignment and management;
- multilingual product support; and
- translation strategy consulting.

"Localisation" is often referred to as "l10n", a short form in which 10 is the number of letters between "l" and "n". The IDRC-sponsored "PANl10n" initiative (2004–10) is a major research and development activity involving teams in Afghanistan, Bangladesh, Bhutan, Cambodia, China, Laos, Mongolia, Nepal and Sri Lanka. In addition to developing local language content and software, PANl10n is assisting in the development of localisation policy, outreach and training in the partner countries (PANL10n, 2007).

CONCLUSIONS

The chapter has discussed the evolution of DE media through the five generations described by Taylor (2000), and the ways in which different media can combine to form new (convergent) media. New technological forms are contrasted with equally imaginative convergences using old media. For example, mobile learning, commonly associated with modern portable technologies, can be seen as a new manifestation of mobile educational principles developed a century ago. Many of the traditional media and methods have far greater potential in developing countries owing to the widespread inaccessibility of the new Internet-based methods. The open educational resources, open source software, learning objects sharing and software localisation movements are taking rapid steps towards making educational media and materials freely available. If such technologies become widely accessible, the liberating and enhancing process of lifelong education for all may at last be a reality.

Print and Audio Production 10

Dewi Padmo

INTRODUCTION

This chapter discusses principles and procedures for the production of print and audio materials in distance education (DE). It gives examples of the production processes used at the Universitas Terbuka (UT—Indonesia Open University), Indonesia.

All DE institutions deliver their learning materials via media technologies. Even though, in the terms of Taylor's (2000) analysis, DE technologies have evolved through five generations (Chapter 9), many DE institutions still base their course delivery on the traditional media (print, radio, television, and audio/video-tape). This is mainly due to their high accessibility, an especially important factor in developing countries. For delivering materials to students scattered across the country in remote and isolated locations, only the postal system can provide an adequate infrastructure. Radio and television, although now regarded in many parts of the world as traditional and old-fashioned educational media, retain their high value in developing countries, where they are used in a wide range of old and new production formats. In DE courses, radio/audio and TV/video productions are typically used as supplementary materials to enrich the students' experience. An exception is the use of audio in languages courses, where it is integrated with print media in essential course material.

This chapter describes the process of designing and producing print and radio/audio programmes for teaching and learning support in DE. The example is given of media production at Indonesia's UT, an open university operating in a developing country with the benefit of limited resources for accessible and high-quality DE delivery. It is hoped that the UT example

will be useful to other universities operating in situations similar to that of Indonesia.

PRINT MATERIALS

Print is the most accessible educational medium to most DE students. Most DE institutions still use print materials extensively as the main instructional medium, and many use print material to deliver 100 per cent of their course content. This is due to print's flexibility and accessibility. As Rowntree (1994a, b) have indicated, DE print materials must be carefully developed and/or adapted to meet the curriculum's specific goals and objectives. Various types of print material can be used: new materials produced by the institution, textbooks produced by other publishers and combinations of both (Lockwood, 1994). Previously produced textbooks may need explanation and adjustments to make them suitable as self-instructional DE materials, and so will need to be packaged with accompanying materials (articles, blueprints, guideline manuals, etc.). The DE institution will need to take care of the copyright aspects of using previously published instructional materials.

In selecting an appropriate textbook for a course, two factors can be considered: its content (that is, relevance and scope in relation to the course topics); and non-content issues such as its appearance, reputation, availability and price. Guideline materials should be designed to be compatible with the textbook and should include details about:

- the course objectives;
- the relevance of the textbook's topics to the course objectives;
- the stages through which the course and the student's use of the materials will develop;
- exercises, case studies, simulations and other activities, as appropriate.

Selection, production and packaging of materials according to specific goals and objectives can take time. In creating original materials, a subject matter expert (SME) is required to act as

writer, supported by an editor and/or a course team (Moore and Kearsley, 1996).

Writer–Editor Approach

If the SME writer has the expertise to act as an instructional designer as well as content specialist, only one other collaborator may be needed: an editor, whose functions can include course manager and reviewer of the material's subject matter, language, typography and layout.

Course Team Approach

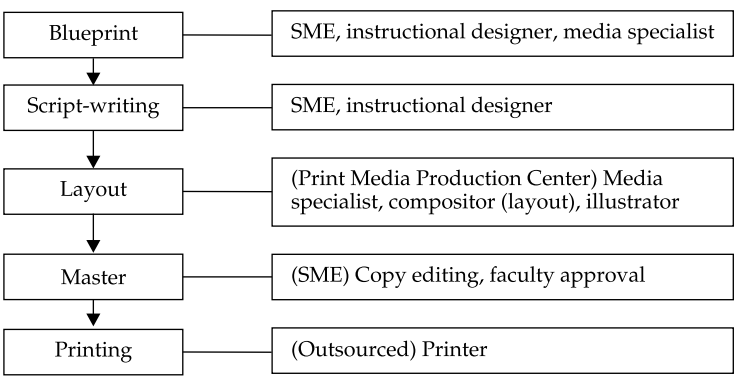
If the writer and editor do not have all the skills required for the design and development process of the print materials, a course team approach is needed. This can involve many people with different functions: for example, SME, instructional designer, media specialist and course manager. During the development process, all members of the team work together in designing the course goals and objectives, presentation techniques, media selection, evaluation design and other activities that are needed by the programme. The course team approach is quite complicated in comparison with the writer–editor approach, but the resulting product is likely to be superior in quality.

The actual approach used depends upon the criteria and demands of the DE institution. Every institution has policies affecting its human resources, finances and procedures. UT, established in 1984, is a state open university in Indonesia with over 350,000 students, 95 per cent of whom are working adults in various industrial sectors. Even in an age of technological advances, UT continues to reply on print materials and the correspondence mode of communication for its course delivery—wisely so in view of the widespread inaccessibility of online DE methods in Indonesia. In the preparation stage of its print materials, UT mainly uses the writer–editor approach. For certain courses, the more complex course team approach has been in operation at UT since 2001, comprising at least an SME, an editor and an instructional designer. Approximately 97 per cent of UT's SMEs are hired from Indonesia's traditional universities. The

instructional designers who create the course materials' format according to UT's standards are all UT academic staff (Belawati, Padmo and Sinar, 2005). They are responsible for ensuring that each course is divided into modules containing introductory sections, the main content, exercises, summary and formative evaluation tests, and represents three credit units fulfilling general and specific objectives. The modules are designed to be self-instructional so that the students can use them with minimum assistance from the instructors/tutors.

UT began using the textbook approach in its graduate programme in 2001, but no longer does so, owing to difficulties of obtaining specific textbooks from external sources. Currently, most graduate programme learning materials are developed by UT, by the process shown in Figure 10.1. The first step in the print material development process is to write the course blueprint, a process coordinated by a faculty member. The people involved in this stage include an SME invited from a recognised traditional university, an instructional designer who usually is a UT faculty member, and a media specialist from the UT multimedia centre. These people work together until the course blueprint has been finalised, and its instructional analysis, goal and objectives, topics, and media selection have been determined. Based on the blueprint, a media script is then written by the SME and instructional designer. This process, including reviews of the content, format and language, can take up to a year to complete.

Figure 10.1 Stages in development of print learning materials at UT



Source: Author.

NON-PRINT MATERIALS

DE institutions mainly use non-print materials for supplementary purposes in the course material package. These can include audio/video cassettes and CDs, and radio/TV programmes broadcast through private cable/satellite TV stations or the state-owned national radio system. Radio has a unique value in Indonesian DE, for it can reach remote areas despite the difficult geographical situation of thousands of remote islands. Radio is also accessible in that it is relatively affordable and easy to use. Nearly every household in Indonesia can be assumed to have at least one radio. TV/videotapes are still the most powerful media for delivering DE learning materials, and can be used for general information purposes as well as for motivating and entertaining the students. Educational TV/video programmes are reliable for the production and distribution of programmes designed to educate students individually, at a distance, and by open learning principles. Radio/audiotapes are usually most suitable for courses where sound is important as in language and communication courses; and the use of TV/video is primarily reserved for courses where visualisation is important, as in practicum and communication courses.

According to Rowntree (1994b), the audio format can be divided into three types of presentations:

- **Just listen**. This type of presentation is appropriate for dialogue, discussion, dramatisation and feature formats. It is particularly useful in broadcast form, as supplementary to print material.
- **Listen and see**. Also called *audio-vision* or *audio-graphic,* this type of audio presentation is useful in combination with visual material (graphics, tables, maps, diagrams, rock samples, cloth samples, etc.).
- **Listen, see and do**. Also called *active-audiovision,* this type of audio presentation is useful when the user is required to complete an activity guided by an audio-cassette, as in practicum courses.

The development of radio/audio programmes involves two stages: script-writing and production. Having a good script is the first step in the production of an effective audio programme. With a

script covering a well-defined area of content, the producer can guarantee that the programmes will contain the essential facts. In writing an audio script, a two-column format is commonly used covering narration and other audio content, as in Table 10.1.

Table 10.1 Two-column audio script

Speaker	*Script*
1) Fade in: ETHNIC MUSIC: Fade out	
2) Narrator	Indonesia is an archipelago country spreading as far as the European continent. The beautiful coasts, crystal blue ocean, panoramic mountain-sides, spectacular waterfalls, tranquil rivers, wide paddy fields and other natural wonders give Indonesia different shades of colour and beauty.
3) Narrator	From west to east, various ethnic groups are united in their uniqueness.
4) Narrator	Different cultures, attitudes, panoramas and religions make Indonesia rich in diversity.
5) Fade in: ETHNIC MUSIC: Fade out	

Source: Author.

Another type of audio script, a three-column format, is mainly used for audio presentations accompanied by graphics and other visualisations (Table 10.2).

Table 10.2 Three-column audio script

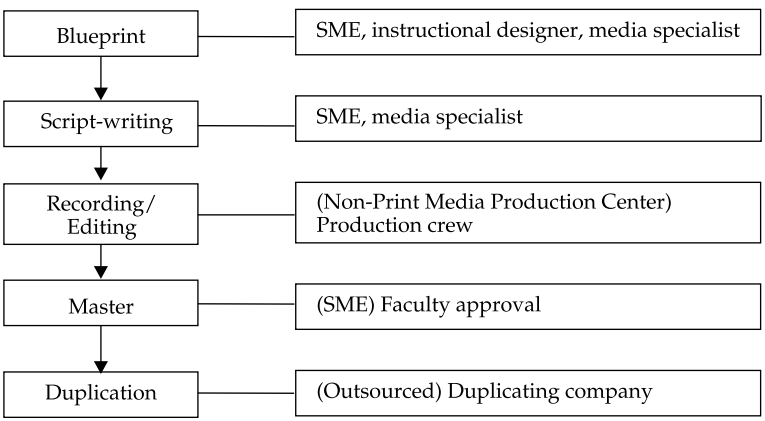
Speaker	*Script*	*Graphics/Visualisation*
1) Fade in: ETHNIC MUSIC: Fade out		
2) Narrator	Indonesia is an archipelago country spreading as far as the European continent. The beautiful coasts, crystal blue ocean, panoramic mountain-sides, spectacular waterfalls, tranquil rivers, wide paddy fields and other natural wonders give Indonesia different shades of colour and beauty.	Indonesian map
3) Narrator	From west to east, various ethnic groups are united in their uniqueness.	
4) Narrator	Different cultures, attitudes, panoramas and religions make Indonesia rich in diversity.	Pictures of wedding ceremonies in different parts of Indonesia
5) Fade in: ETHNIC MUSIC: Fade out		

Source: Author.

Relatively few people are needed in the audio/radio production process. The minimal team may include a narrator, programme director and technical operator. In a simple programme, just one technical operator may be needed to direct the narrator, record and mix the audio and do the post-production editing. At UT, *Just listen* audio programmes are used not only as supplementary to print materials, but as broadcasts in the form of radio tutorials. They are usually designed to include follow-up activities involving telephone interaction between the tutor and students. In the *Listen and See* and *Listen, See, and Do* types of presentation, the production process will involve additional persons: for example, graphic and layout designers. Figure 10.2 illustrates UT's typical radio/audio production process.

The development of radio/audio programmes at UT involves two institutional units: faculty and media production centre personnel. The radio/audio programme blueprint is written by faculty member or SME with assistance from UT's media production centre. The blueprint covers the programme objectives, subtopics and presentation format (narration, discussion, etc.). Based on the blueprint, the script is written by the SME assisted by a media specialist responsible for presentation format and language style. The script-writing process usually takes up to a month, before it is approved and is ready to be produced.

Figure 10.2 Stages of UT's radio/audio programme development



Source: Author.

The production of the final script is coordinated by UT's Non-Print Media Production Centre. The person in charge of the production process is the programme director, who directs the production crew and on-air "talent". A simple 30-minute programme can be produced in one day, including recording, editing and mixing, and review, whereas a more complicated programme can take up to two days. After a final review by the SME and media specialist, and completion of final revisions, the programme is duplicated and sent to regional offices to be broadcast by local radio stations. After the students have heard it, they are given the opportunity to phone in, if possible, to ask questions and give comments for the tutor to answer from the radio stations. *Just listen* and *Listen and See* programmes are both accompanied by print material, with the *Listen and See* programmes being used for courses with graphic content. They are usually presented by a tutor who asks the student to listen and simultaneously view the graphics provided with the audio.

The persons and activities involved in UT's print and audio production processes are summarised in Table 10.3.

Table 10.3 Summary of development process of print and audio

Type of Media	*Source/ Product*	*Pre-production*	*Production*	*Post-production*
Print	Human Resources	SME/writer; instructional designer	Layout designer; graphic designer	SME/writer; Instructional designer
	Product	Manuscript	Draft of print master/dummy	Evaluation result; Print master
Audio	Human Resources	SME/writer; instructional designer; media specialist	Operator; editor	SME/writer; instructional designer
	Product	Script-writer	Draft of master programme	Evaluation result; master

Source: Padmo (2006).

CONCLUSIONS

The process of designing and developing print and radio/TV materials for DE needs to be systematically supervised. The media

used need to be carefully selected in terms of their accessibility for the students and their adequacy for communicating the course content and objectives. To produce more complicated productions involving radio and TV/video, an extensive team of specialists is required. The design and production of complex educational video materials is described in Chapter 11.

TV/Video Production

11

Dewi Padmo

INTRODUCTION

This chapter complements the previous one, by discussing procedures for the production of complex TV/video materials in distance education (DE). It gives examples of the production process used at the Universitas Terbuka (UT—Indonesia Open University), Indonesia.

Broadcast TV and non-broadcast video are powerful teaching media. They can handle complex topics that may be impossible to communicate in other ways, and can teach students who may be hard to reach by other means. They can also provide concrete illustrations of abstract ideas. Today, TV/video programmes can be presented not only through broadcasting stations, but also online with video streaming. This versatility makes TV and video formats a highly effective medium for delivering DE learning materials.

PRODUCTION FORMATS

A wide range of production formats can be used in educational TV/video, usually falling into one of four categories.

1. **Talk**. The "talk" programme can be as simple as one person speaking directly to the camera (talking head), or as complex as a series of interviews connected by a host's commentary (for example, a teacher in front of a classroom, an expert being interviewed or a professional narrator reading a script).
2. **Demonstration**. The demonstration type of programme uses the camera to show material which would otherwise be difficult for the audience to experience. This may include

scientific experiments, distant and dangerous topics, and visual sequences organised for effect and contrast.

3. **Combination of talk and demonstration**. The problem with a programme that is all talk is that the audience can quickly get bored, even though the subject matter itself may be interesting. The problem with a programme that is all demonstration is that the information can be quite confusing in the absence of a description. For these reasons, most educational TV programmes try to combine both talk and demonstration. The decision about how much of the programme should be talk and how much should be demonstration largely depends on the topic, the presentation style of the person on the screen and the production resources available.
4. **Feature**. The most complex TV/video format is a full feature, combining all types of presentation: talk/narrative, demonstration, dramatisation and other kinds of illustration.

The development stages of TV/video programmes is a standard process involving pre-production, production, post-production and evaluation.

PRE-PRODUCTION STAGE

The pre-production stage includes scheduling, budgeting, script-writing and all other preparations for the production. It is the most critical stage, because it is the foundation upon which the rest of the programme is built. Lack of adequate pre-production preparation is likely to result in an unsatisfying programme. The most important process at this stage is the script-writing, for it helps:

- the director to clarify his ideas and to develop a project that will work;
- to coordinate the production team; and
- to assess the resources needed by the production.

The type of script varies according to the type of TV/video format that will be produced. TV scripts can be classified in three ways (Macrae, Monty and Worling, 1981).

1. **Full script**. This format includes detailed information on all aspects of the production, and gives a complete, continuous action sequence identified with scene numbers and locations. An individual scene can involve anything from an interview, to a song, dialogue or demonstration sequence. The full script may use several types of programme format: for example, drama, newscast and narration.
2. **Partially scripted**. This format is not a complete word-for-word script, but provides a skeleton format on which the programme is built. It helps the production team to anticipate what is expected of it. Instructional programmes and demonstrations with non-professional performers may sound stilted if a full script is used, and a partially scripted format can help them to sound more natural.
3. **Outline script**. This type of script merely lists the general order of topics to be covered and the persons who will perform or improvise the narration and/or dialogue.

All material and dialogue in a script must be written for the ear, not for the eye, even though TV/video is a visual medium (Wurtzel and Acker, 1989). In writing a TV/video script, the following points should be remembered:

- *Carefully assess the audience.* It is important to base a TV/video script on information about the target audience. In deciding on the script's language and structure, the writer must begin with an awareness of the audience's prior levels of knowledge.
- *Avoid overloading the audience.* The production should be kept simple. This is a core principle in script-writing and production. It is more important to select the most important information, and to present a few topics that illustrate it well, than to cover many topics inadequately. A creative script-writer can balance words and images to provide just the right amount of information for communicating with the audience clearly.
- *Fit the treatment to the budget and facilities available.* The writer should always work within the production's capabilities and limitations. Ingenious use of available production techniques can overcome apparently impossible restrictions. It is therefore crucial for the writer to obtain information

about the production budget and facilities before writing the script. A common mistake of novice script-writers is to write a script requiring resources that are unavailable.

- *Be visual.* It is important to present the materials in visual terms as far as possible, accompanied by as few words as are needed for clarification. Sometimes pictures can convey the information without commentary. In producing talk-show programmes, for example, it is better to illustrate the topic under discussion rather than simple "talking head" shots of the person who is speaking.
- *Develop a flow of ideas.* Aim for each topic and sequence to lead naturally into the next. The script should always deal with one subject at a time. Too much inter-cutting between different topics, and too many flash-backs and flash-forwards should be avoided.
- *Pace.* A good script balances the picture and the sound. This is not always easy, for the pace of the picture sequence may not correspond with the pace of the sound sequence. It is important, therefore, to edit out parts of the picture and/or commentary where necessary, so that the remaining audio/visual materials are well coordinated.

The writer should also understand the options available to the production in terms of camera angle; for example,

- *Long shot* (LS): a wide panorama (for example, person from head to foot);
- *Medium shot* (MS): part of a panorama (for example, person from head to waist); and
- *Close-up* (CU): a detail (for example, face).

Many other types of shots can be used according to the production's needs for visualisation: for example, medium long shot (MLS), over-the-shoulder (OS) and extreme close-up (ECU). Other technical terms the writer can find useful relate to camera movements: for example, panning, whereby the camera moves from one side to side; and tilt up or tilt down, whereby the camera moves up or down.

Two types of TV/video scripts are commonly used (Millerson, 1994):

1. *Single-column script format*. In this format, the video and audio information are presented in a single column. Before each scene, an explanatory introduction is given of the location and action (Table 11.1).

Table 11.1 Single-column TV/video script

Video and audio
1) MONTAGE: hectic scene at Sukarno-Hatta international airport—monument welcoming visitors to Indonesia—busy traffic • Ambient sound • Background: traditional Balinese/Sasando music
2) MONTAGE: Indonesia nature scenes: mountains, big rivers, forest, wild animals, etc. • Narrator: Indonesia is an archipelago country spreading as far as the European continent. The beautiful coasts, crystal blue ocean, panoramic mountain-sides, spectacular waterfalls, tranquil rivers, wide paddy fields and other natural wonders give Indonesia different shades of colour and beauty.
3) MONTAGE: Indonesian ethnic groups: Java, Bali, Kalimantan, Nusa Tenggara, Sumatera • Narrator: From west to east, various ethnic groups are united in their uniqueness.
4) MONTAGE: Ancient temples (Borobudur, Prambanan, Bali) • Narrator: Different cultures, attitudes, panoramas and religions make Indonesia rich in diversity.

Source: Author.

2. *Two-column script format*. In this format, the script is divided into a video column and an audio column. The video column on the left contains important visual elements such as titles, graphics, special effects and other visuals. The audio column contains the sound elements including the performer's dialogue, sound effects and music (Table 11.2).

PRODUCTION STAGE

The TV/video production stage can involve numerous personnel and complex equipment. At UT, the production of the finalised script is supervised by a programme director from the Non-Print Media Production Centre. The director is in charge of the

Table 11.2 A two-column TV/video script

Video	*Audio*
1) MONTAGE • hectic scene at Sukarno-Hatta international airport • monument welcoming visitors to Indonesia—busy traffic	• Ambient sound • Background: traditional Balinese/ Sasando music
2) MONTAGE • Indonesia nature scenes: mountains, big rivers, forest, wild animals, etc.	Indonesia is an archipelago country spreading as far as the European continent. The beautiful coasts, crystal blue ocean, panoramic mountain-sides, spectacular waterfalls, tranquil rivers, wide paddy fields and other natural wonders give Indonesia different shades of colour and beauty.
3) MONTAGE • Indonesian ethnic groups: Java, Bali, Kalimantan, Nusa Teng-gara, Sumatera	From west to east, various ethnic groups are united in their uniqueness.
4) MONTAGE • Ancient temples (Borobudur, Prambanan, Bali)	Different cultures, attitudes, panoramas, and religions make Indonesia rich in diversity.

Source: Author.

entire production process beginning with the script breakdown, searching for locations, shooting, editing and reviewing the programme. The production team varies in number according to the production's complexity. At some institutions, there are strict demarcations of function and roles, while in smaller units the function and roles of production team members may be shared. Typically, a production team includes the following key people:

- *Producer*: responsible for overall business organisation and budget; in smaller units the producer may also direct the production.
- *Director*: responsible for interpreting and staging the production; advises, instructs and coordinates the production team; chooses, hires and directs the performers; guides and cues the performance either directly or through the floor manager; instructs the cameras, camera switcher, sound specialist, etc.; and supervises the post-production editing.

- *Assistant director*: takes notes from the director, and liaises with the crew.
- *Floor manager*: is the director's representative and contact in the studio; cues the performers; checks and directs the floor crew; and is responsible for general studio organisation, safety and discipline.
- *Switcher*: operates the selection of cameras dictated by the director.
- *Technical director*: supervises and instructs technical facilities and operations; may operate the camera switches.
- *Camera operators*: responsible for all camera operations on the production.
- *Lighting director*: designs, arranges and controls the lighting; supervises electricians in rigging and setting the lighting equipment.
- *Audio engineer*: a specialist operator responsible for the technical/artistic quality and balance of programme sound.
- *Video controller*: a specialist operator responsible for picture quality.
- *Make-up artist*: designs and applies the performers' make-up.
- *Set designer*: a specialist designer in charge of the scenic treatment.
- *Technicians*: responsible for the maintenance and adjustment of all electronic equipment.
- *Floor crew*: responsible for dress the studio sets, operating cue cards, etc.

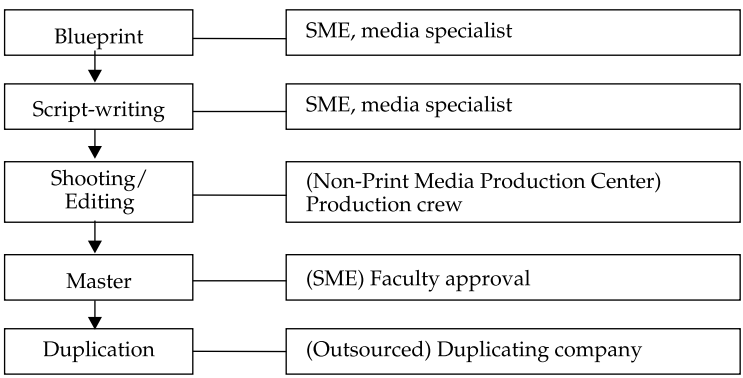
POST-PRODUCTION STAGE

Once the raw programme material has been recorded, the post-production editing process combines the visuals, sound and graphics into an effective sequence according to the script and programme objectives. The quality of editing depends not only on the editor's skills but also on those of the director. Working together, they add final touches that can have significant effects on the overall product. As in all other aspects of TV production, careful planning and work at this stage ensures the best programme

possible. After it has been reviewed by the subject matter expert (SME) and media specialist, and necessary revisions have been completed, the master copy is duplicated and sent to the TV company to be broadcast according to a fixed schedule. UT also delivers its TV programmes by duplicating them on VCDs. The typical stages and roles of a TV production at UT are summarised in Figure 11.1.

At UT in Indonesia, the development of a TV/video programme usually involves two institutional units: faculty and the Non-Print Media Production Centre. The TV/video programme's *blueprint* is written by a faculty member or hired specialist, assisted by a media specialist from the Non-Print Media Production Centre. The blueprint covers the programme's objectives, sub-topics and presentation format (talk, feature demonstration, etc.). The next step is the script-writing by the faculty member, assisted by a media specialist who is responsible for presentation format, language style and others media issues. The process of script-writing includes a review of the content by the SME, and of the format and language by the media specialist. The script may take several months to complete, depending on the writer's experience. When it has been approved, it is ready to be produced. Production of a 30-minute programme takes about two weeks. The complete TV/video production process at UT is summarised in Table 11.3.

Figure 11.1 Stages of UT's TV/video programme development



Source: Author.

Table 11.3 Summary of the TV/video production process at UT

Source/Product	*Pre-production*	*Production*	*Post-production*
Human Resources	SME/writer; instructional designer; media specialist	Director; camera operator; lighting engineer; art director; editor; floor manager (if needed); unit manager	SME/writer; instructional designer;
Product	Script-writing	Draft of master programme	Evaluation result; master

Source: Padmo (2006).

Online Learning Management Systems*

12

Batpurev Batchuluun and *Buyandelger Batsaikhan*

INTRODUCTION

This chapter covers the selection and use of learning management systems (LMS) in order to teach and learn online. It discusses the first evaluation of Asia-based study of open-source software (OSS) for course development, and illustrates LMS usage with particular reference to the practices developed at the Health Sciences University of Mongolia for using the *Moodle* LMS software.

In the late 1990s, a teacher wishing to create a web site for online teaching and learning needed access to an expensive commercial LMS, probably hosted by the educational institution. Otherwise, the teacher had to acquire web programming skills, usually involving HTML coding, in order to develop a course site independently. The last five years, however, have seen the development of hundreds of commercial and non-commercial LMS software products, many of them available for free download. More than 50 LMS systems based on open-source software (OSS) were identified at the time of the study, and numerous other products of this type have become available since then (EduTools, 2010).

These LMS products are not all equally efficient, however. Many contain hidden costs, unclear user, developer and administration manuals, and limitations with regard to interoperability, integration, localisation and bandwidth requirements. Careful evaluation is required in selecting the most appropriate LMS for use. Farrell (2003) ranked the *ATutor* and *ILIAS* packages highly out of 35 OSS products evaluated for the Commonwealth of

* The chapter is based on the PANdora project report by Batpurev et al. (2010).

Learning (COL). Subsequent versions of these products have been found to have some of the above problems (Hotrum, Ludwig and Baggaley, 2005), while *Moodle* was found to have superior attributes in both studies. As no LMS evaluation studies appeared to have taken place in the Asian online environment, the PANdora network of researchers conducted the following study.

EVALUATION OF LMS SYSTEMS

Methodology

Various methods are available for LMS evaluation. The "heuristic evaluation" approach stresses problems relating to the usability of the system interface (Neilsen and Mack, 1994). A complementary approach to evaluating the pedagogical dimension of computer-based instruction was offered by Reeves (1994). More recently, a comprehensive framework for evaluating online software has been developed by the American Society for Training and Development (ASTD), and has been used specifically in evaluations of online DE software (Belyk and Feist, 2002). The ASTD evaluation criteria include: cost to institution and user; complexity; control; clarity; common technical framework; and sub-sections of each. After considering each of these methods, the PANdora evaluation team decided to combine the ASTD approach with that used in Farrell's 2003 study (Batpurev et al., 2010).

PANdora partners from Indonesia, Mongolia, Sri Lanka and Vietnam collaborated on the evaluation. Each team was assigned to evaluate a subset of OS-based LMS products from a total of 61 options. It was decided not to include any commercial LMS products in the evaluation since these do not support open localisation and customisation. The following products were shortlisted for consideration based on the previous findings of Farrell (2003) and Baggaley et al. (2002–06). These were: *ATutor*; *Claroline*; *DoceboLMS*; *Dokeos*; *Magic Tutor*; *MimerDesk*; *Moodle*; and *WordCircle*. An evaluation questionnaire was then distributed to DE students, teachers and technical personnel, including questions about LMSs found to be valuable, and about how they could be improved. Responses were received from 44 students,

26 technical personnel and 12 academics in Mongolia, Indonesia and Sri Lanka.

The results were simple to analyse. Only one LMS product, *Moodle*, was well known to the sample. Of the 82 sample members, 23 cited *Moodle 1.5* as the best LMS for their purposes (Table 12.1). It was not seen as the best product in all respects, however. Table 12.2 indicates the ratings of *Moodle* by those members of the sample who had experience of it. Their particular approval of the product's wide range of features is noted. Table 12.3 indicates the positive reactions of the sample's 13 technical members to *Moodle*.

Table 12.1 Software that respondents (N = 82) have found useful in online learning

Software	*Respondents*	*Typical comments*
Moodle	23	All areas are smoothly handled. The software is easy to use, maintain and customise. Nothing else is good enough for my requirements.
Flash	3	Good but needs technical expertise. Database handling is difficult.
ATutor	2	Easy to install and use. Lots of features.
Dreamweaver	2	Useful for template and HTML creation. Programming, customisation and maintenance easy. Can use javascript.
Others	14	*KEWL*, *Redbox*, *Presenter* and *Prometric* are useful.

Source: Authors.

Table 12.2 Overall ratings of *Moodle* by respondents (N = 82)

Moodle features	*Good*	*Fairly good*	*Not very good*	*Poor*
Ease of use	41	**48**	10	0
Variety of features	**44**	41	12	3
Display loading speed	34	**48**	10	7
System interface	26	**55**	19	0
Template/theme selection	19	**50**	25	6
Security	32	**55**	13	0
Technical support/manual	35	**39**	26	0

Source: Authors.

Table 12.3 *Moodle* feedback from technical staff (N = 13)

Moodle features	*Good*	*Fairly good*	*Not very good*	*Poor*
Overall ease of maintenance	**67**	33		
Installation and upgrade	**67**	25	8	
Hardware, software requirements	**75**	25		
Ease of backup, restore	**75**	25		
Security	**67**	33		
Permissions, roles and user privileges	**83**	8	9	
Multi-language	33	**42**		25
Localisation	42	**50**	8	
Multiple + custom-designed templates	33	33	**34**	
Technical manual	**67**	17	16	
Intelligibility of source code	**42**	**42**	8	8
Ease of programming new modules	**33**	**33**	9	25
Display loading speed	11	**55**	11	23
System interface	33	**58**	9	
Unicode support	**67**	17		16

Source: Authors.

SURVEY CONCLUSIONS

Major findings of the PANdora LMS evaluation were as follows:

- The most useful OSS software for e-learning in the Asian institutions represented in the study: 46 per cent of the total sample reported *Moodle* to be the most useful LMS in online training; *ATutor* and *Dreamweaver* each received 4 per cent of the votes, while *Blackboard* and *Flash* each received 3 per cent. The remaining 28 per cent named other software such as *KEWL*, *Mambo*, *Presenter* and *Redbox*.
- The best features of *Moodle*: 44 per cent of the respondents said that it is feature-rich. The lowest rating (7 per cent) was for its display loading speed.
- Students requested improvements to *Moodle*'s e-mail, multimedia and SMS environment.
- Of the 13 technical personnel who gave valid responses, nine stated that they use *Moodle*, and one used *WebCT*. The other three respondents did not name an LMS.

- The most common problem in maintaining DE software was localisation (38 per cent), language barriers (31 per cent), source code licence costs (15 per cent), additional requirements (8 per cent) and other factors (8 per cent).
- From the perspective of the technical personnel, the three best features of *Moodle* were: permissions, roles and user privileges (83 per cent); ease of backup and restoration (75 per cent); and hardware, software requirements (75 per cent).
- The three aspects of *Moodle* with the lowest ratings by the technical support personnel were: ease of adding and programming new modules (25 per cent); multi-language support (25 per cent); and display loading speed (23 per cent).

USING AN LMS COURSE WEB SITE

In view of the popularity of *Moodle* found by the evaluation study, the following illustration of how to use an LMS-based course is adapted from the *Moodle* instructions provided for students by the Distance Learning and Telemedicine Centre (DLTC) of the Health Sciences University of Mongolia (HSUM).

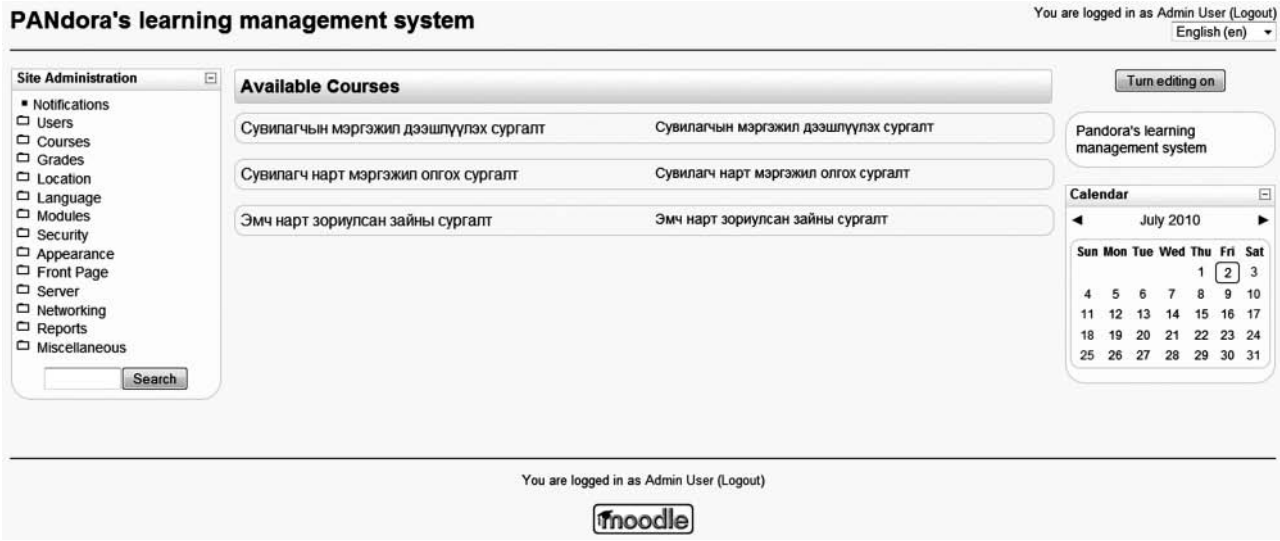
1. Visiting an LMS Web Site

The general design of a *Moodle* site (font colours, graphics, menu positions, etc.) is decided by the course teacher and/or site designer. Users can visit a *Moodle* site on the web by entering the appropriate address in their web browser software. Figure 12.1 shows an opening display typical of the *Moodle* LMS. Related courses are listed on a menu in the main (right-hand) display. Select a course by clicking on its title in the main display.

2. Logging in to a Course Site

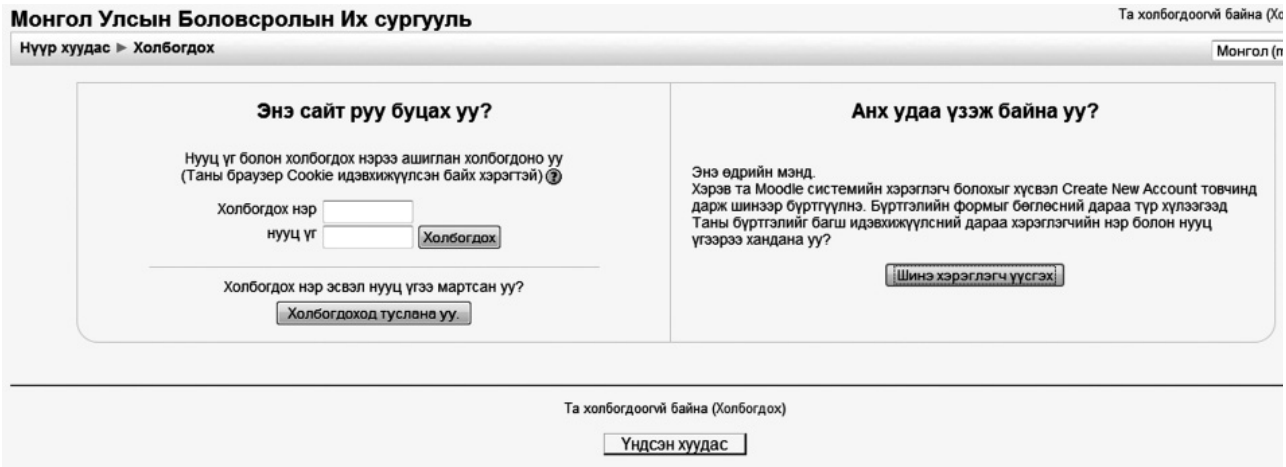
A login screen is displayed (Figure 12.2). If you are using the system for the first time and have not yet signed up for a course, or if your course registration has not yet been activated, you can only inspect course materials for guest participants. At HSUM, only free courses are available to guests. If you wish to use the *Moodle*

Figure 12.1 An opening course display in *Moodle*



Source: http://moodle.org.

Figure 12.2 ***Moodle*** **display for course login**



Source: http://moodle.org.

system as a guest, click the **Login as a guest** button. To register for a course as an official user, click the **Create new account** button.

3. Signing Up for a Course

Figure 12.3 shows the **New user** page. To continue creating a user account, you need to give a user name, password, an e-mail address, first name, surname, city and country. You then complete the process by clicking the **Create my new account** button.

4. Confirming Your User Account

Successful registration by the above procedures causes a **Confirm your account** page to be displayed (Figure 12.4.). The display contains your e-mail address for correspondence. To confirm the E-mail address, click the **Continue** button. When you receive the confirmation message, your account will be active. At this point, you can visit the course site as an actual user, by returning to the login procedures illustrated by Figures 12.1 and 12.2, and entering your user name and password.

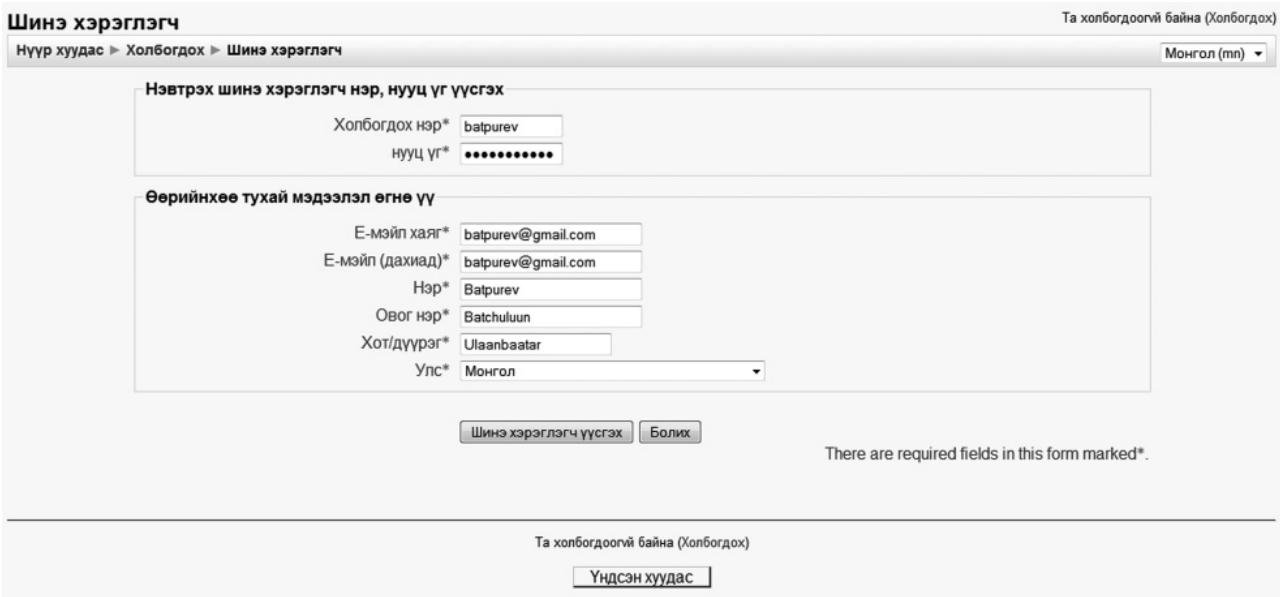
5. Choosing a Language

As a new *Moodle* user, you can select the language you wish to use. This is a major reason for the popularity of the *Moodle* LMS. When you log in to the system for the first time, the display titles are in English, but you can use another language version. Mongolian users at HSUM can choose the Mongolian language version by clicking on **Монгол** in the dropdown menu, and can return to the English version at any time by clicking on **English** on the top right side of the page (Figure 12.5). The main display typically contains a list of courses, resources, news, calendar, messages and names of other users currently online.

6. Choosing a Course

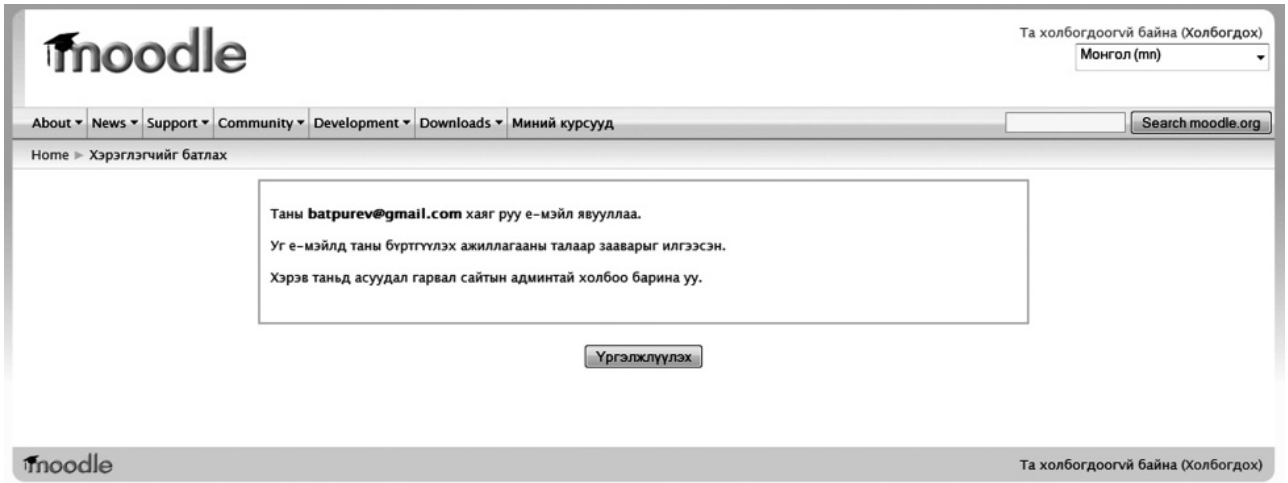
The list of courses is typically presented in a **Course categories** list. By clicking on a course name you can read an introduction

Figure 12.3 ***Moodle*** **display for creating a user account**



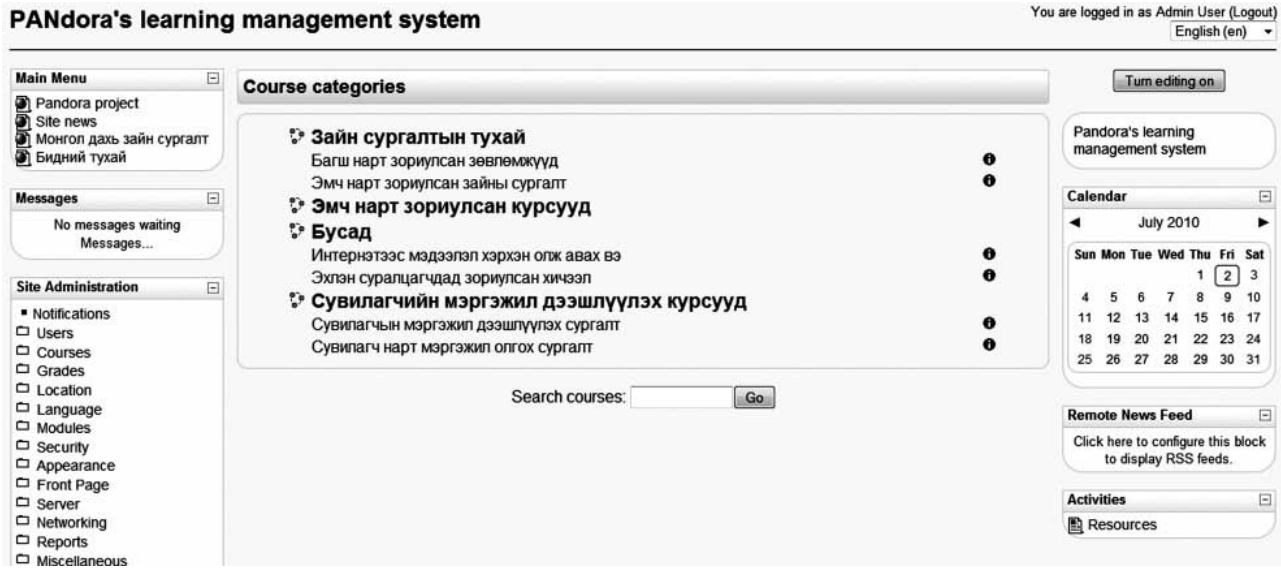
Source: http://moodle.org.

Figure 12.4 *Moodle* display for confirming an account



Source: http://moodle.org.

Figure 12.5 Main course site display in English



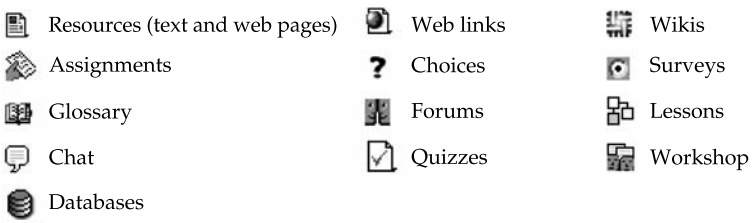
Source: http://moodle.org.

to the course. After paying the course tuition fee, you can begin your studies in the course by informing the DLTC by telephone, fax or online. Users who have registered for multiple courses simultaneously can go from one to another of them using the **My courses** list.

7. Using the Course Materials

When students enter an HSUM course site, they see all course lessons and activities, listed week by week on the main page. They should complete these during the prescribed time of the course. At HSUM, student grades depend on attendance at the online lessons and activities, and performance in assignments and quizzes. The following are common activities (Figure 12.6) made available by the *Moodle* software:

Figure 12.6 Activities available at *Moodle*



Source: http://moodle.org.

HSUM's presentations of course materials in *Moodle* can be viewed all at once by clicking the ☐ link on the right side of the page, or one week at a time by clicking the ☐ link. When viewing them one at a time, you can go from one to another by using the dropdown menu **Jump to**: for example, to go to next week's materials. Users can also choose to display or hide individual blocks of material, by clicking the [+] or [–] links respectively.

8. Using Interactive Features

The interactive features of an online LMS provide important ways to ensure that the distance learning experience is not an impersonal and lonely one. The *Moodle* system provides useful

lists of the other course participants and their e-mail addresses, and of participants currently online (Figure 12.7). These features enable the user to communicate with other participants by e-mail, or in real-time text chat boxes. Many users can exchange ideas as a group using course Forums.

Figure 12.7 A *Moodle* list of current users

Source: http://moodle.org.

9. Logging Out of a Course Site

To log out of one course site and into another, click on the **Home page** link. To log out of the *Moodle* system altogether, click on the **Log out** link.

CONCLUSIONS

As new LMS methods evolve, they must be carefully evaluated to see if they improve on existing practices. It must be confirmed, however, that their advantages truly outweigh those of the current approaches, because unnecessary changes in LMS support can disrupt the course development process, and can cause confusion for teachers and students. A clear advantage of an LMS in Asian education would be the ability to operate efficiently over low-speed Internet connections; and even this feature is of little use to the majority of DE students in Asia who lack Internet access in any form. In Mongolia, where this is a major problem, the authors of this chapter are currently developing ways of distributing *Moodle*-based course materials to students on CDs as well as online. This approach allows the course designers to use a single

course management system for online and offline students alike, without having to produce different materials for each. The major differences between the online and offline learning situations is that offline students lack access to *Moodle*'s interactive features (for example, text chat and forum discussions), whereas online students can use the interactive features and can also update the materials directly from the web server. The authors of this report are working on overcoming these accessibility and interactivity problems by creating SMS-based methods for offline students to use in conjunction with the CD materials. Combined uses of *Moodle*, CD and SMS-to-Web techniques can successfully compensate for the lack of interactivity caused by Internet inaccessibility.

Production of SMS Materials* 13

Angelo J. Ramos and *Jerome P. Triñona*

INTRODUCTION

This chapter covers the production of cell-phone–based short message service (SMS) materials in distance education. It discusses the lessons learned from pioneering uses of SMS methods in the Philippines, and gives examples of the coding methods used to create SMS methods of interaction with students.

Cell-phones are not just devices for audio communication, but are computers that fit in the pocket, with processing power far greater than PCs of the1990s. They are also ubiquitous, and nearly always switched on. Unlike other communication and computing devices used in education, cell-phones can be used on a mobile basis, and are a central focus of the current emphasis on mobile learning (m-learning). M-learning is a subset of e-learning using mobile devices (Brown, 2005). In regions such as the US and Europe, *Windows* and *Palm*-based personal digital assistants (PDAs) are being used to provide media-rich educational content, while in developing Asian countries such as the Philippines, the high cost of ownership and connection of these devices make their educational use impractical. In these areas, however, the more accessible and popular cell-phones can be used instead.

In the Philippines, the mobile telecommunications industry is experiencing unprecedented growth. By the end of 2006, it was estimated that the penetration of cell-phones in the Philippines had reached over 40 million for all providers, and almost 50 per cent

* The chapter is based on the authors' PANdora project report (Ramos and Triñona, 2010).

of the total Philippines' population of 88 million (China ASEAN ICT Cooperation, 2007). The number of owners of cell-phone SIMs (subscriber identity modules) does not precisely represent the number of subscribers, for individuals can own more than one SIM belonging to different networks; but the figures are nonetheless a clear indication of the popularity of the cell-phone as a primary, if not exclusive, means of interpersonal connectivity with landline ownership lagging behind at 3.3 million. Most cell-phone users in the Philippines use their units for "texting"—sending and receiving text messages via short message service (SMS).

The educational potential of SMS methods has been described in three categories (Librero et al., 2007):

1. *Academic uses*: announcements of lecture schedules, project deadlines, examination reminders, grades, library resources, etc.
2. *Extra-curricular uses*: promotion of activities by student groups, job fairs, social affairs, discount opportunities, voting in student elections, etc.
3. *Administrative uses*: announcements of admissions procedures, fee schedules and grants; marketing campaigns, alerts to parents on student performance, etc.

Despite the cell-phone's popularity and potential, however, its use to deliver educational content is still limited, and its wide geographical reach for educational purposes remains largely unexploited. M-learning using the cell-phone can be a vital resource in developing countries, notably for adult and lifelong learners who require a more flexible type of learning and who wish to study at their own pace, time and place. It offers enhanced opportunities for more efficient interaction, and new possibilities for access to learning resources, for educators and students, especially those who are constantly on the move (for example, businessmen and professionals) and individuals in rural areas (Brown, 2005). At present, however, there are inadequate models for developing mobile applications in education. The challenge for educators and mobile content designers, therefore, is one of understanding and exploring the best ways to use these resources in support of teaching and learning.

PROJECT MIND

The Molave Development Foundation Inc. (MDFI) is leading a study to determine the viability of the use of mobile SMS technologies for nonformal education in Asia. Known as Project MIND (Mobile Technology Initiatives for Nonformal Distance Education), the study is a part of the PANdora initiative (2005–07) and involves partnership with the Alternative Learning Services (ALS) of the Philippines' Department of Education, and with two organisations in Mongolia—the Health Sciences University of Mongolia (HSUM) and the English for Special Purposes Foundation (ESPF).

The SMS Learning System

Following an extremely positive needs assessment study of user attitudes to educational uses of SMS, an SMS learning system was developed with three components: *(a)* a Global System for Mobile Communications (GSM) Data Terminal; *(b)* original SMS software; and *(c)* teacher/student support facilities.

The GSM Data Terminal

The GSM Data Terminal is a product designed to SMS-enable an organisation's information system. With this equipment, the organisation is able to send and receive text messages (PC to mobile phone, or PC to PC) using developed and customised SMS applications. These include: reporting and/or requesting information from the server via SMS, programmed sending of SMS to individual and/or group recipients and machine-to-machine communication allowing two computers to exchange short data packages via GSM. The advantages of an integrated SMS system are as follows:

a) It is a complete solution including both hardware and software.
b) Developers do not need to handle the lower-level details of GSM communication.
c) Applications can be customised to clients' specific needs.

d) It runs on *Windows 2000/XP* supporting the use of visual programming tools, and on *Linux*, in which the programming is via web-based scripts.

The GSM data terminal runs on a computer with the following recommended specifications: *Pentium 3* or higher; 128 kps RAM; an available PCI slot; and a serial port. The GSM module with antenna is mounted on the PCI card. Data exchange is via the serial port, and the system module is controlled internally by AT (Hayes) commands hidden from the user. To simplify SMS integration, a driver/gateway programme is provided. The programme handles all of the GSM module's lower-level control functions: initialisation, sending of AT commands, handling of incoming SMS and acknowledgments, status messages, etc.

The project MIND SMS software

The software was developed by MDFI to handle content delivery, student registration and database management. This is an integral component of the learning modules. The SMS software is designed to receive and process incoming messages based on keyword and other specified parameters, followed by appropriate replies. The software includes menus and screens for:

- the student information database;
- quiz content and user keywords;
- user and quiz reports;
- system utilities; and
- help messages.

The student information database acts as the central repository of student information including name, age, date of birth and cell-phone number. The system also generates a unique ID for the student to use in registering, and for the SMS server to use as the basis for recording student activity. Information from the student database can be cross-referenced with reports generated from the quiz and user database. The system design also includes the definition of keywords, parameters and message formats for transactions including student registration, quizzes, requesting help and providing standard replies. The development of

keywords and messages was carefully designed to conform to the 160-character limitations of the basic SMS-enabled cell-phone. The keyword parameters were also kept at a minimum to avoid confusion. The system generates reports including incoming/outgoing message logs, student information reports, quiz results and other activities. Important announcements are transmitted, and automatic messages reminding inactive students to use the materials.

Student registration

A unique system-generated number is assigned to each student record in the SMS database module. To register with the system, the student sends an SMS containing the keyword REG followed by the student number (for example, REG 2). If the cell-phone number of the student sending the message matches with the assigned student number in the database record, an automatic reply is sent to the student: for example, *Thank you <student name> you are already registered. You may now proceed with the lesson*. In case of discrepancies (for example, the cell-phone number does not correspond with a registered user), the student is asked to contact the ALS teacher for assistance. The teacher reports the problem to Project MIND so that the database record can be modified.

Quizzes and keywords

The SMS keywords used by the project modules have been designed to comply with basic cell-phone configurations, as well as to minimise costs for the user and the project. The keywords do not exceed four characters to reduce confusion and to help users to memorise them. The main keywords are:

1. ENG: to answer the English quiz;
2. MATH: to answer the Math quiz;
3. HELP: to request teacher (person-to-person) assistance; and
4. INFO: to request automated assistance.

To answer an SMS quiz question, the student has to send an SMS following the syntax: <Main Keyword> <Question Number>

<Answer> (for example, ENG 1 b or MATH 2 a). If the student has followed the parameters correctly, the system recognises the SMS message and replies accordingly: for example, *<Student Name> you answered B. You are correct! Please proceed to the next question* or *You answered A. Sorry you are incorrect. Please proceed to the next question.*

When the keyword HELP is sent, the student request is recorded in the system and an automatic reply is sent to the student: for example, *Thank you, Project MIND has received your request and is processing it. We will contact you as soon as possible*. Further assistance is available via an SMS chat between the student and Project MIND staff, or a personal call with the ALS teacher.

Students are then free to start either of the two lessons. Automatic reminder messages are sent to the students who are active but have not used the SMS facility for three days: for example, *You have been inactive for three days, please continue with your lessons or contact your teacher if you have concerns. If you are already finished with your lessons, please ignore this message*. A student who has registered but not used the SMS facility for six days is deactivated and receives an automatic message: for example, *You have been deactivated due to inactivity for six days. Please contact your teacher for further instructions.*

Technical and student support

An important component is the provision of technical and general support to the students as well as to the field officers.

1. *User Orientation*. To prepare the ALS field staff to give student support in their role as field officers, an orientation is given on the use of the SMS modules, and how to respond to the students' various requests and questions. Step-by-step instructions are given so that the field staff are familiar with the module contents and the technical aspects of the SMS system. Separate orientations for the students in the six districts are then conducted by the field staff, on how to register with the system, how the modules are used and how to answer the SMS quiz questions. During the orientation period, the field staff distribute the Project MIND modules

on Maths and English to each student, and 100 pesos (less than USD 1) as prepaid load allocation.

2. *Field Officer Support*. The Project MIND staff provides the teachers and students with additional technical support, and responds to questions on issues such as data encoding and modification. The system and its activity are constantly monitored, and system messages and updates are sent to the students via SMS.

Content Design and Development

In the Philippines, two subject areas have been identified for development into SMS-enabled modules: English and Maths. The ESPF partner in Mongolia has focused on the development of English learning modules for waiters and bank tellers, while the HSUM is developing obstetrics and gynaecology modules for their medical residents. Workshop training has been conducted for the ALS field staff in the design and development of the project's learning modules, covering the basic principles of instructional design, blended learning and student assessment. Through this workshop, the field staff have been introduced to instructional design concepts including:

- assessment of instructional needs;
- analysis of learner characteristics;
- writing teaching objectives;
- selecting instructional strategies;
- developing learning materials; and
- evaluating the materials and student performance.

These principles have subsequently been used to formulate the content of SMS-enabled learning modules in English and Maths. Through the instructional design process, content developers including the ALS field staff involved in the project have identified the best methods enabling students to attain specific goals in particular contexts. The learning content to be developed for use in the ALS literacy programme is being aligned with the requirements of the ALS curriculum. This reflects the skills and competencies that learners need in order to meet the minimum

requirements of basic education. It is parallel to and comparable with the formal school curriculum (Government of the Philippines, 2004), while addressing the particular learning needs and interests of out-of-school children, youth and adults. The curriculum covers five learning strands:

- communication skills (English and Filipino);
- problem-solving and critical thinking (Maths and Science);
- sustainable use of resources and productivity;
- development of self and sense of community; and
- expanding ones' world vision.

To serve these curricular needs, the project has developed two learning modules:

1. *MIND Your English*: with topics including
    - expressing oneself;
    - language and grammar;
    - reading skills; and
    - letter-writing.

This module also includes an audio CD, containing the module lessons in audio form, to be listened simultaneously with the use of the paper-based module. This allows the students to learn the proper pronunciation and diction, while at the same time being entertained with voice skits. After each lesson, SMS-based quizzes *(see Project MIND SMS learning system)* help the students in their self-assessment of the knowledge that they gained. For a final activity, students also need to accomplish an assignment to be submitted to their teacher after using the modules.

2. *MIND Your Math*: with topics including
    - fundamentals of mathematics;
    - area and perimeter; and
    - percentage.

The *MIND Your Math* modules also include student pre- and post-tests. The results are fed back to the students, enabling them to monitor their personal improvement after using the modules.

In general, the SMS modules are designed to be visually appealing with graphical elements that do not distract the students from the lessons. The overall look is devoid of unnecessary clutter, and the size of the display was designed so that the students can easily refer to the modules at home. The *MIND Your English* module has a built-in sleeve containing an audio CD. The SMS component of the all of the Project MIND learning modules is designed so that a student with a basic GSM cell-phone can use the system as well as those with more advanced models. Quizzes and system messages have been designed to conform to the 160-character limitation of older phones.

Problems Encountered

Programme and hardware errors

The Project MIND SMS learner management system contains numerous parameters and controls. In the first week of the implementation period, programme conflicts developed between the PC host and the SMS server card which caused the system to hang. A reboot of the server did not remedy the problem, and the SMS hardware was transferred to another PC. The conflicts were immediately resolved, and the system programmer remained on-call. While this delayed the testing schedules, it did affect the overall implementation or results.

Data encoding

The SMS learner management system was designed to identify each assigned student number exclusively with an encoded cell-phone number. This procedure aimed to minimise cheating by ensuring that only cell-phones recorded in the system will be able to access the SMS quizzes. It caused problems, however, in relation to the handling of student records and the students' access to the SMS server. Some students changed their cell-phone numbers during the process or dropped out of the system without informing their teachers. The system then blocked these students from accessing the project quizzes until the records were updated or replacement students could be located.

Message delays

The system was occasionally swamped with incoming messages from the students using the modules. This caused conflicts in the autoreply system, and affected the replies' transmission. Users either experienced delayed responses, or received no reply at all. Most students immediately reported the problems to their ALS teacher who reported the problem to Project MIND for trouble-shooting. An adjustment in the automated response timer resolved this problem with minimal delays.

Student errors

Other problems have been due to errors by the students in sending the SMS keywords during the registration and quizzes. When a student sends an SMS message without following the proper syntax, an automatic reply is sent: for example, *Wrong keyword* or *Keyword does not exist. Please check on your instructions and try again*. The student is allowed to make three such mistakes before another message is sent: for example, *You have reached the allowable limit of 3 attempts. Please check your instructions or contact your teacher if you have further concerns*. The SMS server ignores future messages from the student until a message with the correct syntax is received. This procedure ensures that the system does not incur unnecessary costs due to user error.

CONCLUSIONS

Learning modules based on technologies such as SMS can be automated with minimal human intervention. The integration of technical and student support into such systems, however, is an important aspect of the learning process. To be fully effective, learning modules still need the option of human interaction, and the assistance provided by Project MIND to its field staff and students has been vital. Enhanced student support is also desirable in terms of detailed access to quiz results and varied registration instructions, and interaction with the content developers and teachers.

Cost will be an important factor in the further development of the Project Mind SMS modules. The programming and development of SMS content and the cost of access must be carefully considered, and a good balance found between providing adequate learning content and charging no more than students are willing to spend. Highly customised programmes such as Project MIND are naturally prone to technical problems. Signal fluctuations and system bottlenecks can cause delays in the delivery of learning content, affecting students' motivation to interact with the system. Alternative systems and backup have to be in place to minimise delays and problems.

It is hoped that the model provided by Project MIND will help educators to conceive of new uses of the cell-phone and its SMS technology in formal and nonformal educational contexts.

Section 4

Principles of Distance Education Implementation

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Accessibility and Selection of Distance Education Media

14

Gihan Wikramanayake and *Jon Baggaley*

INTRODUCTION

This chapter focuses on the problems of Internet accessibility in distance education. It emphasises the problems facing distance educators and students in South Asia, and the findings of an extensive (2005–07) study of the accessibility, acceptance and effects of DE in Bhutan, Pakistan and Sri Lanka, reported by the PANdora DE research network.

In all parts of the world, information and communications technologies (ICT) are considered vital for economic growth, and students are expected to have access to global knowledge resources, often via distance education (DE) methods. In North America, Europe and Australia, the most commonly used medium for delivering DE courses is now the Internet and World-Wide Web (WWW). Since the 1990s, universities and colleges in developing countries, notably across Asia, have followed this example by converting their course materials into web-based formats and developing new online courses (Gunawardena, 1995). The adoptability and cost effectiveness of ICT-based learning models in developing countries is not yet fully validated, however, and studies are indicating that the selection of the WWW as a medium for Asian education may actually be premature, owing to its inaccessibility to large proportions of the population.

Recent studies by the PANdora network of Asian DE researchers have confirmed this conclusion (Baggaley and Belawati, 2010). The PANdora network is sponsored by the IDRC's PAN Asia Networking Division, and comprises two dozen educators and researchers in 14 Asian countries.

A PANdora study of access to DE technologies in South Asia (Wikramanayake et al., 2010) shows that at present most students use computers, though only a minority has Internet access.

In Sri Lanka, 79 per cent use non-Internet computers in their educational institution; 42 per cent of them have online access at home, and 35 per cent use Internet kiosks. In Pakistan, location of the world's largest university (Allama Iqbal Open University), the access figures are lower in all categories, with institutional computers (no Internet) used by 42 per cent of the students, and facilities such as e-mail, web-based training material and text-chat accessed by 15–30 per cent. The geographical coverage of many Internet service providers in the region does not include rural areas. Higher proportions of South Asian students have access to other media (for example, radio and television), and these are used as major media of educational delivery by most of the large South Asian universities. E-learning approaches are proving more successful in India than elsewhere, though mainly in the corporate sector where access is more readily available.

In Bhutan, only 35 per cent of students surveyed reported that they had easy access to a computer, either in the workplace, at home, or in Internet kiosks (Jamtsho and Bullen, 2007). After taking an e-learning option offered in 2005 for teacher training credit, relatively few students were satisfied with the experience. Eighty-three per cent reported difficulty in using the online method owing to poor Internet connections (22 per cent); not enough time (22 per cent); too complicated to use (22 per cent); and having to travel too far to get Internet access (33 per cent). During the course as a whole, 66 per cent said they had used the e-learning option less than once a month. Following intensive preparations involving the creation of a comprehensive LMS using *Moodle*, the development team described their numerous implementation obstacles, relating to lack of technical support and national ICT infrastructure, need for faculty training and faculty resistance to e-learning generally. In countries including Indonesia, Laos, Mongolia and Thailand, e-learning efforts are at a much earlier stage of development, and the same issues are proving to be serious obstacles to progress (Baggaley and Belawati, 2010).

Those that do have Internet access report numerous other problems. For example, Jamtsho (in Jamtsho and Bullen, 2007) describes the Royal University of Bhutan's attempts to use the WWW in online DE:

> [February 2007]: I have to admit that [Internet] access is still our main concern. After one hour, I still couldn't send one email…

> [For web use] we had *Moodle* installed on our server at Samtse, but then lightning struck and we were down for over a month. Then the suggestion from the techies was to have Druknet [the ISP] host it. Even after moving it there, it went down on a number of occasions. It always took numerous requests to have it up and running but almost always with some problems… So we decided to explore possibilities of hosting it elsewhere where we may receive better support and service. However, we have not been very successful so far. I do suspect that we are quite far from achieving the ideal situation that many seem to expect almost immediately after we introduce something new…

Similar problems have been reported by PANdora researchers in Indonesia and Thailand, who have concluded that Asian institutions are selecting "e-learning methods as a major symbol of their modernisation", rather than as the result of research and evaluation into e-learning accessibility (Hardhono et al., 2010). This team's analysis of attitudes to web-based learning materials repositories in Asia indicates the need for improvements in policy and infrastructure before teachers and students can make optimal use of WWW techniques. The same conclusions have been drawn by numerous earlier studies (Gulati, 2008).

A collaborative study by members of 14 Asian countries of the entire PANdora network has provided data about the reasons for the Internet's inaccessibility in the region (Baggaley and Batpurev, 2007; Baggaley, Batpurev and Klaas, 2007). The study has measured the time taken to access web pages between major Asian cities, and has reported that "in most of the survey conditions, browser loading times were noted up to four times slower than commonly prescribed as acceptable. Failure of pages to load at all was frequent…" Using the widely available 'traceroute' routine, the study also analysed the routes taken by web hits (attempts to access material) from web servers at Asian institutions. All web hits go through intermediate web servers before reaching their target, and the more intermediate "hops" involved, the greater the chance that the access attempt will be unsuccessful. Whereas Canadian hits on Canadian web servers users may go through half a dozen hops, web hits by users in Asia commonly go through 20 or more hops, failing to reach their target altogether. The study has recommended the development of more efficient mirror sites and Internet Exchange Points (IXPs) for Asian online learning.

The next sub-section presents the conclusions of the comprehensive recent study on this topic in Bhutan, Pakistan and Sri Lanka (Samaranayake et al., 2010; Wikramanayake, 2010).

ONLINE ACCESSIBILITY AND ACCEPTANCE IN SOUTH ASIA

Accessibility

The results reported by Samaranayake et al. (2010) and Wikramanayake et al. (2010) have highlighted the increased use of computers and ICT in Bhutan, Pakistan and Sri Lanka since the 1990s, and the dramatic increase in computer usage for education. Government policy for tax-free computers has placed them within the reach of middle-class users, and widespread access to used computers has made it possible for many families to afford a computer at home. The survey has revealed that students are ready and willing to embrace ICT-based learning methods, and that in all three countries, the main location for student access to computers is the study institution. As indicated above, computer access is relatively high in Sri Lanka, where more than two-thirds of students gain access through their study institutions. In Bhutan and Pakistan, less than half the students have computer access. In the three countries, their main location for Internet access is at their study institutions. In Pakistan and in Sri Lanka, Internet access is mostly at the student's place of study/work, and the use of Internet cafes is relatively unpopular, in part owing to their slow dial-up connectivity and serious computer virus problems. Most students complain that the Internet is usually disconnected before they can download the large multimedia files necessary for their online work. In all three countries, ICT-based learning resources are used in study programmes. In over 90 per cent of the courses, however, their use is partial and the students' ability to use interactive learning materials is minimal.

Affordability

The same study also indicates that the high cost of Internet usage is a problem for many students, though the majority feels that

ICT-based resources are generally affordable, usually with the financial assistance of their parents. Considering the high cost of connectivity relative to local salaries, this attitude indicates the high priority given to education by students and parents alike. Thus, accessibility and availability are the major obstacles to online learning rather than affordability.

Models Suitable for Different Countries

The same study has considered the alternatives to online methods of DE: for example, use of computer-assisted learning resources, TV, radio, cell-phone and other audiovisual resources. The general availability of non-Internet ICT-based resources seems satisfactory in educational institutions as well as in students' homes. Multimedia CDs are an effective way for students to learn, though their quality is not always good; and electricity service problems in rural areas, economic factors and the lack of learning content in local languages hinder wide accessibility and acceptance of ICTs generally. The use of mixed-media ("blended") methods for DE is encouraged in such areas, and is becoming increasingly important in all types of education. The Sri Lanka and Pakistan samples in the study discussed here have indicated that mixed-media delivery modes of this type are most suited to their needs. The study recommends more extensive use of radio and TV, widely and freely available in most Asian countries, and the establishment of nationwide educational radio and TV services. Public infrastructures need to catch up with demand and to increase nationwide coverage. Neither the public nor the private sectors tend to be involved in such initiatives, however, mainly owing to lack of funding. If DE is to be widely adopted as a means of increasing educational access in Asia, such initiatives will be a major investment for future generations.

RECOMMENDATIONS

Most students feel that ICT-based learning offers them significant benefits, saving time and helping them to learn more efficiently, to understand concepts/theories, to find relevant information easily and to make the educational process more interesting.

A high proportion of the population in this region lives below the poverty level, however, and cannot afford the resources necessary for ICT-based study. Educational institutions lack resources (equipment and operational maintenance), and accessibility and reliability are of low quality at national levels. The educational practices and policies of present and past governments in the region have recognised the value of education in social development, and have provided systems of free education at school level. The availability of tertiary education is restricted, however, owing to lack of the resources needed to make it available for all.

The environment of education in Asia is gradually changing, however. The traditional, exclusively teacher-focused environment is giving way to student-centred learning environments as various ICT technologies are integrated into the system. The skills for using ICT resources are provided in schools both to teachers and students. While access is an immediate challenge to be dealt with, there are positive signs that a culture of ICT usage for study purpose is developing in the region, and needs to be more systematically promoted. Public awareness of the advantages of ICT and DE methods needs to be increased in order to encourage future investment in easy and affordable educational access both at home and at the place of work/study. For students who lack their own domestic resources, it is important that access is provided within easy reach of their homes: for example, at telecentres. Sri Lanka, for example, is beginning to take the benefits of ICT to rural communities through various models of multi-purpose community telecentre; and a nationwide broadband backbone is under development by the telecommunication companies to make maximum use of ICT-based resources. Ultimately, governments need to come to the rescue with infrastructure building, teacher training and content development for all ethnic, religious and social communities, and for both genders on an equal basis. This can be achieved through the adoption of appropriate ICT-based methods for different student groups.

CONCLUSIONS

The modern focus on online education in developing countries seems to have failed to take account of its general lack of accessibility. In order to appear "modern", Asian distance educators

are embracing First World, Internet-based methods that do not work well elsewhere. It is possible that developing countries will unwisely follow the example of First World educational institutions in abandoning traditional media such as radio and television, even though these technologies are more widely accessible than the Internet and World-Wide Web in all parts of the world. Meanwhile, studies of accessibility and acceptance can generate useful conclusions for educational policy-makers in relation to the design of mirror sites and new Internet routings across the developing world. ICTs, particularly computer-based, have become an integral part of every aspect of life, and it is imperative for schools to have easy access to them, not just for learning but as a preparation for life. While waiting for improved access to modern ICT facilities such as computers and the Internet, there is clear scope for extensive uses of the radio, TV and cell-phone media that are freely available in all parts of South Asia.

Adult Learning and Instructional Design

15

Santosh Panda and *Jon Baggaley*

INTRODUCTION

This chapter summarises the learning theories and adult learning characteristics that have traditionally influenced the design of teaching/learning materials and approaches. The material is complementary to the information given in the chapter following this one, about course development strategies.

ADULT CHARACTERISTICS AFFECTING LEARNING

Various theories explain how adults approach their learning, and the factors that affect it. Knowles (1990) summarises six characteristics associated with adult learning, as distinct from learning by children:

1. *Adult needs and benefits.* Attitudinal development in adults is such that at maturity one is unable to accept anything without first questioning it. It is usual for adults to question the usefulness of any new material—a new course, for example—that is introduced to them to study. They will only make the effort to go through the material once they are convinced that it will help them in their profession, hobby and/or life. It is essential, therefore, for instructional designers to determine adult needs and the perceived benefits that specific types of adults derive from new information, in making the benefits of learning materials explicit.
2. *Adult experiences.* Every adult possesses a degree of social experience. Since life, society and culture are inextricably

interrelated, the personal experiences that the adult brings to the learning experience are socially relevant, and should be taken into consideration while designing learning materials. Learning should build upon existing experiences in order to be more interesting, acceptable and beneficial. Teachers and instructional designers must be careful in this regard since the past experiences of adults can either be facilitating or inhabiting to learning.

3. *Self-directed learning.* Generally, adults decide things for themselves. Adult learners are usually self-directed and responsible in what they decide to do—with regard to job, family, political ideology, religious preference, personal leisure activities, etc. Adults tend to set their own goals, choose their own courses of study, follow their own approach to study and exercise independence in learning.
4. *Readiness for learning.* Adults generally make a conscious decision to take up a course of study based on the perceived benefits to be derived from the course. Readiness to study is derived from maturity and experience. At times, however, adult learners may need additional guidance and clarification before making course choices.
5. *Adult motivation.* After deciding to take up a course of study, adults are often assumed to have a superior readiness and motivation for learning. In general, however, they continue to be motivated by their own evolving personal needs rather than by external interventions.
6. *Problem-centred learning.* Adult learners are goal-oriented, and their goals are usually based on the obstacles that they face to a smooth way of life. Adults learn the most if their learning materials are problem-centred and relate to problems that are both individual-centred and socially relevant.

These six common characteristics of adult learning need to be carefully taken into account while designing courses and learning materials. It is essential to appreciate how learning takes place, and the variables associated with context-based adult learning. This will facilitate the design of curricula and instruction. One such design framework is explained in the following sub-section.

IMPLICATIONS FOR INSTRUCTIONAL DESIGN

The implications of adult learning principles may be applied in the instructional design (ID) of courses and learning materials in various ways:

1. There should be a comprehensive understanding, through needs analysis and analysis of adult characteristics, of who the learners are, how they learn, what their needs and constraints are and who their facilitators are.
2. The analysis of instructional needs, environment and preparedness for a particular teaching–learning material should determine the level of the course, the nuances and requirements of the discipline, and the learning goals.
3. The instructional events and experiences should be developed around the context of the learner and/or the professional community of practice to which the learner belongs. Culture plays an important part in determining what and how learning takes place.
4. The learner needs to be provided with freedom and flexibility to choose what and how to study, and the pace of learning. Attempts must be made, within and around the learning resources, to empower and facilitate learners so that they can reflect on what they are doing and learning, on the wider applicability of their learning and on how they may move to a deeper kind of learning capable of transforming them (transformative learning: Mezirow, 1991).
5. The choice of instructional media should largely be governed by the learner's capacity and goals.
6. Individual and social problems set by teacher should be based on the discipline and level of study, and appropriate to the learner's context; they should be selected, designed and integrated into the instructional events and experiences.
7. In addition to content/text, the learning materials should include appropriate learning objectives, self-evaluation and activities, examples and case studies, study guides and study skills, opportunities for reflection and conclusions, and logical sequencing and linkages between study modules.

The primary work of instructional designers in this process is to apply ID principles in the planning, design and development of teaching and learning. In the distance education context, they are primarily concerned with the development of self-learning materials (SLMs), in breaking down the teaching–learning process into instructional events, and in designing each of them to take account of adult needs and learning styles. The process adopts a systematic approach, from the analysis of learner needs to their evaluation and verification. Freeman (2005), quoting the definition of ID provided by Penn State University, writes:

> Instructional Design is the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities.

Theories of learning and ID have evolved from an early "behaviourist" approach of the 1960s and 1970s to "cognitivist" and "constructivist" models common today.

- *Behaviourism.* This model, originally proposed by Skinner (1969), assumes that learning occurs when there is an observable change in the learner's behaviour. Learning must be organised and reinforced in chunks, and should be sequenced with prior and subsequent learning as in a chain.
- *Cognitivism.* The cognitivist model of learning is based on the belief that learning is a cognitive/mental activity, less expressed in terms of human behaviour than of what happens inside the mind. Perception is important in the learning process. Learning involves conceptual understanding, problem solving, procedures and rules. Cognitivism is associated with theorists including Reigeluth (1983) and Gagne, Briggs and Wager (1992).
- *Constructivism.* More recently than the earlier two views, constructivists assert that learners construct their own knowledge and understanding based on their perceptions and personal interpretations. Learning is therefore only

meaningful when the materials it uses are based on the learner's cognitive and socio-cultural context (Panda and Juwah, 2006). Constructivism is based on the social development theory of Vygotsky, first published in the West in 1962.

Table 15.1 relates the three major learning theories to the methods consistent with each.

Table 15.1 Learning theories and corresponding methods

Learning theory	*Learning devices*
Behaviourism	Statement of learning objectives Breaking down learning tasks into small steps Right or wrong answers for each task Learner assessment based on the learning objectives Prescription of learning in the learning package
Cognitivism	Statement of learning objectives Breaking down tasks into small steps Provision of a wide variety of tasks Small and meaningful chunks of materials Use of "signposts" in the material (advance organisers) to clarify structure (that is, concepts and sub-concepts) Relationship to simple real-world contexts Prescription of learning in the learning package
Constructivism	Choice of learning task or situation by the learner Provision of authentic and real-world tasks Use of case studies Provision of collaborative learning tasks Learning through observation of the contexts Open-ended learning package Self-evaluation

Source: Freeman (2005).

These and other learning theories influencing ID are described in detail at Learning-theories.com (2008).

INSTRUCTIONAL DESIGN MODELS

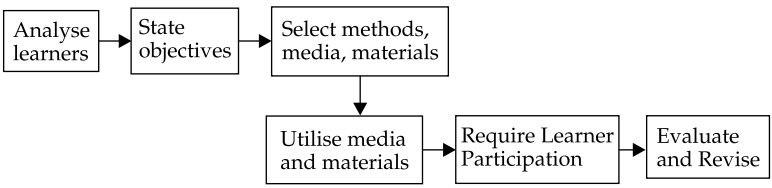
ID principles differ greatly from one educational situation to another, as is evident from the wide variety of ID models.

Gustafson and Branch (1997) indicate that the conditions under which ID and delivery should take place are based on classroom, product and systems factors. Their classification is useful in identifying good ID strategies for distance education.

Classroom Model

The ID process is handled largely by the teachers, and the students learn primarily from this teaching. Learning materials and other learning activities are based on this view of teaching, and are primarily selected by the teacher (Figure 15.1).

Figure 15.1 The classroom model



Source: Heinich et al. (2002).

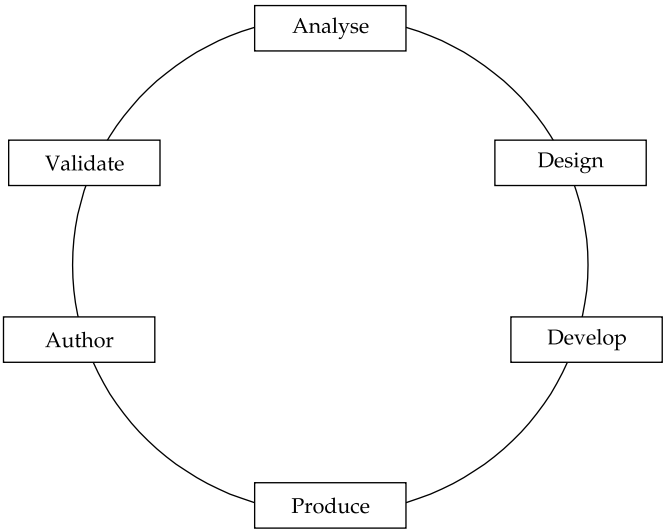
Product Model

This model, on the other hand, stresses a final instructional product unique to particular contexts (Figure 15.2). Useful in the development of interactive video and multimedia materials, the model emphasises authoring and validation in developing the instructional product. It emphasises the role of pilot-testing and revision in placing the product in an appropriate learning context.

Systems Model

The systems model (Figure 15.3) is oriented towards behaviourism, and is widely used in the design and development of the entire curricular experience. Dick and Carey (1978) stated that nine steps are required to design instruction, each having its own input and output. All of the steps interact with each other. Formative and summative evaluations are conducted to validate the product

Figure 15.2 The product model



Source: Bergman and Moore (1990).

before use. A team of content experts, instructional designers, graphic designers and developers is needed to implement this ID model.

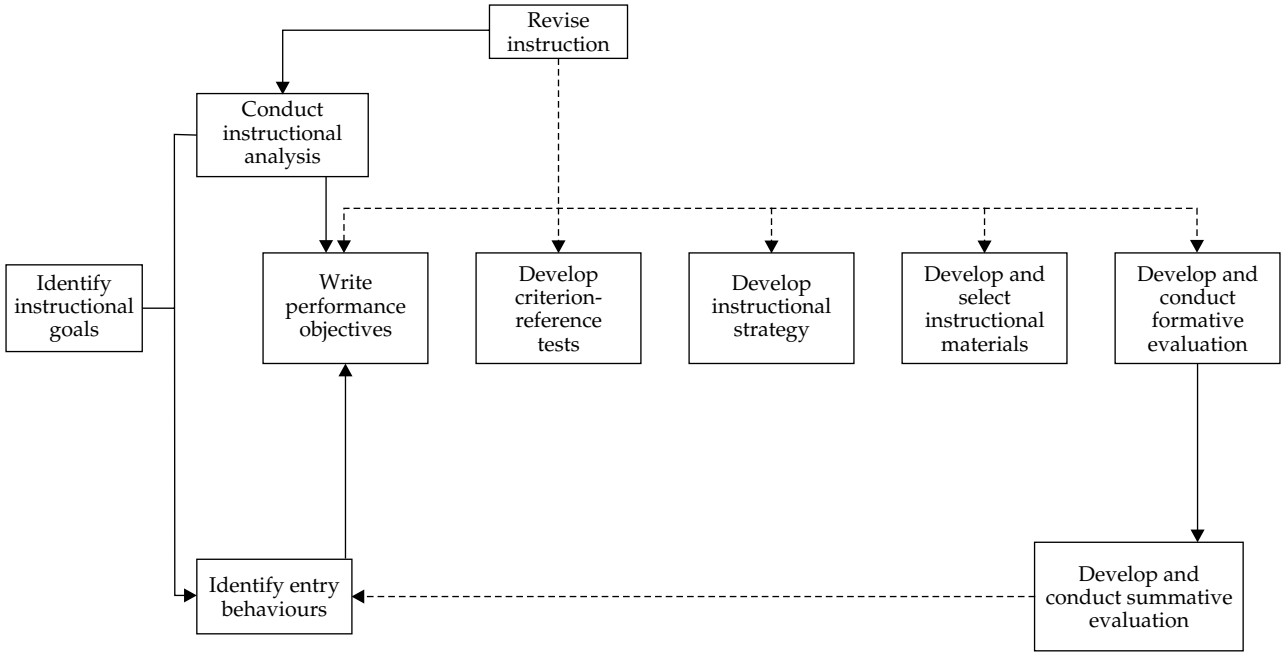
ADDIE Model

This generic model describes the steps in the ID process as follows:

- (A)nalysis of the environment, learners and learning tasks.
- (D)esign of a plan for further instructional development.
- (D)evelopment of instructional activities based on (A).
- (I)mplementation of the design of the plan.
- (E)valuation of the learner's performance and the effectiveness of the ID.

1. Analysis: Via questionnaire methods and tests, important characteristics such as gender, age and experience, prior knowledge and skills, qualifications and grades are recorded, and learning tasks are based to suit them.

Figure 15.3 The systems model



Source: Dick and Carey (1978).

2. Design: involves the identification of learning objectives, selection and ordering of content, learning activities, available resources (time, money, infrastructure, human resources, etc.), assessment strategies and teaching learning strategies. The design stage is followed by development.
3. Development: of learning resources, learning processes and activities, materials formatting, interactivity, etc.
4. Implementation: depends on the context being implemented—for example, face-to-face teaching in a classroom, delivery of learning materials, web-based delivery and online collaborative learning, and instructional support at designated study centres.
5. Evaluation: is an important component of education and training. It can include student assessment through written and oral tests, portfolios, projects and learning journals. Evaluation also involves reflection and feedback from teachers, students and instructional designers so that learning materials can be revised, thereby improving the learning experiences of future users.

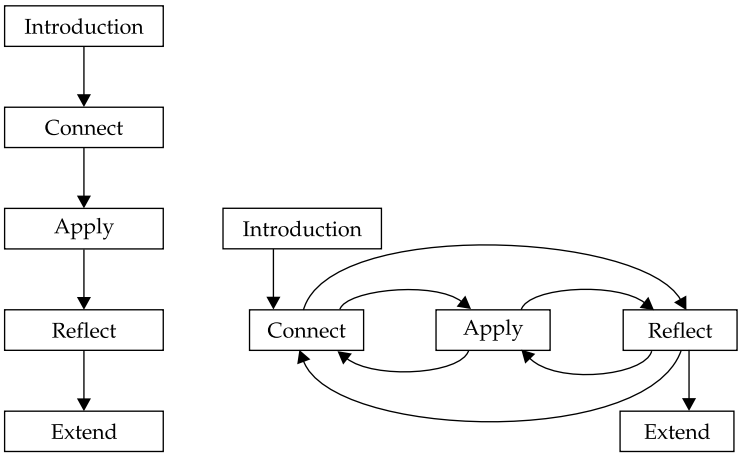
These five processes are cyclical and continue until eventually it is decided to discard the learning design and to develop a new one.

I CARE Model

This model (Introduction, Connect, Apply, Reflect, Extend) features "reflection" as an important component of the ID exercise, and has been found useful in online instruction. It has generated ready-made templates and guidelines for teachers to use in designing the teaching/learning process without the need for support from instructional designers. Based on Dick and Carey's system approach (1978), the model was originally developed at San Diego University, USA, and adapted at Middlesex University, UK, to stress its cyclic nature (Figure 15.4).

- *Introduction*: includes context, objectives, prerequisites, study time, equipments and essential reading materials.
- *Connect*: all types of content to be provided.

Figure 15.4 I CARE model



Original linear version **Cyclic version**

Source: Anagnostopoulo (2002).

- *Apply*: exercises, activities, self assessment, quizzes, etc.
- *Reflect*: the learners are provided with opportunity to reflect on their learning experience and the knowledge and skills they have gained: learning journals, discussion, unit tests, etc.
- *Extend*: further opportunities are provided for remedial and supplemental reading.

A comprehensive list of ID models is given by Ryder (2008).

CONCLUSIONS

All of the above learning theories and ID models were developed in Western educational contexts. In applying them in other regions, it is essential to question whether they are culturally appropriate. With the rapid evolution of new educational technologies, it is also important to reassess and redefine the ID principles that were originally developed for print-based teaching and learning.

Principles for the effective design of web-based and cell-phone materials, for example, are not necessarily found under the heading of "instructional design" at all. Other evolving areas of research and development such as "usability" (Nielsen, 2008) and "user interface design" (Interfaced Systems International, 2008) are providing major sources of information about the effective design of new DE media such as these.

The next chapter gives details about the course development strategies commonly based on the models discussed here.

Course Material Development Strategies

16

*Santosh Panda**

INTRODUCTION

Based on the principles of media accessibility and adult learning theory discussed in the previous two chapters, distance educators can proceed to developing appropriate strategies for ODL course development. The current chapter focuses on leading course development models. By way of example, it presents a description of the course development procedures being adopted in Asia's newest open university, Wawasan Open University (WOU) in Malaysia. This chapter complements the description of WOU given in Chapter 23.

COURSE DEVELOPMENT PROCEDURES/STRATEGIES

Depending on their requirements, distance teaching institutions (DTIs) adopt a variety of course design and development models. The most common are the Course Team (CT) model followed at the UK Open University (UK), Athabasca University (Canada) and Deakin University (Australia), and the revised course team models followed by many other institutions. Many specialists comprise the course team: academics (subject experts), radio and TV producers, educational technologists, editors, graphic designers, counsellors, student representatives and a course chairperson with varying levels of responsibility (see Chapter 10). Because different types of expert are actively involved in the process, the quality of materials produced is normally high. The application of the model in many DE contexts has shown that

*Wawasan Open University material is based on information provided by the University.

it takes two to three years to prepare a course, with an accompanying cost escalation.

DTIs also practise variants of the course team model. The Universidad Estatal a Distancia, Costa Rica, for example, follows the Author-Contract Model (ACM). The FernUniversitat in the Hague also follows the ACM, though in this case an individual teacher takes overall responsibility. The Everyman's University of Israel also works with this model (Rumble and Harry, 1982). Lockwood (1992, 1993) has discussed four additional course production models: personalised training, workshop-generated, text transformation and wrap-around text, each considerably different from the original CT model. Besides the course team model, a variety of course development approaches is available to distance educators: for example, the contract author and editor model, the educational adviser model and the workshop model.

Course Development Models

Personalised training

This model "is designed to equip authors with the skills and techniques they need to use when planning and producing self instructional materials at that moment in time when they need them". This approach has been found suitable by designers for producing self-instructional materials in a short time, and by people having no previous course development experience. Timely help in the skills and techniques should be provided by educational technologists to generate good quality materials.

Workshop-generated

As an improvement over the general CT model, experts (for example, subject-matter specialists, media experts, graphic designers, language editors, etc.) with different backgrounds, workshop the materials and generally take less time to complete them. Indira Gandhi National Open University (IGNOU) has developed a large portion of materials for the Certificate in Guidance programme and BSc Physics laboratory courses via this model (Panda and Garg, 2003). The model places major emphasis on detailed prior planning before the workshop.

Text transformation

Using this approach, authors and designers follow a process of transforming existing learning materials into self-learning materials (SLMs). In India, for instance, the DTIs of dual-mode universities transform existing correspondence study materials into SLMs with support from the national Distance Education Council (DEC), and the Staff Training and Research Institute of Distance Education (STRIDE) of IGNOU. The process involves organisation of workshops for the transformer-authors, and follow-up support from instructional designers to quicken the transformation process.

Wrap-around text

Since high-quality SLM development is time consuming and costly, existing printed texts are sometimes packaged with wrap-around text. The cost of developing course material by this approach is relatively low, and many DTIs are using it. Copyright issues, however, may need to be resolved, and non-availability of good, simple textbooks is a hurdle to high-quality learning.

Educational advisor

This model is followed at Murdoch University and Darling Down Institute of Advanced Education, Australia. The educational advisors are usually senior subject experts with experience in educational technology. They advise and work in collaboration with the teaching faculty within their disciplines/subject areas to develop high-quality learning materials.

Contract Author–Faculty

Via this model, authors from outside the DTI write course units, and the materials they produce are vetted by the internal faculty. This is the usual practice at IGNOU, with courses being designed by a team of experts, and the editors taking exclusive responsibility for content editing and quality. This model, with slight variation, is also known as the "Author–Faculty–Editor Model" or "Coordinator–Writer–Editor Model".

Contract Author–Editor

Via this approach, the materials are developed by the external experts, and vetted and edited either by internal or external editors, who work on the materials as surrogate students. Caution is required to ensure that materials written by external authors are of high quality.

Seminar-generated

This model of course development is useful when the subject matter is in the early stages of development, and experts and existing published literature in it is limited. In this situation, a seminar method is a good approach to generating new thorough discussion of potential course material by peer groups. The papers presented in the seminar proceedings become the basic material, and study guides and activities are subsequently developed by internal faculty. This approach leads to a relatively speedy development of materials.

All models of course development have varied implications on the cost, timeliness, effectiveness and quality of the materials produced (Panda, 2000). The variables influencing the choice of the best approach/process for particular situations include number of learners, course length, time scale, support, contributors, budget and institution-specific factors. Each model has its own complexities and constraints at the procedural level, and different individuals, agencies and institutions favour different approaches. An understanding of the subject-matter sources, cost-effectiveness and limitations of different models help in the appropriate selection and use of course development models.

The above approaches have evolved in the design of print-based course materials for traditional DE delivery. The development of online resources or learning materials may not necessarily follow these approaches, though some of them may be useful when print-based materials are developed before being converted into interactive multimedia materials and uploaded to the internet. Meaningful engagement between students and online resources requires the development of interactive materials facilitating group collaboration, resource-based learning and

reflection. Mason (2001) emphasises three models of interactive online course development.

Content and support model

In this model, the content development is separated from tutorial support. Pre-produced content is provided by the teachers, and applied in a framework of learner collaboration, online assessment and computer conferencing. As the content and support elements are not necessarily integrated, students spend less time actually online, and sometimes find conflicts between offline course reading and online interaction and assessment.

Wrap-around model

The materials available in textbooks, CD-ROMs, etc., are packaged with online study guides, activities and discussions. The teacher assumes a greater role in the development process, and the students devote approximately half of their study time for offline study and online interaction and activities.

Integrated model

Online materials are dynamically accessed in a sequence determined by the completion of individual and group activities. The learning resources and activities are integrated and available online. This model can achieve economies of scale since the high costs of course development are compensated by low costs of course delivery.

THE WAWASAN OPEN UNIVERSITY COURSE DEVELOPMENT MODEL

As any other ODL system, WOU depends on good self-instructional materials to support its learning and teaching activities. As the youngest OU in Asia, established in 2006, WOU has taken advantage of the opportunity to plan a course

development model using the most up-to-date educational media and design principles. In its early months, WOU has relied heavily on printed course materials, which will be supplemented by video, audio and other multimedia material, as appropriate, in the years ahead. As access to appropriate technology becomes more widespread, the greater use of the digital medium (CD-ROM, Web and streaming audio and video) will all become part of WOU's learning environment.

In developing its instructional materials, the University uses two methods. The first involves identifying a textbook that covers the majority of the course syllabus at an appropriate level, accompanied by a "wrap-around" study guide. This approach includes working with academic publishers to customise off-the-shelf textbooks for the University's purposes. Learners use the study guide to navigate through the content of the textbook and any other source material. As appropriate, supplementary materials are included in the learning package. The supplementary materials can contain explanations, detailed descriptions of concepts, and self-assessment tests and responses.

The second method of course materials development involves the creation of a fully self-contained and comprehensive materials package. This contains everything the student needs to complete the course successfully: content, enrichment material, self-assessment tests and responses to them. Additional reading materials (for example, journal articles) are provided in the form of "readers". WOU is in discussion with other open universities around the world to use and adapt their materials.

In designing procedures for designing and developing learning materials, international "best practices" guidelines are adopted. WOU envisages a flexible yet robust system of course development that meets all academic quality requirements and serves the independent self learner in a friendly and effective way. Learning from other DTIs provides a framework for course development in three phases. The first two phases relate to material development, and the third is the delivery of the course for the first time. Currently, WOU's tight development schedule does not permit pilot-testing of materials. The first-time delivery of the course serves as a test leading to subsequent modifications. Box 16.1 illustrates the three phases of course development as follows:

Box 16.1 The three phases of course development at WOU

Phase 1: Preparation of Blueprint for Course Development

1.1 Course curriculum reviewed by external course assessor approved by Senate; formation of course team
1.2 Course developers and instructional designer convert curriculum to course blueprint
1.3 Course blueprint is endorsed by school and external course assessor

Phase 2: Preparation of Course Materials and Publication

2.1 Preparation of draft course guide, and course SLM
2.2 Review and endorsement of SLM by school, external course assessor, educational technologist
2.3 Feedback incorporated into final contents of the course guide and SLM according to in-house style
2.4 Training of course tutors with course guide, SLM and on conduct of tutorials
2.5 Final editing by course team, publication and distribution

Phase 3: Presentation of Course Materials and Evaluation

3.1 Senate approves presentation of SLM to students; students work through the SLM, attend tutorials, complete assignments and sit for examinations
3.2 Formative and summative evaluation of course conduct; feedback about course SLM obtained from external course assessor, tutors and students
3.3 After examinations and tutor-marked assessments are completed, and final scores tabulated, the course team reports to school and Senate on continuation or revamp of course SLM

Source: Wawasan Open University IT Planning Document, 2010.

The material development and production process is recursive and reiterative, so that as much review and elaboration as possible can be conducted during the cycle. The academic staff of the school, external course assessor and Senate are all informed on the progress made in the design and development of the course materials, with inputs from WOU's Educational Technology and Publishing Unit.

COURSE DELIVERY

WOU has selected its programme delivery techniques and technologies to best suit the Malaysian context, through learning from the experience of others, especially in Asia, and recognising the strengths and weaknesses of the nation's physical and IT infrastructure. Current circumstances and costs clearly preclude the use of broadcast media for course delivery. On the other hand, broadcast media have a value for marketing the programmes and for motivating working citizens to embark on further education and skills training through DE methods. WOU therefore currently uses the mass media, both print and broadcast, for its marketing functions exclusively.

For its academic purposes, WOU currently uses printed text as its core medium, and almost all instruction is embedded within text-based materials. Self-instructional materials are supported through:

- personal tutors (one per 30 learners);
- telephone tutoring and counselling;
- a learning management system on an open-source platform, continually available for peer-to-peer discussion, learner-to-tutor dialogues and tutor-to-course coordinator interactions;
- contact sessions between part- and full-time academics and students; and
- point to multi-point videoconferencing for specialised lectures.

Students can maintain continuous contact with the University either directly or indirectly through their course tutors. The tutors

meet with their students regularly throughout the semester at WOU's learning centres around the country. There are currently five centres, with more being planned. All of the learning centres are fully equipped with technology assets connected to the main campus in Penang on a 24/7 basis.

WOU's forward planning includes moving gradually into a highly technology-driven delivery system. The pace at which this transition will take place will be determined by the country's conquest of last-mile challenges. Meanwhile, halfway steps include equipping regional centres with IT facilities that learners can access on call for up to eighteen hours a day. This access includes a digital library, online submission of assignments, access to one's own academic records, study calendar, and programme and course-related announcements.

TECHNOLOGY INFRASTRUCTURE

The youngest of Asia's open universities, WOU, opened its student enrolments in 2006. WOU is committed to providing a rich technological environment for all of its functions. Its original vision was to establish a virtual university; but with the realisation that Malaysia's present state of IT infrastructure would have marginalised large proportions of its population from WOU's offerings, the University's sponsors decided to pull back from a totally virtual learning approach to one in which technology will support a large part of the University's administrative and student support systems, while moving slowly in the development of its teaching and learning environment. This final section is based on an extract from WOU's IT planning document that describes the elements comprising the university's IT infrastructure:

> Wawasan Open University (WOU) has a vast inventory of enterprise-wide and specific applications residing on mid-size computer and microcomputer platforms (PCs). New applications and application enhancements are constantly being evaluated, developed, acquired, and implemented as older "legacy" applications are retired. At WOU, its application and data architecture is to use and create industry standard application development tools and language environments that are adaptive in client/server and Web-enabled

models. Further, this should allow WOU to protect its investment in "existing" systems by providing enhancements that facilitate greater user-friendliness, better data manipulation and reporting, and end user controls.

In addition, by keeping abreast of emerging technologies such as Web Services, XML, SCORM and so forth, WOU is positioning itself to take advantage of the opportunities these technologies offer. Equally, WOU moves toward finding a balance between COTS (Commercial-off-the-shelf) vs. in-house development, a framework for development activity is being put in place. First and foremost, this framework will incorporate the concepts of Software Engineering, Information Architecture, and Application Development Methodology. These principles and techniques will be used to augment the current Systems Development Life Cycle Standards (SDLCS). This approach will encompass application life cycles from the earliest stages of planning, through requirements and design, to implementation and post-implementation support.

These new applications will be built on the most current and promising platforms and an architectural framework based on the future of IT, not on the past. The adaptation of *.Net* and emerging standards such as XML and Web Services will provide the foundation for the next generation of both departmental and enterprise-wide applications. .Net provides a stable application environment with more opportunity for componentization of business logic, sharing of common components and the integration of business processes across application boundaries. A new class of tools such as *Visual Studio.Net* will provide WOU developers with a robust and flexible development environment. Encapsulating both existing and new business logic into "Web services" will provide the ability to expose business processes across organizational and application boundaries. XML will provide the common "glue" to hold together and provide consistent information across these boundaries to facilitate the need to share data from disparate platforms and systems.

Equally with the rapid adoption by the open source community to use PHP as a web-programming language to develop web based application on Open Source, a *MySQL* database will provide an opportunity to do the same. Furthermore, Enterprise Application Integration (EAI) products will allow the ability to share and bring into a diverse environment, information and business process from older client/server and other kind of applications. Our approach to such a framework is intended to be an organic document, which

will be flexible enough to reflect and incorporate the rapid advances in information technology:

Enterprise Systems Applications: WOU is deploying tested Commercial-Off-The-Shelf (COTS) Enterprise systems that consist of Student Information System, Financial Management System, HR Management System, Inventory & E-Procurement Systems that provide relevant process integration, interoperability on a common database platform, and advance manageability of the data for Business Intelligence purposes.

Office Systems: WOU uses the *MS Office Suite* installed on PCs attached to LAN based servers and printers to facilitate shared file and printing requirements for word processing, spreadsheet, groupware presentation software, workflow database applications, project management and collaborative group work process and workflow. *GroupWise* email client is preferred on the desktop supported by *GroupWise* email server running on Netware.

Learning Management System: WOU is deploying the Open Source *Moodle* LMS solution to work in concert with our own course management system platform that can tie in a variety of best of breed online learning solutions.

Production Applications: Although a fair majority of enterprise applications use *MS Access* or *MS SQL Server* as their database and programming language architecture, WOU also employ PHP/*MYSQL* for much of its web-based applications development. The IT standards call for complex, Internet accessible or high access databases to use *MS SQL Server*, *Oracle*, or *MySQL* as appropriate. Most server-based systems reside on *Windows 2003* servers that support applications services running on them.

Application Tools: Application tools are the information technology components used to develop and support the functioning of the applications. Application tools also include the support systems used to facilitate work planning and communications.

Programming/Development Tools: New applications are currently being developed using fourth generation object oriented languages and tools. This approach will continue as additional client/server applications are developed and as COTS system components are purchased. Standard lifecycle methodologies are employed to define, develop and implement new systems. The models and design documents that are created are updated throughout the system development and maintenance life cycle.

In specific instances, expert system technology will be used to incorporate complex rule based functionality into systems. Third and fourth generation languages and tools are used in only a few specific development efforts and as utility programs. WOU uses a suite of tools to assist in the integration of applications at the presentation, business logic, and data layers. Software Engineering technologies are being incorporated into the Systems Development Life Cycle Standards (SDLCS) to provide a disciplined and consistent development approach.

Database Management Systems (DBMS): WOU uses several database management systems to support its business applications. For UNIX, LINUX, & *Windows* platforms, *Oracle*, *MySQL*, and *Microsoft SQL Server* are WOU's database standards. *Crystal* (Business Objects), *MS Excel* drawing upon *MS SQL* bi-functionality support ad-hoc query and reporting. Relational database design activities, such as creating entity-relationship diagrams, the data dictionary, the process models, the logical and physical data models, and the database definition language, are supported through appropriate tool-sets.

Office Automation/Workstation Software: WOU's office automation tools are the *MS Office Suite* including *Word* for word processing, *Excel* for spreadsheets, *PowerPoint* for presentations, *Access* for desktop application databases, *Groupwise* for e-mail/groupware, *Internet Explorer* and *Mozilla Firefox* for Web browsing. Other desktop software used includes *MS Project* for project management/tracking, *VISIO*, *Adobe Acrobat*, *Photoshop*, *Illustrator*, and *Pagemaker*.

GroupWare/Collaborative Software: WOU uses *Groupwise* as its primary corporate collaborative group software. *Scopia Desktop* web conferencing/collaboration solution is deployed to provide cross-platform PC-to-PC easy-to-use interactive whiteboard, application sharing, real-time video and messaging. Groups also use the computer-supported meeting center and its *LifeSize* video conferencing system as avenues for meetings, teaching & learning support. Other software is used to support activities dealing with the group output/results, e.g., *Word*, *Excel*, databases, presentation and process modeling software.

Technical Support Center: Help Desk Software—The Technical Support Center provides WOU staff and students with a centralized point of contact for computer support. A multi-channel ('phone, email, web) help desk system is employed to capture, manage, and

attend to feedback and enquiries. Self-help web-based applications & diagnostic tools are developed to assist in contact resolution.

The architecture and configuration of WOU's course development and delivery system allow it the necessary flexibility to scale up its various components as the University's needs change. At some point in the future, "morphing" into a totally virtual style of learning is a real possibility.

Gender and Outcome Mapping

17

Sana Shams, *Sarmad Hussain* and *Atif Mirza*

INTRODUCTION

This chapter examines the importance of gender issues and sensitivity to them in development projects, and presents an approach to project planning, monitoring and evaluation that takes gender issues specifically into account from the earliest stages, and integrates them into the project execution.

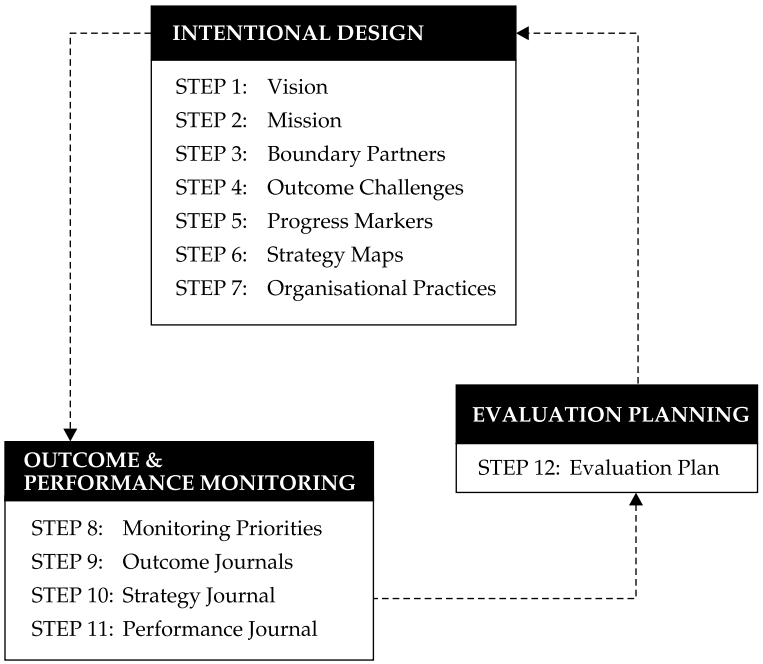
OUTCOME MAPPING

Outcome mapping (OM) is a planning, monitoring and evaluation methodology for development initiatives (Earl, Carden and Smutylo, 2001). It is a three-step approach that helps programmes to identify the people it is targeting, the changes and transformations it anticipates, and the strategies that the programme intends to follow in order to bring about the expected changes. OM recognises that the impact of development projects is often the product of inter related factors including aspects of the programme in question, and external factors. The OM approach provides a unique way for a programme to form its plan and assess its performance. It looks at development results as changes in the behaviour and relationships of the people (programme participants) and organisations on which the programme focuses.

OM methodology is divided into three phases: *(a)* intentional design, *(b)* outcome and performance monitoring and *(c)* evaluation planning (Figure 17.1).

Working through these phases, the development programme matures itself iteratively, through discussion and feedback from

Figure 17.1 Three stages of outcome mapping



Source: Earl, Carden and Smutylo (2001).

the stakeholders about the behaviour changes that the programme intends. The programme develops a monitoring and evaluation framework facilitating reflection about a project's progress and conclusions. The OM methodology is flexible, and the programme analysis may be dynamically updated as it progresses.

1. Intentional Design

The Intentional Design stage of OM initiates the programme planning. In this phase, the project team sets the *vision* and the *mission* statements of the programme, identifies the *boundary partners* and their expected *outcome challenges*, develops a *strategy map*, and reviews the *organisational practices* related to the fulfillment of the outcome challenges.

- The *vision* statement describes longer term economic, political, social and environmental changes that the programme hopes will be achieved, as well as broad behavioural changes expected in the people and organisations.
- While the vision states why the project is engaged in development and provides an inspirational goal, the project's *mission* describes the specific achievements that the project intends to accomplish during its cycle. *Mission* is the specific part of the larger vision on which the programme focuses.
- Based on the mission statement, the *boundary partners* of the programme are identified. A single project may have many relevant stakeholders, though OM focuses only on its direct participants, the boundary partners. Thus boundary partners are those individuals, groups and organisations with which the project directly interacts.
- For every boundary partner, an *outcome challenge* is defined. This describes the ideal behavioural changes that the programme aims to help bring about in the associated boundary partner.
- Each outcome challenge is composed of a list of sequential behavioural changes anticipated in each boundary partner as the project's outcome challenge is achieved. These transitional steps, from lower to higher levels of change, are called *progress markers*, and help to measure the behavioural change(s) taking place with respect to each boundary partner.
- Once the project boundary partners have been identified, their outcomes defined and their stages of progress described, the programme maps out a three-tier strategic plan called the *strategy map,* to achieve the anticipated behaviour change(s).
- During the intentional design phase, the project team also engages in reflection, by defining internal *organisational practices* to ensure that the programme remains relevant, innovative and sustainable. These practices describe how an organisation operates to fulfill its mission and vision. Each organisational practice includes activities enabling a programme to reflect upon its own practices in order to improve its performance.

2. Outcome and Performance Monitoring

Actions and strategies planned in the Intentional Design phase are monitored during the project execution. In the outcome and performance monitoring phase, the project outlines its monitoring priorities, and schedules the project's monitoring activities. The monitoring data eventually helps to capture the behavioural changes that occur during the project.

- *The monitoring plan* is developed at the outset to set the monitoring priorities of the programme, based on the outcome challenges, programme strategies and organisational practices.
- The *outcome journal* is used to capture the description and levels (low, medium or high) of behavioural changes taking place according to the earlier planned progress markers. The journal also provides an observation sheet for explaining the factors and identifying individuals who contributed to the change; it can be a record of unanticipated changes and/or lessons learned during the project.
- The *strategy journal* records the activities performed with respect to the project strategies, and includes a judgment of their effectiveness, outputs and follow-up activities defined as necessary.
- The *performance journal* is used to collect data on the organisational practices employed by the programme, which may include quantitative indicators and qualitative examples of each practice. Based on the monitoring data collected, the programme must learn and adapt to new conditions and changes in its participants. In OM, such impacts are captured by *programme response forms*.

3. Evaluation Planning

The Evaluation Planning stage allows the programme to identify its evaluation priorities, and to develop an *evaluation plan*. The evaluation plan is a description of the evaluation issues of greatest importance to the programme. It defines the evaluation and the frequency with which it will be conducted during the programme. It also states the instruments and tools that will be used for the evaluation.

GENDER AND OUTCOME MAPPING

OM methodology has been used by development programmes in numerous subject areas, including education, health and environment. It is based on the principles of participation, and involves as full a range of stakeholders as possible in a participatory process from the earliest stages of project planning till project completion. The current chapter describes a programme framework developed by the PAN Localization project (2008a), an initiative to build local language computing capacity in regional institutions of Asia, and focusing specifically on gender-related issues. The framework used for this purpose is known as the "gendered OM framework" (OM^g).

> *In the past, it has often been assumed that women benefit automatically from development efforts and that progress towards equality of opportunity and treatment between men and women takes place naturally. However, it has become abundantly clear that, if women's issues are not explicitly incorporated at all stages of the programming cycle, their position is likely to deteriorate rather than improve.* (ILO, 1997)

In general, gender sensitivity in the planning, monitoring and evaluation system allows for the following:

- concretely identifying target beneficiaries of both gender (Joseph-Brown, 2006);
- developing specific goals and strategies so that both women and men can influence, participate in and benefit from development processes (World Bank, 2001);
- improving project performance, with the project able to report gender-related achievements (Hafkin, 2003);
- instituting a specific focus towards the gender dimension of a project's development, execution and evaluation; this is critical because the empowerment of women is an integral part of development processes (Hafkin, 2003).

Based on OM, a OM^g is developed which addresses gender equity at all stages of development projects.

Despite OM's participatory nature, the OM^g framework addresses gender issues implicitly only. The PAN Localization project (2008a) is studying the digital literacy challenges posed

for end users, both males and females, who wish to use localised technologies for communication and to access and generate local language content. The project works in multiple countries (languages) including: Afghanistan (Pashto), Bangladesh (Bangla), Bhutan (Dzongkha), Cambodia (Khmer), China (Tibetan), Indonesia (Bahasa Indonesia), Laos (Lao), Mongolia (Mongolian), Nepal (Nepali), Pakistan (Urdu) and Sri Lanka (Sinhala, Tamil). The project is using the OM^{g} framework to plan, monitor and evaluate its development projects with an explicit gender focus.

The gender focus in the OM^{g} framework has been influenced by the *gender evaluation methodology* (GEM) developed for Internet and ICT projects (APC-WNSP, 2008). GEM is a tool for integrating gender analysis into project evaluations using ICTs for social change. It has been used by ICT initiatives in different areas of study, including community telecentre programmes, education and training initiatives for women, employment projects, networking and community-building projects, and women's ICT media, information and advocacy projects.

The GEM approach focuses more on evaluation than on a more general approach that covers project planning, monitoring and gender issues in addition to evaluation. The OM^{g} approach has been developed according to this philosophy, and includes a gender analysis that integrates the gender perspective into all phases of project development, including design, implementation and evaluation. Gender analysis is a methodology that investigates the socially constructed differences between men and women, and between women themselves (Moser, 1993). The OM^{g} framework assists the project team not only to see how its outcomes will contribute to the large-scale development-related changes that the project encourages, but also to plan, monitor and gauge the responsiveness of the project for each gender. The framework helps to create a deeper understanding of the challenges and opportunities that development interventions present to women.

Based on the general OM methodology (Figure 17.1), OM^{g} includes:

- the project planning phase (intentional design, and monitoring and evaluation activities); and
- monitoring and evaluation phases.

Project Planning

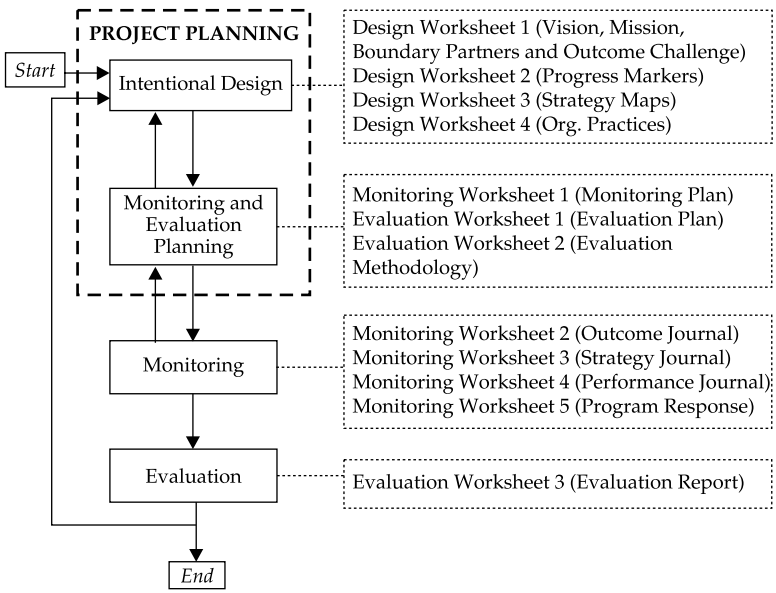
The project planning process of OM^g is very similar to that prescribed in the OM framework, with more detailed planning for monitoring and evaluation, and explicit focus on gender (Figure 17.2).

Intentional design

> *Often Vision and Mission statements of the programmes are gender neutral by resorting to the usage of neutral terms like "community", "people", "marginalised". Ideally, these terms imply the inclusion of both women and men, but in actual practice, having male connotations, these terms exclude women.* (Saxena and Thekkudan, 2007)

Extending the OM methodology, OM^g requires inclusion of gender-specific terminology in the project's vision and mission statements. It needs to consider the vision from the separate

Figure 17.2 Three stages of OM^g

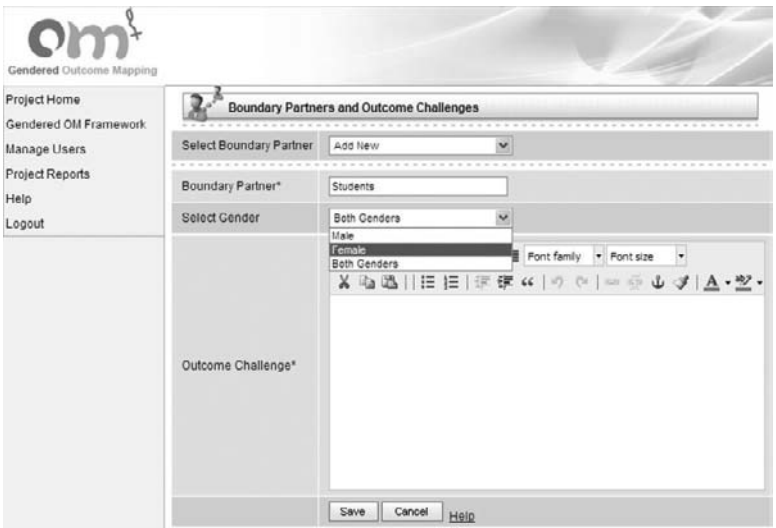


Source: PAN Localization Project (2008b).

perspectives of each gender. Similarly, the mission statement is considered in a gender-specific manner, driving the planners to focus on gender explicitly, early in the project.

OM project planning worksheets have been modified so that gender specification can be included in OM^g. These require the project planners explicitly to affirm which gender category is applicable at different levels: *(a)* male; *(b)* female; or *(c)* both. The gender-explicit process begins with the definition of the boundary partner—the central focus for monitoring and observing changes in the behaviour. For example, instead of identifying "Student" (*both genders*) as a boundary partner for a training programme, "Male Students" and/or "Female Students" may be specified as unique boundary partners (Figure 17.3). Though OM also allows this, OM^g explicitly requires the planners to specify the gender of the boundary partner, a feature lacking in the original OM framework.

Figure 17.3 Gender specification in boundary partners



Source: PAN Localization Project (2008b).

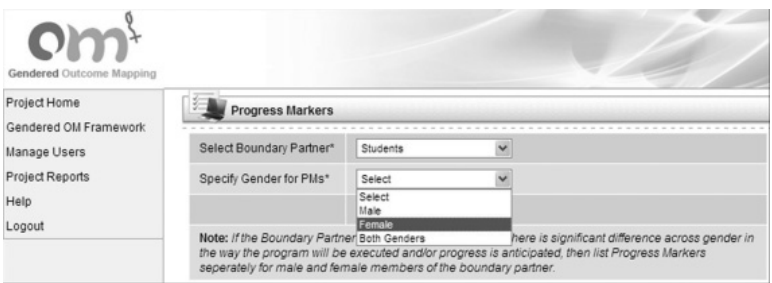
Note: As illustrated in Figures 17.3 to 17.7, the PAN Localization project has developed an online tool for OM^g framework (2008b) to enable project partners to document their progress. The project data are centrally collated and conveniently accessible to the partner teams across Asia in the synthesis of their results nationally and regionally.

In defining the outcomes for boundary partners, a unique challenge statement may be developed for each of the three gender groups. For example, if a training programme classifies students into two different boundary partner groups, "Male Students" and "Female Students", it would define two different outcome challenges for them relating to the difference in the initial capacity of the two groups, and the pace of capacity enhancement/behaviour change intended by the project. If it specifies a difference in which it will progress for the different genders, the programme may also define separate, additional progress markers for male and female members of the same boundary partner groups.

For example, a training programme may be designed to help a single boundary partner (for example, "Students", *both genders*) to be able to publish locally relevant content on their web sites. If male and female students have different levels of computer skill at the start of the training, and different rates of progress are anticipated for the two groups, the programme may develop common or separate progress markers for each group without classifying them as two separate boundary partners. If very significant differences exist between them, however, or are intended for the two genders as a result of the programme, separate boundary partners may be defined as discussed earlier. Figure 17.4 shows how gender may be explicitly defined for the progress markers added.

When developing the strategy map, the OM[g] framework takes care to develop specific strategies for addressing each gender. If an outcome challenge is set for Trainers (*both genders*), then in addition to developing common strategies for both gender groups,

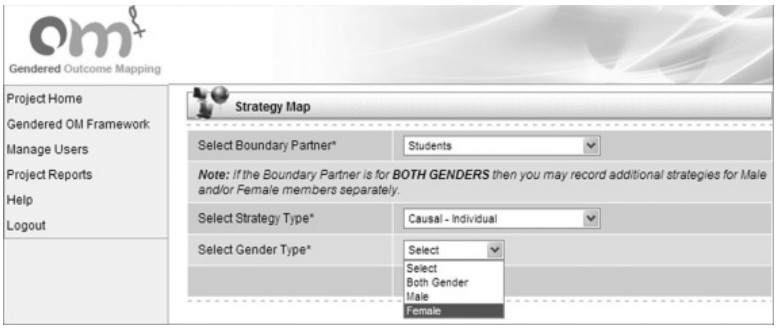
Figure 17.4 Progress markers for males and females within the same boundary partner



Source: PAN Localization Project (2008b).

the project team may design additional, specific strategies for the male and female participants (Figure 17.5).

Figure 17.5 Specific strategies for males and females within the same boundary partner



Source: PAN Localization Project (2008b).

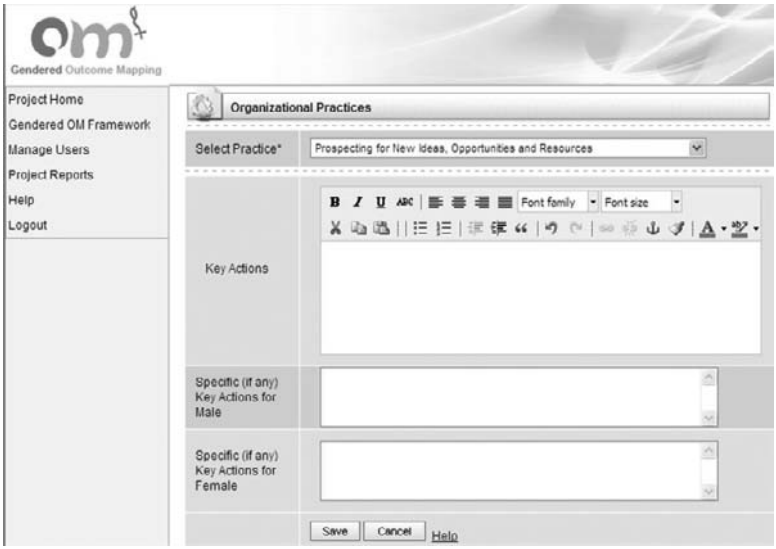
According to OM^g, the project team also needs to focus on how organisational practices will effectively incorporate gender concerns. The framework helps a programme to identify the factors that create gender biases in an organisation, and works towards the adoption of measures to eliminate them. Efforts must also be made to explore new partnerships and opportunities that could help the programme to fulfill its mission. Gender awareness is essential in seeking new ideas and opportunities; and a gender issues expert may need to be consulted in this process. When obtaining feedback on the programme, female participants must be deliberately sampled in addition to male participants.

The programme also needs to sensitise higher management to gender issues. OM^g requires the programme to review its products and services regularly from a gender-sensitive viewpoint. The programme needs to improve over time in its ability to respond to the needs of both men and women. Organisational practices are defined in a gender-specific manner (Figure 17.6).

Monitoring and evaluation planning

The OM^g framework also follows gender-based principles for monitoring and evaluation. Project monitoring and evaluation activities must consider whether the project has made a difference

Figure 17.6 Organisational practices for gendered outcome mapping



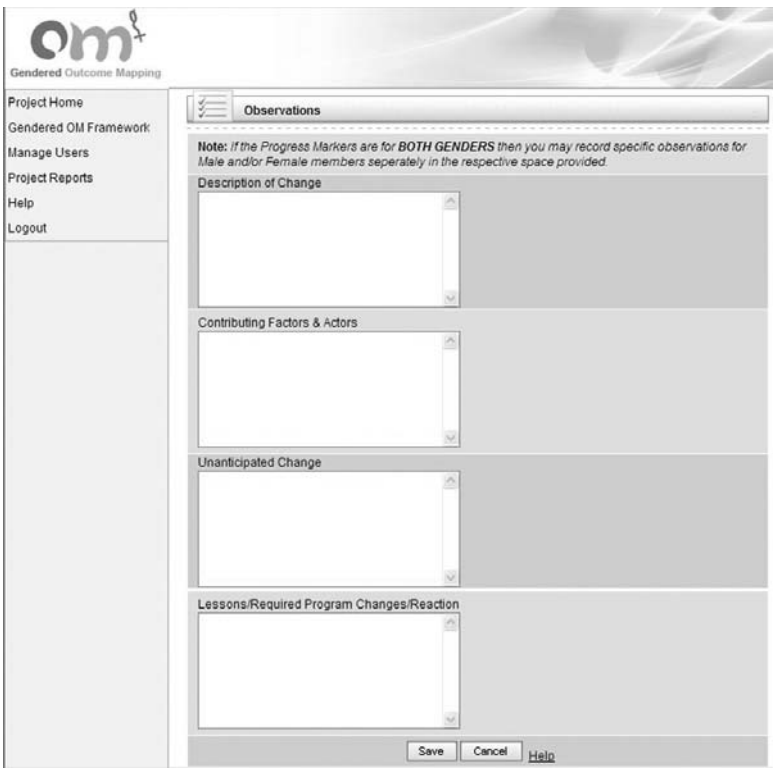
Source: PAN Localization Project (2008b).

in the lives of women as well as men. A gender-sensitive evaluation stresses women's experiences in its planning and analysis stages (Sielbeck-Bowen et al., 2002). The OM^g framework helps the programme to prepare a detailed *monitoring plan* and a *utilisation-focused evaluation plan*. This type of evaluation is based on the assumption that evaluations should be judged by their usefulness, and that the evaluation should carefully consider how it will determine and affect usefulness. It focuses specifically on the intended uses of the intended users (Patton, 1997). OM^g further influences the evaluation plan by explicitly defining the evaluation methodology, and the frequency and level of interpretation of the results obtained during project evaluation. The utilisation of the evaluation results is as important as the collection and analysis of reliable data; therefore, the relevant primary and secondary users of the evaluation results are identified. For example, a project's objectives might be to promote access to ICT facilities and to train women in ICT skills at community learning centres. In this case, the evaluation objective might be to examine how the services provided by these centres empower women. The evaluation

activities invite the team to identify the parties (individuals, organisations) that will use the evaluation findings. The team is encouraged to consider who will use the evaluation findings and how they will use them. This enables the information produced by the evaluation to be fed into the decision-making process.

The monitoring plan defines the outcome challenges, programme strategies and organisational practices that will be monitored during the project's execution. During the monitoring phase, the effectiveness of these plans is recorded using appropriate journals. When outcome journals are used, OM^g proposes that observations should be separately recorded for each gender (Figure 17.7). This helps to bring a gender-responsive approach

Figure 17.7 Specific cells to record observations for male and female boundary partners



Source: PAN Localization Project (2008b).

to the work. Strategy journals record gender-specific information relating to the outcomes of common/specific strategies of the project. Performance journals collect data about organisational practices that are employed to help it remain relevant, sustainable and innovative with regard to the project's objectives: for example, gender parity and responsiveness.

OM^g does not prescribe a specific way to evaluate a project. Instead, it provides planning tools and monitoring data to aid the evaluator to gauge the project's effectiveness. Based on the data gathered through the journals, the evaluator can judge the performance of the project and its teams in relation to the objectives defined in the outcome challenges and project mission. An evaluation report is required at the end of the evaluation phase, synthesising the findings and interpretations regarding the project's success and failure in meeting its objectives. The evaluation report should indicate the extent to which gender issues were incorporated into the project, and were achieved.

CONCLUSIONS

A gender-related outcome mapping approach is important in sensitising project planners to potential gender issues from the earliest stage of their work. The PAN Localization project (2008a) has adopted an outcome mapping framework at its planning, monitoring and evaluation stages. As gender issues are not explicitly stated in OM, the project has worked towards specifying it via the OM^g framework. This approach is providing the partner organisations with better understanding and appreciation of the gender dimension within their projects, and is providing an integrated approach to planning, monitoring and evaluation from this perspective. Because of its explicit gender focus and convenient online planning, monitoring and evaluation tools, OM^g represents an attractive framework for adoption in other development projects.

Section 5

Examples of Distance Education and Open and Distance Learning Institutions

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China Open University (formerly China Central Radio and TV University)

18

Chen Haishan and *Li Yawan*

INTRODUCTION

This chapter contains one of a series of case studies of open and distance learning (ODL) institutions in Asia. The range of ways in which ODL is provided by these institutions provides useful models for other organisations to consider.

China Open University (formerly the China Central Radio and TV University [CCRTVU]) is estimated to be the biggest DE system in the world, with around 2 million tertiary-level enrolments. The CCRTVU's mission is to provide opportunities to all those who aspire to higher education, and to those wishing to obtain improved qualifications and relevant certificates. For the past 28 years, as the main force of distance education (DE) in China, the CCRTVU system has played an important role in the "massification" of higher education within the country, and has contributed greatly to the construction of a lifelong learning system.

ORGANISATIONAL BACKGROUND

Rationale of the Institutions

The CCRTVU is a dedicated DE institution offering multi-media courses through radio, television, print, audio-visual materials, CAI courseware and the Internet. In 1978, Deng Xiaoping approved the establishment of the TV University. The CCRTVU and 28 provincial TV Universities (PRTVUs) were established

in 1979. To meet the needs of the nation's reform policy and modernisation process, the CCRTVU has undertaken profound reforms and innovations for the training of varied groups of professionals, and has to some extent increased the overall standards of the general public nationally.

Mandates of the National Education System

The CCRTVU aims to serve grass-roots communities in rural and remote areas and minority nationality regions, and to provide all learners with higher education opportunities, especially in those areas where education is less developed. Moreover, as part of the *Education Rejuvenation Action Plan toward the 21st Century*, the topic of *Modern DE Engineering* was provided in 1998. In 1999, with a view to implementing modern DE, the Ministry of Education introduced a new CCRTVU project: *Open Education Pilot Project and Reform for Training Applied Professionals*. This project is regarded as an important step in modern DE development, and an important experiment in how to train applied professionals via modern ODL.

Organisational Structure

The CCRTVU, the 44 PRTVUs, 945 branch schools at prefecture levels, about 1,842 working stations at county levels and 46,724 teaching classes have formed a modern DE system with an overall system for planning, managing and running schools at different educational levels. The CCRTVU's collaborative mechanism proves that systematic academic management can be efficient, and provides a method to maintain quality on a large scale. As a dedicated DE provider, CCRTVU is under the direct supervision of the Ministry of Education (MoE). The local Radio and Television Universities (RTVUs) operate similarly though under provincial, prefectural and county-level administrative management.

Internal Infrastructure

China now has a modern DE network that combines satellite-TV and web-based teaching within an effective management network.

In recent years, CCRTVU and the RTVUs have spent about 3 billion RMB (Renminbi) on their teaching facilities and infrastructure. This has been a significant step in the application of information and communication technologies (ICT) in DE. The CCRTVU online learning platform, developed as a joint venture between CCRTVU and the TCL Group, was launched in 2001. As a multifunctional network teaching platform, it has offered a variety of Internet-based teaching activities, which have encouraged interactivity between the central and local RTVUs. TV broadcasts are provided for DE on dedicated digital channels. Interactive TV teaching programmes are produced in live transmission classrooms and a two-way videoconferencing system. The RTVUs have greatly strengthened their ability to provide DE on the Internet by taking full advantage of modern ICTs.

CCRTVU has gained a rich experience in developing DE resources for multimedia teaching. In recent years, in response to the need of autonomous and individual learning methods, CCRTVU has made great efforts to improve the design and production of print, audio and video materials. Together with conventional universities, local RTVU enterprises and other social institutions, CCRTVU has developed multimedia learning resources for various disciplines, and has made great progress in creating web-based learning materials. By early 2007, the learning platform called "CRTVU-Online" has created multimedia teaching resources for 549 courses. In the *New Century Network Course Development Project Competition* organised by the MoE, two of CCRTVU's coursewares were rated "excellent".

STUDENT BODY AND PROFILES

Most students study on-the-job. Their average age is 34, and they have relatively clear ambitions and ability to control their own learning. Ninety-five per cent of the students have been working adults, and more than 78 per cent are working in units below the prefecture level; 25 per cent are distributed in China's western, less developed region. Students come from varied social backgrounds in the urban and rural parts, business and industry, the army and the farm. They also come with different learning motivations: for a degree or career development, for knowledge

enrichment or a particular skill. They adopt different learning modes: full-time or part-time (mostly the latter), correspondence or online, learning on-the-job or at study centres. To meet its diverse learning requirements, the CCRTVU offers the adult learners flexible and convenient methods which have promoted effective learning outcomes. According to the *China Statistical Yearbook* (2006), by the end of 2006 the total number of students enrolled in the CCRTVU was just under 2 million (Table 18.1).

Table 18.1 CCRTVU student body (end of 2006)

Programme	*No. of students*	*%*	*No. of students*		*%*
Management	927,466	49	Male	945,268	50
Law	338,159	18	Female	946,709	50
Arts	220,024	12			
Technology	137,382	7	<20 years	172,413	9
Education	115,651	6	21–25	714,076	38
Economics	75,215	4	26–30	646,239	34
Medicine	42,606	2	>30 years	359,249	19
Agriculture	22,617	1			
Science	12,857	1	TOTAL	1,891,977	

Source: Statistic Year Book of 2006.

THE INSTRUCTIONAL SYSTEM

Registration

The CCRTVU provides a credit system so that students may register for selected courses. The eligible candidate obtains student status after receiving the CCRTVU's qualification review. A student study profile is recorded by credits. The accumulated credits can be valid for up to eight years.

Learning/Course Materials

About 60–70 per cent of the programmes and courses within the CCRTVU system are provided by CCRTVU. The provincial RTVUs, under CCRTVU's supervision, manage the courses. The local RTVUs are allowed to design 30–40 per cent of their programmes and courses to be relevant to local needs. Since 1999,

the CCRTVU has not only created a large repertoire of course modules, but has also integrated multiple media learning resources including print materials, audio-visual materials, VCDs, DVDs, CDs and other online resources to give students a varied choice of ways to learn. The CCRTVU delivers these resources via correspondence or digital satellite, live-transmission classroom or the Internet. In different areas, people can make good use of a range of available facilities.

The course presenters and chief editors include well-known professors in traditional universities, and experts in professional fields and industries. The course coordinators facilitate contact between the students and the CCRTVU. They deliver institutional information to the students and inform the institutions of what the students need. The tutors assist in helping the students to understand the learning materials and help them to manage their own progress. In addition, learning guidebooks introduce the students to the principles and methodologies of ODL.

In the CCRTVU, three principles of resource construction are stressed, relative to teaching objectives, the students' foundation knowledge and the future application of it. From 1999 to 2006, the CCRTVU developed 60 pilot specialties including 18 for bachelor degrees and 42 for diploma. Reforms were made in the construction of mathematics and English courses, and practical experiments were conducted in relation to accounting and engineering courses. Simulated courts were created for law education, and theory and practice were combined in the management speciality. Care is taken to ensure that the courses are compatible with social and market demand. Currently, the fields of study include law, literature, accounting and finance, science and engineering, agriculture, medicine, education and languages. Recent surveys have indicated the need for increased offerings in accounting, business management, computing and law.

Learning Support System

Learning support is regarded as the basis of quality assurance in ODL. The CCRTVU has created regulations and policy for every procedure from the delivery of course materials to the deadlines for response to students' enquiries. Infrastructure and facilities have been increased for the learners, and the staff has been

encouraged to work harder in the call centres, enquiry offices and libraries. Regular training projects have been introduced and strategies developed to support different types of student: for example, programmes for training citizens, military personnel, the disabled, ethnic minority groups, local peasants, etc. One research findings has indicated that the overall student satisfaction rate regarding the CCRTVU has reached 85 per cent, which indicates that the CCRTVU is meeting the general public's demands.

Student Assessment

So that both the teachers and students can assess the students' progress, formative and summative assessment methods are used. Formative assessment is an important means to enhance the guidance and management of the learning process. Through a systematic assessment of the students' achievements and by providing feedback students' capability for independent comprehension and learning can be increased. Formative and summative assessments are also effective ways of examining the quality of course content and teaching so that reforms can be made of these in future. To record the student's learning achievements, various testimonial procedures have been developed: for example, the graduation diploma, the qualification certificate and credentials for completing individual courses.

THE OPERATIONAL SYSTEM

The CCRTVU is making good efforts in sharing quality educational resources and upgrading the overall level of ODL. They are using an integrated operation system for the general public's benefit, by establishing closer ties between the RTVUs. The CCRTVU system has adopted quality assurance as its major priority. To maintain high quality, the system focuses on providing enriched learning resources and effective learning support. Open and DE programmes in the CCRTVU system are transmitted through satellite-TV and computer networks.

The CCRTVU is responsible for drawing up guidelines, coordinating academic relations within the CCRTVU, creating

a unified curriculum and teaching plans, organising the design and development of teaching materials, generating examination papers and specifying the necessary grading standards. The local RTVUs are responsible for implementing the teaching plan and determining the other 30–40 per cent of course topics according to local needs. As the CCRTVU system is run by the government, it has been able to obtain good accountability throughout society. As a practical and affordable learning system, it has attracted large student numbers in recent decades. The aim is to enable the students to be independent, autonomous and successful in their careers.

CONCLUSIONS AND RECOMMENDATIONS

Via the concept of open access for the general public and grassroots communities, the CCRTVU is providing degree and non-degree programmes to meet diverse student demands. They are endeavouring to practise the notion of educational democracy and social fairness by offering quality DE resources and efficient learning support. However, they are also facing challenges. The number of university-age students has decreased in recent years, and new projects are needed to attract more students. To enhance the progress and strength of the CCRTVU, measures are needed with respect to expanding the openness and features of learning. Upholding the core values of ODL is of great significance to maintain competitiveness.

In October 2009, the CRTVU achieved its 30th Anniversary, and was officially renamed the Open University of China (OUC). In celebrating that event, President Professor Ge Daokai has said:

> The OU culture has developed vigorously, unfolding a colorful picture. The cultural construction has been dynamically integrated with the celebrations of the founding of the University, the student work and publicity work. Progress in one respect brought along progress in another, displaying the cultural spirit and mental outlook of the teachers and students in OUs around the country, and motivating students' enthusiasm for self-directed learning and promoting the social recognition of open education. (Ge Daokai and Ruan Zhiyong, 2010)

Korea National Open University

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Chang Yeul Yang

INTRODUCTION

This chapter contains one of a series of case studies of open and distance learning (ODL) institutions in Asia. The range of ways in which ODL is provided by these institutions provides useful models for other organisations to consider.

ORGANISATIONAL BACKGROUND

Rationale of the Institution

Korea National Open University (KNOU), Seoul is accredited by the Ministry of Education and Human Resource Development in South Korea. KNOU was established in 1972 by *Presidential Decree 17146,* with five departments annexed to Seoul National University (SNU). It was Korea's first national university for open and distance learning (ODL). Other national and local government laws that affect KNOU and its students are: the Law of Higher Education, which manages the University of the Air as a provider of higher education by ODL; and the Foundation Law of Korea National Open University.

Mandates and Roles within the Korea National Educational System

The founding vision of KNOU was as the "Open University in Lifelong Society". Today, KNOU's role as an open lifelong educational institution is greater than ever, representing a renewable source of the information and knowledge demanded by the

information society. KNOU advocates open learning principles leading to the lifelong learning society of the 21st century under three mandates: *Distance education* specialising in learning methods; *Lifelong Education* that is open to all people, open in time and place, and open to social change; and *Public Education* that promotes lifelong learning opportunities.

Since 1972, KNOU has produced approximately 400,000 graduates, and has a current enrolment of nearly 180,000 students. Students enrolled at KNOU come from all walks of life, from homemakers to lawmakers, teenagers to senior citizens, from Seoul citizens to Jeju islanders. Over 80 per cent of KNOU students also have jobs. Their ages, occupations and regional origins are truly diverse. Once a student joins KNOU, he or she not only obtains knowledge but also interacts with peers from a wide range of backgrounds. Twenty per cent of graduates continue their studies at graduate schools and over. Because they can study at any time and any place of their own choosing, students can pursue a higher academic career while progressing in their social career. KNOU offers "substitute exams" equivalent to classroom coursework for those who cannot attend classroom lectures. About 1,000 study groups, spanning all regions of the country, encourage students to study together.

Organisational Structure

KNOU's organisational structure is based on a presidential system (one president) and four administrative offices: Academic Affairs, Students Affairs, General Affairs and Planning Affairs. The academic structure includes four Colleges for undergraduate courses: Liberal Arts, Social Science, Natural Science and Education. It also includes a Graduate School with Departments of Public Administration, Business Administration, Home Economics, Computer Science, Nursing, Early Childhood Education, and Lifelong Education. KNOU also has auxiliary institutions, including the Institute of Distance Education, the Digital Media Centre, the Centre for Lifelong Education, the University Library, the Information and Computer Centre, the Centre for In-service Education, KNOU Press, the KNOU weekly newspaper, the Office of Bachelor's Degree Examination Programme for Self-Education, the KNOU Industry-Academic Cooperation Foundation and the Open University Network (OUN) television station.

In order to provide the students with a convenient educational environment, KNOU also has a network of 14 regional campuses and 35 study centres across Korea. All areas of academic affairs, from admissions to graduation, are carried out in the same manner at all regional campuses. A distinctive educational environment featuring videoconferencing lectures, libraries and tutorial systems enhances the efficiency of study. In addition to formal classes, the regional campuses provide a convenient setting for student-based study groups. With educational and cultural centres for local residents, and venues for special lectures and reading clubs, the campuses also contribute to enriching the life of the local communities.

ACADEMIC PROGRAMMES

KNOU offers four-year Bachelor's degree and Master's degree programmes (Table 19.1).

Table 19.1 Overview of KNOU academic programmes

Programme	*College*	*Departments*	
Bachelor's Programme	Liberal Arts	Korean Language and Literature	French Language and Literature
		Chinese Language and Literature	Japanese Language and Literature
		English Language and Literature	
	Social Sciences	Economics	Media Arts & Sciences
		International Trade	Public Administration
		Law	Tourism
		Management	
	Natural Sciences	Agricultural Sciences	Home Economics
		Computer Science	Information Statistics
		Environmental Health	Nursing
	Educational Science	Culture and Liberal Arts	Education
		Early Childhood Education	
Master's Programme		Business Administration	Lifelong Education
		Early Childhood Education	Nursing
		E-learning	Practical English
		Information Science	Public Administration
		Home Economics	

Source: KNOU (2010).

Bachelor's Programmes

1. *College of Liberal Arts*. Studies in the liberal arts are a starting point for communication and the first step by which people understand each other. Up-to-date education in literature, languages and culture can develop a person into a global leader with international insight. The College of Liberal Arts includes departments devoted to study of the languages and literature of the Korean, Chinese, English, French and Japanese cultures.
2. *College of Social Sciences*. The 21st century is an era of boundless competition, and demands creative thinking and professional expertise. To educate talented individuals to meet the needs of the times and pioneer new knowledge, KNOU has departments of economics, international trade, law, management, media arts and sciences, public administration and tourism.
3. *College of Natural Sciences*. KNOU is on the cutting edge in the natural sciences, with departments of agricultural sciences, computer science, environmental health, home economics, information statistics and nursing.
4. *College of Educational Sciences*. Education is a long-term policy in Korea, and fostering the next generation provides the foundation for national and social development. KNOU develops future leaders in a world-class educational environment, with ideal values and motivation. It has departments of culture and liberal arts, early childhood education, and education.

Master's Programmes

Society has a great need for professionals with leadership and expertise. The Lifelong Graduate School of KNOU produces individuals who will spearhead social change based on time-honoured academic theories and practical competence. The Graduate School has been producing master's degree graduates since 2001. Providing a 100 per cent online education, it offers a high-quality professional education to those who cannot obtain a graduate school education owing to constraints of time and place. The graduate studies departments include business

administration, early childhood education, e-learning, information science, home economics, lifelong education, nursing, practical English and public administration.

STUDENT PROFILE

The total number of enrolling students of KNOU in April 2009 was 183,503, including 123,248 female students (67.2 per cent), and 60,255 males (32.8 per cent). The age profile of KNOU students is shown in Table 19.2.

Table 19.2 KNOU students' profile by age (April 2009)

Age range	*Number of students*
<30 years old	61,532 (33.5 per cent)
31–40 years old	72,609 (39.6 per cent)
41–50 years old	37,771 (20.6 per cent)
>50 years old	11,591 (6.3 per cent)

Source: KNOU (2010).

THE INSTRUCTIONAL SYSTEM

Registration

After receiving the registration documents from KNOU, students pay the registration fee through Internet banking and walk-in banks. As of 2007, the registration fee was approximately USD 320 per semester.

Learning/Course Methods

Lectures at KNOU are presented in conventional classrooms, by videoconferencing, the Internet, radio and TV, and via other educational media as appropriate to the course. Support materials include textbooks written by the faculty members of KNOU and other leading universities in Korea. Students also receive audio cassettes, e-books, CDs, VCDs and MP3s containing videotaped lectures by their professors and other material.

Learning Support System

Several support offices at KNOU offer learning support services to KNOU students.

1. The *Registration office* provides detailed information on all aspects of university life.
2. The *Students Service Centre* offers academic affairs and registration services, search services (admissions matters, employment sites, advisory sites, etc.), and student life services (issuing of certificates and IDs, counselling services, etc.).
3. The *Administration Office* provides the students with specific information (university entrance, registration, examinations and academic records, scholarships, etc.).
4. The *Academic Departments* also provide academic counselling services and information about attending courses, and course content.
5. The *Libraries*. To support education and research, KNOU operates a Central Library and a network of regional libraries at 14 campuses and 35 study centres. The libraries house books, e-books and academic databases.
6. The *Institute of Distance Education* (IDE) is Korea's only research institute specialising in distance education. It has three divisions: distance education research and development, educational technology research, and educational evaluation and counselling (especially psychological counselling services for students).
7. The *Students' Association* also provides counselling services for registration, maintenance of academic records, academic problems and adjustment to school, by telephone or personal interview.
8. The *Tutoring System* uses regional and department tutors to provide students with help in developing self-directed learning plans.

Student Assessment

KNOU evaluates the students' learning via an examinations system. During the regular semester, the students are graded on

the basis of their performance in mid-term and final evaluations. The mid-term evaluation counts for 30 per cent of the total score, via methods including classroom-lecture exam, classroom-lecture substitute exam, mid-term examination, and/or assignment. The final evaluation counts for 70 per cent of the grade based totally on performance in a final examination. In the case of experiment and apprenticeship courses, evaluation is by a report counting for 100 per cent of the grade.

CONCLUSION

Korea is a leader in the information and communication technology field, and its ICT infrastructure is approaching world-class level. More than 30 million people in Korea have subscribed to the Internet since the opening of the country's commercial service in 1994. Korea shows particular ICT capability with respect to its volume of high-speed Internet subscriptions, currently ranking third in the world after the US and Japan. Based on this infrastructure, the Ministry of Education and Human Resources Development has identified "e-Learning Korea" as a major brand to represent the country and the Ministry internationally, and has introduced plans to develop this brand image. As a part of the government's plan to curb excessive private education costs, distance education and e-learning have seen particular advancement and promotion in the country in recent years. For Koreans, distance education and e-learning are now more than a mere educational ICT tool. They are considered a major factor that will create a shift in the educational paradigm, and will be a core driving force by which Korea can gain a competitive edge. Since its foundation in 1972, KNOU has been the first and largest distance university in the country. As a leading cyber-education institution, KNOU offers advanced educational media and learner-oriented educational methods to help individuals acquire a higher degree and professional knowledge. As an institution for lifelong education, required in an age of knowledge and information, KNOU has nurtured the new intellectuals that society needs.

Sukhothai Thammathirat Open University, Thailand

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International Affairs Unit, Sukhothai Thammathirat Open University

INTRODUCTION

This chapter contains one of a series of case studies of open and distance learning (ODL) institutions in Asia. The range of ways in which ODL is provided by these institutions provides useful models for other organisations to consider.

Sukhothai Thammathirat Open University (STOU), Thailand was established by Royal Charter in 1978, to provide the Thai people with increased educational opportunities at university level. His Majesty King Bhumibol Adulyadej, King Rama IX, bestowed the University's name in honor of King Rama VII, one of whose titles before his accession to the throne was Prince Sukhothai Thammaracha. As the eleventh state university, STOU has all the honors and privileges of other universities. It was the first open university in Southeast Asia to use a distance education (DE) system.

ORGANISATION OF STUDIES

As STOU uses DE methods to transfer knowledge and skills to students, curriculum contents are arranged into self-instructional packages, which integrate related material and experience into sets known as *course blocks*. Each block is worth at least six university credits for the bachelor's degree and five for the master's degree. STOU operates on a semester basis, each semester comprising at least 15 weeks. Students must enrol in at least one course block per semester, with a maximum of three course blocks per

semester for bachelor's degree and two for master's degree. They must complete all the required course blocks within a timeframe no more than three times the period of study stated in the curriculum.

Currently, STOU has 12 schools headed by Chairpersons or Deans: Liberal Arts, Educational Studies, Management Science, Law, Health Science, Economics, Human Ecology, Political Science, Agricultural Extension and Cooperatives, Communication Arts, Science and Technology, and Nursing. Unlike other Thai universities, STOU's schools are not divided into departments. STOU was established to utilise existing human resources and to prevent departmentalism as found in most traditional settings. STOU organises its courses into the following levels:

1. STOU's School of Educational Studies offers five *doctoral degree programmes* in the fields of Curriculum and Instruction, Educational Administration, Educational Evaluation, Guidance and Counseling Psychology, and DE.
2. *Master's degree programmes* require a minimum of two years' study. Applicants must hold a bachelor's degree in a relevant subject or hold a bachelor's degree in an unrelated subject and have relevant professional experience.
3. The University offers one-year *graduate diploma programmes* in the fields of Educational Administration and Retailing.
4. Completion of a *bachelor's degree programme* usually requires four years of study. For those already possessing a certificate, diploma or bachelor's degree in another discipline, STOU offers a bachelor's degree programme that can be completed in 2–3 years.
5. The University organises one-year and two-year *certificate level courses* in fields of study including English for Specific Careers, Thai Studies, and Land and Property Law.
6. *Continuing education programmes*. A fundamental aspect of STOU's policy is to provide educational services to the general public in the form of continuing education. In particular, STOU organises the Certificate of Achievement programme, giving individuals, regardless of their educational background or qualifications, the opportunity to study up to three course blocks each semester for personal and professional self-improvement. Those wishing to receive

a Certificate of Achievement take the same examinations as regular students studying for bachelor's degrees.

The qualifications of graduates from all STOU programmes are endorsed by the national Office of the Civil Service Commission and are equal to the qualifications held by graduates of other universities. If graduates enter government service, they are employed as civil servants in the same posts with the same rate of salary as graduates of other universities. Students enrolled at STOU can enrol simultaneously in other institutions because STOU is an open university, and students do not have to attend conventional classes but can study by themselves.

THE STOU DISTANCE LEARNING SYSTEM

STOU employs a system that enables students to study by themselves without having to enter conventional classrooms. This is known as the *Distance Learning System*. It presents students in different regions with the opportunity to study by themselves according to their individual circumstances and interests.

Educational Media

Under STOU's DE system, students receive self-instructional materials by mail and can choose from a variety of support media.

- *Textbooks* contain explanations on the course, course objectives, list of teaching units, study methods and the course content.
- *Workbooks* contain instructions on how to use the workbooks, details of the teaching units, self-evaluation before and after studying, spaces for recording important information, doing exercises and reports, and tests for each unit.
- *Radio programmes.* Each semester STOU produces more than 200 radio programmes of 20-minute length in a variety of formats such as interviews, documentaries, drama and docudrama. The content of each programme is designed to enrich course blocks.

- *TV programmes* are used to supplement its academic courses. For each academic course there are five 20-minute educational TV programmes. These are produced in different formats such as dramas, discussions, interviews and documentaries.
- *Satellite TV Programmes.* STOU has a cooperative agreement with the national Distance Learning Foundation (DLF) in order to develop DE and to support and expand educational opportunities for members of the public who reside in remote areas. STOU has been granted permission to broadcast daily from the DLF's Distance Learning TV station, on topics including science, technology, environment, arts, culture and music.
- *Computer-Assisted Instruction (CAI).* STOU produces CAI as supplementary media for students and the general public. CAI service centres have been set up at STOU headquarters, at 10 STOU regional DE Centres and at the Police Cadet Academy in Nakhon Pathom province. Users are not required to pay any additional expenses or to have any previous computer knowledge.
- *Audio and Video on Demand.* STOU offers students the opportunity to view and listen to its educational radio and TV programmes, and to satellite tutorial broadcasts via the STOU web site (www.stou.ac.th).
- *Online Learning* is a new DE system for STOU, utilising hypermedia technology to present texts, slides, pictures, sounds, graphics, animation and videos in an integrated multimedia format. Interactive activities and exercises for student self-assessment are provided, with contents divided into modules. Students conduct discussions online and post questions for tutors to answer online or in the classroom.
- *Webcasting* is another new channel for students and the general public. It offers live and on-demand educational radio and TV programmes, satellite tutorials, and special conferences and seminars on the web (ctestream02.stou.ac.th).

Study Centres

To ensure that educational services reach students in all parts of the country, STOU has established 82 provincial study centres throughout Thailand. These are usually located at the main

provincial high school, and serve as the site for examinations, tutorials, orientation, and educational and vocational counselling sessions. STOU has also established special study centres in cooperation with government agencies, to provide specialised practical training in fields including nursing and agriculture.

Tutorials

Tutorials are academic services that STOU provides at study centres in every province of the country. The purpose of tutorials is to expand students' knowledge and understanding of course content, which they study on their own. The tutorial instructors answer students' questions in print materials and other media. The instructors may arrange exercises to be undertaken by students during the sessions.

Tutorials are held at weekends and are not compulsory for bachelor's degree students, who can make their own choices about whether they attend classes at the study centres. Normally, a student attends class 2–3 times per semester for a total of 10–15 hours. Tutorial timetables are sent to all students.

The sessions are conducted by qualified instructors from STOU or other universities and agencies. STOU also organises special tutorials for prisoners who are STOU students, and tutorials by appointment for students on request. STOU also provides interactive satellite tutorials via the Distance Learning TV station.

Library and Information Services

STOU's Office of Documentation and Information provides library and information services at the following three levels:

1. *Central Services.* The STOU main library is on the University campus and serves University staff, students and the general public. It collects books, periodicals, reference databases, and archival and audio-visual materials that support teaching and research in the humanities, sciences and social sciences. Reference services, document delivery service, circulation, interlibrary loans and current awareness services are provided. The library has developed a wide range of electronic library services including e-books and e-journals.

2. *Regional Services.* Library and information services are also offered at the regional level through 10 STOU regional DE Centres. In addition, two educational resource centres providing research resources for STOU graduate students have been set up in Songkhla and Prachuab Khiri Khan.
3. *Provincial Services.* The University has established 87 *STOU Corners* in metropolitan and provincial libraries throughout the country. STOU Corners are resource centres offering STOU library and educational media services to students and the local community, including textbooks, workbooks, reference books and audio tapes. These materials can be used at the library and on loan. Further STOU Corners have been established at Bang Kwang Central Prison, Klong Prem Central Prison and the Central Women's Correctional Institution.

Counselling Activities

The University arranges counselling and guidance services and a wide range of activities for students from the time of their enrolment until the completion of their studies.

- *Guidance for Interested Persons in General.* This service provides information to people interested in continuing their education at STOU. Advice is given on the selection of study areas to ensure that they are compatible with the students' professions and interests. Counselling in cooperation with schools and educational institutions is arranged upon request.
- *Orientation for Newly Enrolled Students.* This activity provides the students with news and information of benefit to them in their preparations for studying at STOU. Orientation is provided though orientation booklets, and radio and TV broadcasts. In addition, STOU academic staff members visit students in local study centres in Bangkok and nearby provinces.
- *Educational and Professional Counselling Services* advise students on how to adjust to the DE environment and independent study. Individual and group counselling on

specific learning problems, and information on professional development are provided to help the students meet their goals.
- *Graduate Counseling Services*. STOU graduates may receive guidance on how to continue their education and professional development beyond the bachelor's level.

Student Activities

- *Student Clubs*. To supplement its curricular activities, STOU promotes and endorses student clubs. These provide opportunities for students to meet each other, share views and experiences, and participate in University activities including academic, sports and camping. The clubs, formed by the students themselves, are in all provinces throughout the country.
- *Practical Experience Programmes.* Before graduating, students are required to participate in pre-graduation programmes organised by STOU.
- *Professional Experience Activities.* These are practical activities arranged by each school with the following objectives—to:
  - enable students to realise the importance of their professions;
  - enable student to apply the principles and theories acquired in their studies to actual practice;
  - provide students with experiences they cannot effectively receive through the DE system;
  - promote the qualities essential to a successful career; and
  - provide opportunities for students to exchange professional experiences.
- *Graduate Enrichment Programmes.* Students are required to undergo intensive training in this programme if they do not participate in professional experience activities—to:
  - promote experience in the areas of morality and professional ethics;
  - establish good relationships with the University, academic staff and each other; and
  - enable students to appreciate the importance of teamwork and sacrifice for the benefit of others.

- *Practice or Training.* Some course blocks are designed so that the student can undergo obligatory practical training or observe work procedures in academic, professional and vocational institutions.

Examinations and Evaluation of Studies

- *Examination Centres.* For the student's economy and convenience, STOU has at least one examination centre in all provinces. These are usually at the regional universities and provincial schools which serve as STOU local study centres. Provincial students can take examinations in the provinces where they live or are residing temporarily. Inmates of corrective institutions, who by virtue of their good behaviour have been granted permission by the Corrections Department to register as students, may take their examinations in their institutions. The University also provides STOU students residing abroad with the opportunity to sit examinations at their local Royal Thai Embassy or Consulate.
- *Examination Schedule.* The University does not wish to see students give up their work or leave their official duties to take examinations; so these are held at weekends and organised such that they can be completed in two days.
- *Examination Supervisors.* In organising examinations supervision, STOU makes maximum use of existing community resources. Local study centre personnel who are not STOU students act as supervisors at examination centres, in addition to University officials and academic staff.
- *Examination System.* The University organises its teaching under a two-semester system. Examinations are held twice each semester—the final exam and a make-up exam for students who failed or missed the final exam. STOU also organises a special semester in which students have the option to register for one course.
- *Notification of Examination Results.* Within 30–45 days of each examination, the Office of Registration, Records and Evaluation mails students their examination results.

CONCLUSION

Sukhothai Thammathirat Open University has a great diversity of students in terms of age, gender, occupation and place of residence, in keeping with the University's objective of expanding educational opportunity, irrespective of background or personal circumstances. Most students fall in the 21–25 year age range, reflecting the University's success in providing opportunity to those already in the workforce. In the past 28 years, STOU has produced a total of 368,077 graduates. In response to the nation's social needs, STOU plans to offer more science and technology study programmes, particularly in fields of ICT and Thai Studies. STOU is committed to continue enhancing its DE system in order to maintain high-quality services to Thai society.

Universitas Terbuka (Indonesia Open University) 21

Ludivica Endang Setijorini and *Irma Adnan*

INTRODUCTION

This chapter contains one of a series of open and distance learning (ODL) institutions in Asia. The range of ways in which ODL is provided by these institutions provides useful models for other organisations to consider.

Indonesia is an archipelago with over 15,000 islands. It is of one the largest countries in Asia with a population of approximately 215 million in 33 provinces, 268 regencies, 73 municipalities, 2,004 sub-districts and 69,065 villages. With such a large population and challenging geographical situation, finding the most appropriate system to promote equity of access to quality higher education for all citizens was not easy. The Indonesian government would probably not have had the capacity to establish as many conventional face-to-face (f2f) universities as would be needed to cater to the population in all of its inhabited islands. DE was considered to be the most promising system to enhance the equity and accessibility of high-quality higher education in Indonesia.

Indonesia started using a DE system in 1955 with the establishment of a correspondence diploma programme for upgrading teachers. It was not until 1981, however, when two DE projects were started to provide in-service training to secondary and tertiary level teachers, that the DE system was widely used. The teachers' upgrading skills could only be met with DE, since regular training was too expensive and replacing teachers while they attended further training was difficult. These programmes became part of the Universitas Terbuka (UT—Indonesia Open University) when it was established in 1984.

UT is a state university and the only university in Indonesia using the DE mode of teaching. It was designed to be a flexible and inexpensive university focusing on serving people who

lack the opportunity to attend f2f higher education institutions owing to lack of funding, living in isolated and rural areas, and full-time work. The establishment of UT was both an educational and political event, as shown by the national televising of the opening ceremony with the President of the Republic of Indonesia. The original missions in establishing UT were:

- to widen access of Indonesians to quality higher education;
- to provide second-chance education for Indonesian adults who were unable to pursue their education previously; and
- to improve in-service teachers' qualifications.

In the University's Strategic Plan for 2005–20, those missions have been elaborated:

- to expand opportunities for quality higher education throughout the DE system;
- to produce competent academics and professionals who are able to compete globally;
- to increase participation in continuing education so as to create a "knowledge-based society";
- to increase the quality and quantity of research and development in the DE system, especially in distance-based higher education;
- to disseminate and share information about DE, especially in distance-based higher education;
- to strengthen national unity and integrity through the broad and equal provision of higher education;
- to increase cross-cultural understanding and networking through local, national and global partnerships; and
- to produce academic products in distance-based higher education and other fields of knowledge.

ORGANISATIONAL STRUCTURE AND INFRASTRUCTURE

Before UT was established, a national working committee was given about six months to prepare everything before recruiting students. In that short time, the committee created an organisational structure that basically followed the usual f2f university

system. It soon became obvious, however, that the system used in f2f education would be inadequate for the operational duties of a DE system. So UT added a series of institutes, centres, units and regional offices for this purpose. This structure has been used ever since, though was only formally recognised by the government in 2004.

The Head Office (HO) consists of several units or centres that respond to the distinctive needs of DE institutions. These include the Institute of Learning and Examination Materials Development, and the Information System, *Lembaga Pengembangan Bahan Ajar, Bahan Ujian dan Sistem Informasi* (LPBAUSI). These centres under LPBAUSI are at the heart of UT's operational system, and are responsible for producing and distributing all the above materials as well as for maintaining UT's information system via the Computing Centre.

As one of UT's missions is to widen access to higher education, it has to operate on a nationwide basis, and has established 37 Regional Offices (ROs) located throughout the country. While the HO formulates institutional policies for the development and production of course materials, test/examination items and examinations data processing, the ROs are responsible for activities including daily operations. Those activities include student registration, f2f tutorials, administrative counselling and examinations. Thus, the ROs are important parts of UT's internal network infrastructure.

The HO and all the ROs are connected electronically through the University's wide area network (WAN). This still uses a public Internet connection, though will soon be connected with all state universities using the national higher education network—the Ministry of National Education's Intranet system called INHERENT. The student records system is centrally managed and maintained at the HO's Computer Centre, and data are updated regularly by the relevant units and ROs.

Collaboration with external institutions is an important part of UT's organisation. Long-term collaboration has been established with institutions including the National Postal Service (PT Pos Indonesia) and many courier agencies for distributing registration forms and course materials; also with Bank Rakyat Indonesia (BRI) and Bank Tabungan Negara (BTN) for accepting student tuition fees; and with provincial and district governments for providing school buildings for f2f tutorials and examinations.

Most importantly, UT is strongly supported by state and private universities, which allow the University to hire their professors and lecturers as content specialists in the development of course materials and examinations items, also tutors and supervisors/instructors for tutorial and practical work and as proctors in examinations. With such a large area of coverage, it is impossible for UT to carry out its missions without such collaboration with institutions that already have the necessary support infrastructure.

STUDENT BODY AND PROFILES

Access and equity is also enhanced by various study programmes, designed to meet the needs of different types of students. UT offers nearly 1,000 courses through 29 study programmes under four faculties: Economics (FE), Social and Political Sciences (FISIP), Mathematics and Natural Science (FMIPA), Teacher Training and Educational Sciences (FKIP), and three Graduate Programmes. The FKIP offers in-service training programmes for practising primary and secondary school teachers, while the other three faculties are open for high school graduates as well as for working adults. As a result of changes in government policy about teachers' minimum qualifications, FKIP has become the biggest faculty in the University. Table 21.1 shows that 83 per cent of the 646,467 students who registered in the first semester of 2010 are teachers who are taking courses at FKIP. Of that subgroup, 86 per cent are primary school teachers who are upgrading their qualifications to bachelor's and 2-year diploma levels.

As the table shows, UT has more substantially more female than male students. This ratio changes from semester to semester.

Table 21.1 Universitas Terbuka student body (Semester 2010.1)

Faculty/Programme	*No. of students*	*%*	*No. of students*		*%*
Maths and Natural Sciences	6,145	1	Male	236,878	37
Social Sciences	71,332	11	Female	409,589	63
Economics	28,411	4	<25 years	95,148	15
Education	539,211	83	25–29	142,048	22
Graduate programmes	1,368	0	30–35	103,674	16
			36–40	75,758	12
TOTAL	646,467	100	>40 years	229,839	35

Source: Universitas Terbuka internal data, 2010.

Time-series data indicates that UT has equalised the higher education opportunities of both genders. Eighty-five per cent of students are adults (that is, 25 years old and above) and in full-time employment.

INSTRUCTIONAL SYSTEM

The main consideration in both designing instructional system and selecting media for delivering learning materials has always been emphasised on the issue of accessibility, which is also related to the issue of affordability. UT was intended to be a flexible and inexpensive university so that it would be accessible and affordable to all Indonesians. It is based on this consideration that printed materials form has been selected as the main learning medium. The instructional system was then developed around this concept.

Registration

The enrolment and registration system are designed to be flexible and open. There is no entrance test except for graduate programmes, and anyone who holds a high school diploma/certificate is eligible to enrol regardless of age and high-school completion year. Once students register in a study programme for the first time (enrol), their data is stored and maintained in a central computerised student records system. After enrolling and receiving an ID number, students are formally admitted and registered for courses. Students' registration status remains active as long as they register for at least one course in four consecutive semesters. Enrolments and registrations can be made at any time of the year.

Learning/Course Materials

Students are not obliged to purchase learning materials if they can borrow or buy used materials from other students. For students in the graduate programmes and for teachers with scholarships, learning materials are included in their fees/scholarship package. All (100 per cent) of syllabus content is delivered through printed

learning modules. Non-print materials are developed in support of the print materials, in the form of audio, radio broadcasts, video, TV broadcasts, computer-based and web-based materials. In addition, 25 per cent of course materials are multimedia packages consisting of the print materials and one type of non-print material. Each set of course materials is developed by a content development team (CDT) and a production team (PT) coordinated by a course manager from the study programme or Faculty. The CDT consists of at least one content specialist (authors and reviewers hired from the other universities), an instructional designer (usually acts as course manager) and a media specialist (UT full-time staff). The PT contains a lay-out specialist, illustrator and copy editor.

Learning Support System

Although students are expected to study independently, UT provides various types of learning support using different media. These include tutorial services in f2f, online and radio modes. In Semester 2006.2, UT provided f2f tutorials for 292 courses, online tutorials for 354 courses and radio tutorials for 539 courses. These represented 29 per cent, 36 per cent and 54 per cent of all 989 offered courses. As with UT's policy on learning materials purchase, tutorials are only compulsory for graduate students and undergraduate students with scholarships. Self-funded undergraduate students are encouraged to participate in the free online tutorials, to listen to free radio tutorials or to attend the f2f tutorials with an extra charge.

UT currently has more than 7,000 trained and accredited tutors. F2f tutorials are organised locally by the Regional Offices, and taught by local university specialists. Online tutorials are managed by the HO and taught by full-time UT academic staff using a learning management system based on *Moodle*. Radio tutorials are broadcast by the government-owned National Radio Station Network. UT also provides academic counselling and f2f in Regional Offices and online. All online support services can be accessed by students through the *UT-Online* portal, which contains online tutorials and exercises, web-based learning materials, streamed TV programmes, a digital library with journals and transcripts, academic counselling, e-book store, and online registration and examination facilities. Owing to students' limited

Internet access, however, only about 5 per cent of them are so far taking advantage of these online services.

Student Assessment

Student assessments are conducted through tutorial assignments and a final examination at the end of each semester. The final examinations are scheduled twice a year at weekends, always simultaneously throughout the country. Since 2006, UT has also provided online examination services by request and appointment, for students who cannot take written examinations at the scheduled times. Each semester, UT conducts simultaneous examinations for about 900 courses in 745 examination locations (8,217 examination rooms) in 572 cities. To support such a large-scale process, UT has developed an item-banking system with a large collection of examination items so that unique examination manuscripts can be generated for all courses. The value of the examination items is analysed based on examination results and can be continually revised. Students' final scores are calculated based on assignment and examination scores and delivered by mail, regional offices, UT web sites and short message services (SMS).

CONCLUSION

UT's DE system is an example of how a large and populous country such as Indonesia can adopt and contextualise DE principles in practice. Its instructional system has been designed in accordance with the students' situations in order to optimise the system's flexibility, accessibility and affordability for all Indonesians. The new variety of ICT-enhanced DE that has developed since the mid-1990s has significantly influenced UT's development. As at all DE institutions, UT has been trying to use increasingly efficient technologies so as to enhance its learning system's interactivity. Nonetheless, ongoing surveys show that students still regard print as the most accessible, affordable and preferred medium, and the instructional system still relies predominantly upon it.

Virtual University of Pakistan

22

Naveed Malik

INTRODUCTION

This chapter contains one of a series of open and distance learning (ODL) institutions in Asia. The range of ways in which ODL is provided by these institutions provides useful models for other organisations to consider.

Pakistan is a populous country of nearly 160 million people, with almost half of this number below the age of 30. A 1998–99 study indicated that only 3.5 per cent of the college-age cohort (18–25 years) was actually enrolled in tertiary education institutions. The majority (96 per cent of this age group) were not enrolled and therefore not receiving higher education. The established universities were full to the brim and expressed their inability to cope with higher student numbers. Compounding the problem, the existing universities had an acute shortage of properly qualified faculty, leading to severe quality issues in the tiny segment of the population that actually had access to higher education. Whereas the problem of capacity shortage could have been overcome by providing adequate financial resources, the issue of faculty shortage was not amenable to usual solutions and radical measures were required.

In 2000, a feasibility study organised and funded by the United Nations Development Programme (UNDP) assessed the possibility of using information and communication technology (ICT) to tackle this problem, with particular reference to the development of human resources for ICT, demand for which was at that time at a worldwide peak. Public discussion and debate on the Internet was organised by the Minister for Science and Technology to develop a coherent policy for ICT in Pakistan. The feasibility study, public discussion and other factors indicated

that a new university should be established that would use ICTs as force multipliers to overcome the capacity and faculty shortage problems. The establishment of a "virtual" university became a part of the action plan drawn up by the government to fulfil its ICT policy. The plan was approved in 2001, and initial funding for the Virtual University of Pakistan (VUP) was released later in the year.

The new VUP opened its virtual doors to the public in a very short time. The first batch of students was inducted in March 2002 into a four-year BS programme in Computer Science/Information Technology. The University received a formal Charter in September 2002, which empowered it to establish different faculties and schools. The Charter was federal, allowing VUP to offer its programmes throughout Pakistan rather than being limited to any one province. The University was expected to provide world-class education at extremely affordable rates to aspiring students nationwide. VUP would supplement the capacity of the existing universities, and its main focus would be on formal education. While it would use ICTs to deliver education at a distance, it was not designed as an "open" university, because the Allama Iqbal Open University (AIOU) already served that market.

ORGANISATIONAL STRUCTURE AND INFRASTRUCTURE

The VUP is a public-sector not-for-profit autonomous university established by the Government of Pakistan. Its funding is provided by the Higher Education Commission (HEC), and its administrative division is the Ministry of Information Technology (MoIT). The Charter of the VUP defines its organisation structure. The President of Pakistan is the Chancellor, and a Board of Governors chaired by the Secretary of the MoIT is the apex body charged with running the University. The University's chief executive and chief academic officer is the Rector. Other principal officers include the Registrar, the Controller of Examinations and the Director of Finance, with the same roles as those in conventional universities. Special divisions that distinguish and define VUP from other institutions include a Networking division, an Information Technology division, and a major TV production and broadcasting division. These areas are headed by a Director of

Technical Services. Statutory bodies of VUP include the Academic Council, the Finance and Planning Committee, the Selection Board and the Executive Council. These bodies, chaired by the Rector, make recommendations to the Board of Governors.

VUP is based entirely on the imaginative and effective use of ICTs, and its technical divisions are therefore designed and equipped with a fault-tolerant and redundant infrastructure. The servers deployed for VUP's web site (www.vu.edu.pk), email system (mail.vu.edu.pk) and learning management system (vulms.vu.edu.pk) are all high-end state-of-the-art machines with redundant power supplies and RAID hard disks. The servers are located on a 155 Mbps fibre trunk that traverses only a few yards to get to Pakistan's main router located on the national backbone. As such, the servers offer a high-availability environment. The TV production and broadcast facilities are state-of-the-art and completely digital from end to end. VUP operates its own four free-to-air satellite channels, and more are being added according to the requirements of the various educational programmes. The channels utilise Pakistan's first communications satellite, PAKSAT-I. Although communication problems occasionally arise in the underlying infrastructure, the strategic placement of the servers on the national backbone and the use of the national satellite ensure that any breakdown in international links does not affect VUP's operations.

THE INSTRUCTIONAL SYSTEM

VUP's instructional system and course development process have been designed with the problems that led to the University's creation, especially the shortage of qualified faculty in the existing universities, held carefully in mind. From the outset, it was recognised that whereas access to the Internet was spreading rapidly across the country, it would take a considerable amount of time for broadband to become available nationwide. Content would therefore have to be delivered by means other than the Internet. An informal, psychological pilot study indicated that, regardless of the audience's intellectual sophistication and maturity, the majority still preferred video content. It was therefore decided to deliver content in the form of video lectures

using broadcast television, and that all mentoring, tutoring and interaction between the students and teachers would take place on the Internet.

In designing the instructional system, several other factors were considered. It was decided that the educational experience offered by VUP to students in the smaller towns and remote areas should be no different from that of their peers in the major cities. Furthermore, it was decided that system should be completely scalable and able to handle large student cohorts. Finally, it was felt that students from remote areas lacked exposure to the world-class talent that existed, albeit in short supply, in the traditional universities across the country and that this situation should be addressed. The VUP has therefore evolved its own content development and delivery methodology. Renowned professors and domain experts are invited to develop the video lectures for the courses, and the associated handouts and lecture notes. Since these professors usually belong to other institutions, the VUP requests their services for a defined period of time that does not disturb their parent institutions. These world-class resource persons handcraft the lectures and deliver them personally in the VUP's studios. The lectures are then embellished with slides and animations by the graphics department, and a broadcast-quality lecture is produced. The lectures are broadcast on the University's free-to-air public channels, and along with the VUP students, their counterparts from other universities can and do benefit from them. The accompanying lecture notes and handouts are disseminated through the VUP learning management system and are also distributed in print form.

VUP students follow the lectures in one of three ways: according to a defined timetable on campus; at defined broadcast times from home; and at convenient times via CD versions of the lectures. This flexibility is maintained for a 24-hour period only, so that assignments, quizzes and discussions based on the lecture contents can be initiated by the teachers on the following day. Assignments are an integral part of the course work, and are handed out and submitted through the learning management system. Tutors grade the assignments and the graded work is made available to the students for review. Examinations are conducted in a conventional, proctored environment. Exam centres are established for that purpose across the country with invigilators

appointed and examinations conducted in a strictly controlled environment. The course statistics presented in Table 22.1 are single-line numbers representing pure DE, and may be compared with the corresponding figures for other universities.

The enrolment history (Figure 22.1) clearly shows the slightly wary reception accorded to the university in the first few years, rapidly ramping up with the introduction of new programmes and acceptance by academia and the industry of the Virtual University's degrees.

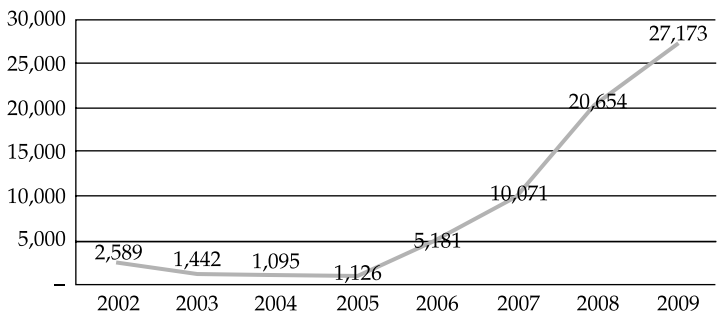
The use of celebrated professors and domain experts for content development, and the dissemination of their lectures on free-to-air TV channels, has gone far towards overcoming the public

Table 22.1 VUP programmes, majors, courses and students (2007)

Programmes	*Majors offered*	*Courses offered*	*Students enrolled*
4-year BS programmes	9	151	6,707
2-year BA programmes	6	105	7,789
2-year Masters programmes	3	66	39,420
2-year MS/MPhil programmes	1	12	148
1-year Diploma in CS/IT	1	11	304
1-Semester Certificate	–	60	749

Source: Virtual University of Pakistan internal data, 2010.

Figure 22.1 New student enrolments at VUP (2002–07)



New student enrolments (2002–07)							
2002	2003	2004	2005	2006	2007	2008	2009
2,589	1,442	1,095	1,126	5,181	10,071	20,654	27,173

Source: Virtual University of Pakistan internal data, 2010.

acceptability problems experienced by other DE institutions. In fact, the recent first batch of VUP graduates has been accepted by top-tier institutions within the country and in graduate schools abroad. This is a huge plus for the University. VUP graduates are being hired at top market salaries by extremely competitive and demanding technology companies. This acceptance by the industry has validated the quality of VUP's programmes and teaching methods. Management problems relate to plagiarism in assignments and cheating during examinations. These also exist at other universities, of course, though at VUP the problem is compounded by the nationwide distribution of the University's activities. The evaluation system contains an elaborate set of checks and balances to detect any attempt to use unfair means. This effort is likely to remain a work in progress, given the ingenious methods some students use to break the system.

CONCLUSIONS

The VUP is one of the youngest universities in Pakistan, the proverbial "baby" of the higher education family. In a very short span of time, it has been able to establish its credentials as an institution providing high-quality higher education. The judicious combination of broadcast television with high production-value lectures, mentoring and support over the Internet, and student assessment conducted in conventional academic environments, has allowed the University to overcome many of the negative perceptions associated with DE programmes. Perhaps inevitably, a certain segment of traditional academics still does not accept DE as an acceptable means for delivering educational quality, but slowly they are being won over by the visibility and quality of the VUP's programmes and the eminence of the specialists associated with them. The University has so far avoided having to offer programmes that require the use of a physical setting (for example, laboratory), but the time is fast approaching when the market will require such programmes. Collaborative efforts are already under way so that programmes can be offered in conjunction with conventional institutions that can provide the necessary physical plant facilities.

Wawasan Open University, Malaysia

23

Gajaraj Dhanarajan

INTRODUCTION

This chapter contains one of a series of open and distance learning (ODL) institutions in Asia. The range of ways in which ODL is provided by these institutions provides useful models for other organisations to consider.

Despite the existence of another open university in Malaysia since 2001, the founders of the Wawasan Open University (WOU) felt the need for another such university to further expand access to higher education in this multi-racial country of 27 million people. WOU is an independent council-governed, private, not-for-profit tertiary institution dedicated to adult learners. It is a "people's university" funded by the Wawasan Education Foundation, a charity, and provides tertiary education opportunities through the ODL mode. WOU was established in August 2006 and is currently in its third semester with approximately 1,700 active learners. A further 800 are inactive. The University is planning to grow steadily and expects to reach its full potential as a first-choice provider of higher education for adults by the year 2015.

The WOU student population is a cross-section of Malaysia's multi-ethnic community, with the youngest student being 21 years old and the oldest 71 years old. As many men as women study at WOU. They include homemakers, clerks, technicians, teachers, office workers and manual workers. Many have years of work experience behind them though had left school before graduating. Others have had the benefit of post-secondary education already, and are returning to refresh and renew their knowledge and skills.

The University's planning, development and management have been guided for 2006–15 by a Ten-Year Development Plan

(2006–15), and a Ten-Year Strategic Plan, prepared by its founding planners. Recently, the University also published its first Five-Year Business Plan, a full statement of the University's business strategy which is expected to guide the University in a fiducially responsible way as it creates for itself a niche in the highly competitive Malaysian higher education marketplace. The Five-Year Plan was prepared for the following purposes:

- to establish a framework for senior management to use as they pursue the University's goals and objectives;
- to provide information to the Wawasan Education Foundation as well as the University Council, helping them to make informed decisions regarding the business aspects of the University; and
- to sustain the interest of the Foundation and other potential philanthropies in WOU as a sound capital investment worthy of their financial support.

In short, the Plan serves as a blueprint of steps the University has to take in order to build its ODL business and at the same time list out the resources that are necessary to ensure success as a self supporting not-for-profit establishment. WOU's overall vision is to be a vibrant community that inspires lifelong learning, supports innovation and nurtures all-round personal growth. The students, faculty and staff embrace and are encouraged to conduct themselves through a set of complementary values, based on the belief that every person has the potential to develop to the fullest. From the outset, the University has established, through extensive discussion with founding staff, council, community leaders and donors, five strategic goals.

Goal 1: A *social goal* to provide access to values-based learning for all adult working Malaysians regardless of their prior academic achievements and present knowledge, age, socio-economic situation, gender and residential location.

Goal 2: An *academic goal* to deliver high-quality education at the preparatory, diploma, undergraduate and post-graduate levels.

Goal 3: A *first institutional goal* to build a world-class environment for learning, administration and the pursuit of scholarship.
Goal 4: A *second institutional goal* to establish and strengthen institutional partnerships and community outreach.
Goal 5: A *management goal* to handle the institution's human, financial and physical resources effectively and efficiently.

WOU'S ACADEMIC PROGRAMMES

Undergraduate degree programmes form the core of WOU's academic activities, and provide most of the revenue needed to finance the University. As the University is committed to supporting working adults, the choice of academic disciplines is dictated by workplace needs. Malaysia is essentially a trading nation, dealing in natural and manufactured goods and increasingly in services. The bulk of the Malaysian population is employed in these sectors, and the University therefore focuses on academic programmes in these areas. Depending on the future development of the Malaysian Qualification Agency's (MQA) accreditation protocols, WOU also plans to deliver carefully selected postgraduate programmes, certificate and sub-degree diploma programmes. All of the academic programmes of the University will be designed, developed, delivered and assessed by the following schools:

- Foundation and Liberal Studies,
- Business and Administration,
- Science and Technology, and
- Education, Languages and Communication.

Programme development is guided by the conditions of approval prescribed by the Malaysian Ministry of Higher education, and by the recommendations of the panel of experts that conducted the University's original feasibility study in 2000. During their design phase, all programmes also benefit from the advice of a panel of industry, business and academic

experts constituted for this purpose by the University senate. The programmes currently approved by the University's Council, provisionally accredited by the Malaysian Qualification Agency and approved by the Malaysian Ministry of Higher Education are:

- Bachelor degrees, first offered in 2007:
  1. Business in Accounting
  2. Business in Banking and Finance
  3. Business in Business Information Systems
  4. Business in Logistics and Supply Chain Management
  5. Business in Management
  6. Business in Sales and Marketing
  7. Technology in Electronics
  8. Technology in Information and Communication Technology
  9. Technology in Computer Systems and Network
  10. Technology in Computing and Intelligent Systems
  11. Technology in Electronic Commerce
- Bachelor degrees, to be offered in 2009–11:
  12. Arts in Liberal Studies
  13. Arts in Psychology
  14. Education
  15. Arts in Chinese Studies
  16. Arts in English Studies
  17. Science in Biomedical Technology and Informatics
  18. Nursing (Conversion Programme)
  19. Communications in Advertising
  20. Communications in Multimedia
- Diplomas, to be offered in 2009–11:
  21. Sales and Marketing
  22. Management
  23. Logistics and Supply Chain Management
  24. Hospitality
  25. Accounting
  26. Financial Services
  27. Entrepreneurship and Small Business Management
  28. Business Information Systems
  29. Information Technology

30. Multimedia Technology
31. Telecommunications Engineering
32. Electronic Engineering

- Master's degrees, to be offered in 2008–11:

33. Commonwealth Executive Masters of Business Administration
34. Commonwealth Executive Masters of Public Administration
35. Business Administration in Logistics and Supply Chain Management
36. Business Administration in Financial Services
37. Business Administration in International Business Management
38. Technology in Financial Information Systems
39. Technology in Mobile Computing
40. Technology in Information Security
41. Education

- Doctoral degree, to be offered in 2009:

42. PhD/Master's by Research

The University's courses are designed to serve the needs of multiple programmes, as appropriate. The University expects to design and develop 135 individual self-learning course materials during 2008–11.

One of the challenges WOU will face as students in undergraduate degree programmes progress to higher levels is the financial viability of low student populations at these levels. The University may therefore have to adopt innovative ways to provide learning support; for example:

a) other presentation schedules;
b) restricting tutorials and laboratory classes to a few regional locations only;
c) increasing the use of online tutorials and reducing face-to-face (f2f) sessions; and
d) using videoconferencing.

While the University's core business will be the provision of sub-, under- and post-graduate degree programmes, it is also

conscious of the growing need to provide working adults with shorter continuing and professional development (CPD) programmes. Some of these may be distance-based, while many will be in an f2f environment using teachers from the University and the larger community. All CPD courses and programmes will be modularised to the extent allowed by the Malaysian Qualification Agency, providing multiple entry and exit points for learners.

A further strategic decision is the use of English as the main medium of instruction. English usage in education is a contentious issue in Malaysia for a variety of reasons, and the University has taken this bold decision *(a)* recognising that for practical purposes, Malaysians, especially working adults, must become competent users of the English language given the country's wish to be a global player in trade and diplomacy; and *(b)* in order to access knowledge products available to open learners around the world, for local adoption and adaptation. This strategy will enable the university to make learning materials available to its students quickly and economically.

WOU's course development model is described in detail in Chapter 15.

QUALITY ASSURANCE

For senior management, the challenge is to ensure that quality concerns are not mere platitudes but remain a constant requirement. Organising and operating a DE institution requires that quality assurance (QA) is not limited to academic elements only. The University needs to have QA systems in place in all aspects of its work. In order to achieve this, the WOU senate and management boards have developed and implemented protocols for the maintenance of quality reflecting international good practice. These are subjected to constant internal and external scrutiny. Internal QA is monitored by departmental committees, boards of academic schools, the University senate and management board, and ultimately the University's 15-member Council, composed of representatives of industry, business, government, academia and civil society. Individuals serving the Council are women and men of high standing in their constituencies. The Council operates

through a number of committees, and has the ultimate power of conferring academic awards on the recommendation of the University's senate.

External checks of the system are assured through:

- an external academic peer review group advising on curricular matters and the introduction of new programmes;
- an external course assessor system assessing the relevance, appropriateness, depth and treatment of courses;
- an external examiner system ensuring parity of standards; and
- a periodic external institutional review system monitoring the effectiveness and efficiency of the entire organisation.

Academic quality is reflected in the course materials, learning environment, assessment and student support services, and is monitored most rigorously. WOU is mindful of the importance of designing and modifying the curriculum to be relevant to the adult learner. The self-instructional materials that it produces, and its learner support systems, receive regular internal and external advice and audit, ensuring that five areas of academic integrity and excellence are maintained:

- programme planning;
- course design, development and production;
- course delivery;
- student assessment and award; and
- staff development.

In each of these areas, WOU's QA policies are guided by:

- the University's values and commitment to good practice;
- the Malaysian Quality Agency's criteria and guidelines, especially as they apply to tertiary education; and
- international good practices and benchmarks addressing ODL provisions.

The tenets of QA derived from the experience of, for example, the National Accreditation Board and international benchmarks, ensure that programme planning applies the following criteria:

1. All learning outcomes are set at an appropriate level and are clearly communicated to the students.
2. Content and design of the curriculum and the teaching methodologies are effective in enabling students to achieve their desired outcomes, in terms of the acquisition of knowledge and the development of practical skills and abilities.
3. Assessment of outcomes and achievement is appropriately designed and rigorously administered.
4. Acquired content knowledge and skills should be relevant, transferable, specific to the purpose and blending traditional education with applied technology skills.
5. Completion of studies takes the form of credits and credentials recognised by professional accreditation bodies and employers and by other educational institutions, as being of the same value as those acquired in the f2f mode, and transferable within programmes and institutions locally, nationally and internationally.
6. The return on investment of time, finances and energy meets the expectations generated by the institution in relation to the benefits and utility of the programmes, the subjective achievement of personal goals and customer satisfaction with all elements of the courses and programmes studied.

WOU has also implemented course development, delivery and assessment protocols inputs advised by a wide range of academic and community leaders:

- advisory peer groups for each course;
- external examiner systems ensuring that appropriate exit standards are met by the University's assessment and exam systems;
- participation of a broad range of specialists (for example, instructional technologists, course designers, editors and external content assessors) in the development of learning materials; and
- external programme appraisal of the entire system every five to six years to ensure that WOU's vigour and high standards are maintained.

MILESTONES AND ECONOMIC SUSTAINABILITY

Despite being less than two years old, the WOU has passed some significant milestones, including the:

- construction of a purpose-built campus in Penang and five regional offices around the country to house all of the university's staff and facilities;
- establishment of three faculties and a Centre for Graduate Studies, and all of the administrative structures necessary and required by a dedicated ODL institution;
- successful launch of eleven undergraduate and two postgraduate degree programmes provisionally accredited by the Malaysian Qualification Agency;
- design and development of 37 individual courses and enrolment of 2,500 learners in its first three semesters;
- delivery of an intensive Headstart Programme to prepare needy learners for university studies;
- searching, appointment and training of close to 250 tutors;
- establishment of links through active participation and bilateral ties with ODL institutions in the region and internationally;
- creation of a dynamic, locally developed learning management system based on the *Moodle* platform;
- circulation (5,000 copies per issue) of WOU's quarterly newsletter, *WawasanLink*, for in-house and public reading; and
- strategic marketing and publicity drive activities resulting in greater WOU–ODL brand visibility in the country.

With benefits of scale and measures such as the above, it is possible to build a self-sustaining and perpetuating institution, though the path towards this goal is full of challenges. The biggest challenge facing WOU will be its ability to ensure its future viability. The conception of WOU is born out of idealism and established through philanthropy. Its challenges include a competitive and hostile marketplace, an uncertain government policy environment on non-governmental funded higher education, the Malaysian economic and political situation and the supply of good academic talent. The University's five-year rolling business plan is based

on an understanding of all of these factors, on reaching specific revenue targets and on managing potential risks.

In its first five years, the total cost of establishing WOU's physical and IT infrastructure, and its seven regional centres is expected to amount to approximately USD 20 million. In addition, the University's total direct and indirect costs are expected to reach USD 70 million. During the same period, the University is expected to generate a total revenue of approximately USD 43 million. The Foundation sponsoring the University has undertaken to pay for the difference between expenditure and revenue (that is, approx. USD 27 million). The University is confident that revenue will match expenditure by the end of the first five-year plan period, though its planning projections indicate a deficit of approximately USD 3 million as the university enters its second quinquennium. This deficit is expected to be eliminated when the University returns to a surplus environment by the middle of the second quinquennium.

CONCLUSIONS

As a publicly supported charity, WOU regards transparency in the manner it conducts its business as a moral obligation. It also adheres to the governance traditions of universities in all liberal societies. Since its inauguration in 2006, the University has gained clear evidence that it is reaching out to the segment of society that its founders envisaged. The profile of its learners, the successful provisional accreditation of its programmes, and its brand recognition as a provider of adult learning, all appear to have met with the original expectations and vision of what WOU should become. If its present rate of development, growth and recognition can be sustained, the University will become an interesting model in a region where the responsibility for providing continuous lifelong learning opportunities by open and distance learning methods is commonly expected to rest with the government alone.

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