



United Nations
Educational, Scientific and
Cultural Organization



International Institute
for Educational
Planning

THE VIRTUAL UNIVERSITY

Models &
Messages

Lessons from
case studies

**EDITED BY
SUSAN D'ANTONI**



Education on the Move series
UNESCO Publishing

The Virtual University: Models and Messages | Lessons from Case Studies

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Published by the United Nations Educational,
Scientific and Cultural Organization
7, place de Fontenoy, 75352 Paris 07 SP, France

Typeset by UNESCO Publishing/G rard Prosper
Printed by Jouv s, Mayenne

ISBN-10: 92-3-104026-X
ISBN-13: 978-92-3-104026-9

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Printed in France

THE VIRTUAL UNIVERSITY

MODELS AND MESSAGES | LESSONS FROM CASE STUDIES

Edited by Susan D'Antoni

Education on the Move

UNESCO Editions

Acknowledgements

The study and its publications were undertaken by the International Institute for Educational Planning, with additional support from the Department for International Development of the United Kingdom, as well as the Development Grant Facility of the World Bank. The additional support was an important contribution to the study and the development of an active dissemination strategy, for which IIEP is most grateful.

Both the initial reflection on the topic and the approach taken in the study benefited from comment and advice from many colleagues. The authors of the cases not only took the time to review and consider their experience and the messages to be conveyed to readers, but gave generously of their time throughout the intense editorial process. Beatrix Dekoster and Suzanne Lapstun contributed respectively to the in-depth and copy-editing phases that enhanced the readability of the text.

The development of the first version of this publication that was prepared for the web benefited from the experience and skill of Lucinda Ramos, who assisted during every step along the new path of preparing a web publication, and Fred Kalfon, who provided the dynamic graphic presentation.

This print version of the publication includes updated information for all the case studies. This edition benefited from the considerable expertise and exactitude of Catriona Savage in editing the new sections and finalizing the text.

Table of Contents

	List of tables	9
	List of figures	9
	List of abbreviations	10
	About the authors	12
	Preface	17
1	Introduction <i>Susan D'Antoni</i>	19
2	The new century: societal paradoxes and major trends <i>Gudmund Hernes</i>	35
3	The university: current challenges and opportunities <i>Robin Mason</i>	49
4	A world of borderless higher education: impact and implications <i>Robin Middlehurst</i>	71
	NEWLY CREATED INSTITUTIONS	
5	Universiti Tun Abdul Razak (UNITAR), Malaysia Developments since 2003 <i>Syed Othman Alhabshi and Hasnan Hakim</i>	89 134
6	Campus numérique francophone, Dakar, Senegal Developments since 2003 <i>Olivier Sagna</i>	141 180

	EVOLUTION OF EXISTING INSTITUTIONS	
7	Universidad Virtual de Quilmes, Argentina	187
	Developments since 2003	229
	<i>Juan Carlos Del Bello, with the contribution of Jorge Flores</i>	
8	USQOnline, Australia	235
	Developments since 2003	275
	<i>James C. Taylor</i>	
9	Athabasca University, Canada	281
	Developments since 2003	324
	<i>Dominique Abrioux</i>	
10	Kenyatta University: African Virtual University, Kenya	333
	Developments since 2003	361
	<i>Magdallen N. Juma</i>	
	CONSORTIUM	
11	L'Université virtuelle en Pays de la Loire, France	371
	Developments since 2003	407
	<i>Henri Ott and Pascal Geeraert</i>	
	COMMERCIAL ENTERPRISE	
12	NetVarsity, India	413
	Developments since 2003	439
	<i>Sugata Mitra</i>	
13	Messages and lessons learned	443
	<i>Susan D'Antoni</i>	

LIST OF TABLES

8.1	USQ's international students offshore in 2001	236
8.2	Nature of USQ's student population in 2001	248
8.3	Models of distance education – a conceptual framework	255
8.4	Instructional materials design phase	261
8.5	USQ's international offshore students in 2004	276
8.6	Growth of USQOnline student enrolments	277
8.7	Overview of USQAssist usage statistics (2001–2003)	279
8.8	Comparison of USQAssist usage statistics (Feb 2003–Feb 2004)	279
9.1	Athabasca University staffing table	330
11.1	Examples of representative exchanges	386
12.1	NIIT and NetVarsity students by gender	422
12.2	Software used by NetVarsity	426
12.3	eSEED feedback report	429
12.4	Top ten countries from where NetVarsity students are registered	439

LIST OF FIGURES

8.1	Management structure of USQ online initiatives	245
8.2	USQOnline Distance Education Centre staffing establishment	250
8.3	USQOnline Distance Education Centre multidisciplinary course team approach	259
8.4	USQ student enrolment by mode and type of programme (1998–2004)	275
8.5	Overview of Distance and e-Learning Centre functions	278
10.1	Organization of Kenyatta AVU	340
10.2	AVU delivery model	347
10.3	Proposed AVU products and targets	356
11.1	UVPL functional organization chart	383
11.2	The UVPL system's overall architecture	388
12.1	The hybrid model at NetVarsity	421

LIST OF ABBREVIATIONS

ACEP	AVU Capacity Enhancement Programme
AU	Athabasca University
AUF	Agence universitaire de la Francophonie (Agency of Universities of the French-speaking World)
AVU	African Virtual University
BBA	Bachelor of Business Administration
BETTER	Building for Enterprise and Teaching through Technology Enhanced Responsiveness
CIM	Centre for Innovative Management
CMC	Computer Mediated Communication
CNF	Campus numérique francophone (Francophone Digital Campus)
CNFD	Campus numérique francophone de Dakar (Dakar Francophone Digital Campus)
CRM	Consumer Relations Management
CVU-UVC	Canadian Virtual University-Université Virtuelle Canadienne
DESS	Diplôme d'études supérieures spécialisées (Diploma of Advanced Specialized Studies)
DCITA	Department of Communications, Information, Technology and the Arts
FCFA	Franc CFA (currency of the West African Economic and Monetary Union)
GIP	<i>Groupement d'intérêt public</i> (public interest group)
GOOD	Generic Online Offline Delivery
ICT	Information and Communication Technology
IP	Internet Protocol
ISO	International Standards Organization
ISP	Internet Service Provider
ISPC	Instructional Strategies Planning Committee
IT	Information Technology
IT&T	Information Technology and Telecommunications
IUFM	Institut universitaire de formation des maîtres (University teacher training institute)
MBA	Master of Business Administration
MDE	Master of Distance Education
NIIT	National Institute of Information Technology
NOIE	National Office of the Information Economy
ODeL	Open, Distance and e-Learning
OLT	Online Tutorial

OMMC	Online Marketing Management Committee
PC	Personal computer
REFER	Réseau électronique francophone pour l'éducation et la recherche (Francophone Electronic Network for Higher Education and Research)
SEED	School for Employee Education
SUP	Strategic University Plan
SYFED	Système francophone d'édition et de diffusion
UCAD	University Cheikh Anta Diop
UDEM	Universidad de Monterrey
UMM	United Multimedia
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNITAR	Universiti Tun Abdul Razak
UNQ	Universidad Nacional de Quilmes (Quilmes National University)
UOC	Universitat Oberta de Catalunya (Open University of Catalonia)
USQ	University of Southern Queensland
UVF	Université virtuelle francophone (Francophone Virtual University)
UVPL	Université virtuelle en Pays de la Loire (Pays de la Loire Virtual University)
UVQ	Universidad Virtual de Quilmes (Quilmes Virtual University)
VOISS	Virtual Online Instructional Support System
VSAT	Very Small Aperture Terminal

About the authors

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Editor

Susan D'Antoni joined IIEP in 1995. Previous to this, her posts included Project Director for a study which sought to identify all sources of correspondence education in Canada. Subsequently she took up the position of Coordinator of Distance Education Programmes at Ryerson Polytechnical University in Toronto. Moving to the Federal Government, she worked as Chief of Projections and Analysis in the Education, Culture and Tourism Division of Statistics Canada. Then she assumed the position of Director of the newly created Division of Research, Policy and Planning at the Association of Universities and Colleges of Canada.

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The new century: societal paradoxes and major trends

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He has written and edited many specialized books, reports and articles, is on the editorial board of several international specialist journals, and is member of several professional societies.

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The university: current challenges and opportunities

Professor Mason is a specialist in the research and practice of online teaching and learning. She was one of the early pioneers in developing the medium of computer conferencing for distance education, and completed her Ph.D. – one of the very first on the subject – in 1989. Since then she has published prolifically, in print and on the web.

She has worked with many course teams across the Open University in the design, tutoring and evaluation of online courses. She has worked extensively on the Open University's Master's Programme in Online and Distance Education, as course developer, tutor and as Director of the Programme. In 2000, she conceived the idea of a Virtual Graduation for the first cohort of Master's students and developed the concept with the Open University's Knowledge Media Institute.

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A world of borderless higher education: impact and implication

Robin Middlehurst served at the University of Surrey as a research assistant, following which she joined the Institute of Education, University of London, as a lecturer. After three years at the Institute, which included redesigning a Master's programme on Higher and Professional Education and contributing to a Diploma on Teaching and Learning in Higher Education, Robin joined the Higher Education Quality Council, first as an Assistant Director and then as Director for Quality Enhancement. Robin led the group in the design and implementation of a number of developmental programmes including external examining, modularity, managing for quality and the national 'Graduate Standards Programme'.

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Preface

This second edition of the publication is an important product of a study on the virtual university and e-learning, undertaken to illuminate the policy, planning and management challenges of these new or evolving institutions and new methods of teaching and learning.

The virtual university is an important example of the use of Information and Communication Technology (ICT) to deliver higher education both in developed and developing countries. New initiatives are growing steadily as universities seek to address increasing demand and reach a broader, and in many cases, an international student body.

Because of the different teaching and learning methods, virtual universities must develop policies and planning, management and financing procedures that are appropriate to their organization, resources and modes of operation. And because of their potential international reach, these institutions may operate outside the higher education policy environment at the national level, with significant policy implications related to accreditation, recognition and quality assurance.

For these reasons, it was deemed timely to examine the experience of a number of institutions, with the aim of identifying the policy, planning and management challenges inherent in the virtual university, and to convey lessons learned. The information collected was intended to promote discussion and debate on the policy implications of the virtual university as an international phenomenon.

The first edition of the publication was designed for the web – an innovative approach that allowed the content to be updated and the site to evolve as support gathered for the forum series, which was organized to share the information and promote discussion and debate. Such debate contributes to capacity building and informed decision making, and is fostering international Communities of Interest in an area that is burdened with high expectations and equally high challenges: the use of ICT to provide greater access to affordable high quality higher education.

The publication makes a significant contribution to the policy debates within UNESCO's Global Forum on International Quality Assurance, Accreditation and the Recognition of Qualifications, and follows previous publications in the series *Education on the move*.

Chapter 1

INTRODUCTION

Susan D'Antoni

1. THE VIRTUAL UNIVERSITY AND E-LEARNING: EXPLORING THE PHENOMENON

The university currently faces a number of challenges, most of which concern institutions in developed and developing countries. Both higher participation levels in secondary education and the requirement of the growing knowledge society for a higher level of education in its members result in an increasing demand for higher education. This demand is for both initial and continuing higher education, and it comes from an increasingly diverse student body in terms of background and academic interest. Difficult as they are, in and of themselves, these challenges must be addressed in the context of stable – if not declining – resources. Faced with competing priorities, most governments cannot afford to allocate to the university sector the resources requested. In this chilly fiscal environment, institutions have cast about for ways to diversify their funding base and develop more efficient practices; many have had some success in doing so. Information and Communication Technology (ICT) constitutes one of the tools institutions have employed to help address some of the challenges.

Technology has long been promoted as having potential to increase efficiency in the provision of higher education, but its record in meeting expectations has been mixed. Various media have been tested in education settings such as radio and television, audio- and videotape, audio and video conferencing, and computer-based

learning. Initiatives have often begun as experiments undertaken by an enthusiastic individual, but such experiments have only rarely had a significant and lasting impact on the institution as a whole. However, with the increasing pervasiveness of the Internet, more and more institutions are experimenting with ICT to support teaching, research and administration.

The virtual university is an important example of the potential of ICT in the delivery of higher education in a wide range of countries. Although the term 'virtual university', has been used to denote quite a varied number of activities and institutions, it can be defined as 'a metaphor for the electronic, teaching, learning and research environment created by the convergence of several relatively new technologies including, but not restricted to, the Internet, World Wide Web, computer mediated communication' (Van Dusen, 1979). Such initiatives began to emerge in the 1990s, taking several different forms: from the online arm of a traditional university to a university operating completely in cyberspace, and from well-known and respected public institutions to private profit-making ventures.

This new form of institution appears to be an important development in the efforts made over time to adopt technology and adapt it to the needs of the institution and of governments, staff, students and employers. Governments have a role in ensuring access to higher education for individual, societal and economic needs, and to do so as cost effectively as is feasible. If ICT-supported education can provide access to more students while containing costs and ensuring quality, then governments may be able to increase the offer of higher education to their citizens. ICT offers staff new tools for teaching and managing, but demands that they learn new skills to use it effectively. From the perspective of the student, the virtual university and e-learning offer flexibility and freedom from the constraints of time and place, but the student, too, must learn new skills. Employers look to the university to educate the highly qualified personnel they need to compete in the marketplace, and to offer continuing education opportunities to support the need for a continually upgraded workforce. Initial graduates that have gained a certain level of ICT skills through their education offer an advantage to their employer. And flexible learning opportunities may be more appropriate than traditional ones offer to the needs of the worker who seeks to upgrade his or her skills.

For all its potential and all its challenges, the development of the virtual university warrants exploration. Thus the International Institute for Educational Planning undertook a small study. One way to appraise new developments is by means of case studies: this is the approach that was taken. The study aimed to place a number of institutions under a microscope so that their development and evolution could be examined. The cases selected represent a range of institutional models, and diverse geographic regions. The main objective of the study that resulted in this publication was to illuminate the policy, planning and management challenges associated with these new entities. Because they teach and evaluate students in a different manner from the traditional academic procedures established for on-campus students, and because they tend to seek students regardless of their geographic location and operate outside the national higher education environment, virtual universities must develop policies and planning and management procedures that are appropriate to their organization and modes of operation.

2. A PROACTIVE PUBLICATION STRATEGY: SHARING THE LESSONS AND PROMOTING REFLECTION

Given the importance of the topic and the timeliness of the study, a proactive publication strategy was elaborated. The first edition of the publication was created for the web, with the purpose of disseminating widely the information and intelligence collected. The web publication was also foreseen as a point of reference from which to stimulate reflection and interaction on the implications of the virtual university and e-learning at the national and international level. A series of international Internet forums on key issues was conceived as an effective means of promoting discussion in a broad group, with the eventual possibility of forming an international Community of Interest.

The approach developed relates to the main functions of UNESCO:

- a laboratory of ideas;
- a clearinghouse;
- a standard setter;
- a capacity builder in Member States;
- a catalyst for international cooperation.

Taken together, the print and web publications, along with the forum series, constitute a strategy that addresses four of the five functions: the publications present numerous ideas on the topic in question, while the website acts as a clearinghouse. The forums support both capacity building and international cooperation. As of mid-2005, the Community of Interest formed was comprised of over 700 individuals, representing almost 100 countries.

This second edition of the publication presents a selection of cases from the first web edition, enhanced with brief update sections that describe new developments since the first edition. In fact, there has been much flux and change in the development and evolution of virtual universities and e-learning in recent years. A number of institutions either closed or changed their approach during and after the turbulence associated with the end of the 'dot-com' period of enthusiastic development and expansion of Internet-based activities. The institutions described in this publication survived the turbulence, and some of the reasons for their ongoing operation may be deduced from the cases. It is important to learn from the successes and failures among the virtual university initiatives to date: failures are expensive in terms of resources, but also in terms of their power to tarnish a potentially promising development.

3. THE ORGANIZATION OF THE PUBLICATION: PRESENTING THE CONTEXT AND THE CASES

The case studies are introduced by three initial background chapters, and their main messages are summarized in a final chapter. In Chapters 2, 3 and 4, three authors present different aspects of the context for the case studies and their messages by elaborating:

- the main societal trends that impinge on higher education;
- the challenges and opportunities facing the university;
- the impact of borderless education.

The cases are at the heart of this publication, and were designed to speak for themselves. Each case author was invited to tell the story of the institution, and to convey to the reader the main lessons learned. In order to ensure a degree of comparability across the cases and the models, authors were asked to prepare their chapter using a common format. The information thus collected was intended to contribute to

the discussion of the policy and planning implications of the virtual university as an important international phenomenon in the provision of higher education.

Chapter 2: The new century: societal paradoxes and major trends

At the beginning of the century, the world is caught in powerful crosscurrents and many of the predominant trends manifest themselves in seemingly contradictory ways:

- wealth and poverty: economic growth is rapid but inequalities are widening;
- better health but new threats: the significant progress in achieving higher levels of public health has not been uniform, and new scourges are complicating this challenge;
- technology gain and technology gap: although technology has brought great progress in many areas, the benefits are skewed between groups and between countries;
- control over nature and environmental degradation: while knowledge and control over nature have increased, there have been unintended negative consequences;
- improved gender conditions but persistent problems: women have gained more rights, health and influence, and yet inequity persists;
- democratization and disenfranchisement: although there have been significant gains in rights, and increasing numbers of countries are democratically governed, there are still infringements on basic human rights, and many political regimes are repressive;
- education, but not for all: education may be a human right, but it is still not available to all when millions remain illiterate.

Three major trends can be seen to be influencing the education environment. Increasing world population, growing urbanization, international migration, ageing societies and new and old diseases all constitute challenges to the educational system. Technology, economic exchange, political integration and culture require educational systems to reduce inequalities and marginalization and prevent widening technology and knowledge gaps between countries, among other challenges. Information technology and development are inherently

linked, but development must be defined in terms of knowledge and the humane uses to which it can be put: a society's wealth and welfare are determined by its capacity to train and educate its people to share in generating and applying knowledge in all spheres of life.

Education is central to addressing these paradoxes and inequities. A well-functioning educational system is essential to modern societies, and higher education has a pivotal role to play in the renewal of educational systems and development in general, given the influence of its institutions and programmes on all societal activities.

Chapter 3: The university: current challenges and opportunities

The state of higher education systems worldwide has often been described as being in crisis. A number of change factors impinge on systems:

- globalization, with digitalized knowledge and permeable educational boundaries;
- connectivity through the Internet, which results in a globalization of information and increased access;
- an increasing digital divide, due to differing access capacity;
- the commodification of knowledge, and a more consumer-oriented attitude in the university;
- government funding decreases, leading to a more competitive stance;
- the need for lifelong learning, which demands new approaches.

In this context, universities are faced with some serious challenges:

- improving quality, increasing access and reducing costs;
- modularizing education so that it can be used and reused;
- changing the role of faculty;
- developing e-learning skills;
- changing institutional leadership styles to become more adaptable and flexible.

However, in addressing an increasing and an increasingly varied demand, universities have new opportunities, many of them linked to ICT. First, there is growth in virtual university activities, many of which

allow traditional universities to extend their reach and increase the flexibility of the educational offer. Blended learning, which combines classroom and online study, offers new learning methods, while open source software and courseware facilitate sharing of resources and reduce costly duplication of effort. These changes promote a learner-centred pedagogy.

There is evidence of an emerging global marketplace and a growing spirit of competition in higher education as traditional universities expand their reach through the Internet, and new actors, such as corporate universities and other private providers, enter the field.

Chapter 4: A world of borderless higher education: impact and implications

Borderless education refers to educational provision that crosses the boundaries of time, space and geography. These boundaries include:

- levels and types of education: for example, further and higher education, adult and continuing education;
- private and public: for-profit and not-for-profit education;
- state level and country level: business and public-sector initiatives, transnational consortia;
- time and space: virtual learning environments, online learning.

The extent of borderless education varies from country to country depending on numerous factors, including the penetration of ICT within the country; the preference for different forms of educational delivery; and the regulations imposed by the state. In addition, different categories of providers are emerging in both the publicly funded not-for-profit sector, as well as the commercial sector.

Borderless education has important policy and management implications. First, there are certain features of this type of education, such as its technology dependence and the growing move to collaboration, that imply policy and management challenges. Second, the very fact of crossing borders – whether they be national, functional, temporal or spatial – poses a policy concern related to the need to remove barriers to a seamless global provision. Reducing national barriers is currently under debate in the World Trade Organization negotiations on the General Agreement on Trade in Services.

A distinctive characteristic of the new modes of delivery used in the new educational provision relates to modes, media and locations. Depending on the media used and instructional approach, students and tutors may never (or rarely) meet, and all interaction may be asynchronous, which has important implications for learning and student support. The nature of the educational experience itself is changing.

New providers and new provision give rise to new types of qualifications, and raise the issue of non-certified learning. The quality of the education and the value of the award are both of high concern.

Institutional models

Since the focus of the IIEP study was to illuminate the policy, planning and management challenges facing new virtual institutions, the analytic approach of the study was based on the institutional model. It was anticipated that the type of institution and its context would have an impact on its development and evolution, and that analysis by model would provide a useful perspective for a comparative study of a number of virtual universities.

Various classifications of institutional models have been put forward. In an overview of the development of virtual education in the Commonwealth, *The changing faces of virtual education*, three main types of initiatives are described: new virtual education institutions, consortia of institutions and government-education alliances (The Commonwealth of Learning, 2001). Similarly, Whittington and Sclater (1998) identify three main models in their description of the organizational structure of the virtual university – virtual front ends for single existing institutions, collaborative ventures between existing universities and entirely new institutions. However, they denote two additional models as websites – online clearinghouses that assemble a number of courses offered by a range of institutions, and commercial enterprises that do not offer accredited courses. In his analysis of higher education in a competitive digital era, Donald Hannah (1998) took as his thesis that:

growth in worldwide demand for learning is combined with improved learning technologies to force existing universities to rethink their basic assumptions and marketing strategies. This new digital environment is further encouraging and enabling the creation of new and innovative organizational

models that are challenging traditional residential universities to change more quickly and dynamically.

The models he identified from examining trends and examples of organizational practice were:

- extended traditional universities;
- for-profit adult-centred universities;
- distance education/technology-based universities;
- corporate universities;
- university/industry strategic alliances;
- degree/certification competency-based universities;
- global multinational universities.

For the purpose of the study and the organization of the presentation of the case studies in this publication, the classification of models of virtual universities is based on four main types:

- a newly created institution;
- evolution of an existing institution;
- a consortium;
- a commercial enterprise.

These four models were selected to limit the scope of the study, while permitting the development of case studies that represented what appeared at the time to be viable approaches. Each model is relatively different from the others and it was anticipated that each would present different planning and management challenges.

New institutions have been created based primarily, although not necessarily exclusively, on the use of ICT to deliver education. As newly formed entities, they have the opportunity to elaborate a mission and develop a planning and management strategy that reflect their specific objectives, institutional characteristics and instructional approach.

The largest number of examples can be found in the second model, the traditional university, which has extended its teaching through the development of a virtual university unit that may be, for example, part of the institution or a for-profit subsidiary. Institutions that have developed such units range from large research-intensive universities to small colleges to open universities. Since the policy development

and planning of these initiatives takes place within the context of the parent institution (at least initially), difficulties may arise. Both the mission and the operating strategies of the parent may not be entirely appropriate for the new entity, and that will necessitate change within the institution.

A consortium offers its members the opportunity to pool expertise and resources to develop a new entity. But although institutional collaboration has the potential to benefit all partners, as in any association there are pitfalls. The consortium needs to ensure that all partners' needs and objectives are taken into consideration, and that partners must feel their interests are being met, and see a return on their respective investments. Such arrangements point to the importance of careful and clear negotiations and planning.

A virtual university that operates as a commercial enterprise faces the challenges of the marketplace. Much was made in the early days of the development of virtual universities and e-learning of the potential of higher education as an international market, and a very large one. This model is very different in that it is based on a business, not a public service model.

As noted earlier, the main objective of this publication is to present examples of a range of experiences that have been described in case studies, the majority of which have been written by the head of the institution or entity. The cases are organized in the publication by institutional model: this presentation intended to allow the reader to consider the similarities and differences among them and their various messages.

Chapters 5 and 6: Newly created institutions

Higher education is seen as the key to turning Malaysia into a fully industrialized country by 2020. UNITAR, which is the region's first virtual university, was created in 1998. It is a new institution, operating as a private enterprise with the goal of providing quality education to a global audience and promoting Malaysia's transformation into a knowledge economy. Its mission is to expand opportunity for quality education at affordable fees. In recognition of bandwidth constraints, courses are mainly CD-based, although some are offered online. Compulsory tutorials, which may be face-to-face or online in synchronous and non-synchronous modes, are an important part of the instructional model and serve to both support and motivate the learner.

In addition, a network of study centres provides learners and instructors with a space for academic or extra-curricular activities. The courses and programmes of UNITAR are fully recognized by the Ministry of Education and its students are eligible for loans. One of the points made in this case is that a virtual university need not be without a ‘campus’ and that social interaction is an important aspect of education.

Established in 1999, the Campus numérique francophone (CNF) represents the evolution of the initial project – a virtual university for the francophone countries – of the Agence universitaire de la Francophonie (a network of more than 400 higher education institutions). CNF has been built on a network of centres that were established in the early 1990s to facilitate access to scientific and technical information, as well as to the Internet and e-mail. The Campus numérique francophone de Dakar (CNFD) was inaugurated in 2000. It functions essentially as a well-equipped resource centre, promoting and supporting distance and ICT-enabled education through the production of multimedia content, the promotion of distance education courses and CD-ROMs, an incubator for innovative firms, the development of digital literacy in students and teachers, and access to online information. CNFD, although supported to some extent by the Agence universitaire de la francophonie, generates its operating budget by charging fees for its services, such as Internet access. The main lesson from this case is that it would be misleading to suggest that distance education can be used in developing countries without investing in the technical and administrative infrastructure. In addition, the Campus numérique francophone has been established to address just this need.

Chapters 7, 8, 9 and 10: Evolution of existing institutions

The Universidad Nacional de Quilmes (UNQ) represents a young traditional institution, which moved quickly to offer online education through the creation in 1998 of the Universidad Virtual de Quilmes (UVQ). UVQ is a corporate entity, and while UNQ is responsible for academic processes, the company, Campus Virtual SA, provides all the support processes. The case describes an efficient manner of ensuring software support for the development of online education and facilitating learner access. First, the UVQ benefited from a transfer of technology from the Universitat Oberta de Catalunya that permitted the use of the software platform, Campus Virtual, to support the provision of online courses. Second, since Internet development in Argentina was limited,

a strategic alliance was formed with a small Internet Service Provider to facilitate student access. Management challenges were posed by the need to develop administrative policies and procedures appropriate for online education. The academic approach reflects the notion of student-centred learning to create 'a university of students'. The creation of UVQ benefited from the boldness, creativity and leadership of senior officials in the university.

Located in Australia, which is one of the most active countries in the export of higher education, the University of Southern Queensland is an example of a traditional university operating as a dual-mode institution. It serves both on-campus and off-campus students, with the latter group comprising about 75 per cent of the student body. This case outlines a planned institutional response to the emerging global higher education market, which has been characterized by increasing competition for students, as more and more institutions offer online courses and programmes. USQOnline is described as 'an E-university for an E-world'. Building on twenty years of experience in distance-education experience, USQOnline was established in 1997 to provide Internet-based courses and programmes, with a commitment to the offer of education anywhere, anytime. In order to finance its development, the institution changed its liquidity ratio and it also invested in a private company for the provision of its software platform and services. Perhaps the most important message is that in this type of initiative, institutional leaders need to take a strong proactive approach and to put in place an organizational development strategy appropriate to the specific institution and e-learning. And a significant financial investment will be necessary, from which the return will not be immediate.

A single-mode institution, Athabasca University is Canada's leading distance education and online university. Serving a relatively small population (30,000) in a large country, the institution has offered an alternative to residential study since its creation in 1970. It strives to remove barriers to higher education participation – time, space, previous educational experience and level of income. The case presents the experience of an open university moving into the provision of online courses and programmes. The university already had administrative and academic procedures in place for distance education, and that facilitated the move to online education. Nevertheless, developing and offering online courses and programmes has had an impact on policy, practice, infrastructure, financial modelling, and institutional culture

(requiring the revision and creation of new policies related to issues such as service standards for students and staff, and the key issue of quality assurance). An important message conveyed in this case is that since online learning is borderless, it is more affected by globalization than any other educational model, which has implications related to global higher education supply and demand.

Kenyatta AVU represents the model of an existing institution that has added a 'virtual' unit to extend its educational offer through participation in an international project. Kenyatta University was one of the initial six institutions that joined the African Virtual University (AVU). Launched in 1997 as a project of the World Bank, in 2002 AVU was transformed into an independent intergovernmental organization with headquarters in Nairobi, Kenya. It currently has over thirty-four learning centres at institutions in seventeen countries. The initial aim of the project was to bring world-class instruction – mainly in engineering, computer science, information technology, business studies and health – from institutions around the world to learning centres in participating higher education institutions, using satellite and e-mail, fax and phone. The current mission of AVU is 'to be pivotal to a leading continental educational network of higher education institutions, all engaged in enhancing their capacity to utilize innovative ODeL systems and methodologies of high quality'. Having been one of the more successful learning centres of the AVU project during its pilot phase from 1997 to 2001, the experience of Kenyatta AVU during that period is instructive, as is the update on recent developments. The case highlights both the challenges faced by many African institutions, as well as the experience gained in using technology to face some of them. The lessons put forward point to the management challenges associated with operating a special centre under the operating policies and procedures of a traditional university. They also speak of the significant constraints that institutions must take into consideration when establishing ICT supported education in countries with limited telecommunications infrastructure.

Chapter 11: A consortium

Launched in 1999, the Université Virtuelle en Pays de la Loire (UVPL) is a consortium of five partners – the universities of Nantes, Angers, and Le Mans, the IUFM (University Teacher Training Institute) and the regional authority Conseil régional des Pays de la Loire. After three years of cooperation, it was formally established in 2002 with the aim of

offering tutored education leading to a qualification, mainly in the context of lifelong learning. Administration is provided by a public interest group governed by a board of directors, within which the partner universities constitute the majority. A call for proposals in 2001 generated sixty-one project proposals, which were evaluated, resulting in the selection of fifteen that were financed. Of the open and distance learning courses on offer, most are blended learning, offering a combination of distance and in-class sessions. The user is the central concern and a portal was developed to provide as much information and as many services as possible. Each partner manages its teachers, tutors and technicians, while the portal and platforms are supported by a UVPL technical team. An appropriate lesson from this particular model is that the cooperation that is the heart of the consortium has been found to accelerate the production of content and improve the quality of the support to students. In addition, cooperation among the teaching staff involved has resulted in an important transfer of skills and an exchange of experience.

Chapter 12: A commercial enterprise

India's first online learning facility, NetVarsity was created in 1996 as an education portal by NIIT, a large commercial software development and information technology learning company. Training in IT is a rapidly changing, high-demand area, and NetVarsity has developed over 300 courses for an annual enrolment of about 100,000. Course design and development is undertaken by a 'factory' of 400 persons, 100 of which are instructional designers. The curriculum is oriented towards learner comfort and ease of learning, at the learner's pace and convenience. NetVarsity provides a full range of learner services from online practice testing to expert assistance twenty-four hours a day, seven days a week, to an online library and even a coffee shop for relaxing. Given the nature of the subject matter, national accreditation has not been deemed feasible, and it is industry certification and recognition that defines the quality of the education. Moreover, although it is a private sector institution, it has developed a student loan scheme to assist those learners that need financial assistance.

Chapter 13: Messages and lessons learned

The distinguishing characteristic of the lessons that are presented in each case study chapter is their diversity. This could be attributed to the range of models presented and national jurisdictions represented.

Chapter 2

THE NEW CENTURY: SOCIETAL PARADOXES AND MAJOR TRENDS

Gudmund Hernes

1. AN ERA OF PARADOXES

At the beginning of a new century, the world is caught in powerful cross-currents and many of the predominant trends manifest themselves in seemingly contradictory ways.

Wealth and poverty

Never before in human history has so much wealth been created so fast. Never before in human history have so many had it so good in terms of housing, food, comfort or the use of new technologies. Today, even in low-income groups large numbers of people have access to running water, electricity, healthy nourishment, vaccines and television, and are better off than the middle class of a century ago. Wealth is increasing, but so is inequality. Economic growth is rapid, but inequalities are widening. Wealth is increasing, but poverty is persistent and misery endemic. The privileged millions often live just next door to the millions who are deprived.

Better health but new threats

For large numbers of people, the twentieth century was the century of public health. Never before have so many survived infancy or lived so long; never before have so many led such healthy lives. Much of this progress has been achieved outside the health sector, through economic growth, nutritional advances, improvements in sanitation

and educational gains. In addition, medicine has made unprecedented strides, developing vaccines, antibiotics and cures. The twentieth century was the century of conquering contagious diseases. Smallpox was eradicated and polio is almost gone; but these gains in health have not been uniform. And new diseases, such as HIV/AIDS, have taken a terrible toll. The gains in health have been astounding, but factors such as those above foreshadow a grim future of mounting disease and death in countries whose health systems are already overburdened and whose social systems are already strained.

Technology gain and technology gap

Technology, and the research on which it rests, is both civilizing and inspiring: civilizing because it makes it possible to live with less drudgery and disease and with more time for leisure and culture; inspiring because it increases our capacity to nourish and heal, to prolong life and make living easier. New products are being introduced at a more rapid rate than ever, and increasingly, whether they are genetically modified seeds or new tools like the Internet, they are the fruits of comprehensive scientific research. But although innovations and patents are increasing faster than ever, the benefits of technology are drastically skewed from one group and nation to another, as are the negative spillovers from many applications of technology.

Control over nature but environmental degradation

Never before have humans had such knowledge about and control over nature, over its elements, forces and species. Science and technology have increased the scope of our understanding and ability to intervene. Humans can tap numerous resources and can build powerful machines; but while the application of this knowledge has certainly improved material welfare, it has often created severe and harmful side effects. Knowledge of and control over nature have increased, but human interventions have also had profound, unintended and potentially life-threatening effects on the environment, which have also generated conflicts between groups and nations. These consequences increase the need not just for more knowledge, but also for greater appreciation of the whole web of cause and effect, and the need to make more ethically informed decisions.

Gender: improved conditions but persistent differences

During the last century women have gained more in rights, health and influence than in any previous century. Yet gender equality does not automatically follow growth in national income. Differences in access to higher positions, wages earned, the impact of divorce are all still manifest, in some countries grossly so. International trafficking in women has increased. Gender inequality greatly detracts from the welfare of girls and women and, indirectly, from that of boys and men. On the other hand, empowering women increases a society's capacity to reduce poverty. Although great strides were made in advancing women's rights in the last century, there are still great gaps between men and women in the productive resources they control and in the institutional environments which shape their opportunities, choices and behaviour.

Democratization and disenfranchisement

The twentieth century was one of increasing popular influence over political and other institutions. Never have so many countries had functional democracies. During recent decades democratic governments have emerged in Latin America, Africa and Asia, while in Europe, since the fall of the Berlin Wall, a number of countries have been added to those where people can exercise political choices as citizens and not just be forced to obey their leaders as subjects. Although the gain in rights has been extensive and political systems have become more participatory, infringements on basic human rights are widespread, millions are still disenfranchised and many political regimes remain repressive.

Education, but not for all

Literacy – to be able to read and write – used to be the privilege of a few, restricted to scribes or officials. Now it is among the basic human rights. Today education comprises more years of life, more days per year and more hours per day for more people than at any time before. Free education is a human right for all, but not a reality for all. Millions remain illiterate, many of today's children will never go to school, and the danger is that inequalities within and between societies will widen with the encroachment of today's expensive new technologies. Great strides have been made, but the gaps are widening.

Education: the critical nexus

A key insight with respect to all the paradoxes and inequities listed above is this: education is the critical common component. To provide skilled workers, administrators, technicians, engineers, doctors and nurses, indeed, to manage all sectors of the modern economy by applying advanced knowledge, a well-functioning education system is mandatory and higher education has an important role to play.

2. A CHANGING EDUCATIONAL ENVIRONMENT: THREE MAJOR TRENDS

There are three overarching trends that affect the environment within which education systems operate. First, dramatic demographic changes are under way in the size, habitat and composition of the world's population. Equally vast changes are altering relations among the world's peoples. Secondly, the world is at a watershed: it is entering an era of new technological, economic and political organization with globalization as the transforming force. New technologies are changing social relations at the macro level between nations and institutions, as well as at the micro level between individuals and groups. But new technologies can also generate new inequalities. Finally, knowledge is being accumulated and converted into new applications and new wealth at a faster rate than ever before. A country's ability to produce and disseminate knowledge is decisive for its development. But access to the new knowledge is unequal and the gaps between nations are widening.

These three developments are changing the educational environment; but at the same time, education is changing the environment. Indeed, the greatest challenge is to reshape education systems in time so that societies can chart their own futures and not be overwhelmed either by the prevailing long-term trends or by short-term turbulence.

2.1 The new demography

The demographic composition of a country or region exerts a strong influence on the access to and provision of education. Moreover, its demographic composition interacts with social factors to shape both the supply of and demand for education, although in different ways in different regions and countries.

Increasing world population

Only a few decades ago the population explosion was seen as a major threat to global development; but the demographic transition – lower death rates followed by lower birth rates – has taken place more rapidly than expected. However, even with slower growth rates, a majority of developing countries will experience large absolute increases in population. Their populations are predominantly young, resulting in many more births than deaths. This trend will put great strain on social services in general and education in particular since it is the least developed countries that have to accommodate the largest increases in numbers of students. On the other hand, ageing populations in industrialized countries will put pressure on their pension programmes and medical systems, particularly where life expectancy is rising at the same time as fertility drops.

Urbanization

In this new millennium and for the first time in human history, the majority of the world's population will live in cities. This development will take place in all regions of the world, but mostly in the South where it will entail vast new expenditures to provide urban services like water, sanitation and transport. Rapid urbanization will produce many new burdens as well as new inequalities. The huge 'mega-cities' with their 'mega-problems' – disenfranchised poor, many living in slums without adequate housing, sanitation, energy or water – will dominate this century, much the way the nation-state dominated the last.

International migration

International migration is increasing. Most of it – about two-thirds – takes place between developing countries. It clearly outnumbers the immigration from developing to industrialized countries. Many industrialized countries have over recent decades adopted more restrictive policies towards untrained immigrants, but have established special quotas for professionals deemed in short supply. It is estimated that by the mid-1980s 100 million people were living outside their countries of birth or citizenship and the number has been rising ever since.

The most common reason for migrating is poor economic prospects, but the desire to escape oppressive political conditions is also important. The result is greater cross-cultural mixing and exchange of experiences.

Ageing

Over the last two centuries there has been a dramatic increase in life expectancy, although at different rates and times in different countries. The percentage of people over 65 is highest in industrialized countries: in twenty-five years it will increase to 22 per cent in Europe and approach 30 per cent in Japan. But it has also increased in developing countries where, by the end of the century, the number of people over age 65 will be greater than the number under age 15. The changing structure of the population pyramid poses several challenges to the education system. With an increasing dependency ratio the working population must be productive enough to ensure its own welfare, that of its children and of the retired. A larger part of the labour force must be trained for more productive jobs.

New diseases and old scourges

Dramatic differences in health are evidence of the divide between rich and poor, in life expectancy, exposure to diseases, availability of treatments and vaccines. With globalization, vulnerability to infections increases in all countries, for bacteria and viruses travel as fast as humans. Each year one-tenth of humanity crosses international borders. Yet the poor suffer disproportionately from communicable diseases because they do not have access to cures or other means to prolong their lives. The circle is vicious: lower health not only is the result of poverty, but maladies such as TB, malaria, HIV/AIDS and childhood diseases, as well as non-communicable illnesses, are causes of poverty.

Demographic challenges to education

Demographic changes are posing several major challenges to education, which is being asked to provide:

- education for more in the developing countries, but education for shrinking numbers in many other countries;
- education of better quality, at all levels;
- expanded educational opportunities after basic education;
- education for urban jobs;
- multicultural education for multi-ethnic societies;
- educational opportunities addressing the needs and demands of the growing numbers of older citizens.

2.2 Globalization

Globalization is the increasing flow across borders and boundaries – whether national, economic, cultural, technological, or institutional – of people, goods, services, ideas, information, images and values. There is no choice, it is already here, as a defining worldwide force and consequence of the rapid and inexorable movement of technologies, markets, policies and destinies. Globalization is a mixed blessing, encompassing promises as well as threats. It can mean modernization, but also marginalization. It can raise standards of living, but also increase exploitation, threaten the environment and destroy communities. It has brought impressive gains in welfare, but also distressing increases in inequality.

The divide between the haves and the have-nots has widened over recent decades. People in poor countries have been able to acquire fewer and fewer of the new goods consumed and used by the people in the rich countries, including many medicines. Poor people and poor countries remain vulnerable, so that when crises occur, the damage spreads faster and farther among poor people and poor countries than elsewhere.

Although globalization may not be a choice, the kind of globalization that evolves is. Inequity is not inevitable. Presently there is an institutional mismatch between the reach of old-order nation states and the reach of global markets. Globalization has already had major impacts on the organization of education, how it is planned, provided and paid for. But the humanizing of globalization depends on education: who gets it, how much, what kind and in what form.

Technologies

Globalization is characterized not only by increasing use of the same technologies all around the world – everything from cars to medicines – but also by the increasing interconnectivity of technologies. The integration of technologies also entails the integration of countries, through the rapid expansion of global networks used by nations, organizations and individuals. Digital communication is becoming the Esperanto of the twenty-first century.

Economic exchange

Not only are knowledge and technology changing, so is the social organization built around them. The economy itself is globalized by

new patterns of world trade, the integration of financial markets and internationalization of companies. Globalization is not just changing the world economy, it is altering the conditions for all national economies and their internal organization. Concentration of wealth implies concentration of power. Globalization increasingly makes education an international commodity, with services provided by new competitors.

The demand for qualified people that knowledge economies depend on is also becoming globalized. More and more, capital is following competence as nations seek to harness the same talent. Labour markets commonly stretch across national boundaries. New jobs increasingly depend on innovations. Migration is a selective phenomenon, with bigger obstacles for some educational groups than others. The biggest movement of trained talent is from the developing countries to the most advanced industrialized ones; what is 'brain drain' for the former is a 'brain gain' for the latter.

Political integration

Globalization is also about the expanding reach of international courts and human rights, including education as a human right. It is about the globalization of rules of law, of systems of exchange and principles of contract. Political integration takes place not just at the regional level, such as the European Union and similar associations on other continents, but also through the varied activities of the United Nations system. The World Trade Organization is slowly establishing the same rules not just for transactions on international markets, but for the organization of domestic economic activities – including education – as well.

Culture

Globalization is not only transforming the physical world, but the mental world as well, by disseminating ideas and creating more similar mindsets and values. Global changes are also being felt in the everyday lives of individuals. The same products are increasingly found everywhere. Education can be ordered and provided via the Internet. International standards are increasingly being adopted for an ever-expanding range of activities.

An important part of globalization is the penetration of market principles and ideology into a wider range of institutions, notably to

education. These principles are transforming educational systems and policies around the world. They also impact strongly on the role of the state and public sector in education.

Hence globalization will only accelerate the homogenization of lifestyles, reducing cultural variety and threatening the diversity of human expression – unless these uniforming tendencies are counteracted by policies to preserve the rich and multifarious heritage of humankind. A key mission of UNESCO is to use education to preserve and stimulate variety and enrich culture in a way that furthers equity and promotes development.

The educational challenges of globalization

The global gaps in educational opportunity are enormous, and reducing them is a staggering task. Among the other important challenges are:

- reducing inequalities, poverty, marginalization and exclusion;
- establishing better links between education and the local economy, and between education and the globalizing world of work;
- preventing the growing role of market-driven research and education from widening the technology and knowledge gaps between industrialized and developing countries;
- ensuring that the research requirements of developing countries receive the necessary attention and can be addressed by their own scientists and scholars;
- reducing negative impacts of the brain drain from the poor to the rich countries and from disadvantaged to advantaged regions as the market for students also becomes globalized;
- addressing the impact of market principles and the changing role of the state on education and their bearing on the planning and management of education;
- using the education system itself not just to transmit the general body of science, which can be used in all places, but also to preserve variety and the richness of world heritage – languages, artistic expressions, lifestyles – in a world becoming more homogeneous.

2.3 Knowledge growth

The development and dissemination of new science-based knowledge has become the most potent force of social change. Information and communication technologies (ICTs) are not just new branches in the economy, they are transforming all other activities, from taxi services to distance education, from industrial production to news transmission.

Information technology

The Internet is at the heart of the second wave in the information revolution. It has totally changed the way knowledge is stored, spread, obtained and used. Boundaries between branches of the economy are being erased: a switchboard has become a computer; newspapers are read via satellites, a PC has become a small post office and a music box.

But information is not the same as knowledge. It takes knowledge not just to provide all the new information, but to apply it usefully and imaginatively as well.

The world has never had so many and varied resources. Yet half of humanity remains poor. More than that, there is also a widening gap between information-rich and information-poor societies in their access and control over the technologies that are driving the global infrastructure and technologies.

A definition of development

The increasing role of knowledge in today's world has direct implications for the way we conceive of development. Indeed, development must be defined in terms of knowledge and the humane uses to which it is put. Put most simply, development can be measured by the capacity a country has to acquire, use and transmit knowledge, in other words, by its capacity for knowledge management in the broadest sense of the word. A society's wealth and welfare are decided by its capacity to train and educate its people to share in making and applying knowledge in all spheres of life.

Information technologies change not just the way students can be taught but also the ways in which education is provided and the content of training and research. ICT is increasingly becoming part of training in schools; it is an expanding channel for distance education and a new opportunity for potent actors, private as well as public, at the national as well as the international level. The key task is to harness

the new information and communication technologies in order to build knowledge societies in states that are now poor, and to develop the education and skills, the science and humanitarian culture on which they must be based.

The educational challenges of the growing role of knowledge

The educational challenges of the growing role of knowledge are severe. Among the most important are:

- reducing the widening digital divide between rich and poor nations, lest the know-nots remain have-nots;
- making access to learning and educational resources via the Internet more equal among countries, but also making more equal the capacity to supply such education;
- increasing the number and proportion of people with a capacity to access and transmit the new knowledge being created, which requires large investments in higher education and specialized training;
- increasing the number and proportion of people who can apply and advance knowledge – what others take an interest in – so they can gain access to creative knowledge networks;
- preventing poor countries from becoming mere spectators and passive recipients of innovations developed in the industrialized world by boosting their capacities to contribute;
- matching the expanding possibilities for new applications of knowledge with ethical reflection and restraint;
- fostering economic and technological transformations that at the same time are compatible with sustainable development and human fulfilment.

3. AN INCREASING ROLE FOR INSTITUTIONS OF HIGHER EDUCATION

This publication focuses on universities, institutions that play an important role in society. Universities provide the personnel that run and operate the key institutions of society – the civil service, corporations and organizations. Institutions of higher education also train most teachers, hence higher education is an integral part of providing education for all. More than that, universities are essential institutions for generating the new knowledge that is the defining mark of modern societies.

Governments increasingly consult universities for solutions to pressing problems, such as the finding of treatments for diseases or models for monitoring global warming. Firms and industry also increasingly turn to universities for the cutting-edge knowledge needed for new patents, goods and services. Research results increasingly provide the critical input for innovations in all fields of human endeavour, and hence for all productive activities, from agriculture to electronics.

The impact of *demographic changes* on institutions of higher education has been and will be great. The history of higher education over recent decades is the history of expansion, a changing composition and structural diversification. From being institutions for the training of the select few – mostly males – the number of students has expanded rapidly.

Not only have institutions grown, they have diversified to accommodate an ever-larger share of the young. In the coming years growing numbers will seek admission, and the social make-up of the student body in many countries will change. This expansion of enrolment and diversification of institutional arrangements is accompanied by new types of external clientele for higher education as well as by new sources of funding and modes of management.

Without adequate higher education and research institutions providing a critical mass of skilled and educated people, no country can ensure genuine endogenous or sustainable development and, in particular, developing countries and the least developed countries cannot reduce the gap separating them from industrially developed ones. At the same time, higher education is being challenged by new opportunities relating to technologies that are improving the ways in which knowledge can be produced, managed, disseminated, accessed and controlled. Equitable access to these technologies should be ensured at all levels of educational systems.

The increasing number of students and types of institutions, the growing complexity of institutional and financial arrangements, all raise new challenges for the design, planning and management of institutions of higher education.

Globalization impacts strongly on institutions of higher education. Universities are pre-eminently global institutions. Science increasingly provides universally shared views of the world and the technical languages for describing them. Knowledge is the most international of commodities; indeed, in many respects it is an international public good.

Globalization not only implies rapid internationalization of research, but also growing numbers of students who enrol at tertiary-level institutions abroad. In the last half-century the number of exchange programmes has grown and financing has improved. Over the past decade, the flow of students across borders has been very much amplified by universities – public as well as private – offering education to foreigners as a commercial activity with great economic potential. A global market in higher education is rapidly developing, affecting curricula and research agendas, but also standards, accreditation and quality assurance. Indeed, the World Trade Organization has become one of the interested parties.

Commercialization of education carries risks: by diverting attention from the classical task of higher education, by accumulating advantages in the most advanced countries and most advantaged institutions, and by discriminating against the most deprived and creating brain drain from poor countries.

If demographic changes and globalization have important impacts on institutions of higher education, the *growing role of knowledge* will affect them even more. The driving force of globalization is the expansion of new learning economies. Their key characteristic is the systematic enriching of new products and services by scientific knowledge.

Universities have grown and changed as a consequence of the knowledge they themselves have produced; supply has created its own demand. The most prominent examples are found in the new information and communication technologies, which are transforming all fields of science. Institutions of higher learning have been at the cutting edge in developing them and are at the forefront in using them: for research, innovations in teaching and in methods of management.

This holds not just for all areas of research but for teaching as well. Students can, via the Internet, enter language laboratories or sites on the construction of pyramids or take part in the classification of asteroids. The Internet has improved access to knowledge and it has reduced the costs of transmission. But access is grossly uneven and concern about a ‘digital divide’ is growing both within and between countries.

Higher education has a pivotal role to play in the renewal of educational systems and development in general, because of its role and the influence of its institutions and programmes on all societal activities.

This chapter is based on the *Medium-Term Plan 2002–2007* of the UNESCO International Institute for Educational Planning, which is available on the Internet at <http://www.unesco.org/iiep/>.

Chapter 3

THE UNIVERSITY: CURRENT CHALLENGES AND OPPORTUNITIES

Robin Mason

1. THE CRISIS IN HIGHER EDUCATION

It is now commonly accepted that educational systems around the world face accumulating economic and social pressures, and are unable to meet the needs of increasingly knowledge-intensive economies. Furthermore, with the emergence of the Internet, the education landscape has changed along with that of commerce and sociocultural interaction. Whereas IT merely enhanced productivity or control over information, the Internet is an even more powerful technology that reshapes social and economic relationships.

The uncontrolled growth of information is flooding universities and learners alike with knowledge from many more sources than ever before. At the same time, increasing competitiveness and globalization are creating needs for learning that extend beyond the scope of the traditional degree to a lifetime of learning. The changing conception of knowledge has been characterized as a shift towards a more activity-based, distributed, customized, adaptive and interactive paradigm.

Given these changes, universities have fundamentally to rethink their roles. They need to be reshaped to address the needs of a knowledge-based society. The World Declaration on Higher Education (UNESCO, 1998) summed up the changes required by stating that higher education should be equally accessible to all, be linked in a seamless educational system starting from childhood, provide for lifelong learning, be relevant to society, use diverse educational models,

provide for essential staff development, ensure quality, be student-centred, ensure women's participation and embrace the potential of IT and networking.

The turmoil that universities have experienced over the past 10 years has been caused by the broader social changes that have taken place due to globalization, technological developments and the information explosion. Together they have profoundly altered traditional views about the university. The changes have been felt differentially; some countries are slower to experience them, and some universities are much slower than others to dismantle the walls around their ivory tower. ICT has opened up fundamentally new options for universities both in how to run the business of higher education and in the methodologies of teaching and learning.

2. AGENTS OF CHANGE

So interrelated are the agents of change for universities, that it is impossible to categorize them in order of importance. Each one is both cause and effect, and from the perspective of the university, it is not particularly relevant to disentangle the primary from the secondary elements. Suffice to say that the cosy picture of the university drawn above, while inevitably superficial and never universally applicable in all countries, has evolved almost beyond recognition in less than a generation.

Globalization

At its simplest, the notion of globalization represents a movement away from seeing the world as vast and chaotic to experiencing it as a global village, a sort of intensification of awareness of the world as a whole. In fact, the frontiers that used to divide nations are collapsing, especially in economic spheres, so that goods, services and people are available across the globe in increasingly immediate ways. Similarly, the relationship between knowledge production (i.e. research) and teaching and learning is inevitably changing in globalized conditions. At one level, the globalization of the world's economies is leading to increased permeability of national educational boundaries as well as a greater emphasis on internationalization of curricula. At another, more profound, level we are experiencing the globalization of knowledge.

Many databases, research articles and even primary sources are now openly available on the Internet, and much of the explosion of

information in all disciplines is either caused, exacerbated or, at least, encompassed by the Internet. The digitization of data is affecting the very core of what is considered data, and predictions abound that the pursuit of knowledge is becoming synonymous with knowledge that can be digitized.

In the global economy, the race to add value to products and to create new knowledge has led to a hierarchy of countries where some are leaders, some are followers, and many are falling further behind. Countries as well as subgroups within countries can become marginalized or isolated, and their specific knowledge, such as local cultural traditions, may become lost or valueless in the global economy. Traditional educational systems are not meeting many of the new needs, let alone the existing needs of large sections of the population.

Connectivity and the impact of the Internet

The emergence of the Internet as a new communication medium is affecting the patterns of social interaction profoundly. Inevitably, therefore, it is having a commensurate impact on education. For example, the skill of memorization is less valued today, not because it is useless, but because there are so many more important skills for young people to develop. The need to be able to find, analyse and synthesize information matters more than the ability to remember information.

This is only one small example of a bigger change in the kinds of learning that are necessary in a connected world. The change is evolutionary rather than revolutionary, but it is taking place ‘before our very eyes’. That makes identifying the really significant aspects of the change sometimes hard to distinguish from the transitory impacts of technology-based connectivity. Nevertheless, a few trends seem undeniable:

- The need to interact with people and information as part of the process of understanding and developing as a learner.
- Passive acceptance of ‘authentic knowledge’ is no longer appropriate. Learners need to be proactive in determining what and how they are to learn, through engaging with ideas and with other learners. One of the keys to this transition is by sharing know-how, by using and adapting what someone else has already learned.

- The acceleration in the production of new knowledge and the consequent necessity of processing more information at greater speed than before.
- The pressures of time are driving an emphasis on durable information and the ability of learners to distinguish this from the ephemeral. Learning and reflecting on learning can no longer be associated only with the classroom. Informal opportunities to learn at work, at home and at play, are gradually becoming as significant as formal courses.
- The globalization of information and access to that information, such that knowing how is more important than knowing that.
- In a world where information is instantly accessible by all, what is valued is how to find, synthesize and apply information.
- The Internet is the current vehicle for this change and underscores the acceptance of knowledge as that which can be digitized and transmitted electronically.

The world of the Internet reflects and perhaps accelerates the increasing privatization of life and blurs the hard and fast line between the real and the virtual. At the same time, it has created communities of communicators, learners and practitioners that rival face-to-face groups in their intimacy, support and learning outcomes.

Digital divide

Across the world, higher education institutions are under pressure to integrate new technologies, particularly online learning, into teaching and learning. Advocates maintain that online learning can cut delivery costs, widen student access and improve the quality of learning materials, and these goals are central to the majority of universities and colleges. In the developing world, additional forces make online learning even more appealing: rapid population growth, an expanding middle class, the rise of knowledge-based economies and limited indigenous higher education infrastructure. The irony is that while online learning might be of most benefit to developing nations, the developing world has generally poor telecommunications infrastructure and insufficient funds to invest in expensive new technology.

Nearly 90 per cent of the world's Internet users are in the developed countries which together comprise 16 per cent of the world's population. In Africa and the Arab States, they constitute only 1 per

cent of the total, thus revealing that a large percentage of the world's population remains isolated from the technological advances and is still living in the pre-information age.

The Internet is the archetypal global medium and, in theory, should be the means for realizing universal education and equality of opportunity. In fact, access to the Internet is still problematic on anything resembling a global scale: many course providers have little experience in writing materials for this new environment or in designing and running online interactive courses; students who enrol in professional updating courses have not developed the study patterns or discipline to sustain participation in courses with 'undemanding media'; and if cultural and linguistic differences are not addressed specifically by course designers, Western English mother-tongue students will invariably dominate online discussions. So access to the Internet is only the beginning of the digital divide; training, support, pedagogy, language and experience are even greater barriers.

Commodification of knowledge

Another disorienting piece of this mosaic of changes has been referred to as the commodification of knowledge, the valuing of information in economic terms rather than for its social and cultural significance. Where the book, the classroom and the obligatory curriculum typify the old view of knowledge, there has now been a questioning of the underlying assumptions about the fixity and stability of the word, the linear text and the teacher as the authoritative repository of meaning. Globalization and the Internet are influencing the dominant function of knowledge towards a position of serving the socio-economic system, that is, towards the position that knowledge should be produced to serve the contemporary globalized system and to stay ahead in the competitive world markets. Academic research has become orientated to performance, to outcomes and targets, rather than being motivated simply by the spirit of curiosity and free enquiry. The focus is on application rather than contemplation.

Similarly profound changes have occurred in the teaching of knowledge. Cyberspace creates a reader-controlled environment in which the distinction between the reader and writer (and by implication, the student and the teacher) becomes redundant. With cyberspace practices there are no authoritative meanings waiting to be found and learned by the student, rather meanings are negotiable. Hence learners

do not simply interpret meanings but actively collaborate in creating meanings, and thus are more able to determine their own paths of learning. Meaning-making itself takes on a different form (Edwards and Usher, 2000, p. 48).

As knowledge has changed its function, so the university has become more consumer oriented, more dominated by a managerial approach and a logic of accountability and excellence. While there is considerable resistance to calling students consumers, universities are increasingly having to regard them as consumers in terms of providing the courses they want, meeting their needs for just-in-time and just-the-right-amount of learning.

Access and government funding

Across the world, governments are less and less willing or able to fund universities at the same level as heretofore. Many countries which used to provide free tuition for students have now introduced fees, and academics are having to find other sources than government block grants to fund research. In some cases, funding of education by governments is contingent on extending access to under-represented populations: ethnic minorities, the disabled, females, or people from socially deprived areas. In other cases, governments have funded particular educational initiatives such as virtual universities – either consortia of existing institutions or new institutions set up especially to offer online courses.

All universities are having to adapt to a more competitive environment. In the developed world, the numbers of 18–22-year-olds are falling and in developing countries, there is increasing competition from virtual universities abroad. Universities are having to respond by developing marketing plans, technology strategies and new vision statements about the kind of direction they intend to take in the face of the changing market and funding regime.

Lifelong learning and flexibility

The information age and the connectivity provided by the Internet have led to a reduced ‘shelf-life’ of the undergraduate degree, which is said now to be less than five years. Postgraduate degrees are increasingly important in many fields and retraining is necessary in almost all. Most professions have introduced mandatory staff development at regular intervals and companies are recognizing that knowledge and knowledge

management are the keys to their continued viability. All of these factors have led to a new situation in the United States, where adult registrations for higher education courses now outstrip those from the traditional 18–22-year-old school leaver.

The notion of a ‘job for life’ is a concept from the last century, no longer appropriate for the twenty-first century. At least one prediction is that the average worker will have not just five jobs in a lifetime, but five different careers in a lifetime. Even if we recognize the usual exaggerated scaremongering in such a prediction, it is increasingly apparent that the responsibility for training, retraining, updating and reskilling will inevitably fall more and more on the employee, not on the employer.

Some employers will fund their employees in almost any kind of learning programme, as they realize that maintaining an enquiring mind matters more than any specific information acquired. Others insist on their employees, following programmes that, in their view, contribute to the company’s ‘bottom line’. Still others have passed most of the responsibility for learning, in terms of time and cost, to their employees.

The most obvious implication of this demand for lifelong learning is the need for flexible learning opportunities. This is one of the main drivers of e-learning and the adoption of asynchronous interaction technologies. Lifelong learners will inevitably be fitting their learning into and around many other demands on their time. The demand for life long learning also drives interest in modularized courses: the need for short learning opportunities, tailorable to different requirements and personalized to individual learners. Course providers need to offer learning opportunities that are quickly adaptable to different markets, that can be resized, customized or updated, and that can be produced or perhaps assembled in response to changing demands. The emphasis in most e-learning programmes on a student-centred pedagogy is also in keeping with the passing of responsibility for the general ‘health’ of one’s learning on to the employee. Finally, the increasing focus of many online opportunities is much more on the processes of learning than on the content. So, for example, online activities develop skills in communication, working in teams, finding and evaluating information resources, storing, accessing and handling large amounts of data, working with new technologies, updating and refining existing skills and knowledge.

This web of interrelated forces of change has left many universities bewildered and disoriented. There have been predictions of the demise of the university as an institution unable to adapt to current pressures. Counter arguments have pointed out that universities are among the oldest institutions in the world and will evolve in time because they fulfil deep personal and broad social needs. Furthermore, the present e-learning market is immature, and moving from a command structure to a demand structure is bound to bring discomfort, confusion and uncertainties.

3. CHALLENGES

These forces of change have resulted in a number of real challenges that universities face as they evolve in tune with the larger societal forces.

Improve quality, increase access, reduce costs

ICT has been seen as the way out of the dilemma caused by the demand to reduce costs and increase access and student numbers. Online courses cater to the lifelong learning market and can be useful for some minority learners as well. There is much research evidence that online education produces the same or better results in terms of marks as traditional courses, and there is anecdotal evidence that students engage in more interaction in online courses than in campus courses. E-learning is gaining in acceptance, and quality guidelines are being developed and adopted in order to counter the rogue diploma mills that sell degrees or produce very poor online courses.

While corporate trainers have been able to show cost savings in moving to ICT-based training, most universities find that ICT adds to their costs. The more emphasis they place on maintaining or improving quality, the more costly online learning is. The infrastructure, equipment and maintenance costs are only the beginning: new staff, new training and greater workloads add up substantially. One of the problems is the legacy systems that most universities have in place already and that make incorporating online learning an additional cost. Virtual universities starting from scratch may find cost savings easier to make.

So the challenge is to do more with fewer resources, and many universities are seriously trying to do this. Some are setting up spin-off companies to market virtual learning and software to support it. Others are seeking partnerships and consortia to share online teaching resources. Sadly, the solution for some has been to close departments that no longer attract sufficient students.

Modularization of education through use of learning objects

The idea of making multiple uses of existing teaching material – across different faculties, for different markets, for shorter courses, or for sale to other institutions – is very appealing to universities that have large amounts of capital stored in their academic coffers. Furthermore, students and employers are demanding more individually tailored courses. These tend to be short, targeted topics, or require company-specific case studies, or culturally adapted material. Out of these pressures has come the notion of a learning object: a short piece of learning material that can be combined with others to form a course or learning module. The idea is that the learning objects produced by academics are tagged with appropriate metadata and stored in data repositories that form a pool from which to create new courses. In order to make these repositories accessible across institutions, considerable effort is currently being invested in devising standards for designing and tagging learning objects.

The increasing recognition that good content is very expensive to produce is supplanting earlier hopes that online learning would be much cheaper than face-to-face training or campus-based education. The Massachusetts Institute of Technology OpenCourseWare announcement that all course content would be made freely available on the web has further underlined the fact that educators need to focus on the processes of learning and the supporting and accrediting of learners, and not necessarily or solely on the production of content.

The challenge is to see whether learning objects can be used in higher education to deliver a quality learning experience yet also be easily reusable.

Changing role of the faculty/teacher

At the most obvious level, academics are spending more time in front of a screen than in front of a class of students. It is also a commonplace to note that many academics are ‘closer’ to colleagues around the world through electronic communication than they are to colleagues in their own building. A new phenomenon is that of the institutionless, online tutor, the virtual itinerant who ekes out an academic career working from home for various institutions, teaching students who never meet face to face. Some of the new virtual institutions ‘cherry pick’ academics from traditional universities to design or tutor courses for them in their spare time.

Academics, especially those at prestigious face-to-face campus universities, have long regarded distance education as a second-best option for students and a tiresome, time-consuming, third-rate duty for themselves. This attitude is changing very rapidly, partly as a result of pressure from their superiors to develop off-campus provision, and partly from students themselves. Nevertheless, designing a course for the web is quite a change for most academics from preparing a series of lectures. Apart from the need to rethink the content, the visuals and the support mechanism, there is for many the unusual experience of having to work in a team. What was once a very private performance in front of a group of students becomes a team effort often, involving critical commenting on drafts of the web materials.

This form of 'public exposure' is only the beginning of the change from lecturing. Even for academics who already work in distance education, a much more significant change is required to tutor online courses in which students dominate the interactions and the tutor becomes a guide and facilitator. While constructivist, collaborative models of learning are not new, they are certainly the dominant paradigm in most online courses. Even in campus-based courses, it is increasingly difficult to sustain the old transmissive model of university teaching. In most areas of the curriculum, there is a greater emphasis on learning how to find out for oneself than on learning what the teacher knows.

Many online courses attract an international body of students. This has implications for the curriculum, not only in the type of courses offered, but also in the content of all courses offered. A much wider range of examples, case studies and references is necessary, at the same time as a much more careful scrutiny of language and expression. Students using a second language are confused by local expressions, jargon and abbreviations, and international students easily misunderstand references to national events, jokes or other topical items. It is a considerable challenge to prepare stimulating, up-to-date and engaging teaching material that is at the same time inoffensive, understandable and linguistically clear to all cultures. This is the reality of global online teaching.

Need for e-learning skills

The impact of modern technologies has altered very little the popular conception of learning as a transaction between the teacher and the

learner. In many countries the predominant view of the learner is as a vessel to be filled and, what is more, a vessel with a limited capacity for taking in information. Yet new technologies are having a significant impact on the whole learning system, both on the supply side and on the demand side of learning: they undermine assumptions about teaching and tutoring, about learning in one place in groups of similar ages, about the administration, the support and the accreditation of learning.

Many developed countries are on the verge of being able to envisage universal access at all ages to computers, television and telecommunications, with their impact of speed and spread. Modern technology provides information and communication twenty-four hours a day, seven days a week. It disregards time zones and is capable of helping those who are isolated by geography, disability, infirmity or social status. In the USA, Canada and the UK there are universities which have adopted a policy of ubiquitous computing, all staff and students having networked computers at all times, which allows them access to communication, office productivity and research tools.

But only the individual can decide to learn and to develop a combination of knowledge, skills and understanding. The technology merely facilitates. The impact of modern technologies, and their rapid spread of availability to everyone, is, unlike the impact of any other technologies on learning, raising profound practical questions at every point in the learning process.

The new technologies place control of the learning process in the hands of the learner. The learners can choose the time, the place and the pace of their learning. The level, too, becomes an individual choice: e-learning is a learner-driven system.

Universities in countries with limited resources for e-learning face very difficult problems in trying to equip their students with the skills, experience and online opportunities that the country needs to develop as a knowledge-based economy. In Asia, the proportion of the population participating in the Internet revolution is small but the rate of growth is rapid. In countries where the infrastructure is reasonably well developed, pressure is growing to use e-learning because of the growing number of foreign universities offering virtual courses. In Africa, industry is taking a lead in fostering ICT-based education, and international agencies have also played a key role in promoting e-learning.

There is growing certainty that, at the very least, what should be learned in schools is how to learn, to become a discerning learner, and to be equipped with the knowledge, skills and understanding to become an effective citizen.

The new technologies are a powerful force in achieving these objectives because they provide everyone with the means, hitherto undreamed of, to access information. Information is thus universally available. What matters more today is the capacity to use it. Learning how to learn has always been the 'Holy Grail' of teaching; learning how to e-learn is equally challenging.

Supporting e-learning

Support services for online students are a critical success factor in e-learning and are essential for meeting quality standards applied to online courses. Online learners who are seldom or never physically present on campus need the same access to library resources and services as on-campus students. The institution is obliged to ensure access to an extensive array of electronic library resources and support staff. Other facilities that are also necessary include: IT support usually in the form of a telephone help desk, electronic submission of assessments, and online registration, administration, and tutoring.

One of the implications of the use of ICT in all forms of higher education is the issue of increased workload. There is mounting evidence that both the development of online materials and the tutoring of students online are more time consuming for academics than the traditional lecture. While many 'early adopters' of technology have turned enthusiastically to online teaching and have devoted more than the normal number of hours to becoming experts in their fields, the question arises as to whether this is sustainable in the long run.

New kinds of institutional leadership

E-learning initiatives require a change in leadership style and approaches within universities. The turbulence created by the depth and degree of change in universities has meant that effective leadership of educational institutions has never been more important. In keeping with the nature of the changes, university leaders in the digital age need to understand institutional cultures and deal with the inevitable dissonances that arise. Obviously they need to be technology literate themselves and to demonstrate the value of collaboration, teamwork

and communication at all levels of the organization. They also need to take risks and be opportunistic, managing change is necessary but not sufficient. Changing times call for flexibility and adaptability. Just as students need support in developing as independent learners, so faculty need support in facing the changes in their role, in the curriculum and in the institution.

The impact of technology on the whole institution is of such magnitude that the leaders of the university cannot delegate decisions about technology strategy to the information officer. For most universities the senior team needs to IT issues and to integrate them into the strategic vision of the university. Institutional leaders must develop and support this vision and communicate it to the whole university community. They then need to ensure institutional alignment of support structures and policies.

4. OPPORTUNITIES

Despite the enormity of these challenges, ICT presents a number of opportunities for universities, which suggest a way forward for their evolution.

Growth of virtual universities and partnerships

Every day there are announcements of new companies being formed to market online and distance-taught courses, or new partnerships among existing institutions to broker courses and programmes both nationally and internationally. Just like airline companies, universities around the world are 'partnering up'. There are a variety of reasons for forming partnerships or consortia of universities:

- sharing resources, costs and infrastructure to deliver e-learning;
- competing with international providers;
- reducing duplication among existing universities.

Some of these initiatives are government sponsored, but many others are developed without any government assistance. Particularly common are partnerships between universities in developed and developing countries.

Such partnerships can also act as a means of entry into the global e-learning market for less economically advanced countries. The partner institution from

the less economically developed country brings adaptation to local culture, language benefits, local or national accreditation, sharing of costs and risks, and access to neighbouring markets or markets with similar language and culture. These are all considerable benefits for the partner from the more developed country. (Bates, 2001, p. 54).

However, a partnership is not a magical solution. It requires careful attention to the initial construction and to the continual maintenance of the relationship between the two institutions. Both universities need to make a commitment to collaboration and to be ready to alter existing organizational arrangements or patterns of behaviour. It is not an easy solution, but without strategic partnerships, universities will find it difficult to compete with the mega-market spaces that are emerging in the higher-education landscape.

Blended learning

Any media-related term that is popularized undergoes the following trajectory: at first it is a buzzword; then it becomes overused so that its early adopters move on to coin new words and concepts; and finally it either dies out completely or finds its rightful place as signifying a particular idea or practice. Already the early adopters of e-learning are looking around for new words or are adapting the term to cover new meanings. M-learning, meaning mobile e-learning 'on the road' or anywhere outside the office, is the latest buzzword. Meanwhile, e-learning is being redefined as 'enhanced' learning or even 'experiential' learning.

These substitutions for 'electronic' reflect a realization that it is not the electronic nature of e-learning that captures its true value, but rather the opportunity to integrate working, learning and community into the workplace. Furthermore, the earlier e-learning adopters have come full circle in rejecting an 'either-or' view of learning online versus face-to-face. So-called blended solutions often offer the most satisfactory outcomes: fifty-fifty models of face-to-face and online learning can combine the best of both worlds; even 75 per cent online with one face-to-face or residential meeting is successful in overcoming the limitations of online learning while benefiting from its overall cost-effectiveness and flexibility.

Importantly, blended approaches can encourage participants to make better use of face-to-face contact in the knowledge that preparation and follow-up can be conducted online. Totally online courses should be reserved for those contexts in which it is impossible

or unreasonable for learners to come together – typically international events and training courses, or projects in which learners cannot leave their operational setting. Synchronous technologies provide a partial substitute.

What does this mean for the continued investment in face-to-face and residential facilities for higher education? On the one hand, blended solutions to learning have strong pedagogical justifications: exposure to ideas through several different media definitely improves understanding and assimilation. On the other hand, the provision of multiple media is more costly. Some distance-teaching universities have found that students are very positive about electronic tuition, but are less happy when it is a complete substitute for face-to-face tutorials. This has left the institution with all the costs of managing physical and technology-based support.

As students adjust to the notion and to the practicalities of learning online, and as the number of students with home access to the Internet grows, these replication costs may be the inevitable price of change and innovation. With each passing year, more and more administrative and tutorial services are being offered online, with greater and greater value evident in the investment in online infrastructure. However, in higher education, just as in the workplace, there are areas of the curriculum, types of experiences, and forms of tacit knowledge that for the foreseeable future still require face-to-face interaction as the primary delivery mode.

Open Source and Open Courseware movement

The announcement that the Massachusetts Institute of Technology was going to make its course content freely available on the web marked a new step in the evolution of the university. It underlined the growing realization that content is not (or at least no longer) the primary focus of teaching and learning. Content can be given away free; what matters is the support of students and the nurturing of enquiring minds and the development of independent learners. In theory, this Open Courseware movement should be a great opportunity for universities in developing countries, as they can build on the expertise of other academics and concentrate on supporting learners rather than producing content. In fact, the whole Open Source philosophy is driven by a strong belief in the importance of freely available, non-proprietary software and, by extension, courseware.

The Open Source model of software production has grown out of a community of developers, who contribute pieces of code, fixes, and improvements to an ongoing software project, for example, an operating system. The code of the software is then regularly updated to incorporate contributions that have been deemed useful by the community into official releases. There are several key principles to the Open Source model. Firstly, the code is freely available. Secondly, the contributors provide their services for free. Changes to the code are decreed by perhaps one person or a committee, but this usually arises out of acceptance by the community as a whole. With Open Courseware, the idea is that any university can contribute to the pool of materials and draw on materials in their own teaching.

In terms of courseware, this movement is only in its infancy, but it holds considerable potential for all universities in evolving to more cost efficient working practices, less redundancy and greater equality of opportunity.

Growth of local study centres and telecentres

One of the ways in which both developed and developing countries have sought to meet the demand for increasing access to higher education is through the use of local study centres. Sometimes called community learning centres or telecentres, these sites have different characteristics in different countries. In many cases they are connected directly with a university and provide a venue for tutorials, access to resources and a local presence. In other cases they are funded by development agencies or other private means and provide access to a wide range of learning opportunities from different institutions.

As a means of providing access to e-learning, telecentres are the latest refinement of the local learning centre. Telecentres offer communal facilities for services such as videoconferencing, access to the Internet, telephone, fax and e-mail. While access to technology is a major element in the telecentre concept, the provision of a meeting place for students is also important. Most centres are able to be flexible in responding to changing demands for different learning options and in catering to diverse needs in the community for education at all levels. Nevertheless, these centres face real challenges in terms of their sustainability and their ability to satisfy local educational needs. The cost of equipping and staffing these centres remains prohibitive in many developing countries:

The issue of costs is also a hindrance to developing learning spaces. The costs associated with using ICT are also prohibitive in many developing countries. While the unit costs of hardware and software are being lowered in terms of the US dollar, the worsening exchange rate of developing countries means that there is no appreciable drop in the costs. The successful use of multi-purpose centres for virtual education relies on trained and professional support. Often learners require support, whether online or at the centres where they access the learning materials. This support, however, is often lacking in developing countries where, to date, very few scholars are familiar with teaching and support in an online environment. This situation poses a threat to being able to deliver online learning as well as to the development of online courses that are context-specific to a country or region. (Naidoo, 2001, p. 21)

Move to a student-centred pedagogy

It is surely not a coincidence that the movement towards a student-centred pedagogy has gathered force just as the technologies to support such a move have taken hold. The Internet has been called a disruptive technology, that is, one that significantly changes the way people and systems operate. Teaching online is not a process that can be controlled in the way that face-to-face lecturing can be. In the online environment, the teacher becomes a facilitator, guide or even expert resource, but no longer the sole determiner of the student experience. The Internet is too vast, the impact of student-to-student communication too great, the asynchronicity of the environment too ephemeral to control. The learner now decides when and where to log on, how to work through the course materials, what resources to draw on, whom to work with collaboratively, when to contribute to discussions, and so on. While this self-directedness is hugely welcomed by many students – and particularly those who are confident, self-motivated and resourceful learners – it is not universally successful with all learners. Those who have poor study habits, lack self-discipline or motivation, have been educationally disadvantaged, or are driven almost solely by extrinsic reasons for wanting a degree, tend to find the student-centred pedagogy bewildering, too demanding or too much hard work. In any case, students do need a gradual process of learning to be self-directed. They need training and practice in ICT skills of searching, analysing and managing web-based resources; they need a student-friendly online environment that encourages and rewards interaction, and they need supportive tutoring to help them adapt their study patterns from linear

working through textbooks and lecture notes to interactive engagement with ideas, resources and other students.

The opportunity this presents to universities is first of all to reduce the annual presentation of content through lecturing and move to greater engagement between teachers and students. While threatening to some academics, this move can be inspirational and refreshing for many others. Second, the focus on peer learning and collaborative activities can release faculty time for interaction with students through e-mail or group conferencing. Third, the increased engagement of students with the learning process can reduce drop-out rates and improve satisfaction ratings.

5. THE GLOBAL MARKETPLACE FOR HIGHER EDUCATION

Given the challenges and opportunities facing universities, it is important to ask questions about the emerging global marketplace in higher education.

How extensive is the market for global e-learning?

Predictions about the size of the global e-learning market abound and the hype surrounding the importance of entering the e-learning market space is hard for universities to resist. Nevertheless, it is now apparent that many of the 'early adopters' have ceased to exist and announcements of closures of e-learning ventures have been all too common. In fact, as Farrell points out in *The Changing Faces of Virtual Education*, the virtual education agenda is evolving:

It is no longer solely, or even primarily, about technology. The focus now is about whether or not it is appropriate to the institutional vision and values, what operational issues it will create for the organization and how the costs can be managed. This changing agenda is partly due to the fact that there is generally more experience with results of ICT use in education. However, it also reflects the fact that the debate has become of more concern to the mainstream decision-making process within institutions, rather than being isolated to a specific, and more peripheral, part of the organization such as the 'distance education' unit. (Farrell, 2001, p. 145)

Competition from virtual universities, corporate universities and other private providers of e-learning will continue to erode the traditional

student base of universities in both developing and developed countries. However, the lifelong learning market is significantly larger than the traditional undergraduate population of school leavers, so the market for e-learning is expanding all the time.

What are the barriers and benefits of virtual courses?

For most academics, designing a course for the web is quite a change from preparing a series of lectures. Apart from the need to rethink the content, the student activities and the support mechanism, there is for many the unusual experience of having to work in a team. What was once a very private performance in front of a group of students, becomes a team effort, often involving critical commenting on drafts of the print or web materials.

This form of 'public exposure' is only the beginning of the change from lecturing. Even for academics who already work in distance education, a much more significant change is required to tutor online courses in which students dominate the interactions and the tutor becomes a guide and facilitator. This constructivist, collaborative model of learning is hardly a new phenomenon, but it has become the dominant paradigm in most online courses. Across many areas of the curriculum, there is a greater emphasis on learning how to find out for oneself, rather than on learning what the teacher knows. This change is unsettling for the teacher and also requires a new attitude to learning on the part of the student.

Nevertheless, there are many benefits. The pioneers of the new online learning courses report renewed interest in and even excitement about the rewards of working closely with students, nurturing an environment for learning, guiding students through the maze of online resources by good course design and interaction in online discussions. Some have found a new career, often towards the end of a traditional one, reworking their tried and true teaching strategies for the new medium of the web or, in some cases, multimedia CD-ROMs. In fact, there is evidence that one of the main elements in the success of many technology-based courses is the renewed attention given to the teaching and learning processes that these technologies have demanded of academics. Instead of repeating the same content in lectures year in and year out, the academic can distill the ideas into course content either through print, the web, or multimedia. Then the focus can be on the more dynamic and interactive side of learning.

Is this a win/win or win/lose process for developed and developing countries?

The Internet, and in particular web-based education, has the potential to enhance access to knowledge (leading to technological leapfrogging) and to help universities break out of outmoded and poor teaching methods. However, it can also exacerbate social inequality if the poor do not have basic access to the rich information resources of the web. There is no doubt that globalization has allowed some virtual universities in developed countries to make learning opportunities available to students in developing countries (Tschang and Della Senta, 2001). For countries or institutions with minimum levels of Internet infrastructure, significant resources are available through the Internet in the form of public-domain software, data, documents, courses, digital libraries, course curricula and other web materials.

However, it is clear that simply having access to courses and software on the web will not solve the individual learners' problems in developing countries, and may even present barriers. Systems developed in technology-rich countries often will not fit with traditional cultures, systems or economic conditions in technology-poor countries. Furthermore, while it is often assumed that IT and other technologies have no cultural context, many technologies and their uses actually have a destabilizing effect on traditional cultures. Finally, language is another barrier to shared access to digital resources. Language-translation technologies are perpetually 'just around the corner' and as yet a translator that works across many languages and multiple contexts is still a long way off.

It seems, therefore, that while virtual education could play a democratizing role and provide benefits for both developed and developing countries, this vision is still more aspirational than real. Bates concludes that:

e-learning is not the answer to many of the most pressing educational problems faced particularly by poorer developing nations. Other strategies, such as open universities, can provide greater access and more cost-effective delivery of education. (Bates, 2001, p. 117)

6. CONCLUSION

The changes that universities are already undergoing are not just inevitable and necessary, they are actually beneficial from the point of view of many students, employers and even academics. The focus on

students, new methods of delivery, access, flexibility and connectivity are positive directions and are breathing fresh air into many of the less credible corners of the concept of a university. The role of the teacher/trainer/tutor is changing rapidly, but there is no evidence that the role is diminishing, it is rather evolving. E-learning is empowering the individual learner so that the teacher is no longer the gatekeeper of knowledge. E-learning has reinforced the importance of informal learning and helped to bring about a convergence between learning and working, between learning and communicating, and between learning and entertainment. Universities have the possibility of emerging from this time of turmoil with more robust procedures, more respect from the community and more commitment to the goals of society.

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Chapter 4

A WORLD OF BORDERLESS HIGHER EDUCATION: IMPACT AND IMPLICATIONS

Robin Middlehurst

1. INTRODUCTION

Overestimating change in the short term and underestimating it in the long term is a common phenomenon when revolutions are under way. Many commentators argue that we are indeed in the throes of a revolution as we move from an industrial to a 'post-modern information age'. Characteristics of this information age include high-speed communication and transaction systems, widespread access to codified knowledge and global interdependence of economic and environmental systems. While regions of the world are differentially affected by the information age, none are immune from it any more than they are immune from the impact of the globalization that is a feature of the age.

Higher education is both deeply affected by and involved in wider social and economic change. Many current studies seek to document and examine the effects of change on higher education, as well as the role that universities and colleges are playing in shaping a new educational landscape. Three related studies (which form the foundation for this chapter) have developed and used the concept of 'borderless education' to describe and capture some of the features of the emerging landscape. The term 'borderless education' was originally coined by a team of Australian researchers investigating the potential competitive impact on Australian higher education of the growth of global media businesses and developments in 'new media' (Cunningham et al., 1998). Concluding from this first study that greater competition for traditional

universities was likely to emerge from the developing phenomena of corporate and virtual universities, a second study examining these new providers soon followed (Cunningham et al., 2000).

In parallel with the second Australian analysis of ‘the business of borderless education’, a British study mapped borderless developments in different parts of the world (in the USA, the UK, continental Europe and the Commonwealth). The British team was seeking to assess the strategic implications of borderless developments on the management, leadership and organizational systems of traditional higher education institutions, including quality assurance, finance, human resource arrangements, teaching and learning systems. They also sought to identify particular issues of relevance for the wider national and European regulatory context (Committee of Vice-Chancellors and Principals, 2000). These developments in borderless education, linked to the emergence of new providers and markets in higher education, provide the focus for this chapter, alongside an analysis of their policy and management implications.

2. BORDERLESS (HIGHER) EDUCATION: CONCEPT AND CATEGORIES

2.1 Concept

The term ‘borderless education’ is used to describe educational provision that crosses conventional boundaries of time, space and geography. In crossing these boundaries, many of our current conceptions of education (and higher education in particular) are also transgressed with a number of consequences that will be discussed throughout this chapter.

The kind of boundaries that are crossed include (Middlehurst, 2002):

- levels and types of education, such as further and higher education, vocational and academic education, adult and continuing education; in some cases this represents a genuine effort to create seamless lifelong learning opportunities;
- private and public, for-profit and not-for-profit education: combining ‘public good’ and ‘private gain’ organizational structures and forms of provision;
- state and country boundaries, for example, between business and the public sectors and higher education, creating new corporate

- universities, transnational consortia as well as joint ventures and strategic alliances;
- boundaries of time and space in the creation of virtual learning environments, online learning programmes and e-universities.

The nature and range of ‘borderlessness’ varies from country to country for a variety of reasons. Firstly, the extent and penetration of new information and communication systems will determine how far traditional modes of distance education are becoming ‘virtual’, that is, fully mediated by forms of electronic learning and student support, capable of crossing boundaries of time, location and geography. Second, countries differ in their responses to increasing demand for initial and continuing higher education (whether academic, professional or vocational). Some seek to combine these levels and types of education in one institution or in alliances between institutions, others segregate them within different kinds of institution, subject to different regulatory arrangements. Third, some countries have strict rules about the status of particular forms of delivery, with face-to-face education typically being seen as more desirable than distance education. Fourthly, some types of provider and educational purpose are regarded as the proper domain of the state and are regulated and protected in this domain. Other types of provider, provision and educational purpose are seen as the legitimate domain of the private, for-profit sector, subject to the opportunities, disciplines and vagaries of the market.

2.2 A changing educational map: categories of borderless education

The Australian and British studies of borderless education were motivated by concerns about increasing levels of competition for higher education institutions from outside the sector, a potential loss of market share in relation to overseas students and the general impact of change consequent on ICT developments and globalization trends. The reports aimed to identify the ‘new competitors’, what particular features of organization or education they embodied and what kind of threat they posed to traditional forms of higher education. The British researchers sought to categorize the ‘new providers’, but with an important caveat: some providers were not new, but in a changing economic and social context, they appeared to be extending their scale of provision, thereby reaching new levels of prominence in national

and international spheres. The original categories identified in the 2000 reports are constantly being extended to include developments (such as national e-university initiatives) that have emerged since the reports were published.

The categories of provider and provision that are part of the commercial sector include:

- corporate universities (public-sector and private-sector organizations);
- private and for-profit providers;
- media and publishing businesses;
- educational services and brokers.

The types of development that are emerging from publicly-funded, not-for-profit, higher education (and which may or may not be commercial) include:

- regional and international consortia;
- forms of transnational education;
- national virtual university initiatives.

In some cases the two categories intersect, creating clear examples of 'borderless education', in other cases the two exist in parallel, either coexisting or in competition with each other.

Corporate universities

Corporate universities have developed rapidly in the USA in the past twenty years (but with some, like McDonald's Hamburger University, established in 1962, having a longer history). Examples of corporate universities are also evident in Europe and Australia (Taylor and Paton, 2002). Recent estimates suggest that there are more than 2,000 such initiatives among large companies (such as Ernst and Young or Lufthansa) and large organizations such as the US Army or the UK's National Health Service. Corporate university initiatives vary in scale and scope; some involve little more than a reorganization and 'rebranding' of internal training and human resource functions, while others are a more systematic attempt to connect human resource strategies, skills development and continuing education, knowledge management, organizational learning and culture change.

Very few initiatives are seeking accreditation in their own right to award university-level qualifications; the Arthur D. Little School of Management is the only corporate university known to have regional accreditation in the USA. Others gain access to accreditation through alliances with existing institutions (for example, Ford Motor Company). Very few are engaged in research and only the more established or those with valuable specialisms, such as IT skills, are seeking to extend their educational and training services from employees to customers, suppliers and the general public. Together with existing universities and colleges, corporate universities can make a valuable contribution to the expansion of opportunities for lifelong learning.

Private and for-profit providers

Many countries, such as Japan or Indonesia, have a higher education system where private higher education institutions predominate. In other countries such as France or Canada, this situation is reversed, with state-owned or publicly funded institutions in the majority. In recent years, a growing demand for foundation-level higher education (for the 18–25 age group) in several parts of the world (such as the Far East) and for continuing and specialist education has resulted in the establishment of new private higher education institutions. Poland, for example, had almost no private institutions in 1989; now more than 180 private institutions have captured a third of the student body (Couturier and Newman, 2002). In addition, due to the regulatory regimes in different countries, some institutions designated as public and not-for-profit in their home countries become private entities if offering programmes off shore (such as Monash or De Montfort University campuses in South Africa).

Some of the private providers were established from the outset – and as early as the late 1970s – as for-profit providers. Market leaders with origins in the USA include the University of Phoenix (now with more than 100,000 registered students studying ‘virtually’ or at centres in the USA, Canada, Puerto Rico and Germany) and Sylvan Learning Systems, with on-campus programmes in Chile, Mexico, Spain, Switzerland and, most recently, in France. Sylvan has also made an approach in India. Many of the for-profit providers offer specialized curricula (in engineering, IT, health care, business and management and teacher training) to the niche market of working adults (Ryan, 2002).

Media and publishing businesses

In some countries, such as China, the USA or the UK, national media organizations have long been involved in the delivery of education. In China, the main providers of distance education in the public sector are the 44 government-supported Provincial Radio and TV Universities with 841 branch 'schools' at city or prefecture level and almost 1,800 study centres. It is estimated that the Provincial Radio and TV Universities have around 1.5 million students enrolled in higher education programmes mainly at undergraduate level, representing about 25 per cent of all students in higher education (British Council, 2001). In the USA, the Public Broadcasting Service, a not-for-profit television service, offers provision on television from numerous higher education institutions. In an alliance with Microsoft, the Public Broadcasting Service can now transmit web-based material to television sets (through Microsoft's web TV Network Service), thus delivering content from local universities and colleges to adult learners in their homes. The Public Broadcasting Service, through Project ACCESS, is also providing a national information service on distance learning to enable students to find provision that best meets their needs (Committee of Vice-Chancellors and Principals, 2000). In the UK, the British Broadcasting Corporation has had a long-standing alliance with the Open University. This alliance is now being extended to include other institutions.

Publishing businesses are also active in alliances with universities, colleges and other educational service providers. The global publishers, Pearsons and Thompson Learning are market leaders in the field. Pearsons' initial partnerships were with traditional universities in the UK and the USA. More recently, they have extended their alliances so that they can offer a wider range of learning services. For example, in partnership with America Online, Pearsons has commenced its 'Learning Network': with the University of Phoenix it is able to provide customized electronic content based on Pearsons' textbooks; with ITT Educational Services, another for-profit post-secondary provider in the USA, Pearsons is able to offer an online e-commerce programme using its own textbook content. Thompson's strategic partnerships have been equally wide-ranging. In 2000, the company invested in U21 Global (now Universitas Global), a consortium of sixteen research-led universities from across the world. In 2001 it entered a partnership with Brainbench (an online examination and certification company). Thompson also acquired selected parts of

Harcourt's business (another large publisher in higher education and in the corporate and assessment businesses). Thompson entered into partnership with Informatics in Singapore to offer IT courses in Asia and began to market Cardean University's courses. Cardean University, a venture begun in 1998, is a consortium that includes the London School of Economics and Columbia University, among others (data obtained from the Observatory on Borderless Higher Education, 2002). In all the examples described, the publishers are able to use their core skills in marketing, distribution, content and electronic delivery systems in alliance with those who provide learning, assessment and accreditation services to offer new products and services to existing and new markets.

Educational services and brokers

Examples of educational brokers include Western Governors' University in the USA or Learndirect in the UK. Western Governors' brings together a range of partners to deliver new kinds of programmes (based on a competency model) to new groups of students. Courses are developed and delivered by more than thirty participating organizations including universities, colleges and commercial companies such as Apple, KPMG and Microsoft. Western Governors' University offers online courses, provides access to assessment services through Sylvan Learning Systems and enables students to accumulate credits towards qualifications, either through formal courses or through experiential learning. Quality assurance of the combined products and services is provided by the university through three councils. The programme councils govern the integrity of academic content; the provider council reviews and approves individual providers (i.e. institutions and training providers that supply teaching staff) and the assessment council oversees the reliability of assessment instruments.

Learndirect, which started life as the 'University for Industry' is a national initiative in the UK (with a separate Scottish organization), funded by government and private investment. It acts as a broker between learners and companies and providers, giving access to 'courses and learning packages' through electronically equipped learning centres in a range of convenient locations. A nationwide guidance service helps to put learners in touch with appropriate provision. Learndirect aims to increase demand for learning and to facilitate access to learning for the whole population, including the most disadvantaged.

The Australian team researching ‘borderless education’ (Cunningham et al., 2000) noted the huge growth in educational brokers of all kinds. They also reported on the expansion of educational services, including educational guidance, testing and assessment, learning support and electronic libraries, and accreditation services. The technology vendors (both hardware and software companies) are also heavily involved in this field as each kind of service becomes increasingly dependent on electronic media. Many corporate universities rely on contractors for the development of tools, templates and expertise not available in-house and some educational service companies will offer to set up and run the corporate university for you, providing enrolment systems and facilities management services. Increasingly, as traditional universities invest in large-scale networked learning to develop ‘managed learning environments’, they too are becoming dependent on commercial service providers.

Regional and international consortia of universities and colleges

In all parts of the world, groups of institutions or departments are developing consortia arrangements. Regional examples include the University of the Arctic, a consortium involving Scandinavian, Russian and Canadian institutions and the Oresund Science Region, a network of eleven universities and science parks in Sweden and Denmark and a range of private companies and local government organizations. These types of consortia aim to encourage both economic and social development in their localities.

Larger international groupings include Universitas 21 with eighteen member universities, the Global University Alliance with nine members or UNext with six member institutions from the USA and the UK. Some consortia, such as the Coimbra Group in Europe, have been in existence for some time, others are more recent. Their purposes vary from enabling student and staff exchanges to promoting research collaborations, developing international curricula or increasing access to markets for international students. The possibilities opened up by developments in information and communications technologies mean that some of these consortia are seeking partnerships with companies (such as that between Universitas Global and Thompson Learning mentioned earlier) to develop commercial opportunities for their educational programmes and services in several parts of the world.

Forms of transnational education

In addition to regional and international consortia, a variety of other forms of transnational education has emerged to add to the traditional modes of staff and student exchanges between countries. In the UNESCO/Council of Europe Code of Good Practice in the Provision of Transnational Education (2001) these are categorized in terms of collaborative and non-collaborative arrangements. The former include franchising, twinning and joint degrees whereby study programmes, parts of a course of study, or other educational services of the awarding institution are provided by a partner in another country. The latter include branch campuses, offshore institutions, corporate and international institutions whereby study programmes, parts of a course of study, or other educational services are provided directly by an awarding institution in one country to another country or countries.

Transnational education can be delivered in a variety of forms: through distance learning (using printed, electronic, audio and video-based media) and face to face. It is in the field of transnational education that concerns have been raised about the volume, nature and quality of provision that is being exported from (mainly) industrialized countries to developing countries, including parts of Central and Eastern Europe and Africa. Other countries, such as Malaysia and Hong Kong welcome foreign providers having developed good systems of regulation. By 2001, for example, Hong Kong was hosting more than 150 overseas providers of higher education, often in collaborative arrangements with local providers (Olsen, 2002).

National virtual university initiatives

As this volume of case studies illustrates, it is not always institutions by themselves that are seeking to join forces to exploit the use of new technologies to enhance their own provision or to extend their provision to new markets. National initiatives, as well as numerous interstate initiatives (as in the USA) are also evident. Countries across the world have announced virtual university initiatives of various kinds, for example, Pakistan, Greece, Sweden, the UK and Finland, as well as those included in this volume. Some of these initiatives are intended to extend and enhance local provision while others are targeted at international markets.

3. PERSPECTIVES ON THE POLICY AND MANAGEMENT IMPACT OF BORDERLESS EDUCATION

In order to tease out the policy and management implications of borderless developments, it is helpful to dissect the concept and categories described earlier in a number of different ways. In this section, three perspectives are presented and their implications discussed: general features of borderless education, cross-border dimensions and new educational variables.

3.1 Features of borderless education

There are some general features of borderless education that are worth brief elaboration in order to draw out their policy and management implications.

Technology dependence

There is widespread and growing use of and dependence on ICT for delivery of programmes, for administration of student services and for learning support. Standardization of processes and compatibility of systems across institutions and between all partners in a consortium are becoming increasingly important issues.

Dissolving boundaries

Boundaries between previously discrete categories of provider and provision (on-campus and distance learning, company and college) are dissolving and distinctions between roles are also blurring. Dissolving boundaries make categorizations difficult and raise questions of identity, role, structure and regulation (what is a university, for example?). They also make it difficult to collect accurate and comprehensive data to assist with the sharing of information across countries, while at the same time creating an urgent need for common vocabularies and typologies.

Emerging boundaries

Where some boundaries are blurring, others are becoming more sharply defined as organizations concentrate on their core business and outsource non-core aspects to other providers. Most UK universities, for example, offer student accommodation as part of the 'community experience' for students. Increasingly, the building and maintenance of such accommodation is being outsourced to private companies. With

the expansion of educational service companies, many other aspects of educational provision can also be outsourced, including admissions, registration, assessment, teaching and learning support. Universities need to address the question of what is core to their business, and where they have a unique or specialist role, and what is non-core, though arguably no less important. As functions are disaggregated and shared between a chain of providers, institutions will need to pay particular attention to quality assurance to ensure that the end user (the students) experience programmes and learning opportunities that are relevant and coherent. Institutions will also face important issues of copyright and ownership of intellectual property.

Educational value

Individuals and companies value a variety of education and training outcomes and do not necessarily wish to create barriers between them. These outcomes may include skills training delivered through short courses, cognitive and attitudinal development delivered through longer programmes leading to qualifications, work-based experience, cultural development and opportunities for personal growth. Learning may, for some groups of learners, need to be relevant, focused and immediately usable rather than generalized, theoretical and focused on longer-term value. 'Just-in-time' learning will be more valuable for some than 'just-in-case' learning. Institutions may need to re-evaluate their provision in the light of different value systems and requirements.

Subject spread

Many – though by no means all – borderless developments are commercially driven, both in terms of income generation to providers of education and in terms of the return on investment for purchasers of education. The range of subjects and programmes offered can often be narrower than traditional university and college curricula, focusing particularly on vocational and professional areas such as engineering, IT, health care, language training, and business. If educational quality, particularly at undergraduate level, is measured by range of subjects studied as much as by depth of engagement in any one discipline, then there are aspects of curriculum control that need to be exercised both at institutional and national levels.

Collaboration

Partnerships, alliances, acquisitions and mergers are developing between many different sectors. Collaborative arrangements require mutual understanding and respect at individual and group level. They also require good information about potential partners and the ability to tailor products and services to meet diverse needs. Mobility, flexibility and exchange are important elements and require collaborative systems (such as credit transfer arrangements) to be developed across a range of territories and organizations.

3.2 Crossing borders: national, organizational, functional, temporal and spatial

A classic feature of borderless education is the crossing of boundaries. Previously discrete aspects of education now exist in more complex, interrelated forms and systems. Yet barriers still exist that prevent the provision or experience of education from being seamless, particularly in a global context. Removing barriers of various kinds is a key policy issue.

Crossing national borders

In transnational education, barriers include national legislation and higher education policies, visa and customs regulations, telecommunications laws and costs, intellectual property rights and the quality assurance arrangements of different countries. Reducing these barriers is a declared aim of the World Trade Organization, through negotiations on the General Agreement on Trade in Services. Various mechanisms are used to achieve a reduction in barriers, many of which are relevant to UNESCO's goals – sharing of information, common vocabularies, templates and formulae to aid transparency, reciprocal recognition, codes of practice and conventions which formalize agreements. At the outset, many of these schemes are voluntaristic but, over time, they may become more tightly coordinated and systematic within and across regions and countries.

Crossing organizational boundaries

Across organizations, barriers include legal and funding arrangements, technical competence and capacity, management structures and organizational cultures. Some of these issues (such as technical standards) require action at supra-national and industry-wide levels,

while others are more likely to be solved by negotiation built on shared experience and understanding of difference at local and regional levels. Where multinational corporations are involved, there is already a wealth of experience to bring to higher education in the development of mechanisms that support and assure the quality of transnational and cross-cultural education.

Crossing functional borders

Where functional borders are crossed, particularly where long chains of providers are linked together, a particular challenge is to specify and agree where responsibilities for the delivery and assurance of quality lie and to ensure that appropriate operational structures and systems exist. A matrix approach to quality assurance may be the answer. As a first stage, each part of the supply chain can be 'accredited' against a set of agreed criteria. In this way, we should be able to get closer to common understandings (or even common standards) related to learning centres, learning resources, assessment systems, curriculum design and pedagogical approaches. At a second level, overarching systems of agreement (contracts) make transparent the responsibilities and accountabilities of each party in the chain. At a third level, organizational arrangements (such as Western Governors' University's quality assurance councils) ensure that processes run smoothly and that outcomes are fit for purpose according to the needs of different learners and purchasers of learning. At an international level, it is possible to agree on the components of such a system and, over time, to agree on the quality criteria that should underpin their successful operation.

Crossing borders of time, space and location

The flexibility potentially created by ICT developments through removing or reducing barriers of time, space and location has brought new expectations and opportunities, both positive and negative. Some specific implications for policy and management include the need for:

- consumer protection against the claims of non-authorized or disreputable providers;
- international conventions to cover the import and export of online learning;
- registration and protection of domain names;

- security systems of various kinds, from registration and payment systems to assessment and student records;
- tracking systems for progression in learning, for marking and grading of assignments and for recording attainment and transfer of credit;
- quality standards to govern technical functioning, curriculum and content design and learner support;
- review systems specifically geared to online learning;
- validation systems to approve individual or group-designed programmes, learning experiences and learning outcomes.

These requirements are likely to be independent of the type of provider and may well require conventions and agreements that apply across sectors as well as across countries. The price of flexibility for the learner or purchaser of education is likely to be an increase in standardization for providers; this is already recognized in the practices and procedures of distance education institutions. In the context of borderless education, traditional higher education providers will need to join with others now involved in the education business to ensure that their particular values and purposes are recognized in any moves towards standardization.

13.3 New educational variables

In this section, some of the critical *educational* features of borderless developments are considered, including type of provider, modes of delivery, curricula and qualifications.

Types of provider and provision

Five kinds of provider and provision can be identified. These are:

- individual providers that offer the full range of educational processes from enrolment to assessment and certification (including public, private and for-profit providers engaging in face-to-face, distance and dual-mode provision);
- consortia that offer the same full range of provision;
- part or joint providers of programmes and degrees;
- multi-agent providers, each of which offers a part of the educational process;

- ‘self-assembly’ arrangements where the learners assemble their own provision, with guidance and subsequent certification from elsewhere.

In relation to the first category, the policy and management impact tends to be felt at national and international levels in relation to regulatory and governance frameworks, funding and quality assurance arrangements and the wider telecommunications infrastructure. At institutional level, leaders and managers face issues of increasing competition with the commensurate need to address questions of mission, regional and global positioning, and market opportunities.

The second category adds complications, particularly where partners in the consortium are not traditional higher education institutions from one country. The legal frameworks of different countries (and their application to education and business) are an important element of the policy context, for example in relation to arrangements for accreditation and licensing of educational establishments or the authority to make judgements about quality and standards. At institutional level, governance arrangements, financial systems, staffing and staff training, technology infrastructures and quality assurance arrangements will all feature in strategic debates and plans. The third and fourth categories raise some of the same as well as other issues. For example, in relation to quality assurance, if one provider is responsible for the design of curricula, another for teaching and another for certification, it may be necessary to have quality assurance arrangements that are fitted to each function with ‘accreditation’ or ‘kite-marking’ of the different parts. There will also need to be clear arrangements for managing and integrating the different functions and for sharing information about enrolments, assessments and grading. Where joint or multi-agent providers involve traditional institutions and companies, new organizational arrangements, with staff on different kinds of employment contracts, may need to be developed.

The fifth category poses a significant challenge in that control of the curriculum is not solely in the hands of academics, but requires negotiation between learners (or companies) and a certifying body, which may or may not be an academic institution. Both at policy and management levels, issues of funding, accreditation, credit transfer and recognition of qualifications become significant.

3.4 Delivery: modes, media and locations

The distinctive characteristics of new modes of delivery include the co-location (or not) of students and tutors and the amount and type of interactions between groups of learners and tutors, between learners themselves and between learners and other resources for learning. The support systems – social, academic and technological – to which learners have access are important. Another consideration is the extent to which the media add value to the learning experience, in terms of quality, accessibility or relevance.

The operational implications of ‘delivery’ are both practical and obvious and less tangible. For example, technical standards, technical capacity and support as well as issues of security, privacy and reliability are important aspects of e-learning and are directly linked to the quality of provision and the nature of students’ learning experiences. More subtle are issues arising from the increasingly fluid boundaries between knowledge, information, learning and entertainment; the nature of students’ educational experiences as well as the value placed on them is changing. Higher education leaders will need to reassess the nature of their educational offerings so that they fit the needs of increasingly diverse learners. Some of these issues are universal, affecting higher education practice in any location, while others (such as access to particular media and the value placed on particular forms of delivery) are particular to different countries or regions. Such differences become significant in relation to transnational education and the recognition of qualifications across national boundaries.

3.5 New curricula and content

In discussing ‘borderless developments’, the emphasis has been largely on teaching and learning and how new providers and provision are affecting the educational enterprise. However, the generation of new knowledge through research and development activities must also be part of the picture. The academic world does not have a monopoly on the generation of new knowledge or on determining the particular requirements of ‘knowledge in application’ for different contexts. The authority to design and determine ‘content’ (and to assure its currency and credibility) is likely to become more widely shared, with implications for standards, assessment and qualification frameworks. In some countries, different institutions and different frameworks and systems cater to different kinds of curricula; in other countries, the

merging of institutions, as well as emerging consortia and partnerships, are blurring these distinctions. Given the increasing variety of suppliers of content, issues of level, recognition, currency and equivalence are important, with a need to negotiate agreements about such matters across organizations and countries.

3.6 New qualifications

New types of qualifications (joint and multiple awards, integrated degrees, incorporating academic requirements with a licence to practise and professional certification) as well as non-certificated learning (such as experiential learning) raise some of the quality assurance issues associated with new content. Ownership and authority for the award is a key issue, with differences noticeable across countries and within countries, particularly in relation to professional areas. Clearly the value of the award is also an issue, with a need to verify the provider, accrediting agency or other recognition arrangements. Where credit is gained towards qualifications, credit accumulation and transfer systems become important, as the European Credit Transfer System recognizes.

4. CONCLUSIONS

This chapter has sought to range widely over the type of developments that are emerging in higher education systems in different parts of the world and to draw attention to some of the consequences that arise for policy and management at different levels. Given that 'borderless developments' have a particular impact on the educational enterprise, most attention has been given to implications for student learning, qualifications and quality assurance systems. However, other aspects of policy and management such as legal frameworks, ICT systems, funding arrangements, governance and human resource management will all be affected by the developments discussed here. Indeed, in recognition of the wide-ranging impact on universities and colleges of 'borderless developments', institutional leaders in the UK have joined with the Association of Commonwealth Universities to establish an 'Observatory on Borderless Higher Education'. The Observatory will provide a continuing strategic information service on a subscription basis to institutions to assist their planning and decision-making processes as they strive to meet the challenges arising from a changing global, regional and local education landscape.

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Chapter 5

UNIVERSITI TUN ABDUL RAZAK (UNITAR), MALAYSIA

Syed Othman Alhabshi and Hasnan Hakim

1. UNITAR AND ITS CONTEXT

Distance learning is an old phenomenon in Malaysia. The establishment of Universiti Tun Abdul Razak (UNITAR) in 1998 has enhanced distance learning in the country in two significant ways. Firstly, by leveraging ICT, UNITAR aims to be an important catalyst for the country's transformation into a knowledge economy, both in terms of technology and human resource development. Secondly, it allows quality education to reach a much wider audience both locally and internationally. UNITAR's presence in the midst of 15 public and 14 private universities and almost 600 private colleges certainly is in line with the mission of the Malaysian Government to turn Malaysia into a centre of educational excellence. Within its limited experience, UNITAR appears to have the potential to pioneer customized education and lifelong learning in the country.

1.1 National context

Many individuals, especially those in the workforce who aspired to develop their careers, painstakingly worked for external degrees offered by reputable universities such as the University of London, UK, as early as the 1950s or earlier. Many professional bodies, such as the City and Guild in the UK, also offered various certificates and diplomas in different fields through correspondence programmes. In principle, these programmes supplied their registered students with

reading and reference materials and assignments in print form through ordinary mail. Students would then sit for the scheduled examinations at different recognized centres in the country. Regular face-to-face teaching was not common for distance learning programmes, but educational entrepreneurs normally provided some form of tutoring to students to help them prepare for their examinations. However, in certain cases, there was no interaction at all between students and faculty.

The first local university that started distance learning, which was popularly known as 'off-campus programmes', was the Universiti Sains Malaysia in Penang. Universiti Sains Malaysia was established in 1967/68. It started operations in 1969 and initiated the off-campus programmes in the early 1970s. Students received print-based materials in modular form and were required to attend regular face-to-face tutorials at different centres conducted by qualified academics employed by the university on a part-time basis. These students needed to be registered as off-campus students for four years in order to complete the first two years of a three-year undergraduate programme. The final year had to be completed on-campus with the other regular students.

Off-campus or distance learning programmes did not become very popular until the 1990s, when almost all the established local public universities had jumped on the distance learning bandwagon. This proliferation of distance learning programmes is the result of very high demand for higher education combined with a shortage of university places in the country. This trend has also prompted foreign universities to offer academic programmes to Malaysians, for example, Master of Business Administration (MBA) programmes offered by universities from the UK. In these cases, no more than 30 per cent of the teaching is done by faculty from the UK, the rest being done by Malaysians. Compared to the fees charged by local universities, those charged by the foreign universities are very high. In other words, the premium for reputation is rather high.

The advent of the Internet in the early 1980s did not, however, lead to the development of e-learning right away. Both the lack of Internet penetration and its instability hindered the enthusiasm for online learning. Providers of e-learning could not afford to venture into the business in Malaysia because of the difficulty in obtaining the critical mass required for profitability. The second, and more important,

reason for the lack of enthusiasm for e-learning was that face-to-face teaching and learning were still preferred. Although distance education where little or no student-faculty interaction takes place has already taken root in the country, there is still much doubt among students and especially their parents that e-learning could be effective. Both society at large and professional educators still strongly believe that the traditional methodology of teaching and learning is the most effective way of imparting knowledge. This belief is so deeply ingrained that forward-looking institutions like UNITAR are finding it difficult to introduce e-learning, which is becoming an important business in countries such as Australia and the USA. UNITAR's experience in introducing e-learning in Malaysia is very significant, in particular for societies of the same background and socio-economic status in other parts of the world.

UNITAR is not the only private higher institute of learning providing tertiary education in Malaysia. There are approximately 600 private colleges and at least 14 fully operating private universities in the country. Only approved private universities are allowed by the authorities to offer undergraduate and higher degree programmes. The private colleges offer various non-degree qualifications leading to certificates, diplomas and advanced diplomas in professional and academic disciplines. They also offer degree programmes by twinning with foreign universities, particularly those in the UK, Australia, the USA and Canada.

The government has also approved a number of foreign universities to establish branch campuses in Malaysia, for example, Monash University (Australia), the University of Nottingham (UK), and Curtin University (Western Australia). These foreign universities offer selected degree programmes in Malaysia that cost slightly less for students who otherwise would have to go abroad to receive the same qualification. All the private institutions adopt the traditional method of face-to-face teaching that requires physical campuses and teaching personnel.

The increasing demand for higher education, especially since the early 1980s after the British Government decided to implement full-cost fees for all foreign students, has resulted in the proliferation of private colleges that provide twinning programmes. The small number of public universities (only six in those days) could not meet the rapidly increasing demand for higher education. Since then, the government

has increased the number of public universities to 15 for a population of nearly 23 million. Private education is still considered to be a very lucrative business.

There is the perception that in order to establish a private university of reasonable size and repute, a huge campus is needed to attract students. Creating a campus requires a very large capital investment. Few private enterprises can afford this. Second, the capacity of the university, which is usually burdened by limited allocation of space, has to be expanded at considerable capital cost when the need arises. Third, students have to be on or at least in the vicinity of the campus to be able to attend the university, and this naturally involves incidental costs, such as transport and lodging, in addition to tuition fees and books. As a result, only a limited number of students – in other words, those who are able to pay – can enrol, a situation which exacerbates the socio-economic divide.

KUB Malaysia Berhad, which owns UNITAR and is listed on the main board of the Kuala Lumpur Stock Exchange, believes that most of the problems associated with the face-to-face teaching and learning mode could be lessened by introducing the concept of virtual education. In this case, the main investment is not in physical facilities, but rather in information and communication technology infrastructure, an effective operating and management support system and content development. Students need to have a personal computer or laptop with Internet access in order to be able to 'click with UNITAR'. Compared to a conventional private university, the fees for a virtual university such as UNITAR would be slightly reduced, lodging and transport costs could be minimal, and capacity could be greatly increased without huge additional capital cost. This not only allows more students to register, but also accelerates the rate of computer literacy and Internet penetration in Malaysia, especially since all UNITAR students will have to use the computer and Internet for their studies, regardless of the courses they are pursuing. Moreover, UNITAR students should be better prepared to work in a 'knowledge society' than are graduates of other universities, who may not be as familiar with computers or IT-related subjects. In the national context, developing this type of training is very important; for instance, the government is investing heavily in ICT with the intention of creating a Multimedia Super Corridor, which investors from all over the world can use to conduct business or R&D activities with Malaysia.

When education materials can be accessed through computers and the Internet, the need for students to be on campus is very much reduced, and the university can function with fewer physical facilities. An online education model will encourage more working people to register for higher education programmes, because these are convenient, cheaper and of high quality. Those who have registered as full-time students will find that they have time to earn some income through part-time employment, and those working full time can take courses on a part-time basis. In this way, the university can encourage lifelong learning, and provide an education that is customized according to the students' own pace. Students can opt to take a heavy course load and graduate early, or a light load and graduate a little later.

A virtual university, if properly implemented, does not have constraints of space and can enrol more students than a conventional one. This is another conceptual issue that is very pertinent for the Malaysian context. During UNITAR's planning stage in the late 1990s, there were only eleven public and five private universities in the country. However, there were about 600 private colleges of varying capacities serving the tertiary education needs of the country. The total student enrolment in the universities and colleges was about 180,000, which is far below the almost 300,000 of annual secondary school leavers. The approximate annual intake is only some 90,000 students, or about 30 per cent of the total number of school leavers. It is therefore necessary to provide more opportunities for tertiary education, which need not be at the tertiary level.

One of the initial worries was whether the level of ICT infrastructure in Malaysia would be adequate to support virtual education. For this very reason UNITAR initially decided to develop its multimedia, interactive content on compact disc format. CD-based content would work very well on stand-alone personal computers (PCs). However, within two years, it became evident that the ICT infrastructure was improving rapidly and could easily support the UNITAR system. It was also clear that CD-based content would be more expensive, cumbersome for students and difficult to update. UNITAR immediately improved its capacity to produce web-based or online content instead, which was faster, slightly cheaper, more flexible and easy to update than CD-based courseware. The drawback was that the web-based or online courseware could not replicate the richness of multimedia content on CD.

1.2 International context

Although English is not the main medium of instruction in all Malaysian universities, UNITAR has chosen English as the medium of instruction. This approach is not only good for Malaysians studying at UNITAR, but it also allows UNITAR to penetrate the international market with ease. Furthermore, as English is the dominant language of the Internet, it will be much easier for UNITAR students to cope with their studies than in universities using languages other than English.

The UNITAR teaching and learning model was also introduced in Cambodia in 1999, where at least 100 students are now pursuing a Bachelor of Business Administration (BBA) programme offered by UNITAR and, at the time of writing, the model is on the verge of being introduced in Thailand and Indonesia. UNITAR was also invited by UNESCO-Bangkok to demonstrate its teaching and learning model to several universities in China after the Chinese Government gave permission to some of its universities to introduce online teaching and learning. In early 2002, through collaboration with the Malaysian Ministry of Defence UNITAR devised a similar model to offer academic programmes to armed-forces personnel through a higher education unit called the K-Force University Programme.

Because it has to produce its own content, UNITAR has now acquired the capacity to develop interactive, multimedia content, both for CD and the web. To date, UNITAR has initiated collaboration with reputed universities, such as Johns Hopkins University (JHU), to develop special multimedia, interactive content for their selected academic programmes. UNITAR has also embarked on the development of prototype content for the corporate training programmes of SAP AG, a German company.

2. UNITAR: ITS CREATION, ORGANIZATION AND CURRENT PROGRAMME

The creation of UNITAR was due mainly to three factors. First, the very strong concern of KUB Malaysia Berhad, the parent company of UNITAR, about the impending socio-economic and digital divides among Malaysians resulting from the information age. Second was the government's policy shift from manufacturing and services to ICT as a new source of growth for the country. Third, there was a necessity to undertake a rapid transformation from a manufacturing-based economy to a knowledge-based economy, especially in terms of

manpower requirements and R&D activities. After official approval for the establishment of UNITAR was granted in late 1997, it took the university only nine months to prepare for its first intake of 162 students in September 1998. It started with two faculties, namely Business Administration and Information Technology, and two undergraduate degree programmes. Within less than a year, UNITAR developed five other programmes, four at the master's level and a fifth (a research programme) at the Ph.D. level.

2.1 Creation

Rationale

As noted in Section 1 above, one of the perpetual problems faced by Malaysian society, especially in the past two decades, is the shortage of university places in the face of growing demand. This problem is further exacerbated when at least half of the 300,000 annual school leavers can neither find the kind of employment they want nor a place in a university. Moreover, there seems to be a strong positive correlation between lower academic achievement and lower income. Given that universities are normally elitist in approach, the socio-economic divide will tend to deepen rapidly.

The government is also very concerned over the digital divide that will result from its policy to turn to ICT as a source of economic growth. Efforts are being made to reduce the impact of ICT by introducing the 'smart-school' initiative (i.e. e-learning at the primary and secondary educational levels) as one of the seven flagship applications for the Multimedia Super Corridor government project. The government is allocating enormous resources to equip schools with the necessary hardware and software to implement the smart-school concept. This same policy requires sufficient manpower, especially skilled knowledge workers, for a successful implementation of the Corridor project. As there is a shortage of such workers worldwide, increasing their number would be more than welcome.

The initiator

Given the above factors, Datuk (Dr) Hassan Harun, the Executive Chairman of KUB Malaysia Berhad, proposed in 1995 the establishment of a private university that could solve most, if not all, of the above problems. As someone who had been directly involved in establishing a number of private colleges since the late 1960s, he

saw an opportunity to contribute significantly to nation building by establishing a private university that would be fully supported by a publicly listed company. His success in managing private schools and colleges in the past was based on the philosophy of providing sufficient opportunities for education and on the premise that the demand for education is always in excess. He has proven time and again that there are always those who, for one reason or other, deserve a second chance to prove themselves in life.

Apart from the above factors, as a businessman he needed to examine the cost of establishing and maintaining a private university from a commercial point of view as well. It is evident that a conventional university normally requires a huge capital investment for the physical campus. This will mean a considerable gestation period for a project that may not even be viable, given the limited number of students that can be accepted.

The objective

The mission of UNITAR is to provide ample opportunity for quality education to all at affordable prices. In 1996, the commitment was made to establish a virtual university that would be ICT mediated and provide quality education, without requiring the construction of a physical campus that would limit enrolment and reduce commercial viability. This initiative was also intended to complement the role of other public and private universities, especially in terms of producing the required number of knowledge workers. Apart from pioneering a virtual mode of education that is believed to be the way forward for education, UNITAR also hopes to lead the way in providing customized and lifelong education.

The intended audience

From the beginning the intention was to reach a global audience. This was evident by the choice of English, the commercial and Internet language, as the medium of instruction. However, UNITAR started with a local audience to ensure that the system would be effective and acceptable. Among the local audience, the first target was school leavers, especially those who did not have access to higher education elsewhere. The second target was workers who had not had the opportunity for higher education or who were compelled to work from an early legal age by circumstances. This group comprises those who started working after

high school or who had previously completed certificate or diploma programmes at other public or private institutions of higher learning, and then began to work. The latter are people with qualifications beyond high school and who possess work experience. Finally, the third group to be targeted included those who intended to pursue higher education degrees without affecting their work schedule. They needed a flexible programme that would allow them to study at their own pace without frequent classroom attendance.

The plan is to go beyond the local market, specifically to the neighbouring countries in the region, and offer a flexible learning mode that could better meet the demands and pressures of the current work environment. The competition inherent in career progression often necessitates gaining new skills or higher qualifications. We believe that we could capture a small portion of such markets, especially if we could effectively provide higher degree programmes.

Partner institutions and their respective roles

The concept of virtual education promoted by UNITAR requires the establishment of regional or study centres in different cities. These centres are needed to provide a place where face-to-face meetings can be held at regular intervals, for example, between students and their lecturers, or where students can obtain hands-on computer training to enable them to effectively follow their online and offline activities. The centres are also necessary to provide premises for students to get together for recreational or social activities. This concept means that UNITAR needs to collaborate with other private colleges in different cities and towns to provide the physical space for classrooms, recreation, socialization and co-curricular activities. The space is also necessary for keeping information technology (IT) equipment, such as networked computers, servers, software and others that will be frequently used to assist learning and teaching.

Instead of building its own centres in different parts of the country, which would require additional capital investment and time, UNITAR offers to collaborate with other private colleges that are willing to provide UNITAR with physical space and IT facilities, lecturers, and student management for a fee. In this way, UNITAR can almost instantly increase its capacity to enrol a large number of students without additional investment, although this results in a smaller revenue stream. The arrangement works well as long as the private colleges attract enough

students to ensure that the UNITAR activity is viable. At present, the collaboration between UNITAR and other colleges does not function on a franchise basis that would require stringent formalities to be followed in accordance with the Franchise Act of Malaysia. However, UNITAR is planning to employ a formal franchise model once the university can fulfil the requirements of the Franchise Act.

Lessons learned from the start-up phase and recommendations

One of the most important lessons we learned from the UNITAR experience was that assumptions that hold true for a public university, are completely different for a private one. The main question for any private learning institution is one of societal acceptability in terms of accreditation and financial support. But for UNITAR, there was another major difficulty, which is the delivery mode itself. Calling itself a virtual university was not helpful because of the perception that students need not come to class at all. Although this perception is only partially true, students (and more so parents) were very concerned about the feasibility of pursuing higher education quite independent of normal lectures and instructors. There was obviously a need for aggressive marketing to explain the virtual university concept and convince students of its validity.

The most important lesson here is that we need to be very meticulous in our planning and implementation and not be overzealous in promoting the concept that we ourselves believe in and admire. We need to have a backup plan to ensure that the investments we make are appropriate and necessary. Investment in IT requires especially careful planning to take into consideration rapid obsolescence, and this is even more the case with respect to available technology for virtual education. The investments in technology could become too expensive for the project to be viable.

2.2 Organizational structure

Organization and the decision-making process

UNITAR is a private enterprise that takes commercial considerations very much into account. When it started, the organizational structure was very simple, and staff was kept to the minimum. The main concern was to set up the physical and technology infrastructure that would support virtual education. Hence, the university employed technical

expertise before appointing the faculty. The organizational structure where academics are appointed to most of the positions and lead departments – as in a conventional university – did not come about until a few months before UNITAR went into operation. Instead, a special project team or steering committee, comprising mostly technical and a few academic staff, was set up, presided over by the President and Chief Executive Officer. This committee had to decide on every aspect of UNITAR's establishment, including the physical infrastructure, technological equipment, systems development and integration, courseware development, organization of the virtual library, financial planning and requirements, manpower planning and recruitment, academic programmes and marketing.

The project team was not divided into subcommittees so that decisions could be reached without delay. All the members had to attend the meetings on a weekly basis. An ad hoc subcommittee was formed with the appropriate people for considering issues that were either too technical or specialized. The most important concern at the planning stage was ensuring that every aspect of UNITAR would be ready before the university would begin operation. Unlike a conventional university, where it is not essential to have all courseware or teaching materials completely prepared before a course starts, a virtual university that uses materials on CD or on the web must ensure that all such materials are ready before the first student registers.

It is worth repeating that the project team took only nine months to put everything in order. The first 162 students registered in September 1998. At that time, the university had appointed the Deputy President (of Academic and Student Affairs), who was in charge of the two Deans (of the Faculty of Business Administration and Faculty of Information Technology). This Deputy President was also responsible for the Academic Affairs Department, the Student Affairs Department and the University's first Study Centre that housed the classrooms, workstations, virtual library and academic areas or offices. At the same time, another Deputy President (of Technology and Development) was appointed, who is in charge of all IT and other technical personnel who ensure that the whole system used to support the UNITAR operation works.

Since then, UNITAR has established three other departments, namely: Corporate Planning and Business Development (CPBD), Finance and Accounts (F&A), and Corporate Services (CS). The officers heading these three departments report directly to the President.

The President's office is also responsible for Public Affairs, Occupational Safety and Health, and Quality.

The Organizational Chart is presented in the Appendix to this chapter.

Difficulties with the current organization and solutions implemented

A major problem at UNITAR was the interaction between the technical experts who joined the university at its inception and the academics who came on board much later. As this problem was envisaged from the beginning, the university employed mostly former academics with technical backgrounds who could easily integrate with the academics joining UNITAR much later.

There was another problem that required attention. The academics who joined the UNITAR faculty were mostly from public, conventional universities and were not familiar with commercial, private-sector values, which were very different from what they were used to. Over time, however, they successfully adapted to UNITAR.

A major change in the organizational structure of UNITAR occurred when the university decided to establish a wholly owned subsidiary company – the United Multimedia (UMM) – to handle all the technological needs of the university. It meant that the university could focus on its own core business of conducting academic programmes, while UMM could concentrate on providing the technological support. Moreover, this organizational change fitted in well with the business model of the university.

Lessons learned and recommendations

First, the right mix of technical and academic staff must be maintained from the beginning to ensure integration of the team.

Second, technical and academic staff should take part in an orientation programme so that they can appreciate the philosophy and mission of a virtual university.

Third, while the organizational structure of an enterprise can easily be changed to suit the demands and needs of the time, it takes much longer to change the attitudes of people. I strongly believe in the philosophy of Matsushita, who once said, 'Matsushita first makes people and then it makes electrical products'. This philosophy is also very pertinent for UNITAR.

2.3 Current programme

Number of programmes and courses offered

UNITAR started with only two undergraduate programmes, namely a BBA and a Bachelor of Information Technology programme. Each programme offers a total of 120 credit hours, or about 40 courses, to be completed in 9 semesters or 3 years (the academic year consists of 3 semesters of 12 weeks each; at a later stage, the equal tri-semester system was changed to 2 semesters of 14 weeks and 1 short semester). For students who are admitted with only the O-level or Secondary School Certificate, the undergraduate programmes at UNITAR are preceded by a one-year (or three-semester) Certificate programme in Business Administration or Information Technology, consisting of 40 credit hours or 10–12 courses. By end of year 2002, there were three other approved programmes being offered, which included Foundation of Management and Bachelor of Management (B.Mgt.) from the Faculty of Humanities and Social Sciences and Bachelor of Information Systems from the Faculty of Information Technology.

Within the first year, UNITAR developed and offered four masters programmes and a Ph.D. programme by research, in addition to the two certificate and undergraduate programmes. The four Masters programmes are:

- Master of Business Administration (MBA);
- Master in Information Technology Management;
- Master in Information and Multimedia Technology; and
- Master of Science (by research).

Both the Information Technology Management and the information and Multimedia Technology masters programmes are designed for non-IT graduates or specialists who wish to become IT specialists. These are one-year programmes offering thirty-six credits for ten courses and projects. The MBA requires forty-five credits of course work or fifteen courses of three credits each. The Master of Science and Ph.D. by research require research training, which is provided by the Centre for Graduate Studies that manages the graduate programmes. By end of the year 2002, there were five additional approved programmes being offered: Executive MBA, Master of Science in Information Technology (by research), Master of Science in Business Administration (by research), Ph.D. in Information Technology

(by research) and Ph.D. in Business Administration (by research). Through collaboration with the University of Technology Sydney, Australia, UNITAR is also able to offer a unique specialization in Facilities Management for its MBA programme. The courses offered by the University of Technology Sydney are conducted online from Australia and taken by students opting for this specialization at UNITAR in Malaysia.

Total annual budget

UNITAR has spent about US\$45 million over the past three years. The annual budgets for 1998, 1999 and 2000 were US\$10 million, US\$15 million and US\$20 million respectively. The budget for 2001 was about US\$23 million, while that for 2002 was about US\$25 million.

Number of active students by programme category, gender and age

Out of a total number of 6,141 active students, undergraduates represent the vast majority (94 per cent), postgraduates, 4 per cent; and preparatory students 2 per cent. With regard to age, most are young (18–23 years old, 64 per cent; 24–30 years old, 29 per cent; and more than 30 years old, 7 per cent) and there are more female (52 per cent) than male (48 per cent) students.

Average course completion rate

So far, at UNITAR, twenty-two out of twenty-five of the first group of MBA students have graduated. About 100 students from various programmes will graduate in early January 2003. The first group of undergraduates are expected to graduate alongside this group. Although UNITAR does not receive the best students since they usually prefer going to public universities that are less expensive, it does not have a serious attrition rate.

Number of academic staff by faculty

Out of a total number of ninety-five academic staff, forty belong to the Faculty of Information Technology; thirty-eight to the Faculty of Business Administration; eight to the Faculty of Humanities and Social Science; and nine to the English Unit.

Number of executive and support staff

Out of a total of 100, executive and support staff are divided as follows: management, 10; executive positions, 42; and support staff, 48.

Development plans for the next three years

UNITAR plans to introduce corporate training, especially in the skill sets that it has developed in-house. Its wholly owned subsidiary, UMM, has been registered as a corporate training provider by the government. This status allows it to conduct training programmes that can be funded by the Human Resources Fund of the government. To end of year 2002, UMM carried out a number of specialized ‘immersion’ training sessions in multimedia courseware development and e-learning for participants from the government, especially from the Ministry of Education, and participants from outside Malaysia, including those from Middle Eastern countries. UMM has also acquired a licence to conduct training programmes funded by the Human Resource Fund from the government.

- UNITAR has already started a centre in Cambodia in collaboration with a locally established private college. There are about seventy students pursuing a BBA offered by UNITAR in Cambodia at the moment, and the number is expected to increase. UNITAR plans to soon offer the MBA programme in Cambodia as well, in addition to corporate training. To date, the Cambodia venture still retains a number of students in the BBA programme; the introduction of the MBA programme in Cambodia is subject to measures of further refinement by both parties.
- UNITAR hopes to establish centres in Indonesia through a collaborative effort with partners in that country. In addition, it intends to collaborate with partners in Thailand and Dubai for the possible establishment of centres in those countries. To date, the Thailand venture will certainly involve a reputable partner in Assumption University, Thailand’s premier university, which conducts its programmes in English and has been in existence for more than thirty years.
- UNITAR is developing and revising the viability its franchise programme to reach out to other markets in the region.

Lessons learned and recommendations

- The introduction of academic programmes has to correspond to market needs. It is also very important to plan for resource, infrastructure and manpower requirements; this will make it easier to mitigate obsolescence, unnecessary investment costs, etc.
- The quality of delivery mechanisms is essential for successful implementation of the virtual university. While there are areas that are under UNITAR's control, there are other areas beyond its control, such as the bandwidth problem, the Internet, advancement in technology, and regulatory framework instituted by the authorities.
- The rate of technological change can be too rapid to follow. It is better to choose the technology that is most stable than to opt for the latest technology.
- The need for a physical campus with IT, residential and recreational facilities may arise when Internet access is not available in certain areas. Such facilities will enable students in these areas to receive a virtual education.
- Academics with IT experience are preferred. The ability to emulate the role as a facilitator instead of a conventional lecturer is a must.

3. ADMINISTRATIVE ISSUES

The administration and management of a virtual university initiative like UNITAR requires the development and implementation of structures and procedures that differ from those of traditional universities. This is not only due to the virtual nature of the university, but also because it encompasses both virtual and private features. For public universities the structures and procedures are quite standard because the funding comes almost totally from the government. Hence, the main parameters, such as the number of faculties, enrolment, and ratio between lecturers and students, are very much determined by the government. On the other hand, a private university does not receive any financial support from the government, even though it may be highly regulated in terms of standards, quality and even programmes.

3.1 Administration

Administration and management of the university

In order to understand and appreciate the differences in the administration and management of a virtual university environment, we have to first of all understand the manner in which the university delivers its education, the student profiles (including location), the types of support services that are provided and the facilities available.

UNITAR'S hybrid model

- From the outset, UNITAR adopted a hybrid model of virtual education in which lectures are not delivered in the usual manner but students are expected to access the materials, which are in multimedia format and made available on CD or on the web. However, students are required to attend face-to-face tutorials, which are conducted at the study centres distributed throughout the country. The total number of hours of tutorials per semester for a three-credit-hour course is twenty-one hours. For the Certificate programme, all tutorials are conducted in a face-to-face fashion. For the degree programmes, the twenty-one hours of tutorials are conducted as follows: eight hours face-to-face, four hours online (real-time), and the rest offline.

UNITAR's student profile and locations

- UNITAR has a mixture of both undergraduate and graduate students, although undergraduate students predominate at the moment. It is interesting to note that almost all the graduate students work and at least 20 per cent of the undergraduate students work.
- About 50 per cent of the students are located in the main study centre near Kuala Lumpur. The remaining 50 per cent are unevenly distributed among the six regional study centres, with the number of students in each centre ranging from 200 to 1,200.

UNITAR's support system

- The main support system is the Virtual Online Instructional Support System (VOISS), which contains various teaching and learning functions, such as e-mail, forums, bulletin board, announcements, frequently asked questions, schedule, and all the

pertinent information about UNITAR, its various departments, faculties, academic programmes, courses and tutorial schedules. VOISS, which is currently on Version 2.0, also acts as a course management system, and handles student records, financial procedures and information. It is the university's main source of information, interaction and activity, and students (as well as the instructors and administrators) must learn how to use it. If VOISS fails to operate, it is said that UNITAR would no longer exist.

- In addition to VOISS, UNITAR provides continuous support to students and lecturers through its Consumer Relations Management (CRM) service, or call centre, where relevant staff answers queries or comments made via telephone, e-mail or fax within a specified period. The centre now provides an online ticketing service twenty-four hours a day, seven days a week. Call-in services are limited to a daytime-work time-frame.
- UNITAR is proud of its virtual library which contains e-resources that can be accessed by students and lecturers anywhere through the Internet. This service makes it very convenient for students to do research.
- UNITAR has altogether eight study centres throughout the country. The main study centre is near Kuala Lumpur, and houses almost all of UNITAR's full-time lecturers and academic departments.

Given the nature of the virtual environment described above, a number of structures and procedures must be developed that are different from those of traditional universities. First of all, there is a need for a strong technology department in terms of importance, staff size and expertise. Thus, UNITAR has a Deputy President in charge of Technology and Development who is responsible for the planning, development, integration and maintenance of the technology services that support the university. There are four main departments under him, namely: Courseware, Software, Network and CRM. The total number of staff in these four departments is maintained at about 160 to 200, since the first year of operation. The biggest department among them is the Courseware Department, which deals with the development of course materials in multimedia format either for CD or the web. This function is completely new, and its management is totally different from that managing any function of a traditional university.

Second, UNITAR has instituted a Chief Technology Officer, who is currently the Dean of the IT Faculty. He works closely with the Deputy President (Technology and Development) concerning the different technological needs of the university. He chairs the Technical Committee of the Senate which is responsible for monitoring, reviewing and improving the technology of UNITAR's support systems.

Third, UNITAR needs a quality assurance system to monitor student achievement in the different study centres. For this purpose, the university has established a Department of Academic Affiliation and Collaboration which deals with the UNITAR-appointed coordinators located in each study centre.

To date, UNITAR has also embarked on a programme to obtain an ISO9001:2000 certification with a view to standardized teaching and learning processes within UNITAR and to better serve its customers, the bulk of which are students.

Problems and solutions

The problems we faced were mainly administrative, whether these concerned academic matters or technology. The academic administrative problem arose from the need to schedule tutorials during weekends and late evenings so that students working full time could regularly attend. Compensatory time off had to be arranged for lecturers who worked on weekends. As the number of UNITAR students grew, the university had to remain open twenty-four hours a day, seven days a week. The university also had to provide technical services to students during weekends, and special staffing arrangements had to be made to meet these needs.

The second major problem was the management of technical services. First, there was a shortage of skilled staff at the national level, and this caused a high turnover of skilled staff. Second, there was an increasing need for training because of the rapid emergence of new technologies as well as new needs. Third, the rate of technical failure was high, especially at the beginning. However, the quality of technical services has been improving, and the system is currently more stable than in the beginning of the UNITAR operation.

Lessons learned and recommendations

The most important lesson learned is that UNITAR should have spent more time planning and testing the system before starting to operate.

When we started, we had literally no benchmark in terms of the hybrid education model that we were implementing. The building that UNITAR was using had to be renovated to become modern and functional according to our specification. We also had to make a thorough analysis of the types of equipment that we intended to purchase, taking into consideration effectiveness, reliability, optimal cost and obsolescence. At the same time, we were selecting and developing systems, and rushing to develop course contents that took longer than we expected. We were also recruiting staff and employing them for specific periods when we needed them the most, so as to optimize costs.

I would like to reiterate that planning and testing are the most essential steps in setting up a technology-based environment.

3.2 Costs and financing

It is important to list the main activities that were required to set up and operate UNITAR in order to appreciate the costs and financing involved. Briefly, there is the need for a physical space to house staff, classrooms, workstations and other IT equipment, the library and recreational facilities. The cost of the physical space depends on the number of students, which can be calculated based on projections. The UNITAR model means that physical space is needed so that students can participate in tutorials near their own locations.

Second, apart from purchasing the necessary equipment, there is a need to set up the technical infrastructure in terms of network, system and Internet access.

Third, the development of course content in multimedia format is certainly a major cost to the university.

Fourth, there is the cost of human resources, as well as administrative cost.

Sources of finance

UNITAR was unfortunate to have started its planning phase before the Asian financial crisis of 1997–99 and begun operations in September 1998. Fortunately for UNITAR, there were some reserves that could be used and its financial requirements were met by the parent company.

Capital and operations expenditures

Capital expenditure was needed most in the first two years, and operating expenditure became very significant from the second year onwards. This

is because UNITAR needed to be completely ready before it could take in any student. Once it started operating, the right academic staffs had to be recruited so that UNITAR could meet academic standards and later obtain recognition from the government.

Capital expenditure was about US\$8 million in 1998 and US\$10 million in 1999. Thereafter, incremental capital cost was stabilized. Operating expenditure, on the other hand, was very small in the first year of operation, only about US\$2 million. In the second, third and fourth years of operation, however, the corresponding operating expenditures went up significantly to US\$5 million, US\$10 million and US\$15 million respectively.

Tuition fees

In general, tuition fees depend mainly on the discipline, duration and the credentials of the awarding institution. The most expensive tuition fee would be for studies in the fields of medicine, followed by engineering, technology and science, business administration and the liberal arts. Normally, public institutions charge much lower fees than private institutions, generally ranging between 20 to 30 per cent of tuition fees charged by private institutions. Private institutions charge in the range of US\$3,000 to US\$4,000 a year for an undergraduate programme. This fee can be higher if the private institution offers a degree programme that is awarded by a foreign university in, for example, Australia, the UK or the USA. UNITAR charges tuition fees that are higher than those of public institutions but slightly lower than those of private institutions. The tuition fee for a three-year undergraduate degree programme at UNITAR is around USD\$2,000 per year. An MBA is nearly US\$4,000 per year, the lowest tuition fee in the country for such a programme.

For foreign students studying in Malaysia, UNITAR charges the same fee as for Malaysian students. However, UNITAR does vary its fees in other countries, such as Cambodia, according to the market rate.

Lessons learned

The first lesson learned is that there should be sufficient capital available to invest, especially in technology because of its rapid rate of change. Second, although there is clearly no necessity for a large campus, there should be sufficient space to house the academic staff,

administration and the IT infrastructure. Third, it is not wise to think that a virtual university can be cheaper than a conventional university.

3.3 Technological infrastructure

UNITAR was advised, by early findings of feasibility studies, to buy off-the-shelf CDs that were already available, and to acquire teaching materials in markets outside of Malaysia. Second, it was also advised that UNITAR should use the Internet infrastructure for student connectivity and interaction. The first recommendation was not adopted because of the high cost.

Location of responsibility for UNITAR's technology strategy

At the beginning, technology requirements were placed under the responsibility of UNITAR management. After one year of implementation, three issues emerged. First, the people who were responsible for technology were different from the people in charge of the academic programmes. Second, the cost of providing technology was escalating, both in terms of manpower and equipment. Third, the level of services provided could not be monitored. There was a need for arm's-length oversight to ensure that the services rendered by the technology group were at an acceptable level. To overcome these problems, UNITAR decided to establish a separate company, a wholly owned subsidiary, to focus on all the technology requirements.

The company, known as United Multimedia (UMM), was established in 1999 and is now responsible for the production of courseware, planning and implementation of the network, providing systems solutions, customer relations' management, portal management, and overall maintenance of all the technological services. UMM also conducts technology-related R&D activities for technology improvement.

Technological infrastructure of UNITAR

Basically, five critical components of technological infrastructure needed to be built in order for UNITAR to operate: courseware, course management system, network and system structure, virtual library and customer relations management centre.

Courseware

Courseware development was the first critical component of e-learning technology for UNITAR. The major premise of courseware development for UNITAR in the beginning was that it must replace lectures. Therefore, a suitable methodology was chosen, and the university decided to develop compact-disk multimedia-enriched courseware. The choice of CD-based courseware at UNITAR's inception reflected managerial awareness of low Internet penetration per capita in Malaysia and the concern that this would be an initial barrier to e-learning adoption. With CDs, courseware can be viewed offline anywhere with multimedia PCs. The second major premise was that of technology transfer. Courseware development in Malaysia was still new and expertise was lacking. In the feasibility studies done by two reputable US-based companies, UNITAR was advised to buy off-the-shelf courseware. This meant copyright control over content, expensive intellectual property right arrangements and localization. The university chose to engage foreign specialists to assist with the initial authoring engine and development of expertise. UNITAR selected NIIT in India as a partner, which cost about US\$1 million for the first four courses. The development of this courseware allowed UNITAR to gain sufficient expertise from NIIT to produce on its own more advanced tertiary-level courseware for internal use. With the ubiquity of online connections – and to address market acceptability and change – UNITAR is moving from CD-based courseware to a web-based courseware methodology. Even though CD-based courseware is superior in multimedia content and delivery, it is costly to produce per semester, and cumbersome to store and move for both students and the university – students cannot carry the bulk of CDs back and forth to academic meetings or use them to study at any available public PCs. Web-based courseware is popular among students, but the multimedia elements in the courseware have been drastically reduced due to bandwidth adaptation and last mile problems (i.e. connection of customer's home to a cable or telephone company). The pedagogy chosen for the web-based courseware has also been changed from a 'story-based' content to a strong resource-based learning approach, which resembles online multimedia 'textbooks'.

Course Management System (CMS)

The second critical component of UNITAR's technological infrastructure is the course management system (CMS) that incorporates the main engine of course delivery, web-based front-end functions, online content, course reporting, and service and support elements. The CMS at UNITAR is better known as the Virtual Online Instructional Support System (VOISS), as mentioned previously. While the main motivation of early CMS development was also building local expertise and localization of content, it was different from early courseware development in that it did not focus on technology transfer. Nonetheless, building local expertise was important and finding adequate personnel with sufficient competences has been a challenge thus far. Another aspect of the early development of UNITAR's CMS was meeting the requirements of the system. As the CMS development time-frame was very short (about six months), 'technology' input was given priority over 'academic' input, and customer requirements were minimized. After the CMS system was implemented, the 'academic' input became more important. UNITAR's course management system in VOISS is now under Version 2.0 of its development, and has yet to reach maturity in terms of functionalities even though it is now the most stable. Version 2.0 also distinguishes itself from Version 1.0 as it includes more 'academic' input and the integration of other important aspects of student management, such as a student administration system that existed separately from VOISS in Version 1.0.

Network and system structure

Another critical aspect of UNITAR's e-learning infrastructure is the network and system structure, which is the backbone of IT delivery. In non-technical terms, the main overriding issue during the early development of UNITAR's network was the stability of e-learning delivery, which consisted of the VOISS as the main web system and the virtual library as the reference support. To a certain extent, UNITAR was fortunate that only 162 students were using UNITAR's early network and they were accessing the system from one location – the main study centre near Kuala Lumpur. The current number has grown to more than 8,500 users from multiple locations nationwide, and it is only now that UNITAR needs to face the issue of how a large user population will affect system stability. The challenge or concern was not the number of students, but the multiple locations of UNITAR's delivery mode.

Technically speaking, a robust UNITAR network and system should be able to provide access to a large number of students at multiple locations, including those in low-bandwidth rural areas. A disadvantage was that the external phone line was not controlled by UNITAR, but by the telecommunication carrier and the Internet service provider. Only when the national conditions of IT and telecommunications improve will UNITAR be able to meet the challenge of delivery at multiple locations. A unique experience in the early development of the network infrastructure was delivering a synchronous online tutorial system to students and lecturers. UNITAR is probably the only virtual university in the world that implemented online tutorial meetings (OLT) right from the beginning. To meet UNITAR requirements for courses, students (regardless of location) need to participate in OLT sessions, which correspond to face-to-face lectures in a traditional classroom but are delivered online in real time. In the early stage of development, the network system had to cater to a small number of OLT sessions at multiple-access locations. However, the OLT sessions faced major problems, such as students not gaining access or being cut off from the OLT class, or hitches in the delivery of online chats and presentations. As the last-mile technology improved, there have been fewer and fewer problems. A significant turnaround was upgrading the network structure with powerful servers and using new communication software to support the delivery of an increasing number of OLTs.

Virtual library

The virtual library plays a critical role as an online, round-the-clock reference service for UNITAR students. The early development of the virtual library focused on implementing an integrated library management system, setting up a homepage and CD-ROM network for the library. Initially, access to commercial databases was provided to students and staff. As UNITAR progressed, the virtual library undertook the in-house database and digitization project with a view to building library resources with in-house content and making them accessible anywhere anytime. A major hurdle to overcome in setting up the virtual library was the issue of IP authentication for all commercial databases that UNITAR subscribed to. Patrons outside the UNITAR network could not access and use the commercial databases how and when they needed to. The simple solution to this problem was setting up a proxy server. Another hurdle was that the

CD-Net offered by the virtual library could not be accessed online because of bandwidth limitation.

The Call Centre or Customer Relations Management

The Call Centre is the final critical aspect of UNITAR's e-learning technological infrastructure. Under the assumption that online or distance learners are always alone, the Call Centre was developed early to support e-learners at UNITAR. The modus operandi of the Centre is that UNITAR students anywhere can contact its staff via the hotline for whatever problems they face. Call Centre staff log in or enter a ticket number into the system and then pass the inquiry on to relevant lecturers or other personnel. A tracking utility has also been implemented to monitor each ticket or inquiry. So far, there has been no major problem with this service and, contrary to call centres in conventional universities in Malaysia, the UNITAR centre has been available to students and is a real advantage.

As noted elsewhere in the report, future enhancement of the technological infrastructure depends on the maximization of resources among and within all five critical components. Although stability of integration is a natural objective, other elements, such as data mining and warehousing within one or more of the components, could be a factor of enhancement. The issue of artificial intelligence technology could also be explored in order to enhance teaching and learning among lecturers and students, especially in the area of system tracking, monitoring and validating e-learning.

3.4 Intellectual property ownership and copyright

Policies and procedures related to IP ownership and copyright

IP ownership and copyright applies mostly to the content of CD-based and web-based courseware. The general principle is that rights are assigned solely to UNITAR in all courseware under development. The contractual arrangement is based on non-royalty arrangements for all IP contributions. Due to the nature of multiple authorship assigned to portions of courseware content, it is difficult for UNITAR to retain royalty arrangements for course authors or subject-matter experts involved in each course. Nonetheless, UNITAR makes an effort to either acknowledge copyright owners for normal resource or citation usage, or pay royalty fees to owners or institutions demanding payment

of royalties. Other than courseware, all course contents, including contents developed and used in the assigned educational delivery mode by lecturers, are covered by UNITAR rights, as is stipulated in UNITAR employment contracts.

4. ACADEMIC ISSUES

As a private university, UNITAR initially focused mainly on academic activities that were viable and less demanding, particularly in terms of financial requirements. In a virtual university, the activities need to be focused on providing the most effective mode of delivery that is both efficient and convenient for students. This is the market niche that needs to be strongly developed so that UNITAR can be truly different from conventional universities. State-of-the-art technology, flexibility of learning and the convenience this provides are some of the other benefits that student can enjoy in a virtual education environment.

4.1 Programme development

Main curriculum areas

The three most important considerations in selecting the main curriculum areas are market demands, technological availability and their suitability for a virtual university. It is obvious that at the time of UNITAR's inception the two most popular programmes were Information Technology and Business Administration. While both programmes have strong market demands, they are also more technologically feasible than heavier curriculum areas, such as engineering or medicine. The latter two are also much in demand, but these studies require hands-on experimentation that cannot be easily grasped in a simulated environment. Moreover, such courses would mean higher investment in equipment, especially at the initial stages. It is clear that information technology studies were perfectly in line with the nature of a virtual university.

Programmes offered

UNITAR started with only two undergraduate degree programmes, namely Bachelor of Information Technology and Bachelor of Business Administration. Both of these programmes are preceded by a one-year Certificate course that constitutes the foundation year for students who have completed eleven years of education at primary and secondary levels. This is equivalent to the old 'Ordinary' (or O) level school

certificate of the British system. Those who have attained the Higher School Certificate, or the equivalent of the 'Advanced' (or A) level Certificate of the British system may join these programmes at the second year. The Higher School Certificate can be obtained only with two years of study after completing the O-level School Certificate. Since both of the above UNITAR degree programmes are for four years, those who leave school after eleven years would tend to gain one year by joining UNITAR. Moreover, after the foundation year, students can be awarded the Certificate in Business Administration or the Certificate in Information Technology.

Determination of the curriculum and programmes

When creating its curriculum, UNITAR not only takes into account feedback from industry and experienced academics from other universities, but also undergoes a rigorous process of approval by the Department of Private Education of the Ministry of Education and the National Accreditation Board, which is necessary before any educational programme can be introduced. This process entails proper and elaborate documentation and an independent panel of academics, mostly from public universities, which is appointed by the National Accreditation Board (locally known as LAN). This panel evaluates the programmes based on documentation, visitation, and interviews of students and lecturers. While approval is necessary to introduce the programmes, accreditation is optional, but would be an additional benefit to degree holders. Hence, the UNITAR curriculum and programmes have to be relevant, current, and meet the expectations of the independent panel of evaluators.

So far UNITAR has developed and obtained approval for the introduction of eighteen academic programmes, ranging from the first-year Certificate programme to Masters programmes in Business Administration and Information Technology and a Ph.D. in Education (by research). UNITAR has also received approval to introduce a Foundation in Management and Bachelor of Management programme, offered by the new Faculty of Humanities and Social Science. The list of eighteen approved programmes as of end of year 2002 are as follows:

- Preparatory Studies (Pre-University Programme)
- Certificate in Business Administration* (CBA)
- Certificate in Information Technology* (CIT)
- Foundation in Management*

- Bachelor of Business Administration* (BBA)(Hons)
- Bachelor of Information Technology* (Hons)
- Bachelor of Information Systems* (Hons)
- Bachelor of Management* (Hons)
- Master of Business Administration* (MBA)
- Master of Business Administration Online* (Online MBA)
- Master of Information Technology Management*
- Master of Information and Multimedia Technology*
- Master of Science (Education) (by research)
- Master of Science (Information Technology) (by research)
- Master of Science (Business Administration) (by research)
- Ph.D. (Education) (by research)
- Ph.D. (Information Technology) (by research)
- Ph.D. (Business Administration) (by research).

Out of the above eighteen programmes, eleven (with *) have been given accreditation by the National Accreditation Board and are recognized by the Government of Malaysia.

Intended students and learners

UNITAR literally opens its doors to all interested and qualified students. Although its model is expected to attract mostly working individuals, a considerable proportion of school leavers have come to UNITAR after completing their O levels to take advantage of graduating one year earlier. This is definitely true for the university's undergraduate programmes. Of course there are also some students who have attained their A levels, and others who have obtained diplomas from other higher institutions of learning. However, in the case of UNITAR's postgraduate programmes, almost all the students are working individuals.

Language of instruction

Although the national policy is to use the Malay language as the medium of instruction, UNITAR has obtained special permission from the Minister of Education to use English. This choice was made to enable students to access materials from the Internet and elsewhere that are overwhelmingly in English. The need to use a pervasive language such as English was too obvious to refute. There was some criticism from some quarters, but UNITAR persisted as it saw this choice to be

logical, not only for providing students with an advantage, but also for making it possible for UNITAR to expand globally.

Programme evaluation and accreditation

Programme evaluation is done at various stages of planning and implementation. At the planning stage, apart from the academics within, industry specialists and other academics evaluate UNITAR proposals and provide extra inputs to enrich the programmes. Before implementation, the National Accreditation Board evaluates the programmes to ensure that they have sufficient scope, depth and quality to award degrees.

About six months after the implementation of a UNITAR programme, an independent panel of evaluators was appointed by the National Accreditation Board to evaluate how the programme was being conducted. Before they recommend awarding what is called 'Minimum Standards' to the programme, they evaluate the quality of teachers and facilities, and even the quality and appropriate level of examination questions set by examiners and the answers given by students. This means that UNITAR programmes are not only approved by the Ministry of Education, but they also meet the minimum standards required for awarding degrees. Six months before the first group of students graduates from a UNITAR programme, the independent panel is invited to make another evaluation so that the programme can receive accreditation for a period of five years.

The National Accreditation Board is an independent body that was instituted under the Private Education Act to assist the Ministry of Education in evaluating programmes conducted by private institutions of higher learning. This evaluation is used to grant approval for introducing the programmes, ascertain whether they meet required minimum standards, and grant accreditation if they do. Moreover, an encouraging recent development is that all accredited programmes are automatically recognized by the Government of Malaysia, which implies that their graduates are eligible to join the public service at levels corresponding to their qualifications (which are now equivalent to degrees from public or state universities).

Admission requirements and registration procedures

UNITAR has specified admission requirements, based mainly on academic achievements. In principle, students must have attained at

least four, if not five, credits at O level to be admitted into the first-year bachelor degree programmes or the certificate programmes. This requirement also includes a credit with good grades in English and mathematics. For the master's level, the minimum requirement is a bachelor's degree, whether it is by research or course work. For the Ph.D. programme, the requirement is a very good honours degree at the bachelor level or a master's degree.

Registration is normally done at the beginning of every semester, although students can join any time during any semester. Most of the registration procedures are done online.

Credentials awarded

All the credentials are awarded by UNITAR. Although UNITAR's name is not as well known as that of some Western universities, it is slowly building a reputation in the region, particularly in Indonesia, Cambodia and Thailand. Lately, UNITAR has also been recognized by the governments of the United Arab Emirates and the State of Oman.

General quality assurance and control measures

Academic quality is of utmost importance to UNITAR. Hence, all examinations are conducted in the usual manner, with candidates taking examinations in examination halls. Second, UNITAR academics mark all final examinations submitted by students from all over the country and Cambodia. Strict disciplinary action is taken against any student guilty of cheating, and special care is taken to ensure that examination questions remain strictly confidential, especially at the regional centres.

Academics employed by UNITAR as well as by UNITAR's collaborating partners receive special training to facilitate their work in a virtual environment.

Lessons learned and recommendations

Although some might think that a virtual university is a cheaper alternative to conventional universities because the investment in bricks and mortar will be less, the investment in technology may actually be more, especially when there is the need to keep up with the latest developments in technology. Technological obsolescence in itself is a cost to be considered.

Second, because of the misgivings that potential students and their parents have about e-learning, there is the need to emulate a

conventional university in terms of the teaching and learning model. This makes it more difficult to move forward, and involves some sacrifices with regard to the virtual teaching and learning model in order to accommodate the cynics and the 'unbelievers'. For instance, giving in to the demand for face-to-face teaching requires more physical space than teaching solely in a virtual environment.

Third, the quality of the academic programmes and the graduates has not yet been appraised. This means that every effort must be made to ensure quality and hence increase the number of believers in e-education in the future.

Fourth, although e-learning is expected to be the way of the future, it must be immediately pointed out that the billions of dollars dedicated to e-learning that have been cited in various literatures are essentially to develop e-training or short courses, rather than degree programmes.

The authors certainly feel that before embarking on a virtual or e-learning venture, one must study very carefully all the implications, particularly in relation to cost-effectiveness.

4.2 Teaching

When the idea of a virtual university was put forward, the first thing to be determined was the right e-learning model. This is indeed crucial because of rapidly changing ICT, which makes most of the equipment obsolete in a very short time, requiring high capital cost to update. UNITAR had to decide on a technology strategy that would not only reduce obsolescence costs but also provide an effective means for the faculty to transfer knowledge to students in a friendly and accommodating fashion. The following issues were considered in determining what kind of e-learning and teaching model UNITAR would adopt.

Designing instruction

The following components, which have been discussed repeatedly above and in different lights, have been identified as very pertinent for effective teaching in an e-learning environment.

Courseware

At the beginning, UNITAR decided that the most important component of its academic model would be CD-based, offline courseware. Because of the narrow bandwidth predicament, it was

not possible to deliver lectures online at that time. The level of current technology, however, allows for lectures to be replaced by quality, interactive, multimedia-enriched courseware or content. Courseware in CD format can be sent to remote areas, and shared over a compatible PC. Moreover, one can review CD-based courseware any number of times to enhance understanding and reinforce learning; content can be repeatedly communicated to students, with 100 per cent uniformity, which is impossible in a conventional setting.

The downside of CD-based courseware is that it is expensive to produce initially. It also takes much longer to produce compared to preparing a conventional lecture or other means of educational delivery. To counteract this shortcoming, UNITAR has developed web-based courseware, which can be viewed both online and offline using any popular browser. Web-based courseware is also faster, cheaper, easier to modify and update and more flexible than its CD-based predecessor. Over the past 4 years, UNITAR has developed more than 300 titles of courseware in CD format (21 CDs in all) and more than 30 titles of web-based courseware for university-level courses both in-house and locally.

Course management system

Our Virtual Online Instructional Support System (VOISS) is the main course management system for students and instructors. The system contains more than ten different modules or functions, such as the online tutorial (OLT), forum, frequently asked questions (FAQs), e-mail, bulletin board, announcements, assignments, quizzes and examinations. All modules, except for the online tutorial (OLT) fall under the category of asynchronous communication. Even though most people tend to associate real-time, multimedia student-instructor interaction as defining the e-learning academic model, the synchronous online tutorial was implemented cautiously due to network instability and narrow bandwidth problems. The VOISS is currently on Version 2.0, which is a considerable improvement over its predecessor Version 1.0. UNITAR's own software engineers have developed both versions.

Virtual library

UNITAR's main library, which was created to support the reference needs of students, holds more electronic, online resources than physical resources. Students can gain access to the library anywhere, any time from any computer. This makes it possible for any registered student

in any region to use a single source for library materials. The strength of the virtual library rests on its online database subscriptions such as Pro-Quest, ERIC, Euro Monitor and ABI/INFORM Global, providing more than 1,000 titles accessible to all students in real time.

The virtual library concept is very much in line with the idea of developing a virtual university environment to pioneer e-learning in the country.

Study centre

The study centre or regional centre is the place where students and instructors can congregate for their academic meetings and extra-curricular activities. Like a campus, the study centre also houses the basic facilities of UNITAR, such as classrooms, workstations, administrative offices, gymnasium, network operations centre, server farms, IT shop, cyber café, library and basic recreation facilities. UNITAR has currently established eight such centres throughout Malaysia, only one of which is developed and owned by UNITAR. The remaining study centres were developed in collaboration with other private educational institutions, thus reducing capital investment. UNITAR study centres are located in major towns to reduce the travelling and accommodation needs of students. A regional study centre need not have all the facilities of the main study centre, which provides most of the ICT facilities. UNITAR has also established a study centre in Cambodia in collaboration with a local partner. The study centre in Cambodia has successfully conducted UNITAR's BBA programme for the last two years. Soon it will also introduce the UNITAR MBA programme.

Customer Relations Management (CRM)

The round-the-clock call centre that provides customer relations management services was established to support students facing academic, technical and personal problems. All enquiries made by telephone, fax or e-mail will be answered by CRM personnel or directed to the relevant lecturers or administrative officers. All enquiries are recorded and checked for the appropriateness of the response and future follow-up.

Delivery of instruction – philosophical basis

UNITAR strongly believes in the philosophy that learning should be a continuous, lifelong process, motivated by the desire to seek knowledge, competency or specific skill either for the sake of such knowledge,

competency or skill or for socio-economic or political purposes. The knowledge era is certainly coming and will surely change not only the way we value knowledge but, more important, the way we organize our lives. Our workplace may change in form and substance, and our schools will have to change in order to enable future generations to manage their lives. Hence, the way we teach and learn today cannot be based on a method that does not change.

We should provide a learning environment that takes into consideration the anticipated changes that are coming our way. Students should be allowed to choose the most suitable mode of learning, and be able to learn in a creative, innovative but effective manner. Flexibility should be the rule rather than the exception. Regimentation and a rigid way of imparting knowledge may not be appropriate and acceptable to students who have been exposed to a considerable amount of experimentation and independence from a very early age. They grow up in an environment that is computerized, automated and electronically driven, and that is enhanced by access to multimedia technology and Internet-based information and knowledge.

Keeping the above in mind, UNITAR provides students with a flexible and customized, quality education at an affordable price. UNITAR no longer delivers lectures in the traditional way since all the learning materials have already been digitized and put in a multimedia format, either on CD or on the web. Students are expected to go through these materials on their own and try to absorb as much as they can.

Tutorials to enhance learning and understanding

The approach of letting students go through the course material and learn by themselves no doubt requires them to be independent, resourceful and disciplined. However, there is no guarantee that all students can actually learn by themselves. Hence, UNITAR has intensified the use of tutorials to help those who are not used to disciplining themselves, and made tutorials compulsory for all students.

For every three-credit-hour course, the university provides from twenty-one to twenty-four hours of tutorials to enhance student understanding of the materials. There are three types of tutorial: face-to-face, online and forum.

The face-to-face tutorial is conducted in a traditional classroom setting. This is where students meet the lecturers and classmates. During these tutorial sessions, students are encouraged to ask questions

for clarification of materials that they have studied on their own. They are also encouraged to raise various issues around topics of discussion that are based on whatever they are learning. The total number of face-to-face tutorials required for first-year students covers between twenty-one and twenty-four hours, and for other students it is eight hours. UNITAR has decided that all tutorials for first-year students are to be conducted on a face-to-face basis to allow them to get used to the new system gradually and build their confidence.

The online tutorial (OLT) is a synchronous (or real-time) tutorial conducted at the main study centre by course coordinators who are full-time (or part-time) faculty members. Both the course coordinator and his/her students must log in at the same time as scheduled. While the course coordinator is stationed at the main study centre, the students work from their homes. These students may be from all over the country. Once they have logged in, they will see a three-segment screen on their monitors. The main segment is used as a white board where the course coordinator can write, erase or paste PowerPoint slides, pictures, images, etc. for the students. The second segment shows pictures of the students who have logged in, and tells the course coordinator whether all his/her students have attended the OLT or not. The third segment is the space where students type questions or provide ideas and views via e-mail. The OLT that UNITAR is currently using allows the course coordinator to speak to his/her students. For instance, the course coordinator may paste PowerPoint slides on the screen to represent the main points of discussion and talk to the students to explain those points. The students then participate through e-mail. In this way, there is a two-way interaction between the course coordinator and the students.

Only four OLT sessions are scheduled for a course per semester. Each session runs for two hours. The total number of hours of OLT per course per semester is eight. Students and lecturers much prefer the OLT because it offers a very convenient platform for participating in tutorials. Only UNITAR students who have passed their first year of study are offered eight hours of OLT per course per semester.

The third type of tutorial is what is called a forum. It is an asynchronous tutorial, where the course coordinator puts a topic up for discussion for about two weeks. All students taking the course will have to participate in the discussion at least twice during the two weeks. Their views will be graded by the course coordinator. There are

four or more forums in a semester, which are counted as equivalent to eight hours of tutorial.

The number of tutorial hours that students will have to take in a semester is a good indication of the workload they will have. For example, first-year students register on average for four to six courses in a semester. If they take 5 courses, they will have 5×24 hours of face-to-face tutorials in a semester of 14 weeks, in other words, a total of 120 hours. This means that they have fewer than nine hours of tutorials per week. The rest of the time the students can conduct research, do assignments, or prepare for examinations.

For all other students, who are required to take only eight hours of face-to-face tutorials per course per semester, class presence can be reduced to only one day per week, even with a full course load. They can meet their remaining tutorial requirements by participating in online tutorials (OLT and forum) from home. Hence, this structure allows a degree of convenience and students can work while studying full time.

Course plan

After students have registered at UNITAR, they will be given an e-mail account, the CDs, or a password for the university system to access the web-based course materials. They will also receive some orientation and training on how to use the computer and the university system. They are then expected to browse through the university website for all the essential information or announcements on all the courses for which they have registered. For example, they will have to consult the course plan for every course they will be taking. In the course plan, they will find the name of the lecturer, the materials to be covered on a weekly basis, the schedules of face-to-face tutorials, online tutorials, forums, assignment due dates, the quizzes and examination dates and locations. UNITAR students thus know ahead of time how the courses will be conducted from the first day of every semester onward.

Theoretically, students can choose to work hard on a particular course and finish it in less than a semester. Once they are prepared to be tested, they can go to their course coordinator and ask to be examined. Students do not need to wait until the end of a semester to finish a course. They may take four or five courses in a semester, and plan it so that they finish their courses one by one instead of all at the same time. The time students take to finish their courses depends

essentially on their interests and capability. This is the kind of flexibility and smart, or customized, learning – instead of mass learning – that UNITAR can provide. This educational approach is also more attuned to lifelong learning.

The course plan itself is a tool that will help students develop positive habits and discipline. It shows how demanding a course will be in terms of the number and level of assignments, quizzes, examinations, etc. It is up to students to determine whether they should register for the course in that semester or leave it for a later semester. What is most important, however, is that students know from day one what to expect from any course, when and how much of the materials they should cover every week, the assignments they have to complete, etc. If students strictly follow the course plan, they should have no problem completing the course with a good grade.

Modes of evaluation

Most of UNITAR's final examinations are conducted in the traditional way, which requires every student to be physically present for his or her examinations. Only very short quizzes are given online, and their contribution to the final grade is minimal.

Roles and responsibilities of academic staff

UNITAR requires its academic staff to be experienced in IT so that they will be able to perform their tasks. Apart from preparing the course plan, which is the most demanding task in terms of preparation, they are also expected to help develop course materials in multimedia format as subject-matter experts, conduct face-to-face, OLT and forum tutorials, prepare examination questions, correct the answers, coordinate with tutors at the various centres, etc. Above all, they are also expected to guide students and help them conduct research. Moreover, UNITAR expects its academic staff to conduct research in e-learning, especially in innovating more effective modes of delivery, etc. So far, academic staff members have been very excited and positive about their UNITAR experience. They also realize that this experience will be very useful in the future. However, for UNITAR, recruiting and retaining adequate academic staff has meant paying slightly higher salaries than most other universities in Malaysia.

Lessons learned and recommendations

First, we learned that students need time to adjust to the new system. Once they have adjusted, they are able to effectively learn in our way. This is borne out by the fact that while the attrition (including failure) rate was very high at the beginning (around 20 per cent), there was much improvement and the rate has dropped to only about 4–5 per cent.

Second, we found that the course plan is a very important vehicle for integrating all the components of the UNITAR e-learning model. It not only guides students in their learning, but also makes learning much easier and more structured.

4.3 Learning

When UNITAR first enrolled 162 students in September 1998, it was difficult convincing them that they could effectively learn on their own with the various support services that the university offered. At that time, the excessively high failure rate (around 20 per cent) caused disappointment and worry. Three years later, the failure rate had significantly declined, indicating that the students were successfully learning.

UNITAR places much emphasis on disseminating information on its programmes by various print and electronic media. It has also organized events in various towns and cities, schools, colleges, and hotels. Preview sessions are also regularly conducted at UNITAR's main study centre. UNITAR also provides academic counselling, both by its own senior academics and professional counsellors. Moreover, what is important is that most UNITAR programmes are recognized by the government, and hence UNITAR students are eligible for financial assistance in the form of government study loans. Because of UNITAR's mode of learning, its students can also receive special computer loans from the government. Furthermore, every year the university provides ten scholarships, based on excellent academic achievements, to UNITAR students.

Hardware, software and Internet/web access required of students

Ideally, every UNITAR student should have a computer (desk or laptop PC) with Internet access that allows him or her to retrieve multimedia, interactive materials from the UNITAR system. Students who do not have the means to be adequately equipped can apply for a special computer loan from the government. Otherwise, the university

provides computer facilities at the study centres, although students may have to take turns using them.

Technical support provided to students

UNITAR does provide some technical support services for students, but these are usually required more at the initial stages. After a while students show resourcefulness and seek help from other sources.

Laboratory work

Laboratory work is only conducted for students who take programming or some other software or systems-related subjects. For such courses, where special software is used for teaching, students use the special IT laboratory.

Library access

UNITAR provides both physical and virtual library services. The physical library is necessary so that students can use books that are not accessible in digital form. The university also encourages students to visit the library when they are at the study centre. In addition, all UNITAR students can use the virtual library, which they can easily access from home.

Course completion

In August 2001 the first – and so far only – group of students graduated from UNITAR. There were twenty-eight graduates in all, twenty with an MBA, four with a masters in Information Technology Management and four with a masters in Information and Multimedia Technology. The first group of students to receive a BBA and Bachelor of Information Technology degrees are expected to graduate in early 2003. This group will not be very representative of general UNITAR student performance because their rate of failure was very high. On the whole, UNITAR students were expected to perform not very differently from students of conventional universities, but it should be noted that so far the university has not been able to enrol the best students.

Student reaction to the e-learning mode has been very encouraging. They have demonstrated their willingness to learn, to be disciplined and resourceful. They realize that they must learn on their own, and that they have a lot more to learn, especially through using the web.

Lessons learned and recommendations

First, we have learned that it took some time for students to become confident. They came to UNITAR with both hope and fear, but eventually began to learn and appreciate the e-learning model. They subsequently became more responsible and mature, and were able to take up the challenge of studying at the first virtual university in Malaysia.

Second, we found that the number of students who are working full time is increasing. Also, students who had completed their first or second year began looking for temporary jobs to earn some income, instead of concentrating on their studies.

Third, students seem to have no inhibition at all when expressing themselves to the highest authority of the university because they can remain anonymous. We have received a considerable number of complaints, views and criticisms from students who were very concerned about their situation.

5. COOPERATION

From the very beginning, institutional cooperation was an important strategy for e-learning delivery. As part of a cost-control strategy, UNITAR needs local partner institutions to assist in delivering its courses. Basically, UNITAR needs a few partner colleges to house its regional study centres or satellite study centres. Originally, UNITAR planned to have twelve study centres within Malaysia by the year 2000 — one in each state. However, due to cost and other barriers, UNITAR has found only seven local colleges since 1998 to become partners and act as recognized UNITAR regional study centres. Together, they now house about 50 per cent of UNITAR's current student population, with Kuching, Sarawak, being the biggest non-UNITAR-owned regional study centre. They are:

- Institut Teknologi Tun Abdul Razak (ITTAR) in Kota Bahru, Kelantan;
- Dynamic Seminar in Kuching, Sarawak;
- Kolej Ibukota (KIK) in Kota Kinabalu, Sabah;
- Kolej Shahputra at Pekan, Pahang;
- Kolej TAJ in Trolak, Perak;
- Kolej Islam Johor in Johor Bahru, Johor;
- Institut Profesional Bumiputera (IPB) in Kuala Lumpur.

The colleges are recognized private institutions of higher learning within Malaysia and they are governed by the Private Education Act and the Education Act. Like UNITAR, they are registered under the Department of Higher Education of the Ministry of Education, and before being recognized as UNITAR regional study centres they had to seek approval from the Ministry.

In addition to adhering to this regulatory framework, the partner colleges have a working agreement with UNITAR. This agreement stipulates the roles, functions and responsibilities of the participating colleges vis-à-vis UNITAR e-learning delivery. These include:

- a fixed profit-sharing ratio governing the business-model arrangement;
- provision of teaching delivery according to UNITAR's Standard Operating Procedure (SOP) and course syllabi;
- tutorial facilities provided to matriculated UNITAR students, including classrooms and qualified tutors;
- provision of relevant access to computers with Internet connection and resource centre;
- provision of other relevant educational facilities, such as facilities for extra-curricular activities and student clubs and societies; and
- adherence to UNITAR's existing quality assurance standard.

In contrast to its great efforts to build local institutional cooperation, UNITAR has hardly embarked on developing international institutional cooperation, except for two projects, which are at a very early stage. UNITAR maintains a good relationship with Regent College in Phnom Penh, Cambodia, where UNITAR's Bachelor of Business Administration Degree is offered. UNITAR also has an agreement with Indonesia Bangkit, which is aiming to develop e-learning courses in Indonesia. So far the initial arrangement with UNITAR concerns only intellectual property issues.

6. FUTURE DEVELOPMENTS AND INSTITUTIONAL CHANGE

UNITAR's future will be to promote lifelong education in Malaysia. This will be characterized by customized education for those who need to master certain types of knowledge or skills either for self-

development or for career improvement. The model that UNITAR has developed so far will certainly be fine tuned to better meet future needs. The fact that UNITAR students have already started to gather work experience before graduating or are actually in the workforce and gaining knowledge to better themselves demonstrates the flexibility and convenience UNITAR provides to both full-time students and full-time working individuals.

The uniformity of content makes it possible to transmit the same quality education globally. This is an advantage that is likely to be fully developed and deployed to globalize education without jeopardizing quality. The aim is to educate a large number of students who nevertheless feel that they are getting the special attention they need. In other words, we see UNITAR as providing customized education to a very large number of students.

Once the UNITAR name is well established, we see the university going global, particularly in Asia and the Middle East. This is possible because English is its language of instruction, and also because conventional universities are becoming more expensive to establish, while technology is becoming less expensive, and its possibilities are continuously increasing.

We also foresee steep competition along the way. However, we strongly believe that our policy of smart partnership from the beginning will pay off at the end.

7. POLICY DEVELOPMENT, PLANNING AND MANAGEMENT IN THE VIRTUAL UNIVERSITY: LESSONS LEARNED AND RECOMMENDATIONS

After an accumulated experience of almost four years – since the first enrolment in September 1998 – the following lessons are particularly pertinent:

- Conceptualization should not stop with the teaching and learning model. On the contrary, one should also look at the support facilities in detail, particularly the technological infrastructure and the physical ‘campus,’ which should be linked to the symbol of an established institution. It is also very important to submit a detailed plan of the technology infrastructure and physical support facilities to a cost-and-benefit analysis. Our assumptions and perceptions regarding the university may not be in line with what

people who seek a virtual education want or need. When this occurs, we will definitely face problems to make things happen. We will then have to make alternative plans to accommodate the demands that are not being met.

- The most difficult part is keeping the technology infrastructure current, as there are rapid changes in capability and price. We should try to mitigate the inevitable risk of obsolescence, especially if we are trying to keep up with the latest technological developments.
- Training of the academic, technical, managerial and support staff should not be taken lightly. There is a definite need for a shift in the thinking of everyone involved so that the whole UNITAR concept can be perceived as something completely new. Otherwise there will be considerable delays and impediments that will keep UNITAR from moving forward.
- The teaching and learning model has to be one that can accommodate various types of potential students. Do not forget that parents are more conservative than the students themselves.
- The choice of academic programmes has to be made carefully so that they can easily be mediated by technology and yet generate demand. We could introduce new programmes that are usually not offered by other institutions and make them attractive by designing them to meet specific industry needs.
- Whatever teaching and learning model has been chosen, the most important success factor is the stability of the system. As long as we have an unstable system, we will be bogged down with unnecessary maintenance problems.
- A virtual university need not be without a 'campus'. Social interaction is necessary for students to develop their personalities. There is clearly no substitute for traditional teaching in this case. Providing some form of physical campus, where students can converge to interact and learn, can help to convince potential students and their parents to try UNITAR.
- There should be sufficient financial resources to support a virtual university. To assume that a virtual university without a campus will require little resources can be grossly wrong. The price of leading technology is very high, and the risk of obsolescence is also very high.

FURTHER LINKS

UNITAR website: <http://www.unitar.edu.my/>

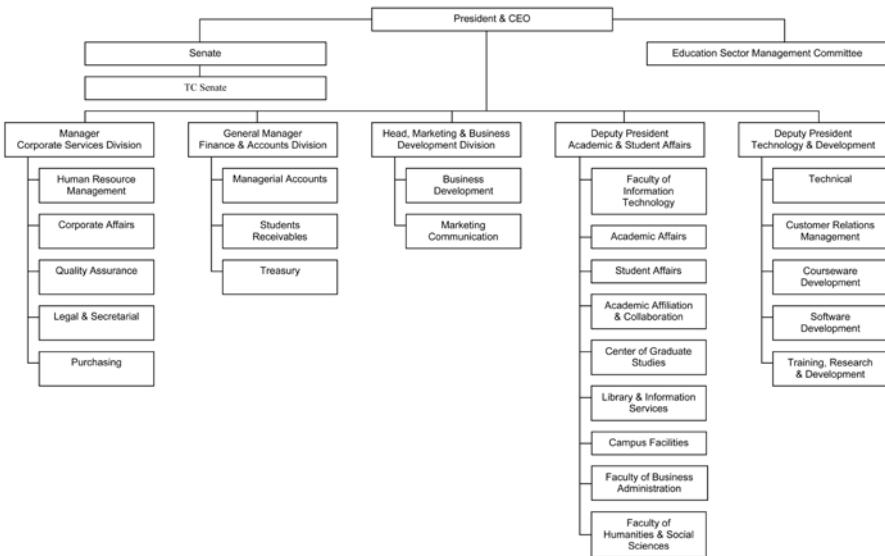
UNITAR eLearning academic model: <http://www.unitar.edu.my/elearning/child.html>

Web courseware examples: <http://www.umm.com.my/popupprod.htm>

Virtual Online Instructional Support System (Flash slides): <http://www.unitar.edu.my/demo/voiss/voiss.html>

Virtual library: <http://vlib.unitarklj1.edu.my/>

APPENDIX – UNITAR ORGANIZATIONAL CHART



Developments since 2003

8. UNITAR AND ITS CONTEXT

The number of higher institutions in Malaysia has increased considerably, from fifteen to seventeen public universities and university colleges, and from fourteen to twenty-seven private universities and university colleges.¹ The significant increase in the number of private universities and university colleges has been due to the upgrading of private colleges that have been in operation for more than a decade, and have demonstrated excellent capacity for providing high-quality education. Having been granted university or university college status, they have the option to offer their own degrees. Previously, they could only offer qualifications up to the diploma level, which is categorically lower than a bachelor degree. The second reason for the significant increase in the number of private higher institutions is the desire of the government to attract highly reputable foreign universities to establish branch campuses in Malaysia in order to provide programmes of international standing. This is in line with the intention of the government to make Malaysia the centre for educational excellence in the region.

8.1 National context

In the late 1990s, the government intended to implement on a large scale the 'smart school' concept, which is essentially a modified version of e-learning. It was not fully implemented, although a pilot project was conducted in a small number of schools. While the smart school project did not fully materialize, in 2002 the government instead introduced a new policy of teaching mathematics and science in English, starting with the first two years of primary school. This policy was implemented, by introducing the use of courseware or course content in multimedia format on CD-ROM, in order to mitigate the problem of a shortage of capable teachers to teach the two subjects in English. Such a policy certainly enhances the potential of UNITAR to expand once these pupils, familiar with computer-aided learning from early in their school careers, reach university level.

It is also a policy of the Ministry of Education to move forward with the advancement of technology by introducing e-learning in teacher training colleges. Special in-service training programmes in

Information Technology (IT) are also being conducted to provide teachers with the relevant knowledge in IT.

UNITAR should stand to benefit from both these policy changes. Indeed, UNITAR and the Ministry of Education are working together to conduct IT training for existing teachers in schools.

8.2 International context

The UNITAR teaching and learning model has also succeeded in attracting other institutions in the region to collaborate in programme delivery. These institutions include Assumption University in Bangkok, Thailand, Universitas Muslim Indonesia in Makassar, Indonesia and Asian University of Bangladesh in Dakka, Bangladesh. UNITAR is also discussing similar collaboration with other institutions in China and Taiwan.

9. UNITAR: ITS CREATION, ORGANIZATION AND CURRENT PROGRAMME

Minimal changes have taken place following what has been written about the creation and organization of UNITAR. However, there have been significant changes made to the current programme.

9.1 Organization

There were some changes in the organizational structure of UNITAR in 2002. First, there was a move to downsize the workforce, particularly in the technical department. It had been thought that the technical department should be run quite independently in order to focus on providing technical support as well as spin-off technical products. However, the commercial objective was not well achieved, resulting in the decision being taken to downsize UNITAR. The subsidiary company of UNITAR, United Multimedia (UMM), ceased operations, and the remaining fifty members of the staff were absorbed by UNITAR.

The top management of UNITAR was also reorganized to have a president and three vice presidents, one each for academic and student affairs, technology and operations. The rest remain more or less the same. The Vice-President (Technology) is currently the Dean of the Faculty of Information Technology as well as the Chief Technology Officer (CTO) of the university. The university has therefore done away with the position of CTO.

9.2 Current programme

There are twenty-seven academic programmes, from diploma to Ph.D. level, in business administration, management, information technology and hospitality management. The number of students has clearly increased to around 8,000. The fourth convocation, in October 2004, saw a very significant increase in the number of graduates, from the previous 241 to more than 1,000. The fifth convocation is anticipated to have around 1,500 graduates.

The graduates of UNITAR are readily absorbed by the market because of their competency in English and IT skills, and this in the midst of high national levels of graduate unemployment.

10. ADMINISTRATIVE ISSUES

10.1 Administration

There are no significant changes to the administration of the university, despite the minor changes at the top and marginal changes in the middle-level management.

10.2 Costs and financing

It is important to note that since its third year of operations, the university has not required any assistance in financing. In fact, in its fourth year of operations, it even managed to repay some of the advances made by the parent company. By the fifth year, it was already in the black and, since then, has needed no more assistance from the parent company.

10.3 Technological infrastructure

The rapid rate of technological obsolescence necessitates considerable investment in upgrading the technical equipment. The university is increasingly deploying new broadband technologies to ensure the utmost satisfaction of its customers, namely the students. The upgrading and replacement of equipment and infrastructure is clearly an annual affair and, as such, requires sufficient long-term allocation of resources.

11. ACADEMIC ISSUES

The university has been in operation for seven years, and it is time for consolidation in the types of programme offered, in terms of the

competition it is facing, the market demand, and the suitability of such programmes to the virtual setting.

11.1 Programme development

Due to the demand for a wider choice of programmes for potential students, the university has embarked on four distinctly different academic disciplines, namely English, education, accounting and hospitality. These four new disciplines have been identified as having market potential and consequently four new bachelor programmes have been developed and offered, beginning in January 2005. It is obvious that education attracted the highest number of students because of the perceived high rate of employability. Since January is not the most appropriate time for a major intake, the other programmes have had a low level of response.

11.2 Teaching

One of the problems for UNITAR, which is related to the rapid increase in the number of new programmes, is the difficulty for the Technology Division to catch up with the development of courseware. For this reason, teaching has to be adapted to the availability of the courseware. However, a private university that greatly depends on student numbers for its commercial viability does not have the luxury of a long planning period. Teaching has to go on and courseware, meanwhile, has to be quickly developed.

11.3 Learning

Students who do not work have no problem attending lectures. However, those working adults who expect to learn at a distance through their computers find it very frustrating to have to attend regular lectures. These are the problems a private virtual university has to face, although such problems are not expected to be an issue after one or two semesters, when the courseware has been developed.

12. COOPERATION

Cooperation with other higher institutions of learning, inside as well as outside the country, is really the key to UNITAR's expansion programme. Through existing partnerships, as well as collaborations with new institutions in Thailand, Indonesia, Cambodia and Bangladesh, UNITAR offers programmes that are highly marketable

in other countries across the region. For instance, Universitas Muslim Indonesia in Makassar is collaborating with UNITAR to offer a Ph.D. in management (by research). At the time of writing Assumption University is planning to conduct UNITAR's MBA, Western University in Phnom Penh, Cambodia, is conducting UNITAR's BBA and Asian University of Bangladesh is offering the BBA, BIT and MBA programmes.

13. FUTURE DEVELOPMENTS AND INSTITUTIONAL CHANGE

UNITAR is seriously looking at building its own mini campus, which would constitute a symbol of the 'real' university and help create a sense of belonging among students. This is strongly believed to be a great success factor because of the profile of students who come directly from school and who can relate to a campus-based university more easily.

Secondly, going forward, UNITAR should endeavour to strengthen its postgraduate education, both professional and research based, because of the increasing need for higher education among working adults. A strong postgraduate programme would certainly attract more working adults, who appreciate virtual education more than those who have just completed high school.

Specialized, skill-enhancing short courses would be apt for working adults, who are often not attracted to a long, drawn-out programme leading to a formal educational qualification. Programmes that are suitable for corporate training are also suitable for e-learning.

Competition is becoming steeper, with an increasing number of private and public higher institutions in the country.

14. POLICY DEVELOPMENT, PLANNING AND MANAGEMENT: LESSONS LEARNED AND RECOMMENDATIONS

I would reiterate the original list of lessons learned. I would especially reinforce the need for face-to-face interaction, for several reasons.

- The importance of social interaction as a form of education is very pertinent, because the working life of graduates is real and requires tremendous experience in social interaction. A campus, however small, with minimal recreational facilities, will be a key success factor.

- Virtual education, especially at the undergraduate level, is still not received well by society. Students need to learn academic and communication skills to equip them for working life. Whether they study in a virtual or real environment is not the issue, although if possible, they still would prefer a conventional education setting.
- Virtual education may be acceptable at higher educational levels such as for a Masters and a Ph.D. It is also true that even working adults do not like to spend too long studying for a particular course.
- Short courses, in the form of corporate training, would be more appropriate to the virtual environment.

Finally, I would like to add that many find it difficult to adapt to a new environment. They need time and confidence. Changing the environment, methodology or approach certainly requires a long time before such changes can be accepted. This has been observed in an agricultural setting, where farmers could not adapt to a structured timetable of activities that would enable them to maximize their output. They still prefer their own old ways.

NOTE

1. Instead of establishing fully fledged universities, the government introduced the concept of the university college, which is meant to be smaller in enrolment and concentrating on teaching at undergraduate level in very specialized fields (e.g. engineering, technical, etc.). These university colleges are independent institutions, not affiliated with any university system, as they are in the United Kingdom, for instance.

Chapter 6

CAMPUS NUMÉRIQUE FRANCOPHONE, DAKAR, SENEGAL

Olivier Sagna

1. THE DAKAR FRANCOPHONE DIGITAL CAMPUS AND ITS CONTEXT

1.1 The international context

Higher education in sub-Saharan Africa has not escaped the crisis that has severely affected African higher education systems in general for over two decades. While the difficulties that African universities are experiencing are numerous, their most frequently encountered problems are due primarily to the following factors:

- students arriving at university are increasingly less well educated;
- long and repeated strikes by students, teachers and administrative and service staff are not always conducive to the acquisition of knowledge in normal conditions;
- student enrolments are increasing exponentially whereas the material, financial and human resources required are remaining at the same level, if not actually diminishing;
- higher education institutions are incapable of retaining a sufficient number of teaching staff in disciplines that are becoming increasingly varied and demanding, at a time when teachers are also attracted by the lure of the private sector, non-governmental organizations, international bodies or expatriation; and

- reference material, scientific and technical information, and the various other kinds of facilities, which students, teachers and researchers cannot do without, are in increasingly short supply.

For some ten years, therefore, the overriding aims of African universities themselves have been undermined. Furthermore, in spite of economic problems and budgetary restrictions, the same universities have continued to enrol large numbers of students in arts disciplines at the expense of scientific and technical fields, notwithstanding the greater relevance of the latter to development issues. One reason, in particular, why African countries have allowed courses in the humanities to expand is that they are less costly than those in scientific and technical fields. While such a policy may have the advantage of ensuring that a large number of young people remain at university and are temporarily given something to do, the drawback is that it ultimately increases frustration among them and, more important, results in a considerable drain on resources rather than an investment in training individuals who would constitute a real force for development in scientific and technological fields.

1.2 The national context

The system of higher education in Senegal consists of both public-sector and private-sector institutions.

The public sector comprises essentially the University Cheikh Anta Diop of Dakar, founded in 1958,¹ and the Gaston Berger University of Saint-Louis, opened in 1990. Alongside these two universities are 'schools', such as the Ecole nationale supérieure d'agriculture at Thiès, the Ecole nationale des cadres ruraux at Bambey, the Ecole nationale d'économie appliquée, or the Ecole Inter-Etats de science et médecine vétérinaires.² The state earmarks almost US\$33 million for higher education, corresponding to some 20 per cent of the total education budget which, in turn, represents approximately 30 per cent of the general state budget. Overall, both universities enrol almost 25,650 students³ to which should be added a further 550 or so from the higher, national schools and some 200 students enrolled at the Ecole Inter-Etats de science et médecine vétérinaires, making a grand total of approximately 27,000 students. Approximately 90 per cent are female. Graduation rates range widely from 44 per cent to 84 per cent, depending on whether one takes into account the faculties, or the 'schools', institutes and other higher national schools.

Private higher education institutions were created in the mid-1990s following reforms advocated in the Concertation nationale sur l'enseignement supérieur⁴ (national-level consultation on higher education) set up with a view to implementing the *Projet d'amélioration de l'enseignement supérieur* (plan for the improvement of higher education) financed by the World Bank. Two major decisions were taken in this period.

- On the one hand, the automatic admission to university of those who had just obtained their *baccalauréat* was replaced by a selection process based on an assessment of school reports.⁵
- On the other hand, the period that could be spent in the first intermediate stage of university studies was limited to four years, which had the effect of excluding students who had re-enrolled repeatedly for this stage without ever managing to move on to the second stage. Consequently, many graduates who had just obtained the *baccalauréat* without securing a place at university, as well as those students who had not managed to re-register, ran the risk of being unable to undertake or continue higher education study, with potentially adverse social consequences.

To rectify the situation, the government encouraged the setting up of private higher education institutions capable of enrolling all those unable to study in the public sector. The Dakar-Bourguiba University and a whole range of private institutes or schools were established. At present, these institutions offer training programmes in around thirty branches of study, 90 per cent of which are concentrated in the tertiary sector (computer science and management, executive secretarial studies, accountancy, business administration, etc.) and enrol over 5,000 students.⁶ Furthermore, for some years now, given the steady increase in the cost of study abroad and difficulties encountered by students in obtaining foreign visas, foreign institutions have been opening branch campuses in Senegal, such as the Dakar campus of Suffolk University, in which it is possible to study for two initial years in Dakar and then move on to the Boston campus (USA) for a further two years in order to obtain a Bachelor of Science in Business Administration.⁷

Over and above numbers alone, the higher education system has to respond to numerous problems and challenges. In addition to those

already referred to above, higher education faces other difficulties, such as:

- the retirement of a great many teachers belonging to the first generation of academics;
- difficulties encountered in recruiting new teachers in subjects related to science and technology;
- the difficulty of ensuring that teachers who are proficient in the field of ICT remain in service;
- the ever-increasing costs involved in the very necessary use of ICT in teaching, research, and scientific and technical information;
- competition engendered by the growth and diversification of distance education offered by foreign universities;
- a lack of short vocational courses at a time when university graduate unemployment is endemic;⁸ and
- the chronic shortage of qualified teachers that will only be aggravated by plans to create regional university centres.

That being said, while higher education has had to confront many problems, circumstances in the country are especially conducive to the use of ICT in education and training in general and to the development of distance education in particular. This may be attributed especially to the following:

- the quality of the existing telecommunications infrastructure;
- favourable tax, legislative and regulatory conditions;
- the number of online educational and training facilities;
- the agreement signed between Sonatel, the Senegal telephone company, and the Ministry of Education; and
- the interest in distance education displayed by the top political authorities.

Indeed, Senegal has been connected to the Internet since March 1996 with a high-speed connection of 53 Mb/s (Sagna, 2001). Furthermore, the possibility of substantially increasing the bandwidth is now greater with the launching, in June 2002, of the 28,000-km SAT-3/WASC/SAFE submarine cable linking Angola, Benin, Cameroon, the Canaries, Gabon, India, Côte d'Ivoire, Malaysia, Mauritius, Nigeria, Portugal, Réunion, Senegal, and South Africa.⁹

At a national level, Senegal possesses an entirely digitalized telecommunications network, which relies on an optical fibre loop almost 2,000 kilometres long linking up the country's main urban centres. Furthermore, since 1998, an Internet Protocol (IP) network based on 155 Mb/s, 34 Mb/s and 2 Mb/s links, depending on the area concerned, will cover the whole of the country. In particular, it will enable the establishment of Virtual Private Networks for the infrastructure of the entire geographical area of Senegal.

The use of ICT in the education and training sector has been made easier by the fact that, apart from the customs stamp duty applicable to all products, computer equipment may be imported duty free. Furthermore, present legislation and regulations are based on a new telecommunications code adopted on 14 December 2001, which:

- guarantees 'the effective provision of a service for all users throughout the entire country, especially in rural areas and at a cost that people can afford' (Law No. 2001-15, 2001);
- introduces open competition in the value-added services sector; and
- entitles the *Autorité de régulation des télécommunications* (the telecommunications Regulating Authority) to ensure that the principles of sound and fair competition are respected by all players and that the public interest is upheld.

Quick to take advantage of these circumstances, a whole series of higher education and training institutions have come online via dedicated links, including the University Cheikh Anta Diop of Dakar (UCAD), the Gaston Berger University of Saint-Louis and the Centre africain d'études supérieures en gestion, among others. Other institutions are connected via satellite links, as in the case of the African Virtual University (AVU) on the UCAD campus, or the World Bank Distance Education Centre on the premises of the *Ecole nationale d'administration et de magistrature*.

This trend towards the use of ICT has been encouraged by the spectacular fall in the cost of leased links, which plummeted from US\$1,645 in 1996 to US\$575 in 2002 for a dedicated 64 Kb/s link. Furthermore, the agreement of 31 July 2001 between the Ministry of Education and Sonatel means that it is henceforth possible for

education and research institutions to secure a 50 per cent reduction for this kind of connection.

Finally, Abdoulaye Wade, the President of the Republic of Senegal, is strongly in favour of introducing ICT into the education system; he has launched the plan to set up an African University of the Future. This university will use distance education facilities and is expected to enrol almost 5,000 students across the entire continent. The proposal is based on arrangements with prestigious foreign universities for a system of joint degrees, which will be awarded by the African University of the Future and universities that agree to the partnership. As regards the technical aspects of the university, Senegal is in touch with the Texas International Education Consortium, an American body that administers around 40 universities, and it has already found a source of funding of no less than US\$14 million from the Government of Taiwan (Agence Education Emploi, 2001).

Distance education and training may thus constitute a response to the problems and challenges confronting Senegalese higher education institutions, their teaching staff and students. Indeed, the sudden proliferation of ICT within the field of education and training offers an open and evolving area for learning and, with it, both a new way of considering educational and scientific concerns and a fresh political approach. That being said, in spite of a supportive technological environment and the existence of experiments such as the AVU, or the Forciir scheme, offering 'second-stage' higher education courses in information sciences¹⁰ and distance education programmes for e-archivists/documentalists in business and industry, there is no real policy in this area either at the national level or among Senegalese higher education institutions. Under these circumstances, the rationale for the Campus numérique francophone de Dakar, or CNFD (Dakar Francophone Digital Campus), of the Agence universitaire de la Francophonie, or AUF (Agency of Universities of the French-speaking World), is to show the way by serving as technical support and as a location for experimentation with many different projects constituting potential solutions or new approaches, which may serve to inspire policy-makers and academics.

2. THE CREATION, ORGANIZATION AND CURRENT PROGRAMME OF THE CNFD

At the beginning of the 1990s, AUF realized that one of the main obstacles to the development of quality higher education and research in developing countries in general and in sub-Saharan Africa in particular was the difficulty, if not the impossibility, of accessing internationally produced scientific and technical information. It thus created the Réseau électronique francophone pour l'éducation et la recherche, or REFER (Francophone Electronic Network for Higher Education and Research). Composed of SYFED centres¹¹ established in francophone higher education institutions, this Network sought mainly to facilitate access to scientific and technical information by offering services for consulting online databases and data banks, ordering original documents, and consulting CD-ROMs and videodiscs with bibliographical information or full-text documents. The first SYFED centre was opened in Dakar on 13 May 1991. At that time, the facilities consisted of:

- Minitel¹² terminals used for searching online information via the Questel-Orbit server; and
- microcomputers equipped with CD-ROM or videodisc drives for local-mode consultation of electronic resources.

Following the extension of the Internet to the general public in the mid-1990s, at a time when the developing countries were not widely connected, if at all, AUF added a further facility to its SYFED centres, namely e-mail. This gave birth to REFER and, from 1995 onwards, the SYFED centres became known as 'SYFED-REFER centres'. Users of the centres were from then on able to obtain an e-mail address and exchange electronic mail and files with 'Netizens' throughout the world. Technically, the link was first established via the Minitel, then via microcomputers emulated in videotext mode, and, finally, via computers using TCP/IP as soon as developing countries first came online. The network of SYFED-REFER centres thus offered both access to scientific and technical information and access to e-mail and Internet browsing.

Meanwhile, in the most developed countries, the growth of ICT opened up new prospects for distance education, which, after moving from paper-based materials to audiovisual aids, was tending

to rely increasingly on electronic multimedia facilities. It was in this context that, in 1995, the World Bank studied and adopted a strategy document proposing the establishment of an African Virtual University (AVU). In an analysis of the global environment, this document stated that the 'new economy' driven by ICT could be expected to enable underdeveloped countries to bypass the normal stages of development and thus offer their citizens better living conditions. However, if real benefit was to be derived from this possibility, the sine qua non requirement was adequate training and, on a sufficient scale, human resources capable of significantly improving the productivity of African business. For this purpose, Africa had to be able in the short term to train very large numbers of people with a firm grasp of ICT, who were also responsive to innovation, capable of adapting to change, skilled in problem-solving, and ready to continue their education throughout their lives. As these aims had not been achieved by means of conventional higher education, it was vital to envisage other solutions and, more particularly, the establishment of an African Virtual University. This university would rely on the intensive and extensive use of ICT in a way so as to introduce into the labour market a considerable number of people with appropriate training, while also overcoming financial, physical and information barriers. The two main aims to be adopted by the AVU were, first, to improve the quality and relevance of education provided in sub-Saharan Africa in the fields of science, engineering and management, and, second, to increase considerably the number of students enrolled in these subject areas. With this end in view, it was envisaged that the AVU would progress in accordance with a three-point strategy, which involved:

- seeking and acquiring relevant teaching materials already produced by higher education institutions and professional associations, etc. so that they could be adapted to the African context and used for seminars and training courses that would lead to formal qualifications;
- boosting access to higher education and improving its quality by generating and stimulating competition between African higher education institutions; and
- supporting the production of quality teaching materials in Africa by Africans (World Bank, 1995).

Presented during a workshop organized by the World Bank in Dakar in April 1997, the proposal for an African Virtual University was seriously contested by several African academics. They were not hostile to the modernization of African universities and the education they provided, but to an arrangement that they felt would deprive them of one of their essential entitlements, namely the right to devise and produce curricular content, and reduce them to little more than mere tutors.

2.1 Establishment of the CNFD

During the same period, the Francophonie (an organization comprised of fifty-five French-speaking countries) was also considering the establishment of a virtual university. The background of this initiative is important as it constitutes the point of departure for the eventual creation of the CNFD.

In line with the Cotonou (Benin) Resolution on the Information Society adopted at the Summit of French-speaking Communities in December 1995, the proposal to set up a *Université virtuelle francophone*, UVF (Francophone Virtual University), was officially presented at the Conference of Francophone Ministers Responsible for the Information Highway, held in Montreal, Canada from 19 to 21 May 1997. Adopted by the Conference, the proposal was submitted to the francophone heads of state in November 1997 during the Summit of French-speaking Communities in Hanoi, Viet Nam. In the action plan adopted at the Summit, the heads of state recommended that special attention should be devoted to the ‘development of virtual information and training and especially the Virtual University,’ and authorized the Association of partially or wholly French-language universities–University of French-language Networks¹³ to establish the Francophone Virtual University.

During their meeting in March 1998, members of the Conference of Rectors of Universities in Africa and the Indian Ocean Region drafted a declaration in which they recommended ‘the development in Africa of the Francophone Virtual University and the setting up of its regional campuses’.¹⁴

Finally, in April 1998 in Beirut, Lebanon, the Association of Partially or Wholly French-language Universities–University of French-language Networks, at its twelfth General Assembly, officially decided to go ahead with the establishment of the Francophone Virtual University. Presented as a ‘unifying concept’ that would make

it possible to create a synergy between experiments already conducted in the French-speaking world, the UVF had the following major objectives:

- decentralized generation of knowledge;
- circulation and compilation of research findings;
- open distance-education and -training and independent learning; and
- provision of user support services.

Among its specific aims were the following:

- to adapt training courses to the requirements of the universities and countries concerned, gearing this provision to the labour market and national priorities, and significantly reducing the operational and installation costs of ICT;
- to progressively replace traditional teaching methods with a more interactive – and in certain cases less hierarchical – teacher/learner relationship, in which teachers would continue to assume fully their role as facilitators in the learning process;
- to give greater consideration in higher education to cultural and socio-economic characteristics specific to the francophone regions of the global South; and
- to implement innovative cooperation strategies for devising course content, which would lead to the formation of francophone multilateral teams of academics and teachers, the establishment of equivalences, and the award of degrees common to several partner universities in the pursuit of collective excellence.

The UVF target group was the same as that of the SYFED-REFER centres, that is, students enrolled in masters and doctoral programmes, as well as those receiving specialized professional training. There were several good reasons for concentrating on these groups:

- the urgency of a commitment to the training of human resources;
- the major likelihood of a brain drain towards countries outside the French-speaking world;
- the overriding need for first-rate teaching and research; and

- the need to strengthen the research community in the French-speaking world.

Once the establishment of the UVF had been formally accepted by all the francophone bodies concerned, the time had come to put this ambitious proposal into practice. From 1998 onwards, several programmes were implemented that aimed at giving UVF a clear academic identity. The objectives of these programmes were defined as follows.

- Technology transfer provides for the training of trainers in ICT in the countries of the South. The objectives of the training are to help teachers and researchers to adapt to changes in their professions due to the emergence of new technologies. This training focuses essentially on the mastery of technological tools, equipment and networks, as well as the production of multimedia resources and software.
- The Virtual Media Library and specialized electronic libraries aim at supplying UVF students, teachers and researchers with the resources they need, by:
 - structuring in electronic form resources of totally different origin (sound, video, conventional printed publications, multimedia products, software, etc.);
 - enabling students to access specialized virtual libraries for training and research purposes;
 - making more of academic output, and especially non-formal sources of information (such as theses and dissertations, etc.) within the scope of the Institut de référencement pour l'information scientifique (Referencing institute for scientific information).
- Pronet sets up intranets in the partner institutions to provide for electronic collaboration between researchers, teachers and students.
- Virtual thematic networks aim at forming international groups for project development in specific areas of interest for the purpose of:
 - acting as a federating network;
 - responding to the expectations of francophone countries in the South as regards the development of open education;

- encouraging exchanges and cooperation between teams producing content;
 - strengthening cooperation between all francophone institutions committed to open education;
 - monitoring activity; and
 - evaluating and selecting projects.
- Initiatives call for bids, finance innovative projects developed by the francophone academic community.

However, with the appointment of Michèle Gendreau-Massaloux in December 1999 as head of AUF, the name ‘UVF’, although not the concept, was dropped. It was felt that the name, Université virtuelle francophone, might have given the impression that the AUF was setting out to promote a new higher education institution for the purpose of replacing or competing with existing institutions, as the AVU wanted to do. The time had come to promote the concept of a ‘francophone digital campus’, which was defined as a ‘technological platform to support universities, *grandes écoles*, training centres and research laboratories in the global South’ (*Official Presentation of Programme 4*).

Encouraged by the backing of the Conference of Rectors of Universities in Africa and the Indian Ocean Region, the Fonds Francophone des Inforoutes (the fund for the francophone information highway) and bilateral cooperation partnerships, AUF decided to begin to establish campus numériques francophones (CNFs) (francophone digital campuses) in countries in the South. In fact, the setting up of CNFs relied quite naturally on the SYFED-REFER centres, which constitute operational AUF field agencies. With regard to sub-Saharan Africa,¹⁵ this network originally consisted of around a dozen centres in Dakar in Senegal, Abidjan in the Côte d’Ivoire, Libreville in Gabon, Ouagadougou in Burkina Faso, Antananarivo in Madagascar, Cotonou in Benin, Lomé in Togo, Yaoundé in Cameroon, Bujumbura in Burundi, Nouakchott in Mauritania and Conakry in Guinea.

With the setting up of the CNFs, the SYFED-REFER centres are now known as *centres d’accès à l’information* (centres for information access). As the basic infrastructure for the CNFs, the centres are staffed by research assistants and offer the following facilities to students, teachers and researchers:

- an area equipped with computers for on-site consultation of CD-ROMs, access to e-mail and web browsing; and
- a service for online database consultation and for ordering primary documents.

The first CNF to be inaugurated was in Yaoundé and it was soon followed by campuses in Bamako¹⁶ and Libreville.¹⁷

Construction work on the Dakar Francophone Digital Campus (CNFD) did not begin until February 1999. Until then, the Dakar premises of the AUF consisted of a resource centre in a site of around 50 m² equipped with some half-dozen computers. In the light of the Conference of Rectors' recommendations, it was decided to undertake heavy investment with a view to the construction of premises capable of housing a whole range of facilities that could be used to illustrate exactly what a typical digital campus might look like, not to say an 'ideal digital campus'. Work was completed in June 2000 and, a few months later, on 24 October 2000, the CNFD was officially inaugurated by the Rector of AUF, in the presence of several Senegalese ministers and representatives of many African academic authorities.

2.2 CNFD staffing

Headed by a director responsible for its day-to-day work, the CNFD is managed administratively and financially by the West Africa Office of AUF. It is responsible to a Conseil national d'orientation (National Policy Council) consisting of individuals from the academic world, heads of firms, development partners, specialists in open and distance education and training and representatives of users. It is chaired by the rectors of the University Cheikh Anta Diop and the Gaston Berger University, as well as by the Director of the AUF West Africa Office. Its members are constituted in six groupings:

- a 'University' group consisting of the Director of Higher Education, the UCAD Director for Reform and Educational Affairs, deans of faculties, directors of training and research units, and directors of UCAD and Gaston Berger University institutes, as well as the Director of the CNFD;
- a 'Cooperation' group consisting of the Personal Adviser on French-speaking communities to the President of the Republic, the Cultural Adviser at the French Embassy, the Canadian

Embassy Representative, the Delegate of the French Community of Belgium, regional representatives and directors of the Institut de Recherche pour le Développement (the Development Research Institute) and of the Centre International de Recherche Agronomique pour le Développement (the International Agricultural Research Development Centre), in Senegal;

- a 'Business' group consisting of an employers' representative and of directors of computer firms;
- a 'Technical' group consisting of the CNFD systems and network administrator and the UCAD and Gaston Berger University computer managers;
- a 'Training of ICT Trainers' group consisting of the CNFD training manager, and representatives of the AVU, the World Bank Distance Education Centre, the African Network for Distance Education and Training, and the Ecole normale supérieure, etc.;
- a 'Users' group consisting of students, teachers and researchers using CNFD facilities.

The National Policy Council meets once a year. It elects from among its members a 'steering committee' consisting of three presidents and a representative from each of the six groups. This committee meets every three months. Its role is to:

- examine priority action programmes;
- evaluate their suitability to online provision;
- identify procedures for implementing them;
- recommend ways of creating awareness among target groups;
- evaluate results; and
- discuss any changes that may be necessary.

In operational terms, the CNFD is the responsibility of a director assisted by a system and network administrator, a training manager and a resource centre manager.

Acting only as a technological platform, the CNFD does not maintain close relations with distance education institutions or consortia. These contacts are primarily the responsibility of AUF at central level when training is being 'accredited' and relate solely to procedures for its delivery and not its content. Indeed, in keeping with its general

approach, AUF does not get involved in academic and/or teaching issues. Naturally, it tries to ensure that commonly accepted standards in this area are respected, but no more than that. Consequently, it determines neither course content nor teaching methods, nor the kind of teachers required, nor the frequency or nature of assessment. Its role is limited to accepting (or rejecting) a particular course because it corresponds (or does not correspond) to the priority subject areas identified by the Academic Council and to the level of education or training generally available from the Agency. It also indicates the share of enrolment fees that may be borne by it and promotes training, etc. All educational aspects are the sole responsibility of the institution that offers the particular course or that has assumed the responsibility for it within the consortium. Locally, AUF may assist with procedures for selecting candidates by making available its premises, infrastructure or even staff to facilitate interviews by telephone or via chat areas, the checking and/or receipt of applications, etc. and, in certain cases, by making its premises and/or computer facilities available to students.

Within this framework, difficulties encountered by AUF often relate to the supervision of students, even though this is not strictly speaking its responsibility. The CNFD is indeed often approached by institutions, responsible for course content and teaching arrangements, which note that students have not submitted homework within the period required, or have not attended regular meetings for assessment purposes. In principle, such matters are not the responsibility of the CNFD, since students are formally enrolled in a university, which should see that they respect its regulations. However, since the enrolment fees of these students are often partly or wholly covered by AUF, it is in the interest of the CNFD to ensure that those selected participate regularly in courses and, more to the point, pass their examinations so that the investment has not been totally wasted.

However, the supervision of students is difficult, as they are under no administrative obligation to report to the CNFD, which exercises no control over them and maintains only minimal contact. Under these circumstances, the CNFD can do little more than remind the students concerned of their binding, moral obligation to AUF, and that, if they ignore or fail to respect the 'rules of the game', they are not just wasting a precious opportunity but acting unfairly vis-à-vis those who were not selected because of the limited number of places available. Another problem that sometimes arises relates to the

need to provide enrolled students with properly equipped classrooms, which means that the same number of places is no longer available for in-class training courses organized by the CNFD or for its other activities. Finally, although this particular problem does not directly concern the CNFD, the bandwidth may be insufficient for students to conveniently access website teaching resources or distance education platforms, or to use effectively the communication tools that a particular course of training requires (e-mail, chat areas, newsgroups, IP videoconferencing, etc.).

2.3 The current CNFD programme

The activities currently implemented by the CNFD, under the AUF programme Technologies de l'information et de la communication et appropriation des savoirs (ICT and knowledge acquisition) essentially focus on six main areas:

- The production of multimedia content and, especially, electronic magazines and website development.
- The promotion of open and distance education with a course offer based on five degree programmes leading to formal qualifications:
 - the Diplôme d'études supérieures spécialisées (DESS) in 'The use of information and communication technology for education and training' awarded by the University Louis Pasteur, Strasbourg in France;
 - the postgraduate Diplôme inter-universitaire in 'Basic rights' awarded by the University of Nantes and the University Paris X in France;
 - the postgraduate Diplôme universitaire in 'International environment law' awarded by the University of Limoges and the University of Nancy II in France;
 - the *licence professionnelle* for Internet professions, awarded by the Université Paris V in France.
- The promotion of a set of six CD-ROMs called *Premier cycle sur mesure*, a specially devised first degree course in mathematics, physics and chemistry developed by the Réseau universitaire des centres d'auto-formation (university network of centres for independent learning).¹⁸

- Support for the setting up of new innovative firms by means of the CNFD ‘incubator’.
- The organization of in-class training, (involving e-mail, Internet browsing and searches, the authoring of HTML documents, Linux systems and network administration, and training provided by the Cisco Regional Academy whose course programme enables students to work for Cisco Certified Network Associate status). This in-class training is intended to help develop the digital literacy of students, teachers and researchers, and strengthen the human resources of higher education and research institutions in the deployment and management of computerized services.
- Access to scientific and technical information via the online consultation of databases and electronically supplied primary documents.

All CNFD distance education programmes are oriented to professional and postgraduate-level study or the second level of university studies (masters). By deliberately opting for this kind of provision, the AUF is seeking to prepare students more effectively for a context in which knowledge and technology are expanding more and more rapidly, with the emergence of new professions, qualifications and forms of employment lying midway between those of higher technicians and engineers or senior managers. Furthermore, the same approach makes it possible to introduce training programmes that call for very closely coordinated activity on the part of universities and other professional sectors so that qualifications with immediate market value can be offered as an alternative to traditional qualifications testifying to the acquisition of essentially theoretical knowledge.

Taking the *licence professionnelle* for Internet professions as one example, this particular qualification has been devised to respond to the need for the professional development and integration at ‘Bac+3’ level (three years of further study after the *baccalauréat*) of persons who have already received a ‘Bac+2’ education and seek to upgrade their qualifications despite not having the time and/or ability to embark on training as engineers. The *licence professionnelle* also provides those who have received ‘conventional’ training in computer science previously with an opportunity to upgrade their knowledge by acquiring new Internet-related skills.

Preparation for the *licence* lasts 20–25 weeks followed by a 2–14-week placement. The content of the programme is divided into 5 teaching modules lasting 381 hours in all, preceded by a 48-hour module, which is intended to ensure that students have reached the level required and which focuses on methodology. These modules are supplemented by a supervised project of some 150 hours that includes a 12–16-week in-company placement. As a whole, this programme is concerned with the following:

- the Internet training environment and services, algorithmics, HTML and an introduction to databases (48 hours);
- English for professional purposes and written and oral French (81 hours);
- the Linux and Windows operating systems, networks and the customer/server, web development, XML and Java programming (228 hours);
- problems of relational databases and practical MySQL, PHP and web/database interfacing (72 hours).

Teaching is divided into three-hour sessions (morning, afternoon and early evening) which may include lessons, independent learning sessions and computer conference tutorials, etc. Finally, as regards assessment, the *licence professionnelle* is validated by means of continuous assessment and examinations.

This degree programme has been offered as distance provision since the start of the 2002/03 academic year. It was previously available in France either as initial training for persons with a scientific or technological ‘Bac+2’ qualification, or under a qualifying contract in remunerated linked work and training for those who had reached ‘Bac+2’ level or, in the case of people with a qualification equivalence or a validated record of professional achievement, in full-time continuing education and training. Distance delivery of the course in Senegal has been conducted by the Université Paris V in partnership with the Ecole supérieure polytechnique of UCAD.¹⁹ The idea is that on completion of its initial year the course should be transferred to the Ecole supérieure polytechnique. Bearing in mind that the *licence professionnelle* is intended mainly for relatively young people, those who devised it have planned for the inclusion of a certain number of in-class sessions, so that learners do not feel unsupported and tempted to drop out before completing the course.

A second example is the diploma in ‘the use of ICT for education and training’ mentioned earlier. This course has been provided in class since 1998 and involves training teachers and managers of adult training who wish to make new technology central to their own teaching or training activity. During the 2000/01 academic year, it was offered as a distance programme leading to a diploma and, since the start of the 2001/02 academic year, has been formally recognized as a DESS. Devised by an educational consortium coordinated by the French University Louis Pasteur of Strasbourg, which brings together the Belgian Université de Mons and the Technology for Training and Learning Unit of the Swiss Université de Genève, in collaboration with the Senegalese Ecole supérieure polytechnique de Dakar and the Tunisian Institut supérieur de documentation, this programme has been conducted in partnership with AUF.

With a 408-hour workload, 50 hours of which are devoted to in-class group activity, the course makes use of the Internet and a distance education platform known as ACOLAD. The in-class provision occupies one week at the start of each stage of training. Its purpose is to develop the ability of learners to grasp certain procedures so that they become familiar with the tools used in distance education and with existing forms of distance provision, and so that they can submit their own personal project. More specifically, the course in this first week consists of a ‘mini-module’ that simulates distance education situations for demonstration purposes. This in-class training is provided on CNFD premises, which serve as a meeting place for students from sub-Saharan Africa.

The major part of the course (358 hours) takes the form of distance training and is divided into 6 teaching modules, each lasting 51 hours broken down into:

- 15 hours of virtual seminars (equivalent to tutorials) and 36 hours of computer-assisted collaborative work;
- three cross-disciplinary seminars each lasting 10 hours;
- monitoring of individual projects (12 hours); and
- technical monitoring (10 hours).

With regard to the virtual seminars, guidance is provided primarily in synchronous mode (twelve hours in each teaching module), with asynchronous mode used between sessions (three hours per module) to

give students instructions concerning the organization of their work and the performance of specific tasks. Tutors make ad hoc appointments so that they can communicate live with one or more students involved in the seminar and check their progress in a given task. All these activities are noted in the work schedule checked and validated by tutors. Course reference literature is formatted in accordance with a pattern based on 'hyperlink' architecture. As the level of telecommunications infrastructure varies very widely from one country to the next, special attention is devoted to technical problems that may arise because the local bandwidth can only transmit to a limited extent the images and simulations used to illustrate coursework.²⁰

In the computer-assisted work, which is the equivalent of practical labour, students work, within a group of ten persons, in teams of three or four supervised by a tutor from their virtual seminar. Each team works collaboratively to produce a small-scale project aimed at solving a problem related to a learning situation.

Finally, the distance training project has to be undertaken independently or by pairs of students, in either case assisted by a tutor. The project is carried out in several compulsory stages, as follows:

- the determination of project specifications with, in particular, a clear breakdown between the time devoted to in-class and distance training;
- the planning of the content-development stages and determination of the timetable for the completion of tasks;
- the presentation of the project at the outset, at the midway stage and on its completion;
- discussions with the other students and tutors in synchronous and asynchronous mode;
- project management;
- execution of the project;
- defence of a project dissertation assessed by the supporting tutor and another teacher.

The special feature of this training programme is that it is provided by a group of teachers responsible to one teacher at the Université Louis Pasteur in Strasbourg, who works in the institutions that were originally involved in developing the course (the Institut supérieur de documentation de Tunis, the Technology for Training and Learning

Unit at the Université de Genève, the Université de Mons, etc.). These teachers are backed up by tutors, who took the course themselves during the experimental year and are enrolled in doctoral studies or have sound professional experience in computer engineering, multimedia or continuing education.

The main role of the tutors is to continually stimulate learner interest and activity, to be constantly on hand to clarify points of methodology and to ensure that the individual learners are part of a joint learning endeavour. In particular, tutors have to follow activities closely and motivate learners as soon as a problem is reflected by prolonged absence from newsgroups or in personal communication. Tutors then intervene to address any indication of disillusion and drop-out with appropriate remedial action. They have resources at their disposal enabling them to:

- exchange messages with learners (e-mail, newsgroup, chat, etc.);
- evaluate the work of learners using assessment documents (working documents shared by the team, personal seminar documents, cross-disciplinary seminar summary documents, written examination papers, and project presentation material).

Out of the 358 hours of the programme conducted in distance mode, synchronous and asynchronous tutoring, which plays a very important part in distance learning, corresponds to approximately 37 hours, amounting to a little over 10 per cent of the total duration of distance training, with an estimated 15 hours devoted to virtual seminar tutorials,²¹ 10 hours to the cross-disciplinary seminar²² and 12 hours to the personal project (out of the total 100 hours that students normally take to complete their project). In technical terms, tutoring relies on the use of the chat facility, e-mail, Internet videoconferencing,²³ newsgroup discussions, areas for joint work, etc., depending on whether it is synchronous or asynchronous.

A final example: the course in 'Basic rights' and 'International environment law' is offered in more conventional form. Originally, it was part of the University by Satellite programme launched in 1992, which made it possible to obtain a university education leading to a formal qualification and also update and upgrade one's knowledge and professional expertise, or enhance one's personal general knowledge

via a distance education facility. The programme first involved the production of multimedia programmes of an educational nature, which were subsequently made available on VHS cassettes or on websites. The instruction provided relied on course booklets, while CD-ROMs were used for whatever could not be transmitted by audiovisual means.

All courses for qualifications that were developed for the University by Satellite programme were at postgraduate level. They were devised and administered by French-speaking specialists and carried out in partnership with bodies specialized in distance education. As a result, the following courses were initiated one by one:

- *Maladies parasitaires et tropicales*, that is, 'Parasitic and tropical diseases' (1993), jointly produced with the Centre national d'enseignement à distance and in collaboration with the Université Paris VI (twelve audio-visual aids lasting twenty-six minutes);
- *Biotechnologies végétales*, that is, 'Plant biotechnologies' (1995), jointly produced with the Centre national d'enseignement à distance and in collaboration with the Université Paris VI, the Université Paris XI, the Ecole nationale supérieure d'agronomie de Rennes and the Ecole nationale supérieure d'agronomie de Toulouse (twenty audio-visual aids lasting twenty-six minutes);
- *Droits fondamentaux*, that is, 'Basic rights' (1996), jointly produced in France with the Université de Nantes and in collaboration with the Université Paris X (fourteen audio-visual aids lasting twenty-six minutes and a website); and
- *Droit international de l'environnement*, that is 'International environment law' (1998), jointly produced in France with the Université de Nancy II and in collaboration with the Université de Limoges (thirteen audio-visual aids lasting twenty-six minutes, a CD-ROM and a website).

Students admitted to these courses were selected following a call for applications. The latter were studied by a committee consisting of representatives of the organizing universities and other institutions, specialized bodies concerned with distance education and AUF. Payment of course registration fees could be waived for students originally from member countries of the Organisation internationale de la francophonie

(International Organization of French-speaking Communities). In such cases, they received free of charge all the educational materials they needed to follow the distance training programme, were enrolled at the expense of AUF in the university awarding the qualification, and received support in the form of information materials (magazines and books) and priority attention in the SYFED-REFER centres as then constituted.

Today, only the last two courses in the above list²⁴ are still on offer and both have moved from reliance on audio-visual support to interactive multimedia. Indeed, in calls for applications for courses, candidates are now explicitly required to be online, particularly so that they can access the open campus website *Droit, éthique et société*,²⁵ that is, 'Law, ethics and society', or have a computer fitted with a CD-ROM drive. For the purpose of this course, the CNFD has placed the services of its *infothèque* at the disposal of over twenty students for the last three years.²⁶ The modest number of students involved in this open and distance programme is due to the fact that, under the AUF strategy to promote this new type of provision, tuition fees are totally paid for or very largely subsidized. As a result, access to this kind of programme is limited to successive groups of around thirty persons for each qualification from all AUF member countries.

3. ADMINISTRATIVE ISSUES

3.1 CNFD administration

CNFD has a light administrative structure for its day-to-day management with just a director, programme manager, computer or information technology (IT) manager, resource centre manager and *infothèque* manager. Responsibility is shared between these five persons as follows.

- The director of the CNFD deals with all human resource management matters, financial management, the administration of material resources, external relations and supervision of all actions in the AUF Programme Four (ICT and knowledge acquisition) that are not directly related to providing training programmes.
- The task of the programme manager is to implement arrangements for the smooth provision of open and distance programmes, which means booking rooms, determining necessary/possible

configurations with the IT manager, organizing in-class examinations, supervising student selection procedures, monitoring contact between local institutions and those of the North in open and distance education involving a Senegalese institution, and supervising the evaluation of certain tools/educational products, etc.

- The IT manager, liaising with the CNFD director and the programme manager, ensures that the technical infrastructure is functioning properly, installs and tests tools prior to their use for the courses (EAD platform, arrangements for IP videoconferencing, etc.), and monitors and evaluates possible new approaches to improve the working conditions of students involved in these courses.
- The resource centre manager produces multimedia content, supervises students who have to use certain specific facilities (particularly IP videoconferencing) and advises individuals or teams regarding the development of multimedia products.
- The *infothèque* manager is responsible for the daily administration of access to computers that can be used to consult e-mail, browse on the Internet and consult specialized databases, and orders electronic primary documents from INIST services.

3.2 Costs and financing

With regard to the basic CNFD infrastructure, the average total US\$500,000 investment was broken down as follows:

- US\$220,000 for building construction;
- US\$170,000 for computer equipment;
- US\$50,000 for electricity;
- US\$25,000 for air-conditioning;
- US\$25,000 for cabling; and
- US\$17,000 for furnishing.

This investment, which came from the AUF's own finances,²⁷ corresponds to a ratio of US\$2,700 for each workstation, resulting in a project that is exceptionally cost effective.

It should be noted that the University Cheikh Anta Diop of Dakar makes a very important contribution from an operational standpoint. It provided the site on which the CNFD is built, expenditure on water

and electricity and the security of the facilities. It also provides AUF with a teacher who is responsible for instruction within the CNFD.

Outside of this contribution and the salaries paid by the AUF, the CNFD has the task of generating its own operating budget. This means that all services have to be paid for, even when prices are subsidized in one way or another. The CNFD thus has a fee schedule with three price levels as follows:

- level one for teachers, researchers, students and administrative staff at public-sector universities;
- level two for teachers, researchers, students and administrative staff at private universities, and the staff of public or quasi-public bodies and associations; and
- level three for the private sector and international bodies.

Enrolment fees payable for open and distance courses depend, first, on the particular qualification concerned and, second, on whether or not the student is an AUF grant holder. For example, for the Diplôme d'université in 'Basic rights' and the Diplôme inter-universitaire in 'International environment law', AUF student grant-holders pay just 100,000 Francs CFA (FCFA), whereas those with no grant have to pay FCFA297,000. By contrast, for the *licence professionnelle* for Internet professions, the tuition fees are over FCFA500,000 for students and over FCFA1 million for persons sent by firms. These sums are transferred in whole or in part to the institutions in which students are enrolled.

3.3 The technological infrastructure

The CNFD, which some consider to be the 'flagship' of AUF francophone digital campuses, occupies two floors with a total work area of 800 m². It is connected to the Internet via a 2 Mb/s dedicated link.²⁸ This link is itself connected to an Ethernet-type virtual Local Area Network with a 100 Mb/s throughput which interconnects all areas dedicated to Internet access, as well as the classrooms for training and self-training, the conference room and administrative premises. In order to activate its various facilities, the CNFD relies on half a dozen Linux-operated servers, including the following:

- a firewall²⁹ for secure access;

- a server for administrative and management requirements;
- a server for Internet services (e-mail, the web, FTP, news, etc.);
- a remote access server simulating thirty access modems, which enables CNFD subscribers to connect from the workplace or from home; and
- a server housing the ACOLAD distance education platform.

The work areas consist of:

- two classrooms for training and independent learning fitted with twenty-four microcomputers;
- two classrooms for training and independent study fitted with eighteen microcomputers;
- a room for Internet access fitted with six microcomputers;
- a 100-seat auditorium fitted with a video projector, a giant screen, public address system and ISDN (integrated services digital network) videoconferencing equipment;³⁰
- a resource centre fitted with nine microcomputers, two scanners and three digital cameras;
- an 'Infolab' housing the Cisco Regional Academy, equipped with five microcomputers, six routers and two switches;
- a business 'incubator' for new innovative firms able to accommodate up to four teams of two persons each.

With regard to computer equipment, it should be noted that the CNFD has procured reconditioned equipment.³¹ As a result, it has been able to obtain first- or second-generation computers with a configuration entirely satisfactory for its purposes³² at a cost 50 per cent lower than that of new equipment. Maintenance of all this equipment is the task of a system and network administrator assisted by a staff member responsible for general maintenance.

In terms of software architecture, the CNFD servers are Linux operated and some of the microcomputers in the classrooms for training and independent study also make use of this operating system coupled to the Galeon free web browser.³³ Tests are currently under way so that all the microcomputers can become Linux operated and fully equipped with open-source software.³⁴

4. ACADEMIC ISSUES

4.1 Programme development

The CNFD does not actually conduct any academic activities. The provision of programmes and instruction depends on the orientation given by the AUF Academic Council, and CNFD open and distance training programmes consist of courses, which are developed at AUF member institutions, taken on a distance basis and leading to university qualifications.

This kind of provision is established as follows:

- Institutions wishing to develop or deploy distance programmes get in touch with an AUF regional office.³⁵
- For instance, those who administer the AUF 'ICT and knowledge acquisition' programme verify the feasibility of the proposal in educational, technical and financial terms, and its congruency with course-subject priorities. If the request is considered eligible, it is forwarded to CNF managers and regional offices in order to check that it matches local requirements and assistance can be offered with finding potential partners.
- The partners are put in touch with each other to confirm the feasibility of the project. Following their joint agreement, an academic consortium is formed to produce the course content and/or supervise teaching of it.
- An agreement setting out the terms of AUF support and the period for which it is to be provided is signed by the coordinating institution and the AUF. The agreement may be subsequently supplemented by agreements with other partners.

In accordance with the guidelines determined by the AUF Academic Council,³⁶ priority is currently attached to the following subject areas:

- law, management and economics;
- agricultural and agri-food sciences;
- health;
- mathematics, physics and chemistry;
- information and communication technology (ICT);
- entrepreneurship; and
- engineering sciences.

Basically, the educational offer is in the form of self-contained programmes leading to postgraduate qualifications, with the exception of the *licence professionnelle*. They are necessarily for the benefit of French-language speakers because instruction is provided solely in French. Generally, online calls for applications are placed on AUF websites and set out the admission requirements (qualifications and geographical origin of applicants, etc.), the cost of the programme, a short description of its content, the type of qualification to which it leads and the one or more universities involved. An application form is also included, requesting personal information on candidates, their previous academic record, proposed subject for a dissertation, and an attached authenticated photocopy of their most recent qualification or degrees.

AUF rarely gets involved in the procedures for selecting candidates, which are generally conducted by the awarding institutions. Once candidates have been selected, they are informed by e-mail and then can enrol at the university concerned like any other student registering for a conventional in-class course. Payment of registration fees by students, which entitles them to their student card, is a formality that must be completed before they are allowed to take examinations.

The Agency acts as no more than a go-between in such procedures, and qualifications are awarded under the auspices of the university that has developed and offered the course. To date, the qualifications in question have been either French national degrees similar to the DESS, or degrees comparable to the *Diplôme d'université* or *Diplôme inter-universitaire* whenever several universities are involved. There is no official CNFD involvement in awarding these qualifications, which are sent directly (by the university or universities offering the degree programme) to students who have passed their examinations.

As far as this last point is concerned, there are two major procedures for student assessment:

- students send directly to the university of origin individual or group work completed for the purpose of continuous assessment; and
- written examinations are organized on the premises of the CNFD and supervised by its staff who send the papers to the university concerned.³⁷

In 2001, 4 open and distance education courses enrolling a total of 166 students (conventional students or working people undertaking continuing education and training) were supported in this way by the AUF.

4.2 Teaching

The development of distance education raises various types of problems, depending on whether a particular course is prepared and provided by a single institution or a consortium of institutions.

Where just one institution is involved, matters are fairly straightforward. Either courses that have hitherto been developed for in-class provision are offered as distance education or new courses are developed specifically for distance delivery. In either case, a plan for provision has to be drawn up by a team united in principle around a common educational vision, culture and approach to teaching. However, difficulties may arise with the transfer from in-class to distance provision if the institution concerned lacks the experience, competence and facilities needed for this kind of operation, either in terms of the new approaches and practices expected of teachers, the technical expertise needed to design and manage distance education resources (the platform, communication tools, tools for adapting courses to media delivery, etc.), or the technical infrastructure itself.

When the venture is undertaken by a consortium, matters become much more complex given the presence of – if not confrontation between – different educational visions, cultures and approaches to teaching. From the strictly curricular standpoint, institutions have even been known to disagree on the content of the course to be taught. Over and above this issue are the questions of how teaching should best be conducted and learners assessed and monitored. Matters that are already complex for a consortium of several educational institutions in a single country become even more so when the consortium consists of several institutions from different countries, and may become a nightmare if their traditional views of education and teaching differ very markedly.

For example, during development of the diploma in ‘The use of ICT for education and training’, which mobilized a consortium of five higher education institutions from as many countries, with three different educational traditions,³⁸ long and sometimes hard negotiations were needed to arrive at an agreement on a qualification acceptable to all.

Teaching materials consist primarily of sets of manuals, which are developed by the teachers who are responsible for the courses, and which learners can consult online or download on their own computers. Naturally, learners are also directed to a set of additional course resources that are often accessible on the web. While they are also provided with conventional bibliographical references, these are only of minor significance, given the very different environments in which learners may find themselves. Indeed, were such references given significance, it would constitute discrimination between those resident in countries, towns or cities with access to the documents in question, and those who lived in places with a dearth of library resources.

Interaction between teachers and learners is based primarily on the use of the ACOLAD distance education platform developed by the Université Louis Pasteur in Strasbourg. The platform uses a web server and FTP server, audio- and videoconference applications, shared facilities (i.e. whiteboards), and a system of electronic messaging and newsgroups. These may be used by teachers to load resources and exercises, and by pupils to store documents gathered on the web along with their working documents (individual and group assignments, dissertations, etc.). As all teaching materials are electronically delivered, the CNFD encounters no special problems associated with customs clearance for course or other teaching materials. Furthermore, as AUF has an agreement with respect to places, it is able to import materials duty free and make local purchases on a tax-free basis.

As far as synchronous communication is concerned, contact between learners and teachers, as well as among learners themselves, occurs primarily via joint work areas,³⁹ chat areas and, to a lesser extent, via Internet videoconferencing and, in exceptional circumstances, by telephone. The main aims of synchronous communication are to:

- provide a support facility enabling learners to overcome any sense of isolation they may feel;
- orient them towards concrete objectives; and
- help strengthen their psycho-cognitive capacity so as to boost motivation and prevent them from dropping out.

In asynchronous mode, the most frequently used facilities are the web and FTP servers and, to a lesser extent, the electronic messaging and web newsgroup. The main aims of asynchronous communication are to:

- enable learners to remain autonomous, and allow them to work at their own pace;
- enable joint work, particularly via whiteboards;
- develop group dynamics among learners; and
- facilitate intercommunication (Mokhtar, 2002).

Interest in this experiment with distance education for teachers led the Senegalese Ministry of Education to approach the President of the Université Louis Pasteur in Strasbourg and the AUF for permission to use the ACOLAD platform for the in-service training of secondary school teachers in Senegal, and the request was accepted. The idea is that teachers who have obtained the diploma in ‘The use of ICT for education and training’ should be used to form a pool of resource persons who can implement a distance training programme for in-service teachers unable to travel elsewhere to attend retraining for the purpose of upgrading their qualifications and skills. However, beyond this particular venture is the likelihood of a move to relocate the diploma in Senegal, so that it would be awarded under the auspices of a Senegalese higher education institution. If this plan comes to fruition, one of the major aims of the AUF in promoting distance education will have been achieved, with the training of human resources able to contribute to bolstering the potential and modernization of higher education institutions in less developed countries.

4.3 Learning

From a limited survey of students who have completed the diploma in ‘The use of ICT for education and training’, it has been possible to record impressions of this new experience. Overall, they were especially appreciative of:

- the intermediary role of the CNFD as a vehicle for the transmission of administrative information between the Université de Strasbourg and themselves;
- their unlimited access to online computers, which they were offered by the CNFD and without which they would have been unable to pursue their learning activity in good conditions, particularly as regards online consultation of course materials

- and synchronous appointments with their tutors and members of their working groups;
- the special facilities at their disposal such as ‘Webcams’ for Internet videoconferencing and telephones for taking calls from the Université de Strasbourg;
 - the support they received from the CNFD in helping them to master certain communication tools such as the chat areas or NetMeeting;
 - the training the CNFD offered them in authoring HTML documents.

Most of the students felt there was little point in visiting a conventional library or even in consulting electronic libraries, given the interest and variety of the supporting documents they received from their teachers. Indeed, each class offers learners hyperlink access to a large database containing information and teaching packages available from servers at the partner universities (Geneva, Mons, etc.), so that conventional or electronic library research is of little relevance or value to them.

In all, students considered this experience to have been very worthwhile, since it matched their learning needs. For example, it enabled them to:

- improve their ability to set up the multimedia projects in which they were involved;
- modify their approach to learning, including in-class training; and
- acquire a sound analytic methodology for their professional work assignments.

Generally speaking, this experience of ICT-supported distance learning has helped students to better integrate office automation tools and the Internet in their daily work routines and, above all, has taught them to be creative and to learn using these tools. Many of them consider that the ‘multinational’ community that they formed and the sense of partnership underlying it fuelled their potential for learning so that they excelled themselves as learners. Be that as it may, the programme is demanding and requires learners to allocate a considerable amount of time with a personal workload of some fifteen hours a week over a forty-week period. For these pioneers, the experience has been so productive that they have

asked for this type of training to be established on a permanent basis for the public in general. They even consider that certain areas of content and methodology should be used for short-term in-class training. Certain problems have nevertheless been noted, such as:

- weakness on the part of certain tutors whose teaching ability was felt to be inadequate; and
- working groups that were overcrowded and might have led some students to rely on the work of others.

Among student suggestions for improving the quality of the course are the following:

- raise the qualifications required when recruiting tutors so that their level of expertise is close or equivalent to that of the academics who are responsible for the course;
- shorten the duration of classes and make individual and group work less intensive;
- increase the number of individual work assignments so that the intrinsic ability of each student is more appreciated; and
- take steps to ensure that tutors prepare their contributions more effectively and reply systematically to the questions put to them.

5. COOPERATION

Given the complexity and considerable costs of setting up and operating distance education facilities, AUF has decided to embark on an active cooperation policy with distance education players working in Africa.

First, the constitution of the CNFD National Policy Council has been altered to provide for the establishment of a sixth so-called 'cooperation' group, consisting of representatives of the main bodies involved in distance education in Senegal, such as the AVU, the Distance Education Centre, and the African Network for Distance Education and Training. This group now provides an opportunity for dialogue and the exchange of experience on distance education, with a view to more wide-ranging joint discussion of the issue.

Second, the AUF has taken the lead in submitting to the African Virtual University a draft memorandum of agreement to develop the principle of integrated cooperation for the purpose of:

- raising the qualification level of distance education programmes in countries party to the final agreement;
- enhancing the quality of distance education programmes on offer, particularly through reliance on the use of new educational technology;
- providing possibilities for lifelong learning;
- carrying out common ventures in close partnership with the universities of the South as regards the terms of reference, conduct and evaluation of projects.

Since the situation of the universities and the level of cooperation may vary from one country to the next, practical arrangements for cooperation between the AVU and AUF are to be implemented locally and are to be specified in additional clauses appended to the framework agreement signed by both.⁴⁰

In addition, on the assumption that, in training teachers to use ICT, AUF cannot on its own meet all potential or articulated needs, preliminary work has been undertaken for the purpose of establishing an interest group in this field for action in Africa. The idea is to set up a consortium specialized in the training of teachers to use ICT, which would bring together all players in the field (Ecoles normales supérieures, AVU, the World Bank Distance Education Centre, the African Network for Distance Education and Training, UNESCO, the Association for the Development of Education in Africa, agencies for bilateral and multilateral cooperation and the Ministry of Higher Education, etc.). One of the main tasks of such a consortium would be to approve an integrated action plan with due regard for needs identified by those concerned, in order to avoid unproductive duplication of effort and enable optimal use to be made of the human, material and financial means earmarked solely for this sector. With this end in mind, it has been decided to establish the CNFD as a Centre of Excellence for the training of teachers in ICT.

6. CONCLUSION

The first year of operation of the CNFD was primarily devoted to finalizing the infrastructure and overcoming a certain number of technical problems such as:

- increasing the strength of the electrical power supply to buildings so that they can accommodate their extensive new facilities (computers, printers, air-conditioning equipment, etc.);
- gradual installation of the computers;
- preparation of the internal regulations and the fee schedule;
- increasing the capacity of the dedicated links from 64 Kb/s to 128 Kb/s and then up to 1 Mb/s to handle the increased volume of activity;
- installation and testing of the videoconferencing equipment.

As a result, CNFD was only partially operational during the 2000/01 academic year. It may be added that, as it was newly established, it was little known – if at all – to its potential users, so that a communications policy had to be launched to publicize the services available.⁴¹

In 2001/02, almost two years after its inauguration, the situation was already different and it can truly be said that the CNFD had moved into top gear. Alongside the distance education programmes already discussed at length, in-class courses have increased considerably in number (office automation, e-mail, Internet browsing and searching, authoring of HTML documents, Linux systems and network administration, etc.) with rapid deployment of services. Videoconferences have been organized with France, Canada, Cameroon, etc., the hosting and design of websites developed with *Système de publication pour l'Internet* software⁴² are expanding rapidly, and the opening of consulting rooms for students of all levels, in return for a low subscription fee, has led to a significant increase in CNFD users.

7. LESSONS LEARNED

Experience has shown that the main challenges were those of assisting and supervising users, along with the maintenance and replacement of the computers. Indeed, bearing in mind the number and inexperience of certain users in handling computer facilities and a lack of public-spiritedness among others, it was necessary to engage an employee to help and keep watch over users in the various areas. Furthermore, given the large number of machines located in the areas for consultation, training and production, minor breakdowns have even occurred and a second person responsible for computer maintenance has been recruited. In addition, the replacement of at least one-third of the

computers⁴³ has to be planned as of the third year of activity to avoid having to renew equipment in a single operation, which would call for a very heavy budgetary commitment. Finally, faced with the high cost of commercial software licences, and bearing in mind the large number of machines and wide variety of the software, it has been decided to gradually transfer all computers to Linux and use open-source software.

From the teaching angle, the use of distance education programmes is proving successful and demand is rising steeply. This presupposes a greater workload for CNFD staff who, among other tasks, has to administer certain aspects of student selection and/or registration, offer them logistical support, organize and oversee in-class examinations, and handle the administrative follow-up with the universities awarding the qualifications and the AUF central services that oversee this programme.

The main lesson to be learned from the foregoing is that it would be misleading to suppose that distance education can be deployed in developing countries without relying on a relatively heavy technical and administrative infrastructure. Bearing in mind the costs involved, it is thus vital to promote cooperation in this area so as to generate constructive forms of partnership and optimize the use of resources committed by all those concerned, rather than continuing to duplicate initiatives that parallel or even compete with one another.

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NOTES

1. The University Cheikh Anta Diop of Dakar was formerly the Dakar school of veterinary medicine, set up in 1916.
2. The main features of public-sector higher education are likely to be slightly altered following the adoption, in August 2002, of the Law for the establishment of regional university centres. These centres will provide training of a vocational nature up to a level corresponding to 'Bac+2' (two years of further study after the *baccalauréat*), which will reflect the economic profile of the regions in which they are located.
3. The University Cheikh Anta Diop of Dakar alone accounts for almost 23,500 of the students in this total.
4. The national-level consultation on higher education was held in August 1992.
5. The new procedures for admitting holders of the *baccalauréat* to university were adopted in 1994.
6. Most of these courses lead to the qualification of *Brevet de technicien supérieur* (higher technical certificate).
7. Cf. <http://www.suffolk.edu/international/dakar/home.html>.
8. For almost 20 years, unemployment among *maitrisards* has been a much discussed topic in Senegal. The *maitrisards* are students who, despite possessing a *maitrise* (equivalent to a Master's degree), spend years without finding employment that corresponds to their level of education and training.
9. With a technical capacity of 120 Gb/s, this cable will enable the transmission of 5.8 million simultaneous telephone conversations, or the content of 35 DVDs, per second.
10. The Forciir scheme: <http://www.ebad.ucad.sn/forciiir/>.
11. Système francophone d'édition et de diffusion (francophone publishing and distribution system).
12. Officially inaugurated in France in 1983, the Minitel is a terminal that uses the Videotext standard.
13. Prior to May 2000, the Agency for Universities of the French-speaking world (AUF) was officially known as the Association of partially or wholly French-language universities – University of French-language networks (AUPELF-UREF).
14. Cf. Paris Declaration and Action Plan of the strengthening of francophone university cooperation in sub-Saharan Africa (http://www.refer.org/sngal_ct/archive/paris.htm).
15. The network of SYFED-REFER centres covers the five continents.
16. The Bamako CNF was inaugurated on 22 February 2000.
17. The Libreville CNF was inaugurated in June 2000.
18. Established in 1987, this network provides an organizational basis for discussing, developing and pooling expertise to provide higher education with new approaches to teaching that are more geared to independent learning by students and rely on modern communication technology (<http://www-ruca.univ-lille1.fr/>).

19. This training is also offered in Cotonou, Benin; Tunis, Tunisia; and Yaoundé and Douala, Cameroon.
20. In general, this type of problem does not arise for the CNFD, which has a dedicated 2 Mb/s link, that is itself connected to the Internet via a 53 Mb/s link.
21. Out of a total fifty-one hours, training activities in computer-assisted joint working groups account for the remaining thirty-six hours.
22. This corresponds to the entire seminar.
23. Internet videoconferencing generally relies on use of a tool such as NetMeeting.
24. 'Basic rights' and 'International environment law'.
25. The address of the '*Droit, éthique et société*' open campus website is: <http://codes.fc.univ-nantes.fr/codes/>.
26. Support from the CNFD involves primarily the loan of video cassettes, provision for web browsing and access to e-mail and offering access to databases, etc.
27. Contributions to the AUF budget come from member countries of the Organisation internationale de la francophonie (International Organization of French-speaking communities), with France itself contributing 90 per cent.
28. Senegal's international online link is at present 53 Mb/s.
29. A security system to prevent piracy by filtering incoming or outgoing Internet traffic.
30. The CNFD possesses three 64 Kb/s ISDN links, which may be used for videoconferencing with an image quality equivalent to that of television.
31. This consists of second-hand computers that have generally been used for two years and are made available when corporate users replenish their computer population.
32. The computers delivered at the opening of the CNFD were Pentium II-type multimedia equipment with a 64-128 MB central memory, a 1-2 GB hard disk and a CD-ROM drive, a configuration entirely satisfactory for their intended applications.
33. Galeon is a free open navigator based on Mozilla (<http://galeon.sourceforge.net/>).
34. This technical preference is in order to comply with AUF policy for the promotion of free open-source software.
35. The AUF has regional offices in Belgium (the West Europe and Maghreb Office located in Brussels), Romania (Central and Eastern Europe Office in Bucharest), Viet Nam (the Asia/Pacific Office in Hanoi), Lebanon (Middle East Office in Beirut), Senegal (the West Africa Office in Dakar), Cameroon (the Central Africa Office in Yaoundé), Madagascar (the Office for the Indian Ocean Region in Antananarivo), Canada (North America Office in Montreal) and Haiti (the Caribbean Office in Port-au-Prince).
36. The Academic Council is a consultative body responsible both for developing academic policy and determining AUF course evaluation policy, and underwriting the academic quality of courses. To this end, it examines them in terms of their interest and relevance vis-à-vis the goals and resources of the AUF and the needs of its member institutions. The Council consists of twenty-seven

members appointed for three years by members of the AUF Board of Directors in accordance with a proposal from the universities and institutional networks (Cf. the AUF statutes adopted by the Quebec Extraordinary General Assembly on 18 May 2001).

37. In general, this means scanned photocopies sent by e-mail and copies of the original document sent by express postal services.
38. The French educational tradition was represented by the University Louis Pasteur in Strasbourg, the Ecole supérieure polytechnique de Dakar, and the Institut supérieur de documentation in Tunis; the Belgian tradition by the Université de Mons, and the Swiss tradition by the Geneva Technology for Training and Learning Unit.
39. On the ACOLAD platform, these areas are places in which learners may file working documents for possible online use by all group members.
40. Cf. the draft memorandum of agreement between AVU and AUF.
41. A special effort has been made to overhaul the design of the CNFD website (Cf. <http://www.refer.sn>).
42. Système de publication pour l'Internet is a free software distributed under General Public Licence that enables users to administer magazine-type websites, consisting mainly of articles and short bulletins inserted in a tree structure of interleaved headings (Cf. <http://www.spip.org/>).
43. Around thirty machines.

Developments since 2003

8. CAMPUS NUMÉRIQUE FRANCOPHONE AND ITS CONTEXT

The year 2004 marked a turning point in the distance education policy of AUF. Until then, AUF had concentrated on strengthening the capability of its university members; but with the approval by its Academic Council of a whole set of new distance education courses in April 2004, the number of available courses increased from four to twenty-four. As a result, AUF is now a leading distance education provider in French-speaking universities in countries in the South. As such, it aims to achieve the following:

- adapt Francophone education and training systems to the knowledge society;
- in the context of increased international competition, offer high-quality, French language open and distance provision on an international scale, with the support of inter-university educational consortiums;
- enhance skills and promote French language academic output.

More specifically, AUF seeks to:

- offer innovative, learner-centred services using digital technologies;
- take account of the development of lifelong learning provision, while giving learners the freedom to determine where and when they study;
- provide scope for flexible course paths that are consistent with the European Credit Transfer System.

At the national level, at the beginning of the 2005/2006 academic year, the University Cheikh Anta Diop in Dakar and the Gaston Berger University in Saint-Louis planned to introduce the *Licence-Master-Doctorat* system, known by its initials, LMD, or '3-5-8', referring to the length of its various *cycles*. The new system is based on European Credit Transfer System-type credits. This implies that students will be

offered some measure of choice regarding their course path, that their past experience will be taken into account, and that they will be able to take their courses when and where they wish. It also means that courses will be compatible with international standards, a factor that can only facilitate the development of local distance provision.

Internationally, implementation of the Bologna Process in Europe has also influenced African higher education. In spite of the development of local universities, many French-speaking African academics have studied in Europe, particularly in France, and many students go abroad to continue the process of study started in Africa. The international environment is leading African universities to join the *Licence-Master-Doctorat* reform process. Indeed, this year the Conseil africain et malgache pour l'enseignement supérieur (the African and Madagascan Council for Higher Education) held a special meeting on this issue to develop a coordinated approach for the countries concerned.

9. ORGANIZATION AND CURRENT PROGRAMMES

Drawing on research into 'skills mapping', since July 2004, AUF has made available a knowledge credit and accumulation mechanism entitled *Passeport TIC pour le développement* (ICT Development Passport). It enables experience gained in ICT (training, participation at an event, etc.) to be recorded electronically in a small, passport-sized booklet, thereby tracking the training path of learners. However, it does not amount to a recognized knowledge certification system at national – let alone international – level, and therefore its holders are not guaranteed that the knowledge they have acquired will be validated and taken into account for professional purposes.

10. ADMINISTRATIVE ISSUES

The increase in the number and nature of the distance courses on offer has led the CNFD to set aside dedicated rooms for distance education provision for the first time. Several computers have been upgraded in order to satisfy the requirements of certain computer science courses, so that they are compatible with particular kinds of software that make heavy use of resources, such as software for the production of multimedia content.

Course descriptions and entry requirements are now available on the AUF portal for distance courses (<http://foad.refer.org/>).

The submission of applications is also handled fully online via the AUF portal. The role of the CNF is confined to organizing various promotional activities, for example, forwarding descriptive documents on the various courses to higher education institutions, publishing press advertisements or organizing sessions to discuss the distance provision available. CNF staff are also active in replying to requests for further information from applicants, even though the essential practical information is available online.

11. ACADEMIC ISSUES

In 2002/2003, AUF offered just four distance courses, namely the *Diplôme universitaire Droit de l'environnement* (postgraduate university diploma in 'Environment law'), the *Diplôme universitaire Droits fondamentaux* (postgraduate university diploma in 'Basic rights'), the *Diplôme universitaire Ethique des droits de l'homme* (postgraduate university diploma in 'The ethics of human rights') and the DESS UTICEF (advanced specialist diploma in 'The use of ICT for education and training'). From the beginning of the 2004/2005 academic year, however, the AUF course catalogue increased substantially in size to include twenty-four courses based on the European Credit Transfer System and leading generally to *Licence* or Master qualifications. The following first- and second-cycle courses are now offered by the CNFD:¹

- Conservatoire national des arts et métiers certificate in statistical techniques;
- '*Label Internet*' university diploma (training in Internet use);
- University diploma in 'The ethics of human rights';
- University diploma in 'Common law';
- *Licence professionnelle* (first professional degree) in 'Developing multimedia and Internet projects';
- *Licence professionnelle* for 'Internet services design managers';
- *Licence* (L3) E-MIAGE;²
- *Licences* in 'Education and health promotion' and 'Commerce and sales'.

The following third-cycle courses on offer are:

- Postgraduate university diploma in 'Basic rights';

- Postgraduate university diploma in ‘Methods and practice in epidemiology’;
- Master in educational research;
- Master in ‘The use of ICT for education and training’;
- Professional Master E-MIAGE;
- Professional Master in ‘Computer applications, management, research, multimedia and e-learning’;
- Professional Master, ‘MIAGE in multimedia information systems’ and professional Master, ‘MIAGE in technologies and network applications’;
- Master in ‘International and comparative environment law’.

Establishing this group of new courses requires the recruitment of tutors from higher education institutions in potential ‘receiving’ countries. To this end, the CNF has encouraged staff from Senegalese institutions to offer their services as tutors to universities with distance courses. After a phase of training as trainers in distance education methodology, the precise nature of which depends on each qualification, these local tutors assume responsibility for some distance tutoring, although they may also be asked to assist with in-class tutoring. Tutors selected in this way, and who carry out distance tutoring for one of the qualifications on offer, are remunerated by the universities concerned in accordance with their normal arrangements. However, AUF generally covers in-class tutoring fees at a basic rate that is higher than the hourly overtime rate paid by the local institutions.

12. COOPERATION

On 18 March 2004, AUF and the AVU signed an agreement to develop the principle of integrated cooperation for the following purposes:

- using the capability of partner institutions in the North to offer electronic French language course material, expertise and training in the computer science, business, medical, public health and engineering fields, as well as in the training of trainers, etc. for the benefit of recipient institutions;
- strengthening existing South-South cooperation through the exchange of learning, knowledge and ideas, and the development of academic mobility for teachers, researchers and students;

- enabling African students to gain access to good quality higher education;
- developing the French language section of the AVU library;
- strengthening AVU centres of excellence;
- developing AVU capacity in the design and transmission of programmes, quality control, evaluation, accreditation and certification;
- encouraging AUF member institutions to accommodate AVU training centres;
- developing a network of AUF digital campuses on the one hand and an AVU training centre network on the other, with a view to establishing a common network;
- increasing the supply of appropriate technology at reasonable cost to reduce the digital divide between African institutions and the academic and scientific community in the rest of the world, and providing for the use of new teaching technologies;
- boosting the research and innovation capacity of recipient institutions.

The result is a partnership between two bodies that previously had little to do with each other and were even sometimes in competition. An initial project cementing the agreement and involving the Gaston Berger University of Saint-Louis, the AUF and the AVU, may lead to the establishment of a distance course on new technology law.

13. LESSONS LEARNED

It is important to:

- recruit tutors in sufficient numbers to ensure effective supervision for learners, to reduce the risk of their dropping out;
- combine distance learning with in-class provision;
- provide learners with preliminary ICT training so that they have the basic skills needed to make use of the resources that they will have to use during their courses;
- establish partnerships with third-party institutions in countries where distance learning is provided, so that they may act as an intermediary in administrative matters (registration, the awarding of qualifications, managing local tutors, organizing in-class sessions, organizing and supervising examinations, etc.);

- provide learners with full information about their workload and the obligations entailed in taking certain distance courses (synchronous work, group work, etc.);
- consider the introduction of special grants for distance learners so that students from the South are able to take certain very expensive courses;
- ensure that there are effective channels of communication between learners and the institutions providing the distance courses;
- combine the use of online and offline resources (particularly resources on CD-ROM) to avoid the problems of connection costs and bandwidth availability.

NOTES

1. Certain courses are limited to particular countries or geographical areas and therefore cannot be accessed by Senegalese students.
2. MIAGE (Méthodes informatiques appliquées à la gestion des entreprises, or 'Computer applications for business management') courses lead to a professional qualification.

Chapter 7

UNIVERSIDAD VIRTUAL DE QUILMES, ARGENTINA

Juan Carlos Del Bello, with the contribution of Jorge Flores

1. THE UNIVERSIDAD NACIONAL DE QUILMES AND ITS CONTEXT

1.1 International context

The Universidad Nacional de Quilmes (UNQ) is a state higher education institution that was founded in 1989 and started its teaching/academic activities in 1991. It is part of a group of public universities that were created by the Argentine National Congress between 1988 and 1995 in the Buenos Aires suburbs, that is to say, cities adjoining Argentina's capital or very close to it. Despite the differences that might exist among these universities, they tend to appear as offering alternative or innovative education models compared to those of traditional universities.

The UNQ's youth is an advantage over more traditional universities as it allows for greater flexibility and the ability to adjust to the changes occurring in university systems throughout the world.

As this paper outlines, the UNQ aspires not only to become a high-quality university, but also a university capable of successfully competing with foreign universities that might establish subsidiaries in Argentina, and might address the Spanish-speaking higher education market of the Americas through the Internet.¹

Unlike other university initiatives in distance education – for example, Open University in the UK, UNED in Spain, UNEDs from Costa Rica and Venezuela, and Universitat Oberta de Catalunya (UOC)

from Catalunya – the Universidad Virtual de Quilmes (UVQ) is a virtual education programme implemented by an existing university, the UNQ. In other words, as we show in this paper, the Quilmes case is similar to that of the Tecnológico de Monterrey (Mexico); in both cases, universities that originally offered face-to-face education have lately become involved in distance education. The UVQ is contemporary with other university distance education programmes that were started in Argentina in 1998.

Distance education was born in Argentina in the 1950s within the non-formal education environment. These programmes did not have high professional standards; thus, their credentials were not competitive when compared to formal education programmes. In other countries of the region, distance education was implemented to achieve literacy in large population sectors that could not receive an institutionalized education. In Argentina, where the initial education policy programme implemented by the national state in the late nineteenth century was based on the principle of free, mandatory and secular education, large sectors of the population had access to elementary and secondary schooling early on. The education programme became the first social policy of the modern Argentinean state, with national scope and specific rules and resources. In the 1980s distance education programmes were added to supplement university degree programmes. A decade later, distance education programmes lost their exceptional character and were becoming an increasingly important issue on the university agenda. In 1993, Red Universitaria de Educación a Distancia (Distance Education University Network) was created. It provides a means for exchange among state universities and aims to become one of the coordination and planning bodies of the Argentine university system, provided for under the Higher Education Act No. 24.521.

The number of students who are enrolled in online programmes – more than 4,000 – at the UVQ is modest, compared to the Tecnológico de Monterrey, which has some 80,000 students, although this total figure includes students attending short-term professional training courses. However, the UVQ is not that small in terms of the number of students who take their full undergraduate studies through the online off-campus programme.²

Since UNQ's online off-campus students account for nearly 30 per cent of the overall number of undergraduate students there, UNQ can be considered a bimodal university.

1.2 National context

In 1998, the Argentine university system had 1,114,085 undergraduate students attending courses at the country's 36 state universities and 42 private universities. The number of university students in Argentina was below 400,000 until 1984, when the country regained democracy. This explosion in the number of students enrolled in higher university studies can be explained by the elimination of formal education systems that restricted admission to universities, the opening of the university sector to private universities, and the increase in the number of secondary school graduates.

The Argentine universities' enrolment rate is 20 per cent of the population between 18 and 24 years old. Some 40 per cent of high-school graduates enrol in university, one of the highest rates worldwide.

It is worth mentioning that the Argentine higher education system is strongly biased towards university education, since non-university post-secondary studies are essentially for teacher training and cater to approximately 400,000 students. Non-university post-secondary technological institutes are non-existent, and demand for higher education in this field is met largely by universities.

State universities are run by the central government. In 1972, public provincial universities were taken over by the national state, and over the past fifteen years, ten new national universities were created.³

Until 1992, the establishment of private universities was severely restricted. Only a few, mostly denominational, private universities were created in the late 1950s and early 1960s. Afterwards, the establishment of new private universities was banned until 1992, when the existing restrictions on new private universities were lifted. Most of the forty-two private universities now in operation were founded during the 1990s. At present, the operation of private universities, as well as of new state universities, is subject to approval by the National Ministry of Education, with the prior assessment and issuing of a favourable opinion by the Comisión Nacional de Evaluación y Acreditación Universitaria (National Committee of University Assessment and Accreditation).⁴

State universities account for 85 per cent of university students – with a total number of over 1.3 million students. The number of students who graduate from state universities averages 38,400 a year, versus 15,400 graduates from private universities. If we compare the

data on students and graduates from state and private universities, it is evident that the latter have a substantially higher productivity coefficient (graduate/student ratio). The annual growth rate of the number of students who graduate from state universities is approximately 4 per cent; this rate amounts to 11 per cent for students who graduate from private universities. In Argentine state universities, 19 out of 100 enrolled students complete their studies (Del Bello, 1998).

A study carried out by the Organisation for Economic Cooperation and Development (OECD) in 1966 asserted that during the 1960s Argentina had some of the highest rates of enrolment in higher education in the world, greater than those of the European countries. For example, while the United Kingdom had few post-secondary students and many graduates relative to the population, the opposite was the case in Argentina, where easy access compromised quality, resulting in high drop-out rates and few graduates (Balán, 1998).

The restricted admission university systems operating in developed countries achieve equity through broad scholarship programmes. Although Argentina has an unrestricted system, scholarships paradoxically account for only 0.4 per cent of the total annual expense of state universities. The granting of scholarships as a way of financing regular students represented on average only 0.5 per cent of the financing.

University students coming from lower-income households represent a minute share of the total number of students in Argentina, even lower than in the case of other Latin American countries where universities charge tuition fees. The Argentine case demonstrates that an open and unrestricted admission system is not synonymous with social equity. The state's contribution to higher education accounts for 0.6 per cent of the Gross Domestic Product, for a consolidated amount of contributions to the education sector of 3.7 per cent. Therefore, in relative terms, the state's financing of higher education with respect to the wealth of the country is not substantially different from that of some European countries, such as Spain, France and Italy, but it is notoriously lower in Argentina for elementary education.

The data mentioned above reflect a state university system with significant deficiencies resulting from historical-political factors. The Argentine state university was developed from a model with the following features: a strong presence of students in the university

government and a strong emphasis on liberal-profession studies (half of the enrolled students take law, medicine, and accounting degrees). Later, two characteristics were added: no tuition fees (since 1947, except during authoritarian government periods) and, more recently, unrestricted admission. These predominant features of the Argentine university model were partially changed (for the worse) during authoritarian government periods, when universities lost their autonomy (the state took control of the university government, there was no choice of faculty chairs and teachers were dismissed for political and ideological reasons) and admission restrictions were established. The loss of autonomy implied a decline in the levels of quality and excellence, and admission restrictions were mainly formal and did not improve the rate of student retention.

The public university enjoyed its highest prestige between 1958 and 1966, the so-called 'golden age' of the Argentine university. This was the only period when university autonomy (in the framework of pseudo-democratic national governments due to the political proscription of the Peronist party) coexisted with high levels of excellence, non-formal but substantive admission systems based on merit, and free education.

After a long series of de facto governments between 1966 and 1984 – except for a short democratic period between mid-1973 and early 1976 – the situation in the past two decades has not improved; in fact, it has become worse. The higher rate of high-school graduates does not necessarily mean better quality; according to the results of achievement tests that students take to obtain school-leaving certificates, Argentine high schools have very low levels of academic performance. This, along with the lack of strict university admission requirements based on merit, results in great numbers of students entering the university and later a phenomenal number of them dropping out. Since 1984, autonomous university governments, except for a few cases, have made strides toward democratization by opening up admission. Compared to Argentina, the Brazilian university system – though much younger, with less than forty years of existence – is based on a more scientific model, with limited admission, which enables the private sector to play a more active role in absorbing demand.

An extremely high number of faculty members (63 per cent) devote only ten hours of work per week to the university. As a

consequence of such low dedication, only a small part of the faculty carries out R&D activities: 18,700 out of a total of 102,000 university faculty members.

Since 1993 – and after almost five years of budgetary constraints – the national government has been implementing a strong reform process together with annual budgetary increases. In 1998, the Argentine State doubled its 1992 public university contributions. State financing went from US\$940 million in 1997 to US\$1.8 billion in 1999, and the latter financing level has been maintained up to the present. Between 1992 and 1996 state and private universities became fully autonomous and financially independent; the creation of private universities was authorized; it was decided that faculty members should have at least 50 per cent involvement in collegiate government bodies; R&D activity was encouraged, and showed a fourfold increase in that period; the Comisión Nacional de Evaluación y Acreditación Universitaria was established and the Fondo para el Mejoramiento de la Calidad (Quality Improvement Fund) was created to support structural reforms affecting university studies and schools. However, the idea of a university for the masses remained unchanged, and still conspires against an improvement in state university performance.

Future challenges for Argentina are: (i) the reform of high-school education (only 54 per cent of teenagers finish secondary school); (ii) the development and diversification of non-university higher education; (iii) a greater opening of the higher education market; and (iv) a reform of the state universities' operational regulatory framework. With regard to the last item, the biggest challenges will be: changing university admission policies and procedures; putting an end to the free tuition structure, defining length of curriculum for obtaining a degree; increasing research and development in technological innovation leading to scientific production; and developing virtual programmes for highly demanded degree courses (i.e. business administration, law, social sciences).

Government policies on off-campus online education come under the Federal Education Act (No. 24.195) and the Higher Education Act (No. 24.521) passed in 1993 and 1995 respectively. The former sets forth that university distance education and other education models such as alternative, experimental and open universities are to be governed by a specific law.

Act No. 24.521 sets forth, through a later regulation, that the executive branch of the government is to provide for the creation and operation of different models of institution organizational design and pedagogical methodology. The different models referred to in the text include a non-conventional approach, as opposed to face-to-face university education. The Higher Education Act sets the framework for future regulations so as to guarantee that off-campus online educational offerings will have the same level of quality as the face-to-face education model.

In 1998, the executive branch regulated, under Decree No. 88/98, what is known as distance studies and, through Ministry Resolution No. 1716/98, established instrumental guidelines for providing and monitoring distance university activities; these included an outline of requirements for granting nationwide validation of degrees obtained through distance education programmes. The above-mentioned regulations have been strongly criticized by all public universities, which consider these to be excessively prescriptive and a violation of the university autonomy principle.

Virtual university programmes were first created in Argentina in the late 1990s. Previously, universities had begun to add institutional information to their telematic networks, and were also using these to offer a few services: registration, enrolment information, handling some administrative procedures through e-mail, and publication sales.

The following state universities have developed distance education programmes using new telematic technologies: Universidad Nacional del Sur, Universidad Nacional de La Plata, Universidad Nacional del Litoral, Universidad Nacional de Cuyo, Universidad Tecnológica Nacional, Universidad de Buenos Aires, Universidad Nacional de Lomas de Zamora, Universidad Nacional del Centro and Universidad Nacional de Quilmes.

As regards telematic infrastructure for the development of distance education programmes, in the early 1990s Argentina started a major modernization process of its telecommunications sector beginning with the privatization of the state-owned telephone company.

Argentina's progress regarding new information and communications technologies, however, has been relatively poor. Argentina lags far behind the world's most developed countries, as well as Korea and almost all European transition economies, and even somewhat behind other Latin American economies, such as Chile and

Uruguay. However, Argentina is still ahead of countries such as Brazil, Mexico and Venezuela.

Argentina has an important fibre optic network structure for international and national communications. There are at least six networks across the whole country, with services ranging from videoconferencing to Internet pages and data, to telephone calls. This provides large urban centres with the same international connectivity enjoyed by other world capitals.

The Argentine Internet market experienced exceptional growth in the 1990s: between 6 and 7 per cent per month. By mid-2000, there were approximately 1,800,000 users (Prince and Cooke, 2000).

In general terms, the number of Internet users in Argentina will grow at the same pace as the offering of contents and applications, and undoubtedly instruction and training contents will be among the highest value-added applications.

Most Internet users (67 per cent) residing in Argentina are between 19 and 39 years old; 59 per cent belong to the highest-income socio-economic level (ABC1). Ten per cent of all users older than 19 years have postgraduate studies; 29 per cent have completed their university studies, and 21 per cent have incomplete university studies. As these developments indicate, the spread of new ICT does not reach medium-low and low-income social sectors with limited education levels.

1.3 Institutional context

The UNQ was established under a law passed by the National Congress in October 1989 as part of the government initiative aimed at creating new state universities in Greater Buenos Aires.⁵

The UNQ was opened during the 1991 academic year, and its first autonomous government was established in December 1992. It has over 10,000 students, approximately 6,000 of which are on-campus students while more than 4,000 are part of the UVQ programme.

The UNQ consists of three academic departments: the Social Sciences Department, the Science and Technology Department, and the Studies and Research Centre Department. It also has an Institute for Social Studies of Science and Technology. The academic departments and the institute are responsible for planning and teaching undergraduate and postgraduate courses, for conducting research and for curriculum development. University extension

services are rendered through a secretariat that depends directly on the university's President.

The following university courses depend on the Science and Technology Department: biotechnology, food engineering, naval architecture, and industrial automation and control engineering.

The following university courses depend on the Social Sciences Department: social communication, education, international trade, hotel management, electroacoustic music and occupational therapy.

The Studies and Research Centre Department is organized into research units in the fields of basic sciences and social sciences, and the Institute for Social Studies of Science and Technology carries out research and is in charge of the on-campus Master's degree in Science, Technology and Society. The teaching for the Master's degree is conducted on a networked basis with foreign universities. Since 1999, the UNQ has had Ph.D. programmes that depend on the Vice-President's Office for Postgraduate Degrees.

Even though the oldest curricula date from 1991, the UNQ applies a permanent revision and updating policy. In 1997, the curricular structure of undergraduate studies was modified to be more flexible. The university chair structure (one teacher, one course) was eliminated, and the credit unit was introduced to evaluate curricular progress; moreover, the subject correlative order system was eliminated and university studies were organized into two phases: an initial phase or *Diplomature* with a theoretical duration of two years, and an advanced phase, with a theoretical duration of two years for Bachelor's degrees⁶ and of three years for engineering degrees. For both basic and advanced phases, the degree is awarded when the student has obtained 150 credits from taking mandatory, general or optional courses. The initial phase provides basic education and training, and these studies are certified with diplomas in science and technology and social sciences. Students design their own curricula with the assistance of a tutor. The curricula reform introduced the Tutorship Management Unit depending on the Vice-President's Office for Academic Affairs.

The UNQ is located on the premises of an old factory, outside the downtown area of the city of Quilmes. This site provides the university with 18,500 m² of facilities that have been recycled as classrooms and laboratories. The UNQ is also renovating a building it shares with the Universidad Nacional de La Plata in a nearby town (Florencio Varela), where the laboratories of the formerly state-owned oil company

(YPF) used to be located. The university's laboratories and workshops for industrial automation and control engineering, food technology engineering and naval architecture operate on those premises.

Unlike the unrestricted admission policy that prevails in other Argentine state universities, admission to UNQ is regulated. In order to be admitted to the university, students have to take proficiency tests on language and logic/mathematics skills. Students who obtain a grade of sixty or higher in each skill are automatically admitted to the university; the rest have to attend a preparatory course in those areas for one semester, which they must pass in order to become regular students.

Likewise, the UNQ Superior Committee – on suggestions made by the respective academic departments – establishes a minimum and maximum student enrolment quota for all of the university courses every year; the university operates on a system that allows new students to choose among four selected vocational options, similar to systems used in other parts of the world where the public university controls its size.

The UNQ is recognized nationwide for its high quality, which is reflected in its faculty members and the teaching system, whose main features are: (i) high percentage of full-time teachers (41 per cent of all faculty members versus a national average of 10 per cent); (ii) high percentage of faculty members doing research (35 per cent versus a general average of 18 per cent); and (iii) a salary system based on experience, opportunity cost and performance.⁷

Within the framework of the Higher Education Act No. 24.521, the Universidad Nacional de Quilmes has established a teacher career system that may be accessed through an open selection process involving competitive examinations, interviews and peer review. Staff promotions depend on biannual evaluations combining performance analysis carried out by external examiners and assessments of teachers by students. There are also faculty members who are hired temporarily, based on specific demands that cannot be met by permanent staff.

All on-campus classrooms have a maximum capacity of thirty students and the technical teacher/student ratio (excluding drop-outs) is, on average, one teacher per every twelve students, and one full-time teacher for every twenty students.

In the year 2000, the UNQ's consolidated budget amounted to US\$19.9 million, of which US\$16.6 million were derived from National

Treasury contributions under the budget law; US\$1.6 million from off-campus student contributions managed through the Campus Virtual SA firm, owned by the university; US\$1.4 million from third-party income (training courses offered by the University Extension Secretariat, sale of small- and medium-sized ships designed and constructed by the faculty and students of the naval architecture programme, and R&D projects) and US\$300,000 from credit financing.

While state universities in Argentina use on average 80 per cent of their budget for staff expenses, the UNQ uses 65 per cent. Approximately 10 per cent of the annual total expense budget is invested.

2. CREATION AND ORGANIZATION OF THE UNIVERSIDAD VIRTUAL DE QUILMES (UVQ)

2.1 Creation

The UVQ was created as an off-campus education programme, which uses the comprehensive software programme Campus Virtual as the means and environment for conducting its undergraduate and postgraduate training courses online. UVQ's programme implementation was possible thanks to a transfer and cooperation agreement signed between the UNQ and the UOC in October 1996.

The UOC was created in 1995 as an autonomous university within Catalunya University, with the special feature of being a university exclusively devoted to off-campus education in asynchronous virtual environments. The UOC has approximately 18,000 students, offers nine degrees, three Master's programmes, two postgraduate courses and one special admission course for people older than 25 years. At the same time, the UOC develops corporate training programmes and university extension courses.

UNQ's relationship with the UOC was set down in an inter-university agreement and the transfer of information technology was carried out through a licence to use the UOC's Campus Virtual platform. This collaboration is being handled by the companies owned by each university, Campus Virtual SA and GEC SA.

The UNQ created its corporate entity, Campus Virtual SA, to provide a vehicle for its educational programme in a virtual environment. The difficulties inherent in the public-sector management system governing Argentine state universities and the political opposition to

the implementation of tuition fees for undergraduate university studies are, in our opinion, most likely the main reasons why a satellite company belonging to the university was created for the UVQ Programme.

As Internet development in Argentina was very limited, the UNQ decided to make a strategic alliance with a small Argentine company established as an Internet Service Provider (ISP). The university strategy consisted in providing not only the educational service but also the Internet connection, so as to guarantee overall quality. Given the ISP's small size, the university decided to become a shareholder in order to minimize risks. As pointed out later in this paper, the university relinquished its shares in the ISP during the third year of operation.

The server where the Campus Virtual software is installed is owned by the university, but managed on the ISP's premises.

UVQ academic activities started in early 1999 with courses for the Bachelor's degree in Education. It was thus necessary to obtain authorization from the National Ministry of Education in order for this degree to be valid nationwide.

The Higher Education Act (No. 24.521) provides that universities have 'academic and institutional autonomy' to 'create undergraduate and postgraduate courses', 'design and develop curricula' and 'grant academic and qualifying degrees' (Title IV, Chapter 2, Section 29). However, Act No. 24.521 also states that in order to grant a degree with nationwide validity, universities will request authorization from the National Ministry of Education, which takes the decision based on analysis of the curricula, professional concerns, priority of the degree, and duration of studies.

We consider that all the decisions UNQ made in order to operate the virtual programme were the right ones, both as regards the software licensing and the simultaneous offering of education and Internet connection services. In fact, no proper link has been established yet between the UVQ and the Ministry authorities, since the latter are still reluctant to authorize full university studies via the Internet. The existing legislation on off-campus university studies was designed using criteria that do not provide for the use of the new information and communication technologies in academic processes. Specifically, there is a legal vacuum as regards postgraduate programmes, since the Comisión Nacional de Evaluación y Acreditación Universitaria – the body in charge of accreditation and assessment at postgraduate levels

– has not yet established the guidelines and criteria for off-campus online programmes.

2.2 Organizational structure

The UVQ's organizational structure underwent a logical evolution as processes became more complex. In early 2000, one year after it was launched, the university hired a consulting company to carry out a diagnosis of the UVQ operation and propose a new organizational structure.

The consulting company looked at the academic operation, administration and management control processes, analysed the programme's organization, its situation and optimization possibilities and proposed a new structure and organization, as well as the profiles of the new required positions. The consulting company did not assess either content or academic performance.

Among organizational deficiencies, it was found that responsibilities were not clearly defined and that processes lacked a methodological description. As a result of this work, a new structure was adopted, flexible enough to allow for future evolution. Thus, UVQ went from a 'foundation stage' to a 'mature stage' organization. The new organization, which was implemented in mid-2000, introduced planning and definition of responsibilities and processes.

Three kinds of processes are featured: (i) strategic processes, including decision-making processes at macro level; (ii) key processes, that is to say, academic processes in a virtual environment; and (iii) academic activities support processes: management, financial and economic administration, information and communications technology, institutional relations and marketing.

As regards strategic processes, the UVQ programme depends on the President's Office. The President chairs a Directive Committee formed by the people responsible for UNQ academic, economic and financial programming activities and by the UVQ Executive Director.

The UVQ Executive Director is, in turn, the General Manager of the company Campus Virtual SA, whose Board of Directors is formed by the members of the UNQ Directive Committee and the other UNQ vice-presidents.

Key and support processes stem from the Executive Director's Office. The former encompass the set of academic activities: undergraduate

studies, postgraduate studies and other continuing education and training programmes; the development of educational materials; the tutorship system; the assessment system and communications of the university community in the Campus Virtual.

Support processes are auxiliary to key processes and embrace: academic management (student enrolment and admission, addition of records to the Campus Virtual, Internet connectivity management for all university community members, and allocation of students to virtual classrooms); contacts with people interested in taking courses at the UVQ (call centre, marketing); management of computer support technologies (relationship with the ISP, communication links; development of applicative systems related to the Campus Virtual); and the administrative, economic and financial management.

Campus Virtual SA is in charge of enrolling students and charging them for the Internet connection services rendered, as well as for printing and posting educational materials. On the expenses side, the company pays royalties for using the IT platform; hires the connectivity service as well as the educational materials reproduction and posting services; conducts marketing activities; and develops, maintains and updates IT systems.

To sum up, the UNQ deals basically with academic processes and their management, while the company deals with support processes.

Undoubtedly, the organizational changes adopted in mid-2000 and the improved articulation between the company and the university have enabled substantial improvements in efficiency.

Since the end of 2000, the IT systems area has been consolidated and a new corporate entity, Sistemas Virtuales SA, has been incorporated, aimed at developing platform and application software, in addition to rendering consulting and technical assistance services to third parties, such as other universities that are starting training activities in virtual environments, business chambers, university professional organizations, etc.

2.3 Current programmes

The UNQ's Universidad Virtual programme has the following undergraduate studies:

- Bachelor's degree in Administration;
- Bachelor's degree in Public accountancy;

- Bachelor's degree in Social sciences and humanities;
- Bachelor's degree in International trade;
- Bachelor's degree in Education;
- Bachelor's degree in Hotel management and tourism;
- Bachelor's degree in Occupational therapy;
- University Technician's degree in Business administration sciences;
- University Technician's degree in Multimedia.

Moreover, since mid-2000, the UVQ has offered the Master's degree in 'Science, technology and society', which was already in place for UNQ on-campus students.

At the end of 2000, the UVQ started developing e-learning programmes. First, together with the Asociación de Bancos Argentinos (Argentine Bank Association), it developed the abavirtual.com platform through which training courses are offered to bank employees in areas such as customer service, accounting for non-accountants, auditing, verification of bills of lading and checks. Second, a digital literacy course was developed (Internet browsing and utility programmes such as text processors, spread sheets, web page design), to be offered to primary and secondary school teachers through the national portal educ.ar. Third, courses in the field of administration were also developed, such as human resources administration and others.

Moreover, the UVQ programme will launch, during the second half of 2001, a three-year secondary school programme for adults, which has been welcomed by the public since 73 per cent of the population between 25 and 64 years of age has not completed secondary school.

In 2000, the virtual university community was made up of 2,384 undergraduate and postgraduate students who take full university programmes through the off-campus, online education system. In addition, a variable figure of approximately 300 on-campus UNQ students take some courses through the virtual education programme.

The UVQ forms a pluralistic community whose demographic structure has some special features as compared to a more conventional university student population.

A true advantage of the virtual university programme is that it is not limited by space constraints and can offer its courses to people anywhere: students taking undergraduate and postgraduate courses

through UVQ reside in all Argentine provinces and there are even some students who live abroad.

The socio-demographic characteristics of UVQ-programme students reveal an original university community. While most UVQ students are between 30 and 50 years old (the average age is 39.4 years), the age spectrum is very broad, ranging from 22 to 77 years.

The majority (67.1 per cent) of UVQ students are women. Moreover, 61.7 per cent are married and working.

Most UVQ students are employed; in fact, 89 per cent work regularly, which is 35 percentage points above the figure recorded for Argentine universities as a whole (including UNQ on-campus students), according to the 1994 University Census.

While figures vary with regard to the extent of the previous higher education that students have received when they are admitted to any of the UVQ programmes, in no case is this less than two years; the weighted average of the years of higher education that UVQ students have received before admission is 3.43 years. Some 56.2 per cent of UVQ students have four years of previous post-secondary education, mainly in the non-university higher education system.

The UVQ student-teacher ratio is the same for all subjects, except for the introductory course, which is common to all university studies. The UVQ has determined that all of its virtual classrooms will have a maximum of fifty students per teacher, while in the introductory course the ratio increases to seventy-five students per teacher-consultant.

Unlike the teachers in the UNQ face-to-face education system, teacher-consultants in the virtual university programme do not have permanent positions; they enter into a relationship with the UVQ programme for fixed periods of time equivalent to the scheduled duration of the academic activity. They earn a salary equal to that of a full-time Associate Professor in the face-to-face education model. Unlike the latter, for UVQ teacher-consultants the total salary does not include research. Furthermore, their contractual situation does not require them to be on the university premises; on the contrary, teacher-consultants work in a way that is similar to tele-working. They only have to attend at least one meeting at the beginning of the academic year, and administer and correct tests at a maximum of two examination boards.

There are seventy-three active virtual classrooms, with a staff of sixty-one teacher-consultants and seventeen tutors. Faculty members may be in charge of up to two classrooms at the same time.

UVQ faculty members are recruited through public notices in the national mass media. This has enabled the UVQ to work with teachers who, like their students, are spread across Argentina. However, it is worth pointing out that the selection of teacher-consultants is not formalized through an ‘academic career system’ as in the face-to-face education model of conventional universities.

The development of UVQ teaching activities lasts approximately eighteen weeks, with three weeks more for teachers who join the programme for the first time. In this case, the UVQ deploys a teacher training and instruction programme for asynchronous virtual environments. In general, the teacher devotes sixteen out of the eighteen weeks to the development of the specific course contents, and two weeks to general examination drafting and correction tasks, working approximately fifteen hours a week.

As detailed in Section 4.2 below, UVQ faculty members have postgraduate degrees in their field. However, given the unprecedented characteristics of this programme, the existing teacher-consultants did not have specific training per se in off-campus education through virtual environments.

Because of UVQ’s particularity, it is necessary to generate a teacher profile with unique features that fits closely with the multimedia and telematic environments where the teaching activity takes place. An ad hoc training and instruction programme for teachers is key for this kind of venture to succeed.

To that end, a systematic staff development programme should be defined that guarantees teaching-quality improvement and that, with respect to such improvement, joins with research proposals on the topic being developed. This will allow an academic career specific to this environment, which guarantees a stable staff policy, consistent in time, subject to periodical quality assessments, with highly skilled scholars, capable of leading and meeting the strategic objectives of the UVQ programme.

Determining remuneration consistent with a staff hiring policy and with a performance-assessment system should also be taken into account.

UVQ started operation in 1999 with only one undergraduate degree (in education), and 273 Bachelors in ‘Educational sciences’ have graduated. It will not be possible to draw conclusions on the UVQ programme performance in terms of the graduate/new student ratio since the programme has more than two starting dates for the annual academic cycle.

3. ADMINISTRATIVE ISSUES

3.1 Administration

The administration and management of the UVQ require the development and implementation of new structures and procedures, different from the ones applied in face-to-face education at the UNQ. As an example, the cost-free basis of undergraduate studies under face-to-face conditions and their costly basis under virtual conditions implies that the allocation of a virtual classroom to a registered and admitted student is mediated by his/her enrolment (payment of fees), an administrative procedure that does not exist at the UNQ.

The management of the UVQ differs significantly from that of the face-to-face education system. As analysed under Section 2.2 above, the UNQ decided to establish an ad hoc⁸ organizational structure. The UVQ collegiate government bodies adopt the decisions to be implemented by the enforcement bodies. The relationship with the UNQ is demonstrated by: (i) the authorization by the University Superior Committee to create an undergraduate and/or postgraduate course of studies; and (ii) UNQ's management of the partial funding granted by the university to the UVQ. Except for these two interactions, all UVQ academic and support activities are independent of the face-to-face education system of the UNQ.

The UVQ's main operational problems were detected in the support processes, particularly in the lack of information technology systems for the academic, economic and financial management of the UVQ (under Section 3.4 below they are referred to as back-end systems).

Key academic processes had a less difficult time adapting to the new virtual environment. Both the academic experience of the UNQ and the technical assistance of the UOC contributed to the resolution of common problems in this field. On the other hand, no experience on support processes such as management of student fees collection, allocation of classrooms, relationship with the Internet server, among others, was available.

Students have been very critical of the services rendered by UVQ regarding the teaching-learning process. Sometimes there were difficulties in accessing the Internet and others felt that at times fees were charged in error.

The UVQ initially focused on the key elements concerning the faculty, educational aids and communication tools, among others. The most useful lesson is that key and support processes should be tackled simultaneously in order to avoid bottlenecks, which are difficult to resolve when academic activities are in process and the increase in the number of students is exponential. As analysed later on in Section 3.3, back-end systems are under development to migrate gradually from a traditional management structure towards a management model consistent with a virtual and open organization.

The second lesson is that the creation of a related business company for the management of the UVQ programme propitiated the incorporation of higher accountability standards as compared to those of the face-to-face education system. Nevertheless, this falls under objective and opposing restrictions, particularly for a 'bimodal university' whose administrative and academic management structure has only been devised for a face-to-face environment. Thus, the emergence of tense situations between both administrations is unavoidable, giving rise to misunderstandings, which are gradually being overcome due to the transfer of management processes already deficient in the face-to-face environment.

The UVQ's administration and management demand the development and implementation of structures and procedures different from those usually applied to face-to-face education. Another important characteristic of the virtual environment is that the academic product or activity should not only be of top quality and excellence, but also financially self-sustaining.

This is the reason why modern concepts applied to the field of business administration and organization, such as 'virtual organization' and 'open organization', should be the guidelines of a programme such as the virtual university programme. UVQ-type organizations are based on flat structures with interconnected operating teams.

The success of these programmes lies in designing management strategies not just conceived as a simple exchange among closed compartments with no communication among them. On the contrary, information, including both routine and ordinary data and the global values and viewpoints of the business, should flow through in-house cooperation and circulation networks, among management agents with a high capacity for rotation and adaptation to constant changes.

A virtual university – that is, an institution of higher education incorporating new information and communication technologies to

attain its fundamental goals – cannot face this challenge without also incorporating such technologies into its management and administration systems. Thus, the administration and academic management processes should be strongly based on the use of information technology systems for the production and flow of information.

The UVQ originally conceived its end-to-end processes of academic administration and knowledge management, taking to the virtual environment what it has done for years under the face-to-face educational system. Nevertheless, within the framework of a virtual organization made of flat and open structures and committed to the education of individuals (undergraduate and postgraduate courses of study), not only the knowledge management associated with learning should be taken to the virtual environment. To become a true ‘virtual organization’, those activities that are not necessarily directly connected with the processes of teaching and learning should also be held under distance conditions in order to become a true ‘virtual community’ operating in the areas of education and generation of knowledge.

With the virtual community having been organized as such, it can be concluded that the success of its management depends on the analysis and satisfaction of the expectations and needs of the following: (i) the organization itself (i.e. coordinators, teacher-consultants, managers, technical back-up); and (ii) the students.

According to Cabrera and Martí (2001), virtual and open organizations focus on four issues concerning their operation: ‘safety, knowledge management, Customer Relationship Management and Datawarehouse’.

For the purpose of ensuring the safety of the virtual organization it is necessary to develop systems of authentication and control of access to the campus, and services guaranteeing the integrity and confidentiality of data.

The end-to-end knowledge management requires model-development tools for the identification of its sources, such as process re-engineering and workflow tools. It also needs tools enabling the storage, selection and retrieval of information through intelligent agents. Finally, knowledge management requires tools that facilitate the management of resources and services (human resources, back-up, etc.).

There are three phases of Customer Relations Management, that is, solutions to improve the service rendered to customers: (i) marketing,

sales and service activities linkage; (ii) customers' data analysis for the purposes of identifying market behaviour patterns and identifying demand behaviour patterns and their satisfaction; and (iii) the strategic or action phase, where the organization's structure must be adapted according to the knowledge of the customer obtained from phase (ii).

Datawarehouse is the study of the users' and the organization's behaviour patterns which is aimed at detecting opportunities to improve decision-making. Information must be accessible to all members of the virtual organization. When referring to the interests of students, the idea is to provide solutions on a personalized basis to their particular expectations, in other words, their concerns and interests before they became active students, and those appearing later as they study within the framework of a virtual environment. In both cases, data generated and processed must be logically sequenced in terms of the personalized expectations of the student-user.

As regards potential students, a key factor for any educational offer is to include guidance services that provide information on activities. These services should also be capable of collecting individual information, such as data on personal preferences, skills, prior education, professional or work environment and time availability.

As for students in the virtual community, they should be able to obtain as much automated information as possible. Other virtual communities that are already consolidated, such as the UOC, user tools such as FAQs (Frequently Asked Questions) and also a Help Desk, a service enabling the resolution of questions on an automated basis under predetermined terms and conditions. Both services require a database specially configured for such purposes. Finally, the prospect of rendering a twenty-four-hour service throughout the year, also in connection with activities or formalities beyond learning, implies that once the students have become acquainted with the automatic data-processing system flowchart, they may 'self-manage' their permanence in the different virtual campus areas.

3.2 Costs and financing

The UVQ is funded through the contributions made by the students to Campus Virtual SA and a grant by the UNQ, whose partial participation in the total funding is gradually decreasing.

At the beginning of its educational activities, the UVQ established a system according to which students were charged per course. During

the year 2000, that system was replaced by monthly payments, which has led to improved financial follow-up.

The UVQ students must hire the services of Campus Virtual SA for a set of technical services including: connection to the Internet, help desk (telephone assistance twenty-four hours a day throughout the year), tutoring, creation and delivery of educational aids, including bibliography. The fee for the Bachelor's degree in 'Educational sciences' is US\$40 per month throughout the year, and for all other undergraduate and master courses of study it is US\$80 a month.

Therefore, the services that Campus Virtual SA provides account for a substantial part of the UVQ's current expenditures: economic and financial management, hiring of Internet access, payment of royalties for the licence to use the automatic data-processing system, compensation for technical assistance rendered by the UOC and payment to tutors.

With a fixed annual allowance, the UVQ assumes responsibility for hiring the authors of the educational material, payment to faculty members, academic management of the programme, investments in equipment, server-maintenance expenses under the housing mode, and marketing expenses (advertising, press, participation in exhibitions, brochures, etc.).

As the number of UVQ students increases (and since Campus Virtual SA is a subcontractor of UNQ) the income obtained from UVQ will cover not only the non-faculty expenses but also more of the expenses now assumed by UNQ.

It should be mentioned that the determination of the monthly fees that UVQ students pay was not subject to a thorough cost-benefit analysis, but was determined by taking into account the fees charged by Argentine private universities; UVQ fees were then set at the lower end of the scale.

This 'price policy' was essentially due to the cost-free nature of the UNQ, and subject to basic university policy as defined within the framework of the Argentine university system.

In terms of total expenses per student, the UVQ is well below the cost of face-to-face education at the UNQ. While the cost per off-campus online student amounts to US\$1,200 annually, the on-campus student has an approximate cost of US\$3,700. Even though infrastructure investment costs and expenses in R&D of a university in its first development stages should be subtracted from the latter value,

in net terms the value per on-campus student is the same as that of a UVQ student.

The challenges for the current fiscal year and the years to come are to improve the collection system, introduce credit cards for payment of enrolment fees, and introduce postgraduate funding strategies through arrangements with financial institutions, which as is customary in developed countries, where banks and other institutions provide financial aid to university education.

One of the most important lessons is that the creation of new academic programmes should derive, among other things, from an economic and financial analysis, without implying that a project should be considered only from an economic viewpoint. In fact, feasibility studies and the advantages of expanding the academic offer must include agglomeration economies, which entail new courses of study within a given field of knowledge where the university has some potential, and provide for a fee covering overheads and initial investment expenses (break-even point and marginal contribution analysis).

Since virtual education demands higher initial and start-up investments than face-to-face education, the economic feasibility of virtual academic programmes entails a necessary minimum number of students.

A greatly diversified academic offer with few students in each programme acts against the attainment of positive economic results, and the same applies to excessively open curricula, which contradict trends towards flexibility.

Three years after its creation, the UVQ systematically began to subject all new potential educational offers to a strict economic analysis, which is not at all the case for face-to-face university programmes. In this sense, the UVQ has had a beneficial impact on the way face-to-face education works at the UNQ, as the university is now devising its academic policy on a stricter basis.

The UNQ has not been unaware of the dominant practices in the Argentine university system: it follows Say's Law of Markets, which would explain that the academic offer creates its own student demand. Argentine universities are basically a community of professors and assistant professors, more than a community of students. Academic opportunities thus reflect the preferences and viewpoints of faculty.

Within a virtual environment, such as that of the UVQ, such practices are not as relevant as they were in the beginning. Nevertheless,

it should be acknowledged that the face-to-face model was partially transferred to the virtual model, particularly face-to-face educational programmes, which is not necessarily the best option.

Currently, the UVQ devises its academic offer independently of face-to-face policies. In fact, the UNQ is basing its institutional policy on the joint but differentiated consideration of its two modes: face-to-face and virtual education. In just a few years, the UNQ will probably have the same number of face-to-face and UVQ students.

As far as costs and financing structures are concerned, we concluded that: (i) a virtual university is like any other economic activity as far as the best management practices are concerned, such as outsourcing, subcontracting, differentiation of cost units, marketing, loans, etc.; and (ii) it is advisable to have a company to take care of the technical aspects of virtual education and training (although in the case of the UVQ it was due to political and public management restrictions imposed by the central government). This is a sound institutional policy because it inevitably sets criteria typical of private management practices.

3.3 Technological infrastructure

UVQ has its own servers, which house the database. They are set up, maintained and administered by the company rendering Internet services (housing).

The Campus Virtual software is provided by the UOC through a non-transferable and non-exclusive licence. The platform that the UOC has granted to UVQ under these licence conditions belongs to the front-end functionality of the system, which supports communications in the learning environment among the different members of the educational community (i.e. students, faculty members, tutors, coordinators, etc.). It also supports communications in the social environment of the 'campus' (i.e. mail, chat, bar), and in the general support-services environment (library, institutional messages, etc.). The Campus Virtual platform functions within the web environment and may be accessed through different navigation systems. It is codified under CGI/Perl and runs under Sun Solaris. The database is Oracle and the operating access interfaces for the general management system (back end) have been custom built.

The Campus Virtual's associated systems, that is, the back end, were developed by another UNQ-related company (see below), and provide support both to academic and administrative management

applications. The database is integrated with the front-end database through appropriate connections and may be any standard relational base of the industry (currently there are implementations in Oracle and SQLDServer). The development was based on a first stage that included survey, analysis and processes re-engineering. This stage took approximately three months and it was possible to redefine and document the main set of processes in a Petri web-based format for easy implementation. Then it was possible to codify programmes within a conceptual framework shared with users. From the technological point of view, the programmes accessible through the web were developed with front-end compatible technology, while the customer-server programmes were developed with Virtual Basic.

The decision to offer web connectivity as part of the educational service was due to the insufficient development of the Internet in Argentina. Providing access to the web together with a Help Desk (technical service twenty-four hours a day throughout the year) was considered a strategic issue. So much so that the UNQ's company, Campus Virtual SA, purchased shares in the ISP that was rendering connectivity services and held approximately 30 per cent of the capital stock of that company.

After the full deregulation of the communications market, the UNQ's strategy was to sell Campus Virtual's share in the ISP. This was accomplished in an international operation that resulted in substantial profits for the university.

During the last quarter of 2000, the university created a company for the development of virtual education software – Sistemas Virtuales SA – which is currently developing all the systems. For these purposes, the Fondo Tecnológico Argentino (Argentine Technological Fund), a state agency that finances technological innovation, gave the UVQ programme a US\$300,000 non-refundable grant for the development of back-end systems and automatic data-processing systems.

Sistemas Virtuales SA is thus developing both the front-end and back-end functionalities of the systems used by the UVQ programme. The front end supports communications within a learning environment similar to the UOC Campus Virtual. Due to the design of this platform, the decision was made to provide it with integrated multi-field facilities so that in just one implementation it will be possible to run different virtual campuses simultaneously, and also share virtual classrooms. This means that students from different institutions can attend the same

virtual classroom, each of them within his/her own virtual campus. Likewise, the platform was provided with intuitive and agile interfaces so as to minimize navigation. The system is encoded in ASP-type programmes using PerlScript, and it is compatible both with servers running Microsoft's Internet Information Server under Windows NT, and Apache under Linux.

A three-layer implementation was adopted for the whole system, separating the database manager from the business rules and from the visual interfaces. This facilitates the system's adaptation and maintenance. A component-based approach for interfaces has been adopted so as to maximize and simplify the reutilization of components. Coding resides in a unified database so as to keep good configuration control and facilitate systems maintenance.

The UVQ already has an automatic data-processing system prototype (internally known as Notredame) and has begun its 'personalization' in the e-learning area with customers associated with the UVQ, such as professional boards and business chambers, among others.

Several conclusions may be drawn from this experience with regard to how things should be done. The case of the UVQ is characterized by the restricted development of the Internet in Argentina. This was the reason why we did not follow the UOC's experience of releasing and separating access to the Internet from the educational service. In hindsight we believe this was the right decision.

As for the decision to take part in the ownership of the company rendering Internet access services, the outcome is less conclusive. From an economic viewpoint it was an excellent investment. In terms of quality of service, there were technical problems that were difficult to resolve due to our shareholder role (between an Internet provider and the UVQ as customer). Although different positions may be adopted, if the aim is to provide good educational services, investing in the ISP sector may not necessarily be a good option for a university.

The creation of *Sistemas Virtuales SA* for developing systems for front-end and back-end functionalities has been an excellent decision that gives the UVQ and *Sistemas Virtuales SA* international standing in state-of-the-art technological development.

3.4 Intellectual property ownership and copyright

The UVQ has the copyright of all the basic teaching materials that are used to support each course (work file). The authors are paid a lump

sum, which entails a significant initial investment in exchange for the authors' copyrights on the work files. An alternative would have been to follow the UOC's experience, paying the authors a royalty on a monthly or course basis, per student.

On the other hand, no copyrights are recognized for the digitalization of bibliographies, since such reproduction is partial and restricted. Reprography is a widespread practice in the Argentine university system which causes economic hardship for authors and publishers and, although reducing educational expenses, also makes students less familiar with textbooks.

The UVQ recognizes copyrights on digitized bibliography and negotiations are held with the Book Chamber, an organization grouping publishers.

As far as the Campus Virtual software programme is concerned, the UVQ recognizes the UOC copyright and pays royalties for the licence of use, which includes access to modifications and updates.

4. ACADEMIC ISSUES

4.1 Programme development

Replicating the UNQ, the UVQ programme bases its academic organization on the grouping of related disciplines by field of knowledge, and basically focuses on undergraduate studies, offering only one Master's degree programme. One of the particular aspects of the UVQ's programmes is their emphasis on social sciences and business administration sciences, with an occupational profile that is not available at other national public universities.

The strategic decision to offer these courses of study was due, in the first place, to the need to satisfy the educational demands of a public that, because of its demographic and sociocultural characteristics, could not gain access to the conventional offers of the Argentine university system.

For the UVQ, the design of subject areas that overlap requires a flexible management academic organization. Thus, the UVQ curricula were designed on the basis of circular curricular models with a wide range of free choices for students, who are accompanied by a tutor. Except for the University Technician's degree in 'Business administration sciences', the offers of the UVQ programme are complementary study cycles or second-level Bachelor's degrees. They require that the students

have prior academic experience, either holding a degree or having taken a minimum number of courses (fifteen) approved by the university system (see Section 2.3 for details).

4.2 Teaching

Academic management of UVQ is the role of coordinators attached to the Academic Office. They are responsible for developing the different processes that shape each professional or management area: teaching, tutorship, academic communication, assessment and processing of educational materials. The Academic Office is composed of a Director and a Deputy Director. Both are permanent employees of the university and are appointed by recommendation of the Vice-Chancellor.

The Director's role is to deal with the integral academic management of UVQ, which includes following and evaluating the performance of the academic coordinators in the delivery of their academic input; organizing curricular programmes, and coordinating their delivery with the management company (Campus Virtual SA) and the technical support (ISP) company; and informing the Chancellor, Vice-Chancellor and the Upper Council on developments.

The Deputy Director of the UVQ deals with all that relates to the coordination of academic units. He/she supervises the provision of information on the delivery of the UVQ programme and the production of statistics, and is responsible for the execution of the academic calendar. Together with the Director he/she recruits academic personnel and selects authors for the creation of work files. Finally, he/she assists the Vice-Chancellor's Academic Affairs Office in verifying course plans and overseeing the awarding of degrees and diplomas.

Teaching is carried out by teacher-consultants, who have a contract limited to the duration of the courses they teach. They develop the content proposed in the work files by the specialists in the respective subject areas, and on a weekly basis they outline proposals and guidance for the development of learning processes in what is called the virtual class. They depend on the coordinators of disciplinary areas.

The virtual class consists of the teacher-consultant transmitting to the students the key elements of the work files and the compulsory bibliography, according to the sequence of a Work Plan which is presented at the beginning of the course or subject. The students must develop skills that will enable them to interpret these texts with a view

to producing their own texts. The Work Plan is a 'contract' between the teacher and the student which permits planning and organization of work in the virtual class. It helps students to understand the development of the course or subject from the first day, so they can plan their studies with certainty and precision.

The virtual class, which lasts a week, begins with a written communication (usually in the form of an attachment) that the teacher places in a space of the Campus Virtual called 'Teachers' Notices' at midnight of each Thursday, so that students can study over the weekend. During the following days there are exchanges, discussions, and consultations between students and the teacher in a space called 'Discussion'.

In the virtual class, the teacher-consultant formulates the content developed in the educational materials and the compulsory bibliography, relates the content to preceding and subsequent materials, proposes activities for the analysis of subjects dealt with in the course, proposes problems for reflection, proposes discussions around a study of the bibliography and communicates updates relating to the subject matter.

The UVQ is based on the concept of knowledge as a construction, linked to a conception of cognizant subjects who interact within a shared social context. The act of teaching is conceived as a space for collaboration, a mental process of construction and reconstruction of knowledge carried out by each student, within a collective framework especially designed for this purpose: the virtual class.

Tutorials are one of the critical functions of the UVQ programme. The tutors are responsible for accompanying students throughout their entire academic lives. They provide permanent input to the teacher-consultant on the one hand, and to the academic management on the other, so that the best strategy to retain students in the UVQ programme can be designed.

Within traditional distance education systems the roles of tutor and teacher are combined. Within UVQ, the person and role of the tutor are separate from that of the teacher-consultant, although they complement each other. Tutorial action is defined within a model of general guidance. It should be clarified at this point that the figure of the tutor thus described, especially with regard to UVQ, represents a recent change in the Argentine university system that resulted from the academic reforms of 1997.

The general guidance tutorial model coordinates different institutional dimensions, while dealing with organization and curriculum. In the case of UNQ, and especially the UVQ programme, a tutorial system of this nature is justified when an open structure curricular education model is in use with a high degree of electivity on the part of the student.

The aim of the tutorial system is to guide students in the development of their education within the university. The students' education is constructed by taking into account their different educational situations and needs throughout their course of study. These in turn will be connected with other experiences that affect the students' professional development, and that take place outside the university environment. The tutor is thus a person with whom the students can discuss and design their educational plans according to their interests and progress of their studies.

Both the teacher-consultants and the tutors are university graduates. The teachers have postgraduate degrees in their areas of competence and carry out research within UVQ or other universities or research institutes. The tutors, on the other hand, have professional experience and a university degree, preferably a postgraduate degree, involving research.

The academic management coordinators are academics with postgraduate studies, who have current knowledge of their field and conduct research. In particular, the academic management coordinators of each professional area supervise the overall work done by the coordinators in their respective disciplines and, with their assistance supervise, the Work Plan of the teachers, implement it and coordinate the work of teachers and tutors.

The academic management coordinators in charge of the Units of Communication, Assessment and Didactic Processing, however, have different responsibilities; they coordinate transversal processes common to all areas, thus ensuring uniformity in the global methodological profile of the UVQ programme.

The Communication Unit is in charge of coordinating and managing the production and circulation of information within the UVQ programme (from statistical data, to ensuring the best means of access to academic content by students). Furthermore, the Unit moderates and promotes public exchange forums, produces informative material on the development of the UVQ programme,

adapts the Campus Virtual platform for best use in each programme of study, and designs and audits the communication processes that shape and allow the constitution and development of the UVQ university community.

The Didactic Processing Unit coordinates the design, editing, production and printing of UVQ educational materials, and the digitalizing and production of educational multimedia and hypermedia materials.

The educational materials (i.e. paper copies of the work files or CD-ROM multimedia support materials) are produced by renowned academics, who are solicited by the university for this purpose. The academics (equivalent to the highest teaching category) develop the content of a course or specific subject through a set of theme units with proposals for teaching and learning activities.

The educational materials (paper or multimedia) constitute the central axis for teacher intervention. Their aim is to teach and they express a pedagogical proposal, even though the teacher-student relationship is essentially developed through written communication in the digital medium.

The Assessment Unit establishes assessment criteria, coordinates the production process of examining tools and evaluates their application. From an organizational standpoint, it ensures the constitution of examining bodies in different parts of the country depending on student registration, and develops management tools for this purpose. It coordinates the accreditation of UVQ students, organizing and systematizing information on the academic performance of each student.

A distinctive aspect of academic management of the UVQ is its unified learning-assessment policy for all educational proposals. The Assessment Unit, together with the career and subject area coordinators, produces generic assessment instruments and procedures making it possible to ensure the quality of these tools and their methodological and content consistency.

In all institutions of the formal education system in Argentina, assessment and accreditation are related and coexist. Assessment informs on the ability and knowledge of the students, and accreditation represents the institution's certification that their assessed knowledge qualifies them for promotion, whether within the institution itself or to a higher level within the education system. The final examination thus

acquires relevance for the UVQ programme, as this is the only instance throughout the course when the student's presence is required, and when a written record with documentary value is produced, providing proof of each student's identity.

Universities that offer distance learning have had to make considerable efforts in order to be considered as providing education that is comparable in quality to that provided by face-to-face systems. For this reason there has been an emphasis on requiring the students' presence for assessment. While in other aspects of the education process (e.g. educational materials), distance learning higher education institutions have been very innovative and the first to make use of technological resources, as regards assessment the tendency is still to respect university tradition because certification and accreditation of the students are carried out in person.

The availability of the academic programme is based on a flexible and open model. Whereas in the traditional face-to-face system the calendar of activities follows the traditional division into two academic semesters, in the UVQ programme there are five teaching periods. Thus, students can choose, according to their time preference and availability, the best moment to begin the course. The same follows for the administration of final examinations: they are held on five occasions during the year and take place in eight different centres throughout Argentina.

The delivery of UVQ's educational offer, both in its academic and administrative dimensions, is subject to continuous monitoring and assessment through surveys circulated to students, as well as evaluations of the academic programmes that are carried out periodically by external experts. The latter are drawn from the Academic Degree Council, which comprises professors and researchers of outstanding academic achievement in their field. They issue opinions on matters such as curriculum design and study profiles, relevance and consistency of study plans, minimum content of courses, educational materials, and any other matter submitted for their consideration by the Academic Board of the UVQ programme.

4.3 Learning

Campus Virtual is a logical and comprehensive software programme that provides the means and the environment for the UVQ. It is where all the conditions, spaces and procedures that make up and surround the teaching and learning processes in a higher education institution

are recreated. It is, at the same time, a complex space where each and every place and service typical of a university campus can be found, redesigned and retrieved under the virtual setting's own logic. In this sense, dialogue-based options of the virtual frame and interaction have been specially developed in terms of point-to-point (typical of the distance education experiences), point-to-group and group-to-group possibilities. This variety of technological possibilities for social relations is added to the clearly stated institutional intention of transforming interactivity into interaction. Thus the UVQ becomes a virtual academic community with an influence on the everyday worlds of each of its members.

From the very beginning of the UVQ programme, emphasis was put on the creation of plural spaces that can overcome the limitations of a web page, since the challenge is not the transference of the existing contents to the HTML language, but the creation of original contents in a virtual model in which the time and place of study is chosen by the student, who is the true subject of the learning process.

The UVQ programme produces educational materials which are the basic theoretical reference of the courses. Unlike traditional distance education courses, learning materials for the UVQ programme are not self-sufficient, and are very much linked with the contents developed throughout the subject course. These materials are mailed to the students as work files, and complemented by the compulsory bibliography, the multimedia material and the courses' contents.

There is an aspect we consider essential here: a change in the quality of the learning processes. In the particular case of the UVQ, the transformation becomes so visible that, unlike traditional universities where pedagogical activities are teacher-centred, our programme can be identified as a 'university of students'.

In the virtual class, the teachers are not the only ones in charge of education. On the contrary, it is a complex model of which the authors of the educational material (whose profile most resembles that of the professors in face-to-face education), the classroom teacher-consultants, the tutors and the academic management coordinators are all a part.

As was stated earlier, it is not just a question of transferring traditional teaching to the hypermedia or of simply cutting out distances, but rather a matter of creating new models of knowledge acquisition and knowledge building. In that respect, the UVQ model specially emphasizes cooperative learning.

With the combination of the interactive framework, which is basically asynchronous, communication between teachers and students is promoted; this guarantees a high level of freedom for students in the administration of their time and place of study. In virtual classes, everybody shares material and information resources, and the teacher is the pedagogical mediator who guides and reinforces the students' initiatives as he/she implements strategies to increase collaboration and associated work. The teacher's main role is to encourage the students to learn and think, and not to impart knowledge: teachers promote the dynamics of the collective intelligence of the groups they are in charge of.

5. COOPERATION

As we have repeatedly stated, the UVQ was born as part of a technological and pedagogical association strategy with the UOC. This allowed the UVQ to save time by postponing internal technological and pedagogical efforts and incorporating a university experience from a European country.

At the same time, UVQ entered a strategic alliance with an ISP organization in order to be able to provide connectivity to the Internet together with the virtual education service.

Today, the UVQ focuses its strengths on the pedagogical model in the virtual environment and on systems development, both platform (front end), or application systems (back end). As for educational contents, the UVQ's strategy is to establish joint ventures with other universities, from Argentina and abroad.

Recently, the UVQ entered into two academic partnerships with other institutions: the first is with an Argentine university institute specialized in health educational programmes (ISALUD); and the second is with the UOC. A postgraduate course on 'Health services management' will soon be offered in collaboration with ISALUD; the classes of the business administration technician's degree have already started in collaboration with the UOC; and the classes of the multimedia technician's university degree are now being offered.

In both cases, the educational programmes – as regards curricula and contents for each subject – belong entirely to the associated institutions. ISALUD and the UOC appoint their teachers for the health course and the multimedia degree, whereas in the case of the business administration degree, the UVQ appoints its teachers. In both

programmes with the UOC, the UVQ also incorporates the tutors. As to the economic and financial management of the programmes, ISALUD runs its postgraduate studies and the UOC runs the multimedia degree. On graduation, students receive two diplomas: each university granting a degree for the academic studies that were completed.

UVQ's association with other institutions has highlighted the following: (i) UNQ's permanent policy to enter into partnerships with other institutions; (ii) UOC's disposition to transfer its know-how; (iii) the error of creating exclusive associations, in the sense of seeking an exclusive partner (both in academic and technological matters); and (iv) the immaturity of the Argentine university system in adapting to new challenges in education, virtual education and technological change, and in following a strategy of association.

In the future, it will be important to: (i) increase inter-university cooperation, both nationally and internationally; (ii) avoid being dependent on exclusive suppliers of any nature; and (iii) foster network configuration to enable the exchange and transportation of multiple offers.

The last recommendation is undoubtedly linked with all the others. It is necessary that we imagine a new phase in virtual university education development. The greatest difficulties are within the universities themselves, not in the availability of technologies. Most of the educational contents on the web are not related to the progress of the ICTs. Broadband, with its impact in terms of speed to visualize high-quality compressed videos in real time and incorporate sound similar to the CD, as well as load and unload indexes in seconds, leverages the possibilities of applications of a greater added value. However, education systems are still too conservative, fearful and doubtful to enter the field of virtual education.

Universities are slowly introducing virtual courses for their on-campus curricula and educational programmes, and a few of them have started to teach undergraduates within a virtual frame.

The configuration of an inter-university virtual education network should be the challenge for the near future. The web could replace the individualistic approach whereby each university tries to master all the educational contents and have its own technological platform.

In a globalized context, ICT allows universities of the developed countries to export their educational proposals to the emerging countries through the Internet. Trying to compete individually is not

possible. This means that it will be necessary for each university to share its strengths and to cooperate in order to collectively solve structural weaknesses.

Access to a virtual campus does not have to be a problem, and permanent upgrading of support technologies does not have to be a barrier for receiving a virtual university education. Even the creation of virtual classes with teachers and students from different universities will be possible. These students will visualize on their screens a personalized campus within the context of the university they are enrolled in.

In a restricted domestic financial context, national and international cooperation in virtual education will be of key importance.

6. FUTURE DEVELOPMENT AND INSTITUTIONAL CHANGE

In the short run, competition in the virtual higher education market with other Argentine public and private universities, along with universities from abroad, will increase. The rapid expansion of ICTs will eliminate technological barriers and facilitate the entrance of new educational offers. Moreover, the tendency of big international companies to internalize not only R&D activities but also training and education programmes, is likely to limit the university higher education open market.

The UNQ's institutional policy to strengthen its bimodal (face-to-face and virtual) educational model guarantees institutional stability in the mid-term, a necessary condition for the growth of the UVQ programme. In a sense, the UNQ is a good example of how public universities can deal with globalization and open borders: use criteria strictly based on merit for admitting and retaining students; develop R&D activities in areas of knowledge where the university has started educational activities; offer academic programmes that are up to date and in tune with the current demand of the economic and social sectors; incorporate modern information and communication technologies, and show innovation with regard to education models, by proposing, for example, activities such as tele-teaching.

The innovative experience of the UNQ and UVQ programme has drawn the attention of the media: quite unexpectedly, this experience shows that an Argentine state university can effectively deal with the challenges public universities face. The UVQ's future development will focus on the creation of strategic alliances, joint-venture agreements,

subcontracting of additional services, organizational flexibility, high-quality graduate and training offers, and an educational portfolio of its own as well as of third parties.

7. POLICY DEVELOPMENT, PLANNING AND MANAGEMENT: LESSONS LEARNED AND RECOMMENDATIONS

With regard to institutional policies, the UNQ experience illustrates that innovative enterprises such as the UVQ call for boldness and creativity on the part of the university's highest authorities. The leadership and talent of UNQ's President, Julio Villar, and the high calibre of the Vice-Presidents have made possible the development of a modern university within a public university system that offers more limitations than opportunities. In short, institutions often bear the imprint of the people who lead and manage them.

The management system of the UNQ has been another positive factor for change and continuous improvement of the university. The students express a strong political adherence to different parties which works against a more academic approach and greater awareness of social change. The university government of Quilmes makes a clear distinction between the roles of the Superior Committee and those of the Board of which the President and the Vice-Presidents are executive members.

In addition the UVQ programme is part of a series of structural reforms that started during the second half of the 1990s: academic reform, reform of the teachers' labour law and reform of the university government system.

The decision to create a private company to manage the UVQ programme was wise. This facilitated the introduction of modern management and accountability methods, and made the management of this new and very complex programme more flexible and responsive, especially when coordinating the very different parties, involved: academics, ISP, Campus Virtual and application systems.

While the UVQ is not a good example of advance planning, it is a good example of 'learning by doing' and of 'catching up'. Methods were adapted and improved, and best management practices were introduced so as to be able to focus on continuous improvement. The decision to invest in the ISP had an excellent return compared to the high risk taken (we invested in a small domestic ISP), and helped to provide a good educational service along with Internet connectivity in a local context where access to new ICTs is difficult.

Notwithstanding the advantages of learning by doing, it is advisable to do a feasibility study before launching each educational product; in particular, at a minimum a market analysis is essential, as education under virtual frames requires great initial investments, which can only be recovered with a large number of students (at least 300) per group. It is also advisable that bimodal universities – that is, those based on a face-to-face model but also offering virtual education programmes – do not automatically transfer the face-to-face educational programmes to the virtual frame. A ‘fine tuned’ educational offer implies that the face-to-face and virtual academic programmes it proposes are differentiated, even though they may be related.

With regard to government educational policies, it is essential to create a minimum regulatory framework for distance education (the virtual environment would be one kind of distance education although, strictly speaking, online education has no ‘distance’). While the government must in some way guarantee the development of educational institutions and ensure their quality, the emphasis of the regulatory framework should be placed not on requirements per se, but on the evaluation of the quality of the processes and their outcomes (i.e. graduates). In light of the new ICT, governments should not be prejudiced against virtual educational programmes when they are examining them. The previous distance education model, based on mail and paper, did not allow the kind of teacher-student interactivity that is possible through the Internet and Campus Virtual, which seems to be even better than that of the conventional face-to-face education system.

As for management, the main difficulty has been the staffing process for an educational enterprise as innovative as the UVQ. Specialists with experience in the private sector, in marketing for example, are not acquainted with the codes and routines of educational institutions that work on a mid-term basis; moreover, the UVQ programme does not consist of short-term training proposals that involve the student’s loyalty to the institution. An undergraduate or postgraduate university student taking a virtual education programme will be studying for a continuous period of no less than two years. On the other hand, education specialists of traditional universities find it difficult to adapt to private management and to incorporate practices and values inherent to market transactions.

The UVQ made an important management mistake: it did not simultaneously incorporate back-end systems with the Campus Virtual

platform. While students were studying via the Internet, the UVQ worked almost manually on academic and financial management. The solution to this problem was found by the end of the year 2000.

In order to generate trust in the UVQ programme and attract students to it, the UNQ launched, in the first part of 2000, an important, though costly, advertising campaign that positioned the 'UVQ' trademark as being synonymous with university learning through the Internet. Although there is no consensus at the UNQ on whether the decision to invest so heavily (around US\$500,000) in the campaign was appropriate or not, communication and marketing campaigns are highly recommended. Such campaigns help to position a non-conventional learning institution in the educational landscape and to foster social acceptance and recognition. Prospective students of the virtual education system anywhere in the world are likely to ask themselves the same questions: Is it possible to learn through tele-teaching? Are these degrees as valid as the 'other ones'? If I study at a virtual university, will I have the same opportunities when looking for a job as I would if I were to study at a conventional university? Doing away with all these doubts calls for a great effort by any university offering virtual programmes, which is not the case for face-to-face educational programmes since no such explanations are needed. As UNQ President Villar has often pointed out, paraphrasing a Canadian colleague:

the university is one of the most conservative institutions, so much so that if an eleventh-century professor came back to life in the middle of a conventional classroom he would feel at home, whereas if a physician of that same century were to appear in an operating room where a heart transplant was being performed, he would die from a heart attack.

With poor development of the higher education market in Argentina – due to the fact that 85 per cent of the university students attend public, free-of-charge universities – the UVQ operates in a context of underdeveloped student financing, which is totally different from the experiences in countries where university education is not free of charge. In those cases, banks and other financial organizations think of university students as clients. It is obvious that UVQ students analyse and compare the cost of studying in a virtual environment that is not free of charge with attending an on-campus classroom that is free of charge but has external costs such as transportation, boarding and

books. The absence of long-term financing with a grace period while the student is at university and of repayment of debt once the student has graduated, makes access to virtual education difficult for a greater number of students in Argentina.

If one of the aims of a virtual university programme is to become financially self-sufficient over a given period of time, some kind of financing will have to be made available to students; without this possibility, the tuition that the programme can realistically charge will be too low for achieving financial balance. The UVQ's average tuition fee is US\$140 per month, which means that for a thirty-month Bachelor's degree the total cost would be US\$4,200, which is very low. The absence of credit financing systems discourages prospective students who, at the outset of their studies, cannot even pay US\$140 per month. However, these students would undoubtedly be willing to pay up to US\$200 a month if they could pay half of this amount during their studies and repay the other half once they were working as professionals.

To sum up, the underdevelopment of the banking system in countries with low per capita income severely limits strategies of self-financing for virtual university programmes.

As for the technological infrastructure, the UVQ experience has shown that the development of front-end Campus Virtual systems is recommended to make navigability easier, with more intuitive and friendlier interfaces. These may include multimedia resources (hypertext, sound, video) to provide better support and more flexibility for virtual education models. Moreover, well-developed front-end systems are needed to be able to accept virtual multi-campus classes and classrooms, where each may have its own institutional image; enhance the visual image; include evaluations and self-evaluations that form part of the virtual classroom; go beyond e-mail as the only means of communication; and work with many browsers, multi-platforms and multiple databases.

Finally, academically speaking, the challenge is to do research on – and apply pedagogical models to – distance education systems based on the new ICT. As Santangelo (2000) wisely points out:

We should think about pedagogical models because very frequently the impact and great advances of ICT make us believe that they are the main factor; cancelling or leaving aside the basic principles of education, reducing them to a superficial and intuitive version.

Thus, we must be coherent with regard to our teaching-learning, constructive, psycho-pedagogical approach, avoiding the exclusive aim of maximizing the number of users or minimizing educational costs. The challenge is to improve the processes of interaction and construction of knowledge shared among and between teachers and students.

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NOTES

1. The Universidad de Bologna was the first foreign university to be established in Argentina, in the mid-1990s. In turn, US universities formed joint ventures with Argentine private universities for the joint granting of postgraduate degrees. Recent literature on this subject indicates that universities from developed countries and, in particular, from Europe, have started a transnationalization process due to sluggish enrolment and restrictions of public funding at home.
2. There is no agreement yet on the name for off-campus education that uses new telematic technologies. The term 'distance' is not appropriate since there is 'no distance' in virtual environments. Moreover, if, as in the UVQ case, the asynchronous mode is chosen, there is 'no time' either. The expression 'virtual' is better but not completely satisfactory since virtual things exist in time but not in space. Probably the most contradictory expression is 'virtual reality', which illustrates the complexity of this issue. The Asociación para el Desarrollo de la Tecnología Educativa y Nuevas Tecnologías Aplicadas a la Educación (Association for the Development of Educational Technology and

New Technologies Applied to Education) proposes the term ‘tele-teaching’. This paper uses the expressions ‘virtual environment’ and ‘off-campus environment’ interchangeably.

3. Two of the ten new national universities had been previously established by two provinces after 1972.
4. The authorization process for private universities to operate has two stages: during the first, a temporary authorization is granted; during the second, after six years of operation, the national government assesses the university’s performance and grants the final authorization.
5. Since Argentina regained democracy in 1984, the National Congress has created 6 national universities in Greater Buenos Aires (a territory concentrating approximately 5 million inhabitants). A reason for this legislative decision is that approximately 60 per cent of the 226,000 students taking courses at the Universidad de Buenos Aires – located in Buenos Aires City (8 million inhabitants) – reside in Greater Buenos Aires.
6. Translation note: The term ‘Bachelor’s degree’ has been used as a translation of *licenciatura*, a four- to five-year course at university level according to the Argentine education system.
7. The UNQ was the first state university to innovate in terms of salaries after the labour and salary system deregulation (1995) affecting state university teachers. The faculty system was changed with the technical assistance of the Centro de Investigaciones para el Desarrollo (Research Centre for Development). Faculty hierarchies are: full professor, associate professor, assistant professor and instructor. Ordinary and theoretical classes are only administered by teachers and instructors coordinate workshops. Remuneration includes: (i) a basic salary, which depends on hierarchy and academic background (the scale is divided into fifteen levels); (ii) the value of the teacher opportunity cost; and (iii) the academic merit, only applicable to full-time faculty members, consisting of a bonus of up to 30 per cent of the basic salary and that rewards productivity. Additionally, faculty members are entitled to fees for consulting, engineering and R&D jobs commissioned by the university to third parties.
8. The Executive Director/General Manager position does not exist at the UNQ and does exist at the UVQ. A similar position at the UNQ, in the face-to-face education system, is held by the Planning Vice-President.

Developments since 2003

8. UNIVERSIDAD VIRTUAL DE QUILMES AND ITS CONTEXT

The macroeconomics of Argentina have changed. Argentina defaulted on its public foreign-current debt early in 2002. After a decade of peso-to-dollar parity its currency was devalued and the economy saw Gross Domestic Product (GDP) drop by roughly 11 per cent, with a recovery in 2003 (8 per cent growth) and in 2004 (expected GDP increase of more than 7 per cent).

During the 1990s, the telecommunications market had reached a growth of 31 per cent, especially in data transmission (up 113 per cent) and Internet use (up 287 per cent). Personal computer penetration rose to 5.3 per 100 inhabitants. The economic crisis of 2002, however, slowed the spread of new ICTs. According to the Information Society Index 2002, Argentina ranks 32nd out of the 55 countries that accounted for 98 per cent of the ICT use of a group of 150 countries. Considered per capita, however, Argentina is ahead of Chile in the number of hosts, of Uruguay in cell phones, and of Brazil in the number of telephones, computers and Internet servers.

The spread of ICTs increased exponentially last year for the first time since the crisis of 2002. The expansion of broadband and cellular technology was particularly notable. It can therefore be supposed that the new macroeconomic context did not affect the development of the communication and information systems that are the technical backbone of the delivery of virtual education.

The fall in incomes affected the demand for private university education. In fact, student enrolments for postgraduate courses charging tuition fees dropped significantly in 2002 and 2003, although a recovery was observed in 2004. As the UVQ is a programme offered by a free, public university, tuition fees remained unchanged after devaluation; that is, the amount charged in pesos did not change. This made it possible to maintain online course enrolments. In fact, the number of online off-campus students increased almost in parallel with the on-campus students.

The national university system has not seen any recent major improvement. There are almost 100 university institutions in total

(38 public and 52 private). Student numbers have steadied at around 1.2 million, although the national population census of 2001 recorded only 900,000 people studying at university. The main reason for this discrepancy appears to be over-registration, as institutions continue to include in their statistics students that have left the university. Another, lesser reason is that some students study more than one university course.

The UNQ is a recently created institution, and therefore continues to expand into new academic areas. This has resulted in a rise in on-campus enrolment, from 3,960 in 1998 to 8,378 in 2004.

Off-campus university education has developed steadily, although it continues to account for a very low proportion of total student numbers. In 2002, it was estimated that fewer than 20,000 students (less than 2 per cent of all university students in Argentina) were enrolled in 'virtual' education. On the one hand, more institutions offer virtual university programmes and it is almost standard practice for universities to offer on-campus students the possibility of taking some of their courses online. On the other hand, Argentina still does not have a dedicated distance higher education institution. In addition to this, the national Ministry of Education has failed to disseminate specific regulations regarding distance learning activities, though new standards are to be adopted in the near future.

In conclusion, university enrolment in Argentina has stabilized at nearly 20 per cent of the population aged 18 to 24. It should be noted that the gradual strengthening of compulsory quality assessment of undergraduate courses in the fields of medicine, engineering and others considered by federal law to be in the public interest, is prompting institutions to replace automatic, direct admission with entrance examinations and quota systems (*numerus clausus*).

9. ORGANIZATION AND CURRENT PROGRAMMES

Regarding the institutional context, changes have been made to the administration of the university, concluding the lengthy period of management by former Rector Julio Villar, who spearheaded groundbreaking and ambitious development. Under his leadership, and against a backdrop of conservatism among the traditional, state universities of Argentina, the UNQ generated joint technology ventures not only in electronic data processing but also in biotechnology and marine architecture. He also pioneered a modern teaching staff policy (for example, fees were paid based on the opportunity cost of each teacher).

The transitional management, which ceased at the end of 2004, had a different approach to university administration, aimed at curbing the expansion of new institutional activities and dissolving the joint ventures, including Campus Virtual SA, which administers the UVQ. For example, Servicios Virtuales SA, the company set up to develop software, was shut down.

The organizational structure of the UVQ remains otherwise unchanged, as does its academic and administrative management.

10. ADMINISTRATIVE ISSUES

As reported in the original case study, growing enrolments mean that the income from students will be enough to cover all costs. Budget lines have remained relatively stable: despite the devaluation of the national currency, costs for teaching and non-teaching staff did not rise, nor did the cost of communications. Furthermore, there have been no increases in enrolment fees. No royalties were paid for the use of the UOC's data-processing platform and these will probably continue to be waived.

In August 2004, the UVQ gained a new virtual campus, with a new graphic interface and redesigned content layout, thus ending reliance on an international technology provider.

The new campus improves the relationship between the academic and administrative management systems and the educational platform. It also aims to facilitate navigation: it is supported by new servers that will make browsing faster and more efficient.

The new platform will give the UVQ more technological and management autonomy. It is a complex, logical-integral technological platform. It includes a series of standardized yet flexible applications developed specifically for the management and development of teaching and learning. It operates using a strong data structure, supplemented by an ad hoc academic management system to cover the technical administration of the virtual campus. For technical, safety and data back-up reasons, this is a stand-alone system.

The graphic interface of the virtual campus has been redesigned. The new content layout enables students, professors, researchers and administrators to use applications more easily, and gives various points of access to classes, services, forums and institutional information. For this first stage, the UVQ has decided to continue to follow the campus operating procedures of the platform provided by the UOC.

For instance, classes will occupy the same spaces as they do currently, and class participation will follow procedures similar to those now used. This is so that the change of technology will not disrupt the preferred practices and routines of each user. Further innovations will be phased in later on.

The data- and user-migration process from the current system to the new environment will require the UVQ to cease activities for ten days.

All classes, course content and e-mail messages will be located at <http://www.virtualunq.edu.ar>. The system will replace the @cvq.edu.ar suffix: with @uvq.edu.ar.

Unlimited storage of messages is also being terminated and replaced by a storage quota for each type of user on the disks of the mail server. The volume assigned will match present averages (e.g. students will be allowed fifteen megabytes).

The users will be unaware of the myriad of technical changes to server programming and structure required to make the system more robust, speed up access and accelerate responses. The nomenclatures familiar to the 6,000 users have been maintained.

11. ACADEMIC ISSUES

UNQ statistics indicate that in 2004 the institution had 13,264 students, of whom 4,886 were taking UVQ courses (more than double the figure of 2,400 two years previously). This means that UVQ students accounted for 37 per cent of the total enrolment – only slightly down from the 40 per cent registered in 2001.

The online programme has been expanded:

- five postgraduate specialization courses have been created in education, sociology, history and petrochemicals;
- the national public accountant undergraduate course (Carrera de grado de Contador Público Nacional) was added to the seven undergraduate courses previously offered;
- short, 'pre-degree' university courses were created, leading to a Diplomado Universitario de Formación Docente (university graduate in teacher training) with specialization in a chosen subject (mathematics, Spanish language and literature, social sciences, natural sciences, etc.);

- the Consejo Superior de la Universidad (University Board) has decided to create *Maestrías* (Master's) degrees in education, international economics and social sciences.

The UVQ has also started a secondary-level online course. This is a *bachillerato* (baccalaureate equivalent) for adults, and has already produced eleven graduates.

*Licenciaturas*¹ in education (1,671 students) and administration (1,037 students) represent 35 per cent of the total enrolment in online courses. In addition to this, about 1,100 on-campus students also take virtual courses. There are currently some 691 virtual classes operating, with a faculty of 82 teacher-consultants and 19 tutors. Finally, the UVQ has produced 921 graduates, 683 of whom were *licendiandos* in education.

12. LESSONS LEARNED

The UVQ is a consolidated programme, following a strategy of continuous academic improvement. The programme could withstand rigorous quality assessment, which cannot be said of other similar programmes. It has indeed been suggested that an international quality evaluation, performed by a committee of experts, should be carried out. The implementation of the forthcoming regulations on distance education will lead, in all probability, to the closure of other programmes that have not made structural modifications. This will not be the case for the UVQ.

However, society is still uncertain about the value of non-classroom education; its appeal remains limited. Prejudice prevails against this type of teaching and learning, even in large sections of the government. The dissemination of specific standards for distance education will help stop it being approached from the perspective and criteria applied to face-to-face education.

At the time of this writing, the UVQ expected soon to replace its electronic data processing platform with a new virtual campus, developed in Argentina – a genuine triumph for our technological independence.

The assessment of the possible institutional changes, especially the full incorporation of the UVQ into the administrative workings of the UNQ remains an outstanding issue. The eventual dissolution of the administrating company, Campus Virtual SA, will mean that

the institution will receive tuition fees from online students. This will undoubtedly give rise to unnecessary conflicts, given the attachment of the public Argentin university system to free undergraduate studies. An alternative would be to replace Campus Virtual SA with a university foundation – to replace a business enterprise with a not-for-profit entity, thereby removing the possibility for conflict. The main difference is that unlike Campus Virtual SA, the foundation would not be able to create ambitious projects, such as investing in business activities (for instance, acquiring holdings in Internet Service Providers and software development companies).

NOTE

1. Until recently most Spanish and Argentine degree courses lasted five years. Students would be awarded a *diplomatura* (general degree) if they completed three years of study, and they would get their *licenciatura* (honours degree) after another two years. Now, under new *planes de estudio*, or curricula, *licenciaturas* take four years. The first two years are referred to as the *primer ciclo* and the final two years as the *segundo ciclo*.

Chapter 8

USQONLINE, AUSTRALIA

James C. Taylor

1. USQONLINE AND ITS CONTEXT

1.1 International context

Established by the Australian Federal Government in 1967 to provide on-campus higher education opportunities primarily for residents of the Darling Downs region of Southern Queensland, the University of Southern Queensland (USQ) became a dual-mode institution when it initiated distance education delivery in 1977. Twenty-four years later, USQ has a student population of 21,063, with 5,266 students studying on-campus and 15,799 distance education students studying off-campus.

USQ was one of the first Australian universities to establish a significant international education programme that included offshore delivery – in other words, reaching students outside of Australia – in the 1980s. This programme developed steadily during the 1990s, with growth in offshore and postgraduate enrolments contributing to an overall rise in international student enrolments over this period. Graduation levels have also risen over this period, and the performance of international students has remained steady despite pressures created by an increasing number of students studying at a distance in their home countries. These developments reflect well on the range of strategies in place at USQ to support these students. Although the international programme remains reliant on enrolments in traditionally strong

markets such as Malaysia, Singapore and Hong Kong, it is continuing to diversify, with over sixty countries being represented in 2000.

The successful transition to dual-mode operations is evident in the current overview of USQ's international students offshore (Table 8.1). USQ has more international students studying offshore than any other Australian university. Further, international students studying on-campus constitute more than 20 per cent of enrolments.

Table 8.1 USQ's international students offshore in 2001

Region/Country	2001 enrolments
Singapore	1 165
Malaysia	943
China	340
South Africa	199
Pacific Islands	114
Zimbabwe	93
United Arab Emirates	76
Canada	73
Total (including more than 50 other countries)	3 981

Source: USQ internal documents.

USQ's focus on international education was given added momentum by the launch of its USQOnline initiative in 1996. This initiative is in line with USQ's mission to be: 'A leader in flexible educational delivery with an expanding national and international market' (Clarke and Klease, 2001).

1.2 National context

USQ is one of the thirty-seven public universities supported by the Australian Federal Government. Apart from the Australian National University, which is constituted under an act of the federal government, all of Australia's universities are established under State or Territory legislation. USQ was established under a Queensland State Act.

In 2002, there were 794,993 students enrolled in higher education courses in Australia (DEST enrolment numbers, Australian Vice-Chancellor's Committee, 2002). Almost 68 per cent were studying full time, and 77 per cent were enrolled in undergraduate courses. At USQ, 76 per cent of students are studying for an undergraduate degree.

USQ is Australia's most multicultural university with students from more than ninety countries.

In 1997, the federal government established the National Office of the Information Economy (NOIE) (<http://www.noie.gov.au/>). NOIE is Australia's lead Commonwealth agency for information economy issues. The aim of NOIE is to help Australians create a world-class online economy and society through its work developing, overseeing, and coordinating federal government policy on electronic commerce, online services and the Internet.

Under the auspices of NOIE, widespread consultation within the education sector led to the development of an Education Action Plan, now called Learning for the Knowledge Society (see www.detya.gov.au/edu/edactplan.htm). The Plan provides an overview of issues and identifies outcomes that the education sector must achieve if it is to support Australia's response to the challenges and opportunities of the information economy and maintain its place as one of Australia's major export-earning industries.

As part of this initiative, the Higher Education Action Plan, entitled 'The Way Forward', has been circulated to universities by the Australian Vice-Chancellors' Committee (see <http://www.avcc.edu.au/avcc/itpolicy/actionplan/>). In addition to the Higher Education Information Technology Consultative Forum, other higher education IT bodies addressing matters of relevance to the Action Plan include the Australian Academic Research Network Pty Ltd, the Council of Australian University Directors of Information Technology, and the Higher Education Advisory Group of the Education Network Australia Reference Committee. Moreover, the Committee for Australian University Librarians and the Coalition in Scholarly Communications are considering the provision of digital resources and services to support research offered through university libraries.

The Australian Federal Government considers that a key priority for advancing the Action Plan will be to support cooperation and strategic collaboration within and across all parts of the education and training sector to build on these foundations. A number of federal government and joint federal government, state, and territory strategic initiatives are already under way. These have been categorized under the five Action Areas of the Education and Training Sector Action Plan: people; infrastructure; online content, applications and services; policy and organizational framework; and regulatory framework.

People

In April 1999, agreement was reached by state, territory and federal ministers of education on Australia's National Goals for Schooling in the Twenty-First Century. One of the goals identified is that 'when students leave school they should be confident, creative and productive users of new technologies, particularly information and communication technologies, and understand the impact of those technologies on society.' Flowing from this, the National Education Performance Monitoring Taskforce has been established to promote action relating to the national reporting of comparable educational outcomes, including information technology.

The Commonwealth Quality Teacher Programme, which commenced in 2000, is providing \$77.7 million¹ over three years for the renewal of teachers' skills and understanding in the priority areas of information technology, literacy, numeracy, mathematics, science and vocational education in schools. The Programme is focusing on teachers who completed initial teacher education ten or more years ago, teachers re-entering the teaching profession and teachers of disadvantaged students.

The Department of Education Training and Youth Affairs (DETYA) has commissioned work on a project to examine models of teacher professional development for the integration of information and communication technology into classroom practice. The first phase of the project involves a detailed examination of existing models of pre-service education and in-service professional development, both in Australia and overseas, across all key learning areas. Further, under the DETYA Science Lectureship Initiative, a number of projects promoting the future skills required to support the online economy are being funded.

The federal government is also helping industry to establish an Information Technology and Telecommunications (IT&T) Skills Exchange to address the current shortage of IT&T skills by providing initial seed funding of \$5 million, with industry contributing matching funding. The purpose of the Exchange is to improve the information on skills in demand, arrange for training programmes to meet those demands, and to promote the take-up of training and careers in IT&T. The Exchange is seeking advice from and working closely with a broad range of industry, education and training providers and other stakeholders in the interests of industry as a whole, with the aim of ensuring that there are enough people with the right skills to fill the jobs being created in the IT&T sector.

Infrastructure

A DETYA study, 'Bandwidth Requirements for the Education and Training Sector' (1999), was commissioned as a contribution to the National Bandwidth Inquiry being conducted through the Department of Communications, Information Technology and the Arts. The report highlighted the fact that the education and training sector is one of the largest users of telecommunications bandwidth in Australia, but needs adequate access to bandwidth at a competitive price if it is to exploit the potential educational benefits of information and communication technologies (see <http://www.noie.gov.au/bandtask/submit/submit.htm>).

In many parts of the education and training sector, funds are being used for infrastructure to support the information economy. In December 1999, the Federal Minister for Education announced allocations from the higher education Capital Development Pool for 2002. The pool supports new campus developments in suburban growth areas and regional centres, and the development of electronic infrastructure for the flexible delivery of education services. The emphasis in current projects is increasingly shifting to the judicious use of ICT to expand access and opportunities for learners. Further, additional funding was announced on 20 July 2000 for regional universities in Queensland, Northern Territory and northern New South Wales to upgrade their bandwidth. Allocations for 2001, 2002 and 2003 are approximately \$274 million per year.

The Framework for Open Learning Programme is a cross-sectoral DETYA initiative that facilitates and encourages the use of ICT throughout the education and training sector. A project under the programme is exploring innovative approaches to meeting the future requirements of the education and training community for high-speed online communications ('bandwidth'). Stage One is reviewing innovative approaches being used in Canada, the USA and Sweden in order to assess their applicability to Australia. If the overseas approaches are applicable to Australia, Stage Two will provide a more detailed examination of how these approaches (or local variants inspired by them) might be applied in Australia. The project is being managed by a Steering Committee with representatives of the education and training sector through the EdNA Reference Committee and DETYA.

Online content, applications and services

The EdNA Online public website (see <http://edna.edu.au/EdNA>) provides access to resources and services for all sectors of the Australian education and training community. EdNA Online is a unique, distributive and collaborative model, which has attracted widespread international interest. The website points to thousands of resources identified and contributed by Australian educators, and its services create communities of educators online, making it a meta-network of Australian education and training practitioners. EdNA Online is managed by education.au limited, a non-profit company owned by state, territory and federal ministers for education and training.

In vocational education and training, the Australian National Training Authority Ministerial Council recently agreed to specific annual national project allocation called the National Project for New Technologies and provides up to \$20 million per annum for the next five years. Further, the Authority has funded a range of Toolbox multimedia resources since 1998 to assist the online delivery of training programmes. In 1998, \$3.5 million were allocated for the Toolbox development project and twelve toolboxes were developed across a range of Training Packages. A further \$5 million was made available in 1999 and another thirteen toolboxes were completed in November 2000. Under Strategy 2000, the development of a further fifteen toolboxes was scheduled (see <http://flexiblelearning.net.au/productsandservices>).

The EdNA Reference Committee has established a Standards Sub-Committee to address the full range of technical standards issues relating to the use of information and communication technologies for education and training in an integrated and proactive way. Support is also being provided by the Reference Committee for the EdNA Metadata Standard and for Australian participation in the USA-based IMS Global Consortium Inc., of which DETYA is a member, representing the interests of the Australian education and training sector.

Policy and organizational framework

In February 2000, DETYA released the report 'Real Time – Computers, Change and Schooling', a national sample study of the information technology skills of Australian school students. The study provided a snapshot of the situation in May 1998. This was the first time that students, teachers, principals and school authorities had been surveyed on the acquisition of skills, resourcing and policy related to information

technology (see <http://www.detya.gov.au/schools/publications/RealTime.pdf>).

Another research project, 'Participation in IT&T in Education and Training', is currently investigating participation and characteristics of students in IT&T courses and subjects in schools, vocational and educational training, higher education, and through private providers. According to the Australian Department of Communications, Information Technology and the Arts (DCITA, 2000), the report "will identify and analyse barriers to participation in courses and progression to IT&T careers by under-represented student groups."

The project 'Unmet Demand for Places at Education and Training Institutions for Courses in the IT&T Industries' is

investigating a range of issues including the nature and extent of unmet demand for IT&T courses offered by Australian tertiary education institutions and the extent to which tertiary education institutions work with industry to meet industry skill needs.

Research is also being carried out into levels of access to, and levels of literacy in, ICT for learners in universities and vocational education and training, with the aim of ensuring that the best advantage is being made of the opportunities available by the application of ICT to education and training. (DCITA, 2000)

Regulatory framework

The Copyright Amendment (Digital Agenda) Bill 2000 was signed into law by the Governor-General on 4 September 2000. The education and training sector will continue to provide advice to the Attorney-General's Department about how its members are managing the new regulations. The Taskforce on Copyright Law is currently giving attention to the development of a training and awareness package to inform educators about their rights and obligations under the new legislation.

DETYA is continuing to represent the interests of the education and training sector on issues relating to the framework for the regulation and management of the .au domain space, particularly in relation to the future management of the .edu.au domain space. Further, DETYA is monitoring developments on the Privacy Amendment (Private Sector) Bill 2000 and the implementation of the Electronic Transactions Act 1999.

This focus on regulatory issues led to the functions of the former Office for Government Online being incorporated into NOIE in late 2000. Bringing these Offices together provided a coordinated approach to addressing technical, regulatory and social issues affecting government, business, education and consumers, in the take-up of online services and the development of the information economy.

Despite all this activity to promote the information economy, decisions to move into online learning at the institutional level are left to individual universities, which have the autonomy to determine modes of delivery. It is in this context, that the USQ provides the focus for an interesting case study, with the emphasis on change management at the institutional level.

2. CREATION AND ORGANIZATION OF USQONLINE

At USQ the initial transition to dual-mode status in 1977 was stimulated by a move to provide professional upgrading opportunities for teachers. The rapid expansion of dual-mode offerings is reflected in the fact that all five faculties are involved in the offering of 145 degree programmes via the distance education mode. Further, 36 of these programmes are now available online (see <http://www.usqonline.com.au>). All students have online access to a range of services that include discussion groups, library services, supplementary instructional resources incorporating links to relevant sites and a variety of student administration functions, including access to personal records of enrolment and academic results. In effect, the 20,000-plus USQ students (whether on- or off-campus) have access to a range of online services, whereas approximately 2,500 of these choose to study primarily online. How did all this begin?

2.1 Creation

The initial impetus for the move to online delivery occurred in 1995 when USQ was the only Australian university to be awarded an AT&T Global Learning Initiative research grant (US\$50,000). This research grant funded the development of the online delivery of the University's Graduate Certificate in Open and Distance Learning, the first complete programme to be offered totally online by an Australian university. The success of the initial online programme and the gradual expansion of the development of other online programmes led to a major strategic, organizational development initiative.

The rationale for the development of USQOnline emerged from strategic planning discussions among the USQ senior managers. There was growing concern that USQ's existence could be threatened by the emergence of the Internet as a powerful distribution channel, and the development of purely web-based business models for education services. The rapid rate of technological change and the rapidly growing number of education and training institutions embarking on Internet-based delivery meant that more and more institutions were becoming involved in distance education than at any other time in history. It was believed that as institutions throughout the world increasingly offered courses via the Internet, there would emerge a global lifelong learning economy (Taylor, 1999) in which organizations would face global competition for students, especially those involved in continuing professional education. The emergence of the global lifelong learning economy acted as a catalyst for change at USQ. With the endorsement of the Vice-Chancellor's Committee, a series of University and Faculty Assemblies was called to engender commitment to the USQOnline concept from all members of staff.

In joint presentations made by the Vice-Chancellor and the Director of the Distance Education Centre, the USQOnline proposal was placed in the context of global developments, and it was argued that the processes of education and training were unlikely to escape the influence of such significant changes, especially as the influence of the Internet continued to increase and the cost of access to information communication technologies continued to decrease. The view was also expressed that the information technology revolution would likely be much more significant than any previous revolution, and that the pace of change would probably be much greater. USQ's vulnerability to increased competition for off-campus students was contrasted with the university's potential leadership position in online education, given its well-established expertise and strong corporate commitment to distance education.

While continued efforts were made to engage the university's academic and professional community in the debate about the future of the institution, a small group of senior managers worked on the resource implications and associated business model for the proposed new mode of delivery. At one stage, a proposal was developed for the establishment of the Australian Global University Network, a national inter-institutional initiative. This proposal was actually

discussed with DETYA and, although it subsequently received in principle support from the Minister of Education with potential seed funding of \$5 million, the network did not engender adequate support against competing budgetary initiatives in Cabinet. The decision was then made to investigate the potential for developing a commercial partnership to fund USQOnline.

As this approach did not move the project forward, the USQ senior management executive team, with University Council approval, opted to change the liquidity ratio of university operations in order to commit \$3 million dollars to the development of USQOnline. Through the business arm of the university, the USQOnline initiative includes a major investment in a Hong Kong-based company, NextEd Ltd, that provides a virtual campus service to USQ and other institutions throughout the world. USQ not only became a foundation shareholder of NextEd Ltd, but also became a major customer of the company. Such a strategy enabled USQ to gain access to more resources and also to a wider range of technical and business expertise. This effective outsourcing of USQ's international virtual campus services demanded the establishment of a new organizational structure within the university for the management of USQOnline.

Key lesson

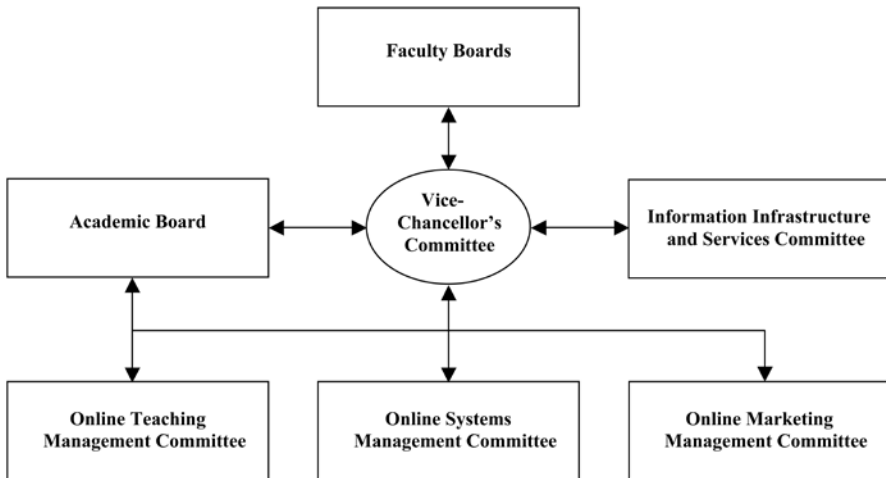
Ensure that the online initiative has the support of the senior executive management team. Sufficient allocation of human and fiscal resources needs to engender a reasonable chance of success for the project.

2.2 Organizational structure

Three new management committees, the Online Teaching Management Committee, the Online Systems Management Committee and the Online Marketing Management Committee respectively, were established (Figure 8.1).

From an organizational development perspective, the Vice-Chancellor's Committee is responsible for determining the range of courses to be offered online, decisions associated with the allocation of resources, and the establishment of the management structure aimed at implementing the USQOnline initiative. The Online Teaching Management Committee is essentially concerned with implementing the online teaching programmes and ensuring the appropriate professional development of staff. This is coordinated

Figure 8.1 Management structure of USQ online initiatives



through a series of Faculty Focus Groups, supported by the Staff and Student Support team. This latter team involves staff members from the Distance Education Centre, the Library, Student Services, the Office of Preparatory and Continuing Studies and Information Technology Services, who were previously involved only in various forms of discrete staff training programmes. Further, under the auspices of the Online Teaching Management Committee, the Research and Evaluation Focus Group is attempting to coordinate investigations into various aspects of the online teaching/learning environment on an institution-wide basis.

The addition of the online mode of delivery of courses previously offered only on-campus and through 'traditional' distance education approaches was managed through the existing multidisciplinary team teaching approach, which was initiated in 1977. It was, of course, not without its pedagogical and logistical challenges, with the standard team approach being supplemented by a series of pedagogically focused workshops offered to each discipline group, and a series of 'hands-on' training sessions to familiarize staff with the features of the delivery platform. While there has been healthy debate of numerous issues, including workloads, download times, evaluation, cost-effectiveness, online pedagogy and marketing, to name but a few, practically no

one has questioned the university's strategic commitment to the development of a significant e-learning capacity.

The Online Systems Management Committee focuses primarily on the technical interface between the outsourced virtual campus software and USQ's existing management information systems and the associated review of course regulations. Given course accreditation considerations and the legacy of government legislation and reporting requirements, this task is far from simple. As well as academic and legislative considerations, the work of the committee incorporates the establishment of effective technical interfaces between the outsourced virtual campus platform and existing student record systems, electronic library services and financial systems. The committee works essentially within the existing policy and regulatory structures of the university, but with the ultimate goal of enhancing student choice and flexibility.

The Online Marketing Management Committee (OMMC) – consisting of marketing specialists from the Faculty of Business, the Director of Marketing and Public Affairs, the Marketing Manager of the International Education Centre, the Corporate Relations Manager, and the USQOnline Commercial Planning Officer (a new position) – has challenged the conventional role of academic staff by involving the teaching staff in decisions about marketing through the establishment of an approach based on product managers. With the guidance of the OMMC, product managers nominated by the faculties began working on the creation of business plans for each online programme. In this task, they were supported by the Commercial Planning Officer and the USQ Account Manager of the commercial partner.

Decisions emanating from the OMMC and endorsed by the Vice-Chancellor's Committee have since led to the establishment of the USQOnline Support Centre, aimed at engendering effective and timely responsiveness to enquiries from prospective students and monitoring the efficacy of particular marketing activities. The involvement of staff in the commercial aspects of the online initiative is further reflected in the endorsement of another OMMC proposal to establish an incentive scheme, with 2 per cent of gross revenue being distributed as follows: 1 per cent to the teaching team at the course level, and 1 per cent into a bonus pool for all members of the USQ staff establishment, irrespective of their specific roles, or even their direct involvement in

online activities. Yet another initiative stemming from the activities of the OMMC will provide staff with the opportunity to become part of USQNet, an international network of marketing representatives, who are compensated financially for the recruitment of new students for USQOnline. Such initiatives are a further indication of the more fluid organizational structure and flexible management processes that are emerging to support USQOnline.

The increasingly fluid and flexible nature of USQ is also reflected in the restructuring in January 2000 of the university's marketing function, followed by the replacement in June 2000 of the OMMC with the Marketing and Media Coordination Committee. The need for a more coordinated corporate approach to marketing was recognized by the OMMC, which generated a proposal (subsequently endorsed by the Vice-Chancellor's Committee) for the establishment of the new Committee, which includes the dean of each faculty. This new initiative is aimed at promoting a corporate approach to the projection of the USQ brand name. The new marketing management structure reflects the university's growing commitment to the strategic importance of e-learning. Further evidence of such a commitment was the establishment (at the behest of the Vice-Chancellor) of a new executive management position: Vice-President (Global Learning Services), in June 2000. This new position, which entails oversight of the Distance Education Centre, the Library and Information Technology Services, highlights the growing importance of the need to generate an effective synergy between information, pedagogy and technology in the increasingly competitive environment of global higher education.

Key lesson

Establish a formal organizational structure for reporting and managing the project, so that the online initiative becomes an integral part of mainstream university decision-making structures.

2.3 Current programme

Given its long-standing emphasis on distance education and its servicing of the lifelong learning market, it was a natural step for USQ to take an active interest in online learning and USQOnline students are classified in the student record system as off-campus students. To date USQ has loaded 180 single online courses, which gain credit towards 48 of

the University's degree programmes. From a baseline of 398 student courses enrolled in USQOnline programmes in the first semester of 1999, enrolments have grown steadily to 4,545 student courses in the second semester of 2003. Further, these students are from at least 45 countries, including Botswana, Cambodia, Czech Republic, India, Japan, Kiribati and Puerto Rico.

The current ratio of off-campus to on-campus students expressed as a percentage (75 per cent to 25 per cent) is a manifestation of USQ's mission 'to be a leader in international and distance education'. The emphasis on distance education has had a significant impact on the student profile, with a much smaller percentage of school leavers and a larger group of mature-age students (Table 8.2) exemplifying the trend towards lifelong learning.

A wide range of programmes is currently available through USQOnline. Thirteen areas of study are offered with more than thirty programmes and fifty-five individual courses.

When the USQOnline initiative on the NextEd Ltd platform was launched in the first semester of 1999, there was a total of 398 students operating solely online, of whom 40 were new students. In the following four semesters, USQOnline attracted new students according to the following pattern, increasing from 40 to 69, to 167, to 293, to 285, to 1,200 in the first semester of 2001. USQOnline enrolments to date have reached a total of 27,024. Further, almost

Table 8.2 Nature of USQ's student population in 2001

Age	Off-campus %	On-campus %
Under 20	3.9	43.9
20–24	17.9	30.9
25–29	22.4	8.9
30–34	19.1	5.6
35–39	14.9	4.7
40–49	17.4	4.9
50–59	4.4	0.9
Over 59	0.4	0.2
Total	100.0	100.0

Source: USQ internal documents.

without exception the response of these students to the e-learning experience has been universally positive.

The demand for online programmes offered by each of the five faculties varies considerably. As expected the greatest demand has been in Business and Commerce with 82 per cent and Education with 14 per cent. Nevertheless, the university is optimistic that demand will continue to grow, and is seeking to place more emphasis on the benefits of online study in its marketing efforts.

Key lesson

Adopt a commercial perspective on the project, incorporating market research and the development of a detailed business plan, and do not expect immediate cost-effectiveness, but be prepared to invest in the future.

3. ADMINISTRATIVE ISSUES

3.1 Administration

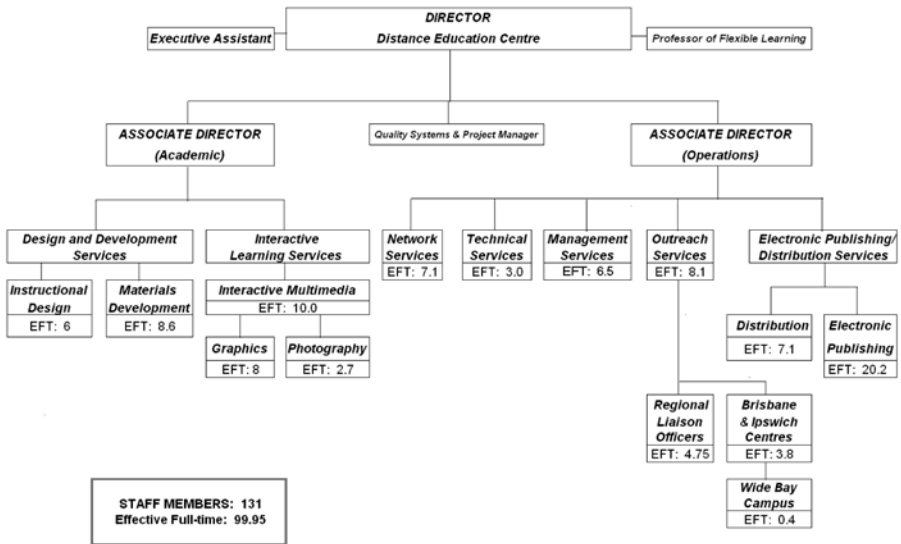
The administration of USQOnline was accommodated with the existing centralized structure for courseware design and development that has existed at USQ since 1977, when distance education delivery was initiated. This infrastructure had grown into a well-resourced and sophisticated multidisciplinary team approach reflected in the staff establishment of the Distance Education Centre (Figure 8.2). The liaisons with NextEd Ltd and the faculties is managed by the Head of Course Team Operations with the support of an administration officer.

Members of the course teams for USQOnline have access to the following services provided under the auspices of the Distance Education Centre.

Design and development services

The instructional design team works with subject-matter specialists to ensure effective teaching and learning strategies are utilized in the distance education packages. Workshops for writers/developers of distance learning and online materials are conducted by the team to familiarize subject-matter specialists with the range of technologies applicable to distance education and the most effective strategies used to achieve learning objectives. Workshops are followed up with individual discussion in the course team, which are more content specific and detailed.

Figure 8.2 USQOnline Distance Education Centre staffing establishment



Interactive Learning Services

Interactive Learning Services provides multimedia, audiovisual, graphic and photographic support, along with consultation on media design and applications, for the academic programme, research projects and promotional activities of USQ and other clients. The Interactive Multimedia section designs and develops courseware and interactive learning tools delivered using CD-ROM, Intranet/Internet or floppy disk. The Video and Audio sections specialize in designing and producing broadcast-standard educational, training and promotional programmes for distribution on cassette, CD or the Intranet/Internet. The Graphic Design studio provides creative and technical artwork services including graphic, multimedia and web design, animation, illustration and desktop publishing. Photography provides a complete digital and traditional, studio and location, photographic service and consultancy. A duplication service is also provided for audio, video, CD-ROM, floppy disks and video standards conversion.

Electronic Publishing Services

Electronic Publishing Services is responsible for publishing study materials and examinations for external, internal and online students. About 2,500 sets of master files for learning packages are produced each year. Master copies are fully electronic, enabling digital storage and easy file transfer across campus and elsewhere, as well as on-demand printing. This also provides the platform for transformation on to CD-ROM and the Internet.

Outreach Services (student support)

Outreach Services manages an extensive Regional Liaison Officer Network, organizes telephone tutorials and audiographic tutorials, residential schools (on-campus periods that allow the use of on-campus equipment, discussions with staff and physical interaction with fellow students) and provides an efficient and effective study support system. Outreach Services has four studios, which are equipped with teleconference, audiographic and desktop videoconferencing facilities. In addition, Outreach Services manages the USQOnline Support Centre and maintains an electronic notice board, which provides up-to-date information that students can access at any time.

In 1997, under the auspices of the International Standards Organization (ISO), the Distance Education Centre achieved ISO 9001 quality accreditation for the following processes:

- courseware design and development;
- project management;
- audio and video production;
- photographic services;
- distance learning evaluation;
- examinations preparation and production;
- telecommunications support;
- microcomputer support;
- systems administration;
- courseware production and distribution;
- multimedia development;
- graphics design;
- instructional design research;
- electronic publishing;
- student support systems;

- technical consultation, installation and repairs;
- network design and maintenance;
- organizational management.

The allocation of time and resources to achieve ISO 9001 accreditation is symptomatic of the need for USQ, a relatively small, relatively new, regional university, to differentiate itself from the competition emerging in the global higher education economy, which threatens USQ's distance education market. It was also stimulated by an emerging trend whereby an increasing number of business organizations and government departments require ISO accreditation as a prerequisite to any business partnership. Further, the achievement and maintenance of ISO accreditation reflects USQ's commitment to continuous improvement and organizational development as a corporate management strategy. Fortunately, its size, ethos and history mean that USQ does not face some of the potentially insurmountable challenges to change of some of the long-established traditional universities. Nevertheless, the financing and management of online delivery is still the greatest organizational development challenge facing USQ.

Key lesson

Deploy a multidisciplinary course team approach to courseware design and development to assure the quality of online pedagogy.

3.2 Costs and financing

Providing an accurate breakdown of the costs of the USQOnline activities is not feasible within the context of the present case study (it may never be feasible!), since the online initiatives are inextricably linked to the myriad of mainstream activities involved in the design, development and delivery of distance education courses in general. The situation is further complicated by the 'commercial-in-confidence' nature of the agreement with NextEd Ltd; which is responsible for taking the original courseware files created by USQ and loading them on the delivery platform. The delivery platform is based on a somewhat customized, online learning management system devised by Blackboard. In the agreement with USQ, NextEd Ltd is responsible for the provision of technical support on a 24/7 basis, and has also recently signed a marketing agreement to provide marketing services on a payment-by-results basis. At the same time, USQ undertakes marketing activities

for its online courses and provides student support services through the Distance Education Centre's Outreach Services section.

From the aforementioned original allocation of \$3 million to support the USQOnline initiative, the university invested \$1 million to become a foundation shareholder in the establishment of NextEd Ltd. A sum of \$600,000 was distributed equitably among the faculties for their work in supporting the development of online courseware, and the remainder has been used to pay for the loading of courseware for the almost 200 separate courses underpinning the programmes offered via the NextEd Ltd platform.

An analysis undertaken by senior staff of the university's Distance Education Centre of the fixed costs associated with the development of courseware for online delivery, compared to the fixed costs for the development of more traditional distance education courseware, demonstrated that these costs were more or less the same. This outcome was in direct contrast with some of the more extravagant claims about the cost of mounting online education courses made in the popular press. This outcome, however, should be considered in the context of USQ's considerable investment in the necessary infrastructure and associated efficiency and effectiveness of USQ's externally accredited, quality assurance system.

Key lesson

Ensure that a senior manager has executive responsibility and associated accountability for the financial management of the project.

3.3 Technological infrastructure

For many years, universities like USQ with a significant commitment to distance and open education institutions have been at the forefront of adopting new technologies to increase access to education and training opportunities. Distance education operations have evolved through the following four generations: first, the Correspondence Model based on print technology; second, the Multimedia Model based on print, audio and video technologies; third, the Telelearning Model, based on applications of telecommunications technologies to provide opportunities for synchronous communication; and fourth, the Flexible Learning Model based on online delivery via the Internet. Although many universities are just beginning to implement fourth-generation distance education initiatives, the fifth generation is already emerging based on

the further exploitation of new technologies. The fifth generation of distance education is essentially a derivation of the fourth generation, which aims to capitalize on the features of the Internet and the web. To place the fifth-generation Intelligent Flexible Learning Model into a meaningful conceptual framework, it is first worth reviewing briefly certain features of the previous four generations of distance education. Some of the characteristics of the various models of distance education that are relevant to the quality of teaching and learning (Taylor, 1995) are summarized in Table 8.3, along with an indicator of institutional variable costs (Taylor et al., 1993).

The USQOnline initiative is essentially fourth generation, but is moving rapidly to the implementation of fifth generation technologies.

Over the years the university has developed an extensive technology infrastructure for the support of its distance education operations. As early as 1994, USQ undertook a strategic commitment to develop the University Campus Academic Network project, whereby all staff would have a networked computer on their desk. Through USQFocus (the staff Intranet) all staff, and through USQConnect (the student Intranet) all students have access to a wide range of web-based information services, as follows.

- All USQ students have e-mail addresses and web access.
- USQConnect student Intranet has the following information and services available to all students:
 - access to library catalogues, electronic indexes, journals and articles, and full-text databases;
 - secure access to enrolment details, course assignment and end-of-semester results;
 - faculty information on departments, courses, policies, and staff details;
 - electronic course materials for most courses;
 - Outreach Electronic Noticeboard for external students, including Residential School and telephone tutorial timetables, learning circles and other information;
 - e-mail for communicating with academic and support staff and other students;
 - conferencing and group communication;
 - Internet access to learning resources.

Table 8.3 Models of distance education – a conceptual framework

Models of distance education and associated delivery technologies	Characteristics of delivery technologies					
	Flexibility			Highly refined materials	Advanced interactive delivery	Institutional variable costs approaching zero
	Time	Place	Pace			
First generation – The Correspondence Model						
• Print	Yes	Yes	Yes	Yes	No	No
Second generation – The Multimedia Model						
• Print	Yes	Yes	Yes	Yes	No	No
• Audiotape	Yes	Yes	Yes	Yes	No	No
• Videotape	Yes	Yes	Yes	Yes	No	No
• Computer-based learning (e.g. CML/CAL/IMM)	Yes	Yes	Yes	Yes	Yes	No
• Interactive video (disk and tape)	Yes	Yes	Yes	Yes	Yes	No
Third generation – The Telelearning Model						
• Audioteleconferencing	No	No	No	No	Yes	No
• Videoteleconferencing	No	No	No	No	Yes	No
• Audiographic communication	No	No	No	Yes	Yes	No
• Broadcast TV/radio and audioteleconferencing	No	No	No	Yes	Yes	No
Fourth generation – The Flexible Learning Model						
• Interactive multimedia (IMM) online	Yes	Yes	Yes	Yes	Yes	Yes
• Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes	Yes
• Computer-mediated communication	Yes	Yes	Yes	Yes	Yes	No
Fifth generation – The Intelligent Flexible Learning Model						
• Interactive multimedia (IMM) online	Yes	Yes	Yes	Yes	Yes	Yes
• Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes	Yes
• Computer-mediated communication, using automated response system	Yes	Yes	Yes	Yes	Yes	Yes
• Campus portal access to institutional processes and resources	Yes	Yes	Yes	Yes	Yes	Yes

Source: Taylor, 1995; Taylor, Kemp and Burgess, 1993.

- The full range of Library services is available to all students through electronic media. For example:
 - the Library is a foundation member of the Local Interlending and Document Delivery Administration consortium, which has developed world-leading document delivery management software for the improved management of inter-library loans traffic. USQ will also be the first to use the system to manage requesting and delivery of required library materials by external students;
 - the Library is about to take delivery of Virtual, a third-generation, client-server management system that will provide catalogue information, and improve collection management and the use of computing resources.
 - the Library has emphasized access to full-text resources, originally on CD-ROM and now on the Internet, and currently has subscriptions to 151 databases in 17 separate services, including 15 databases that contain full-text articles or data – available to all students on- and off-campus (see <http://www.usq.edu.au/library/eservices/datahead.htm>).
 - the Library assists students and staff to develop information literacy through a package entitled 'eGO', which introduces sound principles of information literacy in searching and using resources and evaluating their quality. Library Liaison Officers also locate, evaluate, present and use high-quality websites, which support and enhance teaching resources and learning opportunities.
- A total of 600 PCs and Apple Macs are available to students via fully networked student computer laboratories, with timetabled and non-timetabled labs available twenty-four hours per day at the main campus in Toowoomba, at the Wide Bay campus, and at the Ipswich and Brisbane Study Centres. All labs have access to e-mail, discussion groups and Internet and have latest printing technology, as well as network connection for laptops.
- Dial-up modems are available twenty-four hours per day.
- Help Desk for online students is available twenty-four hours per day, seven days per week, every day of the year.
- An Internet access quota system has been established to encourage responsible Internet use, including free access for study requirements, plus a quota for casual access.

- Trials with Apple and Lucent wireless technologies are currently under way.
- The staff Intranet USQFocus allows all academic staff and associated administrative support staff to:
 - access general and course news groups and log on to USQConnect, the student intranet;
 - add links to ancillary study materials for USQConnect;
 - access Library resources;
 - view details relating to enrolled students;
 - create and view course lists and course materials;
 - download course list information to a microcomputer;
 - look at past examination papers;
 - obtain door combination codes for certain computer labs;
 - submit work requests to ITS;
 - view current undrawn leave balances (vacation time); and
 - add their own links to the USQFocus menu.
- Online application and enrolment is available via USQOnline and USQConnect.
- Students can drop/add courses, change personal details, enrol in tutorial groups and laboratory classes (via the Student Enquiry and Tutorial System), and contact departments and support services electronically.
- Many student services are provided through alternative media, including telephone counselling, the availability of self-paced learning support and careers advice packages, the use of Internet and web-based chat groups, e-mail counselling and study support provided for rural and remote students.

At USQ the strategic move to the online environment was a natural step based on almost twenty-five years of innovation in flexible delivery of education programmes. The central role of ICT in USQ operations is supported by the development of an organizational culture capable of generating and sustaining innovation as a corporate, rather than individual, ethos. This organizational culture developed as a result of a series of policy and structural initiatives based on USQ's guiding objective: 'To be a leader in flexible learning and the use of information and communication technologies in the tertiary education sector.' This objective generated a significant investment in ICT over many years, which has been enhanced through the university's access to the NextEd Ltd mirror site network.

While this infrastructure is available to other institutions that are the customers of NextEd Ltd, USQ has the valuable legacy of a well-trained workforce with extensive access to online technology, and considerable experience of working in the multidisciplinary team environment necessary to exploit the potential pedagogical efficacy of online learning. In essence, it is worth noting that the technology infrastructure is a necessary, but not sufficient, element of success in the global lifelong learning economy.

Key lesson

Ensure that 24/7 technical support is available for both staff and students.

3.4 Intellectual property

Consistent with the management of all aspects of USQOnline, intellectual property issues are managed under the auspices of extant university policies, there is no special provision made for courseware developed for online delivery. In effect, the university may claim ownership of all intellectual property produced by employees in the course of their employment by the university. While this may seem somewhat draconian, the university also seeks to assist staff members to exploit the commercial potential of intellectual property, based on a formula of 60 per cent to the originator, 20 per cent to the university and 20 per cent to the organizational unit in the university nominated by the originator. This policy is generally well received.

Key lesson

Have a proactive, inclusive approach to policy development and subsequent policy dissemination.

4. ACADEMIC ISSUES

4.1 Programme development

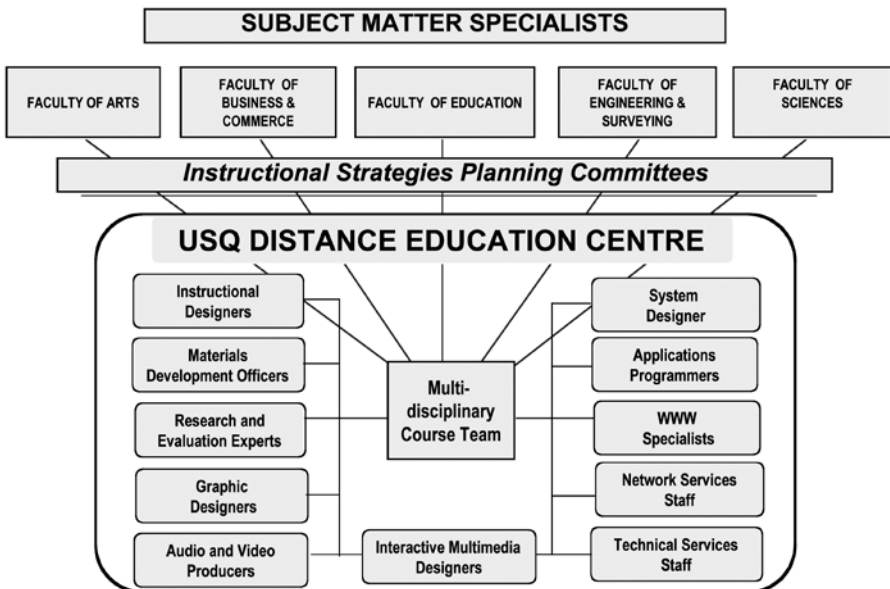
USQ has institutionalized a multidisciplinary course team approach (Figure 8.3) for developing its distance education programme. For the more than 2,000 courses delivered via the distance education mode each year, the Dean of the relevant faculty is responsible for the academic content of the courses, while the Director of the Distance Education Centre is responsible for the instructional quality of the

learning materials. In practice this means that the dean of the Faculty appoints one or more subject-matter specialists to the team, while the Director of the Distance Education Centre appoints an instructional designer, a materials development officer, plus specialists in audio, video, graphics and computer-managed learning as required. This same process is applied to the courses that constitute the programmes developed for USQOnline.

Once the course team has prepared an instructional blueprint for the course, it is referred to the relevant faculty’s Instructional Strategies Planning Committee (ISPC), which acts as an advisory group and essentially fulfils a quality-control function. Specifically, the ISPCs were established to ensure that:

- staff involved in the development of instructional – including online – materials are adequately prepared for the task;
- limited resources are used in the most cost-effective manner;
- teaching methodologies and academic content are appropriate to achieve the objectives of each course; and

Figure 8.3 USQOnline Distance Education Centre multidisciplinary course team approach



- adequate coordination occurs between the individual courses within a programme or strand of programmes.

A key aspect of the operation of the ISPCs is the review of the instructional development blueprint generated by each course team prior to the actual preparation of instructional materials. The development of such a blueprint is fundamental to the design phase of material development as outlined in Table 8.4.

In the design phase of the process, the instructional designer works with the subject-matter expert(s) to formulate a blueprint for instructional development and delivery in much the same way that an architect provides a blueprint for a building, which is subsequently constructed according to required specifications. This design phase entails a systematic, fine-grained analysis of the learning experiences required – in other words, developing the necessary knowledge and cognitive skills – to achieve the desired outcomes of the teaching programme. The amount of time required for this phase will, of course, depend on the complexity of the learning task and on the range of media required. Applying such a systematic instructional design process will determine which media-mix will be required for each project and which other media specialists should be involved in the development phase.

Once the blueprint has been ratified by the ISPC, the development phase is initiated, and specifications and timelines are determined during the design phase. If a range of media is to be used, the development phase can be quite complex, demanding a careful orchestration of a variety of inputs from experts in audiovisual production, scriptwriting, graphic arts, systems design and computer programming. In the first instance, the instructional designer, whose expertise includes matching media with learning requirements, is the best person to act as project leader, though at various stages the audiovisual expert or computer specialist will need to assume executive responsibility for certain aspects of instructional materials development. Similarly, the subject-matter expert must have the final say on matters of academic content.

It is worth noting that this multidisciplinary team approach acts as an effective mechanism for staff development, especially for those staff members who have no formal qualifications in education. Almost without exception, subject-matter specialists report that their face-to-face teaching is improved substantially as a result of their involvement

Table 8.4 Instructional materials design phase

Phase	Team members	Responsibilities
Design	Instructional Designer + Subject-Matter expert(s) + Materials Development Officer	<ul style="list-style-type: none"> • Generate a detailed instructional development blueprint • Prepare a timeline for the project
Development	Instructional Designer	<ul style="list-style-type: none"> • Train the subject-matter expert(s) to use the blueprint for development • Coordinate the production of learning materials
	Materials Development Officer	<ul style="list-style-type: none"> • Format and edit instructional materials • Implement procedures associated with maintenance of databases (course specification, assignment, CMA, mailing), residential school, telephone tutorials, copyright, etc.
	Subject-Matter expert(s)	<ul style="list-style-type: none"> • Produce learning materials (written instruction, self-assessment questions, scripts, CMA, etc.) according to the instructional blueprint
	Media specialist(s): <ul style="list-style-type: none"> • audiovisual • computing • graphics 	<ul style="list-style-type: none"> • Produce learning materials according to prescribed medium and design
Evaluation	Total Development Team	<ul style="list-style-type: none"> • Review and revise learning materials

in such a systematic instructional design process. Further, the USQ Distance Education Centre approach has proved sufficiently robust to support a number of open learning initiatives in a wide range of commercial and industrial settings, which suggests that this type of multidisciplinary team approach could well be applied across a wide range of institutional contexts. Indeed, the systemic management of courseware design, development, production and distribution has been incorporated into a quality assurance system, which is potentially transferable to other organizations.

Key lesson

Document programme-development processes explicitly and have a proactive approach to the evaluation and continuous improvement of systems and services.

4.2 Teaching

Within the context of USQOnline, the essential features of a fourth-generation e-learning environment support a learning process that is interactive, non-linear and collaborative. An interactive study chart serves as a basic navigational tool, which sets the broad parameters of the subject-matter content to be investigated, and lists a number of key electronic references that are hot links. In addition, the students are free to surf the Internet for supplementary teaching-learning resources that meet their specific needs. They are also able to upload and download assignments, with those of sufficiently high quality being added to the teaching-learning resources database for reference by future students. The interaction with courseware materials is, however, only one element of the interactivity built into the USQOnline pedagogical approach. Interaction with other students, teaching staff and other experts, who act as mentors, is achieved through the use of Computer Mediated Communication (CMC), primarily through the deployment of asynchronous discussion groups. Students are encouraged, and in many cases required, to communicate through various electronic discussion groups, established for specific content areas as well as for informal social interaction.

Fundamental to USQ's approach to online pedagogy is the effective use of asynchronous CMC for ensuring effective interactivity, which is generally regarded as an essential feature of effective teaching. It is worth noting that there is a qualitative difference between a traditional on-campus tutorial (real-time verbal communication) and computer conferencing (asynchronous written communication), with the reflective and precise nature of the latter being very different from the spontaneous and less structured nature of oral discourse. Computer conferencing is therefore not just another technology, and its capacity to rehumanize distance education represents a qualitative shift that has the potential not only to reshape learning at a distance, but also to pervade conventional education systems. Further, and more important, in the context of fifth-generation distance education technology, CMC provides a rich source of thoughtful interactions, which can be structured,

tagged and stored in a database and subsequently exploited for teaching purposes on a recurring basis through the application of automated response systems. It is this judicious use of automated response systems that has the potential to transform the cost-effectiveness of distance education and, thereby, to meet the growing demand for access to lifelong learning.

The effective use of CMC is presently constrained in an important way. It is still a function of the traditional working practices of universities, wherein the same academic staff member usually does everything, including teaching, providing academic support and assessment for a group of students. In effect, the current applications of fourth-generation Internet-based delivery tend to generate resource-allocation models similar to tutorial-based on-campus teaching. Indeed, it is still a fear of many academics initiating an online teaching programme that they will be overwhelmed by e-mail requesting support from individual students. While such fears can be allayed by the use of 'one-to-many' communication systems such as bulletin boards, mailing lists and threaded discussions, the underlying resource model is not significantly different from conventional on-campus teaching, with a staff member being necessary to manage groups of approximately twenty students to maintain a reasonable quality of interaction and academic support. In contrast, the fifth-generation Intelligent Flexible Learning Model has the potential to deliver major economies of scale in managing teaching and academic support through the exploitation of automated response systems.

In the USQOnline approach, many teaching staff make use of discussion groups, which entail students posting 'reflections' via the asynchronous CMC system. The teaching staff also post comments, which are aimed at engendering student engagement and ensuring that the focus and depth of the online threaded discussions are appropriate to achieve the desired learning outcomes. In the same vein, members of the teaching staff respond to student questions posted to the discussion group. Development of a detailed response to a searching student query naturally takes time. The benefit of the system is that the communication is on a 'one-to-many' basis, so that all students may benefit, not just the one who asked the initial question. Further, experience demonstrates that other students often comment on the issues raised, thereby enriching the depth and quality of the dialogue. Such interactions may take place in conventional classroom settings,

but the difference is that they are ephemeral and not documented for detailed reflection as they are in the CMC system. There is no doubt that many of the comments posted to the asynchronous discussion groups are valuable for teaching purposes. Storing such interactions in a relational database is technically straightforward, and provides a rich resource for mining by keyword matching, so that such pedagogical resources can be used to assist new students time and time again through the operation of the automated response system.

The development of online pedagogical systems at USQ has reached the point where prototypic, intelligent-object databases can be searched by prespecified metadata. On receipt of an electronic query from a student, the search engine seeks an appropriate match with a previously asked question, which, if successful, triggers a personalized response to the current question without concurrent human intervention. At this stage of development, a tutor must check the validity of the match between the current question and the answers generated automatically from the database before forwarding them to the students with a single 'click'. Such a quality-control mechanism may become redundant in the future. If no appropriate match is discovered in the database of previously answered questions, the query is automatically routed to the relevant tutor for an appropriate response, which is then added to the database with a single point and click. Depending on the pedagogical design of the course, these responses can be directed to the whole cohort of students, to groups of students, or to individuals. The system has the advantage of providing more or less immediate pedagogical advice to students, a significant increase in institutional responsiveness at minimal variable cost.

Key lesson

Have a proactive approach to staff development and student support.

4.3 Learning

While the pedagogical approach underpinning USQOnline is to engage students in interaction especially through the use of asynchronous discussion groups, and to provide timely feedback to student queries and assessment submissions, students also have access to a well-established student support system managed by Outreach Services in the Distance Education Centre. The extensive range of support services provided to students can be reviewed on the USQOnline website.

Evaluation surveys have demonstrated that USQOnline students, almost without exception, are very satisfied with the support provided by the university. This outcome is also likely to be a function of the fact that USQOnline is attracting early adopters of the technology, with less than 3 per cent of students describing themselves as novice users of the Internet, while 26 per cent believed they were highly proficient, and the remaining approximately 71 per cent thought of themselves as competent. The largest variation in student perceptions tended to focus on the responsiveness of teaching staff, with some students complaining that some staff members were too responsive and therefore demanding too much of their time. This is not an insignificant issue. One of the university's current research projects is investigating the staff-student engagement ratio in an effort to generate guidelines for optimal patterns of interaction. This will help to define realistic and appropriate standards so that both staff and students can have realistic expectations for participation in online interaction.

Students are making the most of the flexible access to learning opportunities offered via USQOnline, and indications are that the performance of online students is at least as good as that of students using other modes of study. Indeed, many of the online students have produced academic work of the highest quality. A more comprehensive analysis of the performance of students in this mode of study is currently the subject of an internal review.

Key lesson

Have a proactive approach to ensuring student engagement in the asynchronous online discussion groups.

5. COOPERATION

The USQOnline project entailed a critical cooperative relationship with NextEd Ltd for the provision of virtual campus services. Since USQ became a foundation shareholder as well as a major customer of NextEd Ltd, the relationship between the university and its commercial partner is complex. It is covered by an extensive legal contract between the parties that contains a non-disclosure clause, which means the agreement must be treated as 'commercial in confidence'. It is therefore not possible to provide a detailed analysis of this relationship here.

In general, however, it is fair to say that some of the general characteristics of the relationship were influenced by the inevitable culture clash between the value sets of a traditional educational institution and a dot.com start-up company. Although these differing perspectives tended to generate a certain 'energy' for the project, both parties adhered to a common risk-taking philosophy and a sense of opportunism with the aim of being among the first entrants into the e-learning market. On a philosophical level there was clear evidence of open-mindedness and synergy, but this was not always translated into operational efficacy due to the relative tardiness of the existing decision-making processes within the university and the inherent complexity of implementing a start-up company. While there was a considerable degree of continuity of key staff within the university, this was not the case with NextEd Ltd, which experienced significant changes in personnel in account management positions. There was, however, sufficient stability in key technical and senior management positions to ensure that USQOnline operations were not seriously disrupted. The relationship has endured, which indicates a successful collaborative venture.

Key lesson

Be flexible and adaptable.

6. FUTURE DEVELOPMENT AND INSTITUTIONAL CHANGE

6.1 Future development

There will be an ongoing effort to improve the quality of the e-learning pedagogy deployed in USQOnline, and an enhanced effort to generate an empirical research basis for USQOnline activities. However, at this point, the main impact of the USQOnline initiative has been to highlight the potential improvement in services to students and the potential reduction in the variable cost of delivering such services through the judicious deployment of web-based applications. Experience gained through USQOnline has led to the BETTER (Building for Enterprise and Teaching through Technology Enhanced Responsiveness) project. BETTER is an example of USQ's commitment to continuous improvement, and it incorporates the aforementioned fifth-generation distance education model (for more detailed information on the

BETTER project, see Section 6.2 on institutional change below). This is at the heart of what is referred to as USQ's e-University project, which has been planned thoroughly and is now in the early phases of implementation. USQ's e-University project was conceptualized in terms of three fundamental foci: the e-information repositories, a variety of e-applications, and the e-interface.

It is important to understand the essence of the e-University project to comprehend fully the impact of USQOnline on the complete transformation of USQ. In mid-1999, USQ selected the PeopleSoft enterprise software to update its existing business systems, which required major updating, both in scale and functionality. With a financial commitment of almost \$12 million and a project team of about forty specialists, the university set about creating an Integrated Business Information System based on the PeopleSoft software. This will ultimately lead to the implementation of PeopleSoft Version 8.0, which is totally web based and therefore entirely consistent with USQ's strategic commitment to the e-University project. Until then the existing system will provide an essential source of e-information in conjunction with the e-content management system that is at the heart of the Generic Online Offline Delivery (GOOD) project, which is an application developed locally at USQ.

In essence, the e-content management system incorporated in the GOOD project enables cross-media publishing from a single document source. This means that USQ is able to make courseware available to students in a variety of delivery modes (print, online, CD, DVD, etc.) from a single document source.

While the GOOD system provides a critical foundation for the efficient development and delivery of courseware, it will also provide an integral 'engine' for the provision of a range of e-applications, including e-enrolment, e-learning, e-commerce, e-publishing and, not least, e-administration. While the scope of the present paper does not allow for detailed descriptions of all of these e-applications, a more elaborate view of the approach to e-administration at USQ is warranted, since it has major implications for the use of technology to automate certain aspects of interaction with students.

The USQAssist initiative is deploying tracking and automation tools to manage the interaction between the university and both its existing and prospective students. As USQ already has to provide learning services to students in more than sixty countries, the

university has to face the challenge of being responsive to client needs twenty-four hours per day, seven days per week. The most efficient, cost-effective way to manage the 24/7 challenge is to deploy effective automation tools, as opposed to running three shift student service desks or employing online tutors on different continents (although USQ already does the latter). The aim of such a system is to provide effective and efficient service to existing and prospective students at minimal variable cost.

When the project was initiated in late 1999, there were thirteen toll-free telephone numbers and numerous help-desk facilities offered by various sections of the university. Each of these provided a valuable service and collected some useful information, but there was no systematic recording and processing of enquiries that would enable USQ to be more responsive to satisfying student needs. The deployment of e-customer relations management software, also known as e-care or e-service, will ultimately make possible the use of a single toll-free number integrated with an e-mail-based enquiry tracking system that will exploit the fundamental strengths of the Internet in enhancing communication and managing information. Using structured, intelligent databases, the knowledge generated by solving student problems or enquiries is being progressively stored and made available so that, wherever possible, students with equivalent or similar problems can have their enquiries dealt with immediately through the self-help, automated response capacity of the USQAssist system, thereby facilitating effective resolution at first contact.

As the intelligent-object databases become more comprehensive, enabling personalized, immediate responsiveness to an increasing number of student queries, the institutional variable costs for the provision of effective student support will decrease. The effective use of such technology not only improves the responsiveness of the institution, but also frees up student support personnel to provide personal assistance via e-mail dialogue or telephone as necessary. Further, every interaction is tracked from initiation to resolution, including flexible routing of enquiries using explicit rules-based escalation protocols to ensure timely and successful responsiveness, and subsequent statistical reporting of system performance. Tracking interactions with prospective students enables the collation of the effectiveness of institutional marketing strategies, an increasingly important strategic issue for universities

in the emerging global learning economy, which demands a highly effective public e-interface with the university.

A central feature of the fifth-generation distance education model is the development of a customizable e-interface, a campus portal through which students, staff and other stakeholders can engage with the university in a highly interactive and compelling manner. If well designed, this will enable universities to provide efficient service to students, and build effective, enduring relationships that could last a lifetime. However, to be successful in the emerging global lifelong learning market, a university needs to create a campus portal that will achieve a degree of interactivity, user friendliness and personalization that does not exist in the vast majority of campus websites today.

6.2 Institutional change

Apart from creating a new senior management portfolio, a Vice-President (Global Learning Services) to provide institution-wide leadership of USQOnline and the e-University project, USQ also allocated resources to create a small team of specialists to facilitate the integration of the aforementioned e-systems through the design and development of the e-interface, the campus portal, which is being managed under the auspices of what is known locally as the BETTER project.

The goal of the BETTER project is the functional integration and interoperability of the constituent components of the e-University project, including PeopleSoft, GOOD, USQAssist, USQ's existing Intranet systems (USQConnect and USQFocus) and the university's commercial initiative with NextEd Ltd, USQOnline. This integration is to be achieved through the development of an e-interface, entailing a complete reconceptualization of the USQ website. It is hoped that the benefits will be better service to students and more efficient workflows within the university. The public face of the university experienced through this campus portal will be a sophisticated e-interface that will provide a gateway to all USQ's information and services and respond in a personalized way to user profiles and individual needs.

The BETTER team was created by seconding the University Librarian to lead the project, with the support of her Executive Assistant, an e-Policy Development Officer (a new part-time appointee, who works three days per week), and the e-Systems Designer, the key local expert, who formerly managed the USQ Distance Education Centre's Network Services. Although relatively few in number, this core team

has extensive expertise and has considerable access to the various teams managing the constituent projects. Apart from the staffing budget for the BETTER team, the e-University project has access to \$2.5 million over the 2001–2005 period from the university's capital development funds, which can be expended not only on bricks and mortar, but also on technology – clicks and mortar.

While the major focus of the BETTER team is the redesign of the USQ website to enable a single gateway to the seamless integration of the underlying e-infrastructure and component projects, it is also the key focus for associated e-policy development, interoperability considerations, metadata and related standards issues, as well as for the development and implementation of a communications strategy to keep all staff members up to date with developments. The pathway of the BETTER project to the formal institutional decision-making structure of the university, including the Vice-Chancellor's Consultative Committee and the Academic Board, is through the Information Infrastructure and Services Committee. The comprehensive support for USQOnline within the broader context of the e-University project is clearly central to USQ's strategic planning, with the associated commitment of human and financial resources to sustain the necessary proactive approach to change management aimed at facilitating institutional transformation on a corporate scale.

7. THE POLICY DEVELOPMENT, PLANNING AND MANAGEMENT OF USQONLINE: LESSONS LEARNED AND RECOMMENDATIONS

It is important to consider that the lessons learned and associated recommendations are a function of the context in which the USQOnline initiative emerged. It is worth keeping in mind that USQ is a dual-mode institution with almost 75 per cent of its students off-campus, including 20 per cent offshore. The emerging threat of the burgeoning interest in online delivery and the development of the lifelong learning economy to the USQ market is a major issue on the strategic planning agenda of the university. The USQ reaction is unashamedly proactive; rather than keeping the Internet at arm's length through simply developing an attractive website, USQ has fully embraced the new technology, and is attempting a fundamental rethinking and rewiring of its structure and infrastructure as it strives to become an e-university for the rapidly emerging e-world.

In many universities developments in online initiatives are not systemic, but are often ‘random acts of innovation’ initiated by risk-taking individuals. In contrast, the implementation of web-based applications at USQ is strategically planned, systematically integrated and institutionally comprehensive. This essentially corporate organizational culture evolved over many years and is essentially a reflection of USQ’s guiding objectives.

While the USQ approach is clearly a function of the specific institutional characteristics and unique personalities that contribute to the ethos of a particular institution, as an exemplary case study it is primarily significant in highlighting the fact that to effect qualitative change in the teaching-learning process, it is necessary to generate qualitatively different teaching-learning environments, pedagogical practices and organizational infrastructures. The USQ case study demonstrates that technology alone is not sufficient to engender much-needed organizational development. The following guidelines may be of benefit to other organizations contemplating a move into the online learning market.

7.1 Policy development

- Ensure that the online initiative has the support of the senior executive management team.
- Ensure that sufficient human and fiscal resources are allocated to the project.
- Have a proactive, inclusive approach to policy development and subsequent policy dissemination.
- Take the opportunity to question existing policies, regulations and procedures with a view to improving service to both students and staff, and to enhancing efficiency and cost-effectiveness.
- Avoid potentially debilitating administrative complexity by making every effort to retain a single set of regulations for all students of the institution.

7.2 Planning

- Implement a communications strategy, with direct involvement by the senior executive management team, to engender ownership of the online initiative among the university community.

- Establish a formal organizational structure for reporting and managing the project, so that the online initiative becomes an integral part of mainstream university decision-making structures.
- Adopt a commercial perspective on the project and develop a detailed business plan.
- Ensure that a senior manager has executive responsibility and associated accountability for the financial management of the project.
- Do not expect immediate cost-effectiveness, but be prepared to invest in the future.
- Undertake market research and select programmes that appear to have market potential.
- Avoid discipline areas that demand major broadband capacity.

7.3 Management

- Ensure that a senior manager has executive responsibility and associated accountability for the project.
- Create new positions (e.g. project management, administration, marketing support) to support the project where necessary.
- Have a proactive approach to communication about the project within the university community.
- Have a proactive approach to staff development and student support.
- Deploy a multidisciplinary course team approach to courseware design and development to assure the quality of online pedagogy.
- Ensure 24/7 technical support for both staff and students.
- Document development processes explicitly.
- Have a proactive approach to ensuring student engagement in the asynchronous online discussion groups.
- Have a proactive approach to evaluation and the continuous improvement of systems and services.
- Engender an organizational culture which aims to become fast, flexible and fluid.
- Be flexible and adaptable in developing cooperative arrangements with organizations outside the university.

The USQOnline case study makes it clear that technology alone is not sufficient to foster and sustain much-needed improvement in the quality of service, teaching and learning, and interaction with students. If the power and sophistication of the increasing array of new technologies are to be exploited in higher education, an appropriate organizational development strategy capable of generating necessary restructuring is required. Such restructuring is difficult; learning to use technology effectively is difficult; both take time; both require sustained human intervention. Therein lies the challenge to the leaders and managers of higher education institutions in the twenty-first century.

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NOTE

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1. All amounts quoted in the case study are in Australian dollars, unless otherwise stated.

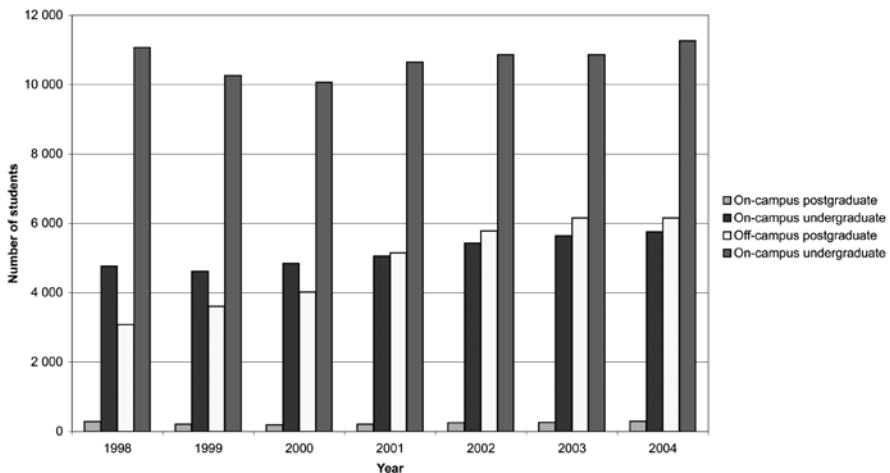
Developments since 2003

8. USQONLINE AND ITS CONTEXT

USQ's continuing strategic commitment to distance education and online learning is reflected in enrolment patterns. Over the past 10 years, on-campus enrolments have grown steadily from 4,542 to 6,050, while off-campus enrolments have grown from 11,506 to 17,421. For the past 5 years, off-campus enrolments have constituted approximately 75 per cent of USQ students (Figure 8.4). During the same period, the proportion of international students at USQ has grown significantly, to almost 29 per cent in 2004, with 763 students currently studying on campus in Toowoomba, and 5,421 students studying offshore. Of these, 1,397 individual students were recruited directly. The remainder were recruited through agreements with international agents, including a further 610 students (predominantly postgraduate) studying at other centres in Australia, primarily in Sydney.

These 2004 figures include 6,794 international students (Table 8.5), including 4,634 studying offshore in approximately 118 countries.

Figure 8.4 USQ student enrolment by mode and type of programme (1998-2004)



Source: USQ, 2004.

Table 8.5 USQ's international offshore students in 2004

Region/Country	2004 enrolments
Malaysia	1 605
Singapore	1 225
India	562
China	421
Hong Kong	396
Taiwan	259
Fiji	202
South Africa	195
Bangladesh	193
United Arab Emirates	172
Canada	142
Germany	124
Total (including 106 other countries)	6 794

Source: USQ, 2004.

9. ORGANIZATION AND CURRENT PROGRAMMES

The organizational structure associated with the USQOnline initiative is essentially the same, but USQ is currently reviewing the role of the Online Teaching Management Committee, which is likely to be subsumed by a new structure, the Learning and Teaching Enhancement Committee, which will focus on all USQ modes of delivery: on-campus, off-campus via the distributed learning centres, and online. This initiative reflects that online delivery is now part of the mainstream delivery of USQ programmes, which increasingly entail hybrid combinations of the modes of delivery.

The only other relevant development is a shift in the role of the Vice-President (Global Learning Services), which has been expanded to include the management of the faculties, and is now entitled Vice-President (Academic and Global Learning). This expanded executive role still includes oversight of USQ's e-University Project.

Since the launch of USQOnline in 1999, the number of programmes and courses that are available totally online has remained relatively static, while the number of students studying via this conduit has grown steadily (Table 8.6). At the same time, practically all USQ courses now have an online component, and all USQ students have access to a range of online systems, including USQConnect, USQAssist, online enrolment and the USQ Library, which has an extensive online collection.

10. ADMINISTRATIVE ISSUES

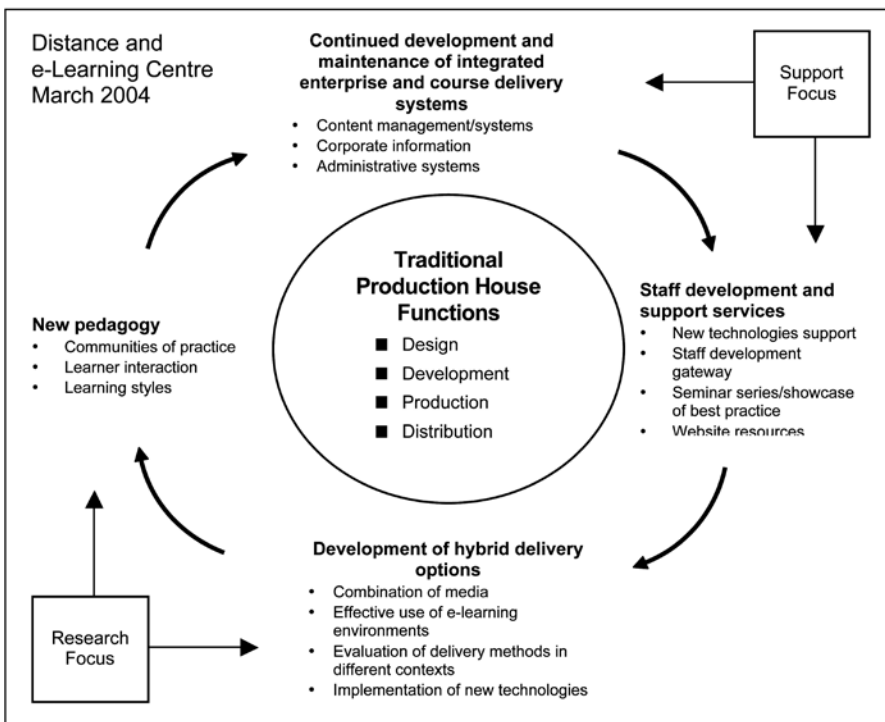
Late in 2003, the name of the Distance Education Centre was changed to the Distance and e-Learning Centre to reflect the change in operations of the centre, which has continued to evolve with the introduction of USQOnline in 1999, and the move towards hybrid modes of delivery in 2003. While USQ experimented with mixed-mode delivery in the early 1990s, the Vice Chancellor's Committee endorsed a more concerted effort on hybrid modes of delivery at its strategic planning retreat in 2003. Unlike most cost centres at USQ, the Distance and e-learning Centre has actually experienced a slight decline in staff numbers, despite a significant growth in student numbers and course offerings. This decline has been partially offset by increased efficiency in the use of online technology, including the web-based self-service initiatives underpinning USQAssist. The continuing implementation of the GOOD content management system will also ultimately lead to greater efficiency and greater flexibility in staffing

Table 8.6 Growth of USQOnline student enrolments

Year	Semester	Total enrolments
1999	Semester 2	289
	Semester 3	171
2000	Semester 1	1 766
	Semester 2	1 460
	Semester 3	1 087
2001	Semester 1	2 052
	Semester 2	2 113
	Semester 3	1 470
2002	Semester 1	2 588
	Semester 2	2 041
	Semester 3	1 688
2003	Semester 1	2 753
	Semester 2	2 640
	Semester 3	2 038
2004	Semester 1	3 161

Source: USQ, 2004.

Figure 8.5 Overview of Distance and e-Learning Centre functions



Source: USQ, 2004

to support the hybrid modes of delivery initiative. An overview of the current functions and associated activities of the Distance and e-Learning Centre is presented in Figure 8.5.

In parallel with USQOnline, the USQAssist initiative is deploying tracking and automation tools to manage the interaction between the university and its existing students. As USQ already has a need to provide global learning services to students enrolled in approximately ninety countries, the university has to face the challenge of being responsive to client needs twenty-four hours per day, seven days per week. When the project was initiated in late 1999, there were thirteen toll-free telephone numbers and numerous help-desk facilities offered by various sections of the university. Each of these services provided a valuable service and collected some useful information, but there was no systematic recording and processing of enquiries that

would enable USQ to be more responsive to satisfying student needs. Using structured, intelligent databases, the knowledge generated by solving student problems and enquiries is being progressively stored and made available. As a result, wherever possible, students with equivalent or similar problems can have their enquiries dealt with immediately through the self-help, automated response capacity of the USQAssist system, thereby facilitating effective first point of contact resolution.

Table 8.7 highlights the effectiveness of the USQAssist system, showing the increasing use of self-service, increased use of the web to submit questions ('Ask a Question' tab at USQAssist) and the reduced number of e-mails received (e-mail inboxes captured by the system for processing).

At the time of writing considerable increase in the use of USQAssist was anticipated during 2004 and beyond, based on a comparison of figures from February 2003 and February 2004, as shown in Table 8.8.

Table 8.7 Overview of USQAssist usage statistics (2001–2003)

Year	Answers viewed	Sessions (visitors)	Hits	Web questions	Email questions
2001 (9 months)	1 583	1 655	6 165	15	50 475
2002	47 576	48 983	172 174	2 162	94 141
2003	133 973	209 926	509 486	7 537	80 558
Comparison (percentage)	+ 36	+ 23	+ 34	+ 29	- 14

Source: USQ, 2004.

Table 8.8 Comparison of USQAssist usage statistics (Feb 2003–Feb 2004)

	Answers viewed	Sessions (visitors)	Hits	Web questions	Email questions
Feb 2003	7 870	8 144	30 629	397	6 407
Feb 2004	27 495	42 959	90 090	891	6 932
Comparison (percentage)	+ 71	+ 81	+ 66	+ 55	+ 7

Source: USQ, 2004.

11. LESSONS LEARNED

While online delivery is now part of the mainstream operations of USQ, the lessons learned from the USQOnline initiative, as outlined in the original case study, are still very much relevant.

Chapter 9

ATHABASCA UNIVERSITY, CANADA

Dominique Abrioux

1. ATHABASCA UNIVERSITY AND ITS CONTEXT

Established in 1970 as the Province of Alberta's fourth public university, Athabasca University (AU) is a single-mode institution that in 2002/03 provided online and distance-delivered undergraduate and graduate university-level courses and programmes to some 30,000 students.

Athabasca University has evolved from a primarily print- and telephone-based distance education model to an increasingly online learning environment. Partially as a result of this transformation, enrolment has more than doubled since 1995/96, and it is anticipated that AU will serve well in excess of 50,000 credit-seeking learners by 2010. This has been, and will be, achieved in spite of a significant drop in public funding of the post-secondary sector; per-student operating grants now represent (without taking into account inflationary adjustments) less than half of what they did in 1994/95.

Online learning got under way in 1994 with the opening of the University's first graduate programmes, an online Master of Distance Education and an electronically delivered Master of Business Administration, both of which were also the first online university programmes of their kind in North America. In contrast, the undergraduate curriculum (some 350 courses at that time) was essentially print-based with telephone support, though some pioneering academics were exploring online enhancements to their courses.

The early and mid-1990s also represented a very difficult period for AU, with government questioning the value the University added to the provincial post-secondary system. In the face of very difficult financial times, serious consideration was being given either to its closure or amalgamation with another (traditional) university. In an effort to revitalize the University and to demonstrate its significance, AU adopted in January 1996 a Strategic University Plan that emphasized, *inter alia*, two complementary strategies: on the one hand, becoming a leader in the application of digital communication systems to individualized distance education; and on the other hand, a renewed commitment to serving students.

During the period since 1995, AU has evolved into an online university. Even though its social mandate and concern with removing barriers to learning require it to continue to serve many undergraduate students via older distance education models, many of today's 550-plus courses that the University offers are online, and all courses incorporate electronic communication options.

In the context of these tremendous changes, and the concomitant doubling of both its enrolment and full-time staff since 1995, AU has embraced a new strategic planning process that sets goals, objectives and strategies through to 2006. Central to this discussion was the renewal of the principles and values that have guided AU since its infancy. The University's Mission Statement now reads:

Athabasca University, Canada's Open University, is dedicated to the removal of barriers that restrict access to, and success in, university-level studies and to increasing equality of educational opportunity for adult learners worldwide.

We are committed to excellence in teaching, research and scholarship, and to being of service to the general public. (Athabasca University, 2002)

This reaffirmation of the coupling of AU's educational and social mandates is most significant, coming as it does at the very time when the environment in which the University operates is characterized by reduced public funding, global competition, increased opportunities (as a result of e-learning applications) to focus on more advantaged learners with the ability to pay more for their ongoing education, and the emergence of a strong for-profit sector.

1.1 International context

Whereas AU historically has engaged in one-off international projects, generally providing assistance to developing countries (e.g. Thailand, Sri Lanka) through the auspices of the Canadian International Development Agency, the last few years have witnessed increased international activity that has focused on the independent and/or joint delivery of courses and programmes abroad. Since 1999, some 1,000 to 2,000 international students have enrolled at AU per year, and while a significant number of these registrations originate in the USA (more than 500), the other international students reside in about 70 different countries.

The online environment, the increasing facility that non-native English speakers have with English, and the phenomenon of borderless education that characterizes today's global educational environment have led AU to develop a strategic international plan that advocates a coherent, multi-faceted approach for the institution's role in the global higher education context.

First, and of paramount importance, is the recent decision to consider the USA as part of the University's primary market and to seek regional (and hence national) US accreditation. For AU, servicing the post-secondary American learner through online education originating in Canada is only marginally more difficult than providing quality courses, programmes and support services to Canadian students. Unlike the failed USA Open University initiative of the British Open University (which was obliged to reinvent itself, its products, and its infrastructure in order to penetrate a different market), AU can expand into the American market by building on its existing academic, support and administrative systems. The University thereby acts not only on its commitment to remove barriers that impede access to higher education, but it does so in a manner that will also result in a significant improvement in the University's financial position through economies of scale.

The second, complementary thrust of the University's international strategy seeks to position AU as a world-class open university through its international reputation for online learning models and research, and its institutional affiliations and globally dispersed student body. The newly enacted Strategic University Plan (SUP) is committed to: (i) increasing registrations (through its website) by internationally located students who possess appropriate English-language skills, and who

deem the primarily North American curriculum to be appropriate for their needs; (ii) entering into limited and selective partnerships not only for delivering courses and programmes, but also for increasing collaborative research in open and distance learning; and (iii) engaging in select international development and training projects, thereby developing its international reputation and fulfilling part of its social mission as a publicly funded open university (which is in sharp contrast, in this regard, to its for-profit, global competitors).

Achieving these objectives does not represent a goal in and of itself. International expansion, and the interrelationship of borderless education, research and reputation, are primarily about providing quality learning opportunities for AU's domestic market, and failure to brand the University in this way in the face of increased competition (both at home and from abroad) would in fact place AU's longer-term future as Canada's Open University at risk.

1.2 National context

In recognition of AU's increasingly out-of-province student population, the Province of Alberta revised the University's mandate in 1999 with a view to reflecting its national and international reach, and asserted that:

Athabasca University is a board-governed open university committed, through distance education, to increasing accessibility in Alberta, throughout Canada, and internationally to university-level study, and to meeting the educational needs of the workplace ... (Athabasca University, 1999).

Since higher education is a provincial responsibility in Canada, AU finds itself in the somewhat difficult position of serving mostly adult learners whose provincial and federal governments do not contribute to the cost of the services that AU provides. While the Province of Alberta has accepted this, the fact that more than 60 per cent of the students enrolled at AU reside out of province requires continuous justification. Key to appeasing the provincial government are the following factors: (i) no Alberta student is ever denied registration in a course because of non-Albertan status; (ii) out-of-province students contribute significantly to the institution's various economies of scale, and since their tuition fees more than offset all variable costs encountered in serving them, they are net contributors to the University's fiscal

position; and (iii) the provincial economic impact of generating fees out of province and spending the revenue on goods and services within the province is considerable.

Notwithstanding its unique national role in online learning, AU struggles to gain appropriate national recognition as a key policy adviser. The popularity of online education, both with all levels of government and within the private sector, and its promise as a partial solution to the skills and learning needs of Canada's workforce are engendering significant debate on the creation of national policies and funding opportunities for the development, delivery and research of e-learning. With large product development and research dollars at stake, Canada's traditional university system is finally showing considerable interest in distance and online learning. Given their strong ties to government, traditional disciplinary research-intensive universities are well positioned to contribute to these policy and financial discussions, albeit their experience is only in indirectly related, traditional, academic work. Perhaps the best example of this was the creation in 2000 by the federal government of an Advisory Committee for Online Learning, which included in excess of twelve university and college presidents. Not one of the presidents, however, came from any of the several important single distance-mode educational institutions in the country.¹

A second, equally important initiative by the federal government was the establishment of the National Broadband Task Force in early 2001 to 'advise the Government of Canada on how best to make high-speed broadband Internet services available to businesses and residents in all Canadian communities by the year 2004' (Government of Canada, 2000). The task force recommended later that year, *inter alia*, that connectivity should be a priority for federal, provincial, and territorial governments.² However, the inability of the federal government thus far to invest in the infrastructure that is necessary to meet its earlier commitment has resulted in a decentralized (and less consistent) approach, with the provincial governments assuming a greater responsibility for their geographic area. In this regard, the Province of Alberta leads the way through its SuperNet project, which should make Alberta the most wired jurisdiction in the world.

In addition to connecting every library, school, hospital and provincial government office to a high-speed, broadband network, SuperNet will make broadband services available to commercial service

providers, who will provide competitive services to businesses and residences in rural and urban areas.³

Notwithstanding provincial differences and delays in implementation, Canada is building on its strong foundation of Internet-connected homes and businesses (it is the second most wired country per capita) and developing a broadband infrastructure that positions it as a world leader in the information communication technology infrastructure required to support online learning.

A third recent initiative by the national government to elevate the importance of online learning is embodied in the 2002 discussion paper 'Knowledge matters: skills and learning for Canadians'. In the section on post-secondary education and lifelong learning, this publication promotes e-learning applications as a key strategy for addressing current and future accessibility issues, and holds up Athabasca University as exemplary insofar as the comparable quality of face-to-face and online learning is concerned.⁴

2. CREATION, ORGANIZATION AND CURRENT PROGRAMMES

2.1 Creation

Initially conceived in 1970 as a non-traditional yet campus-based undergraduate institution that was to focus on arts, science and education, AU experienced a very troubled infancy when a change of government in 1971 questioned the need for a fourth provincial university (Hughes, 1980). Primarily through the efforts of the founding President, Dr T. C. Byrne, the new government agreed in November 1972 to fund a pilot project that sought to explore and test the use of learning systems and technology (i.e. distance education) in the provision of university-level education in arts and sciences to adults. The primary selling point for government seems to have been the economics of the model and its potential for wider application in the Alberta education system (Byrne, 1989). In 1975, satisfied with an evaluation of the pilot project, the Alberta government indicated its intention to approve the permanency of AU, but did not act on this until 1978.

Political uncertainty affected the development of AU throughout this period and continued in the early 1980s when the government announced that the University would be relocated from temporary facilities in Edmonton (a city of some 500,000 at that time) to a

new campus in Athabasca (a town of 2,000), 130 kilometres north of Edmonton. This political decision led to the immediate resignation of both the University President and the Chair of the Governing Council. Nevertheless, by 1984 AU had opened its facilities in Athabasca and was operating from its 12,000 square-metre building, serving some 8,700 students in 1984/85, 75 per cent of whom resided in Alberta.

With its permanent mandate and subsequent move to Athabasca, AU was expected to build on the pilot project, to develop its undergraduate distance-delivered curriculum, and to further facilitate access to university studies for adult Albertans. During the pilot project, the importance of a curriculum that would allow students to transfer credits obtained from AU to other provincial institutions had become paramount, and this had (and to this day still has) a significant impact on the courses and credit structure of AU programmes. Since the late 1970s, the courses offered by AU differ from those of sister Canadian institutions by virtue of the delivery mode, not their content or modularization into three-credit course equivalencies. During the last twenty years, students from other Canadian universities who take courses at AU as visiting students and then transfer earned credits to their home institution have represented a significant market, and today constitute the largest segment of the AU student body.

This being the case, collaboration with the post-secondary sector, particularly in Alberta, has always been an important ingredient of success for the University. At the undergraduate level, AU is seldom the complete answer to a learner's educational needs, but it often represents a key component. More recently (post-1995), college collaboration has become even more critical, as the University has sought to increase its course registration and graduation rates by offering degree completion options in partnership with select (two-year) community colleges and by articulating two-year college diplomas with AU degrees.

AU has recently developed the necessary physical facilities to accommodate some 150 additional staff members on site in Athabasca in order to support the planned doubling of its student numbers by 2010.

2.2 Organizational structure

The University is organized into four divisions: (i) the Office of the President (including Public Affairs, Institutional Studies, Human Resources and the University Secretariat); (ii) the Office of the Vice-President Academic (including fourteen academic centres, the Centre

for Learning Accreditation, the Research Centre, the Department of Educational Media Development, and the Department for Outreach and College Collaboration;⁵ (iii) the Office of the Vice-President Student Services (including the Registry, Library, Course Materials Production, Computing Services, Counselling, and two Regional Offices); and (iv) the Office of the Vice-President Finance and Facilities (with responsibility over Financial Services, Budget, and Facilities).

A key component of a 1995 reorganization was the decision to eliminate the faculty structure. Previously, there had been three rather autonomous faculties (Arts, Sciences, and Administration) and two graduate centres (housing the Master of Business Administration and the Master of Distance Education programmes). While the two graduate centres worked very effectively, there were concerns that the undergraduate faculty structure was not conducive to innovation and change. By eliminating these faculties, and creating academic units that were both significantly smaller and established on the basis of collegiality (i.e. mutual respect and willingness to work together) rather than disciplinary affiliation(s), teams of like-minded academics were able to assume increased independence and responsibility for experimenting with the development and delivery of their courses and programmes. The decision to continue to fund course delivery internally on a per-registration basis, and to allow academic centres that achieved cost savings through innovation (while maintaining the required level of quality) to reinvest these savings in accordance with their own priorities, also represented a key element of the innovation strategy.

This revised organizational structure may have had a shortcoming; the fact that the non-academic course development staff such as course materials editors, visual designers and educational technologists were centralized meant that academic centres were restricted in their ability to match resources with their own priorities. A counter argument, however, suggests that a centralized, arm's-length course development unit may be better positioned to enforce quality control and standards, a matter of increasing concern in the online environment where course development roles blur easily. As staff complements increase, and the decision to reassign course development staff to individual centres may be made, it will be important to find a way to maintain the synergy and peer learning that flow from having regrouped these professionals in the Department of Educational Media Development. An eventual solution,

one that is already implemented where feasible, involves locating these positions in the centralized unit but seconding or assigning them to specific centres for relatively long periods of time (at least one year).

The importance of the Student Services Division, and the fact that it is headed by a Vice-President, further differentiates AU's organizational structure from that of traditional institutions. Also, the result of the 1995 reorganization, the prominence assigned to this division is indicative of the greater importance of customer service in the online environment. AU's recent success and transition into a leading online educational institution has paralleled the increased organizational importance assigned to this division.

Unlike the undergraduate centres, their graduate counterparts are much more self-contained administratively, with the Centre for Innovative Management (CIM), which houses the MBA, being the most independent. Following government approval in 1993 to offer this complete cost-recovery programme, it was determined that two formidable and related challenges would have to be met in order for this programme to be a success. First, given the highly competitive nature of the North American Executive MBA market and that AU was an unknown entity therein, the necessity to innovate with a radically new product, an online degree. Second, the realization that the businesslike culture that CIM would have to develop and the speed with which it would have to open its programme to students (two years) was practically unattainable within the University's regular operations. Consequently, the University decided that the new programme would have the best chance of success if it were given quasi independence from the University's regular infrastructure, which was a human, technological, and systems network meant to facilitate the promotion, development, delivery, and support for all undergraduate programmes, delivered at that time almost exclusively through print and telephone support. CIM thus created its own academic and administrative platforms and systems in support of what has become Canada's largest Executive MBA programme (1,100 students per year), with annual graduating classes now in excess of 200 and an annual operating budget of about CA\$10 million.⁶

Developing as it did in a new site or self-controlled environment, CIM served as an incubator for online innovation and successfully paved the way for other programmes and courses to move online, particularly those offered by the undergraduate School of Business.

Though approved by government in 1991 (eighteen months before the MBA), the online Master of Distance Education (MDE) was not under the same time pressure as the MBA (or the same pressure to pay all its own bills) and opened in May of 1995, a few months before the MBA. Its ongoing financial dependence on the University has meant that it could not argue for, nor did it want, the same level of independence as the MBA. While it is self-contained academically insofar as course development, delivery and most student-support services are concerned, the MDE relies heavily on the University's administrative and technological infrastructures. Unlike the MBA, which has always used a self-supported, adapted LotusNotes platform, the MDE has experimented with different platforms, all of which have been supported by the central University. The MDE's stronger interrelationship with the general academic faculty and with the centralized non-academic departments has meant that certain aspects of its online academic model have been adopted by more centres (particularly those with online graduate programmes) than is the case for the MBA.

2.3 Current programmes

Courses

As of 2002/03, AU's curriculum comprised some 570 courses (an increase of 64 per cent over 1995), 119 of which were considered online, 62 as distance-delivered with significant online features, and the balance providing, at a minimum, online tutoring and file transfer options. Liberal arts and science courses accounted for more than two-thirds of the curriculum (69 per cent), professional courses for 17 per cent, and applied courses for 13 per cent.

Programmes

Together, these courses combine to provide thirteen undergraduate (excluding majors) and nine graduate degree programmes. At the undergraduate level, AU offers: a full range of Bachelor of Arts majors (for both three- and four-year degrees); a cohesive set of business degrees (Bachelor of Administrative Studies, Bachelor of Commerce, Bachelor of Management); a Bachelor of Science (with majors in human science and computing and information systems); a Bachelor of Professional Arts (with majors in communication studies, criminal justice, human services, and governance, law and management); a

Bachelor of Nursing; and a Bachelor of General Studies. The graduate programmes include: the Master of Business Administration; the Master of Distance Education; the Master of Health Studies; the Master of Science (information systems); the Master of Arts (integrated studies); and the Master of Counselling, developed and delivered in partnership with two other Albertan universities. All graduate programmes are online, as are the Bachelor of Science (computer and information systems) and the Bachelor of Commerce (e-commerce). Online and online-supplemented courses are particularly important components of undergraduate programmes in administration, management, commerce and psychology, but they are also features of all other programmes.

Whereas practically all graduate students (8 per cent of the total student population in 2000/01) were committed to completing their programme with AU, such was not the case at the undergraduate level, where, notwithstanding the availability of full programmes, only 26 per cent of undergraduate students (2001/02) entered AU with the intention of obtaining an AU credential. Fully one-third (34 per cent) of AU's student body is composed of visiting students who take only a few courses at AU and transfer them to their own home institution from which they will graduate. This is mostly due to the strong course-transfer culture so prevalent in Canada, and the inability of traditional universities to respond to the flexible learning needs of their students. A further breakdown of the student body shows students taking courses for diagnostic purposes, to determine if they are suited for post-secondary or online study (14 per cent); for credit banking and application to a programme some time in the future (11.4 per cent); to obtain a professional designation (5.5 per cent); for needs related directly to their job (4.4 per cent); or for personal interest (4.4 per cent).

This composition of the undergraduate student body, together with the fact that fully 45 per cent of course registrations are generated by first-time students, results in an average course completion rate of 65 per cent, as opposed to a graduate completion rate of 95 per cent.

Notwithstanding the preponderance of non-AU credential students, recent graduation rates have witnessed a dramatic increase, with 387 undergraduate degrees having been awarded in 2002 (an increase of 85 per cent over 1996). The introduction of graduate programmes, from which 308 students graduated in 2002, has resulted in a combined increase of 175 per cent in the University's graduation rate over a five-year period.

Learner demographics

At the undergraduate level, 65 per cent of AU learners were female in 2001/02, a statistic that has barely changed in the University's history (notwithstanding the move into e-learning). This number drops to 49 per cent at the graduate level, where the MBA accounted for 1,102 of the 1,884 students, 70 per cent of whom were male.

As would be expected, there is also a significant difference in the average age of undergraduate and graduate students at AU. Though dropping quite dramatically in recent years, the average age of undergraduate students in 2000–2001 was 29, with 40 per cent being under 25 (as opposed to 27 per cent five years earlier). In contrast, the average age of graduate students was 40, with only 5 per cent being under 25.

The ability of students to access computers and to interface online with the University is critical to AU's development as an online university. In this regard, 87 per cent of undergraduate students not in computer studies programmes reported in 2001 that they had Internet access from home, whereas the online nature of all graduate programmes resulted in 100 per cent of the students having easy Internet access.

Staffing

By 2003, the total staff complement at AU had grown dramatically (see Table 9.1, page 330). The University reinvested most of the additional income generated by the doubling of its tuition revenue (due both to volume and non-volume related increases) in the human infrastructure required to maintain the quality of AU's academic and non-academic services.

AU's staff profile differs greatly from that of traditional universities. While there is a significant and crucial cadre of regular academics, the majority of the academic support services are provided by part-time academics who outnumber their full-time colleagues by a ratio greater than 3 to 1. AU's regular academics, who normally hold a Ph.D. and also conduct research, are responsible for curriculum planning, the academic quality of the course content, learning activities, and learner support and course assessment. The unbundling of the teaching components and their assignment to part-time academics, who normally hold at least a master's degree and do not do research or to telephone and virtual call-centre staff, whose responsibilities are

administrative and not academic, allow for both economies of scale and a less expensive workforce.

The large percentage of professional and support staff represents another major difference. The members of each of these groups outnumber the full-time academic staff, and their importance reflects the crucial role played by professionals in course development, academic and non-academic computing, and student-support services, and by the large cadre of support positions that operate and manage numerous student support and administrative processes or systems.

3. ADMINISTRATIVE ISSUES

As AU is a single-mode distance and online university, it has a particular management and administration model that has resulted from two significantly different aspects of its organizational culture:

- on the one hand, a teaching and learning model that places the responsibility for teaching on a team of professionals rather than on one professor;
- on the other hand, recognition that particularly in an online environment, where no institution has a protected market, serious providers must create not only an excellent learning environment, but also an institutional climate that recognizes the importance of excellence in non-academic support services.

The composite parts of AU's educational model have been unbundled in a manner that is more in keeping with an industrial model than with the cottage-industry approach generally used by traditional academia. It is therefore essential that the administrative structure and institutional policies of the University facilitate the management of processes and their interrelation.

3.1 Administration

There are differences between the undergraduate and the graduate models of administration. The academic graduate centres are more self-contained and less dependent on centralized resources (both academic and non-academic), and the University manages its processes primarily through a functions-based model. Cross-functional management is facilitated through regular meetings of the Executive Group (the president and three vice-presidents), and multi-divisional

representation at the monthly Council of Chairs (chaired by the Vice-President Academic), and the Student Services Group (chaired by the Vice-President Student Services) administrative meetings. Day-to-day administration at all levels is conducted essentially online.

The virtual learning environment has necessitated the revision and development of a range of policies that deal with all aspects of the University's work, but particularly with issues concerning online learning itself and the quality of the total learning experience. The move to online learning has led to policies that have to take into account three related (but sometimes incongruent) poles: cost, standardization, and quality. While balancing institutional standards and individual freedom in decision making for staff and students, new policies were formulated that address, *inter alia*: the optional versus the compulsory nature of the institutional online transition; the level of commitment to continue serving non-online students; the adoption and institutional support of different online platforms and learning management systems; institutionally supported software; server locations and security; housing of master versions of online courses; centralized versus decentralized record keeping; disaster recovery planning; corporate, as opposed to individual, branding of online materials; and online material to be made available to non-students.

New policies were also required to deal with related quality assurance factors. Staff roles blur more easily in the online environment, whether this concerns course development (course authors, graphic and media designers, and editors) or the relationship between course development, delivery, and revision due to the ability to constantly update course content. With a view to safeguarding the course team approach to curriculum development and to maintaining the same level of quality in online as in printed materials, policies dealing with Phases Three and Four (see Section 4.1) of the course-development process underwent significant redrafting. Similarly, just as the University had to develop a new policy around copyright obligations for course developers in the electronic environment, academic policies dealing with intellectual honesty and plagiarism had to be redrafted.

The move to an online environment has also had a dramatic impact on policies dealing with the service standards that students and staff can depend on. The e-learning environment has escalated expectations with regard to just-in-time service, be it academic or

administrative. Consequently, AU has adopted a set of standards outlining the acceptable time delay during which the University should respond insofar as general enquiries, administrative services, electronic communications assistance, library, course materials, and academic support services are concerned. These standards are published through a public posting on the AU website,⁷ and in a printed brochure, together with instructions on whom to contact in the event that these standards are not being met. Since the University differentiates its service standards according to whether students are residents of North America or of other regions (primarily in that it communicates with the latter only via e-mail), a different web page has been created for non-North American residents.⁸

In order for the service standards to be met, the University has adopted a set of human resources policies. These deal, for example, with the use of e-mail and voice mail across the organization, addressing matters such as response time and the use of automatic alerts for absences in excess of twenty-four hours. The policies also deal with the balance between personalized and just-in-time service, the latter often being assured through aliases and call centres, but at the expense of a more personalized service that only individualized contact can assure.

Within the e-learning context, the financial domain represents the third principal area requiring policy review. Originally, for example, a policy had to be passed dealing with who would pay for student access to the University, an issue that was hotly debated given AU's mission statement. In spite of considerable pressure to either get into the ISP (Internet Service Provider) business, or to offset costs that students would incur by signing on with a commercial provider, the University opted for passing on all connection costs to students (in exactly the same way as they may require their own cable television subscription in order to view certain course-related programmes). This decision may well appear to be self-evident today, but was not so in 1995.

AU's decentralized full-time academic workforce necessitated policies on who would pay for the hardware and communications costs incurred by 80 per cent of the academics who choose to work out of their own homes.⁹ Further, all staff were affected by a policy on the continuous upgrading of hardware and software and the regularity with which these would be replaced.

Similar policies were required to support the University's relationship with its part-time tutorial workforce, whose members

have an average seniority of more than ten years with AU. While the University accepts its responsibility for covering operating costs such as connectivity, helpdesk support, and software associated with general online operations or course-specific requirements, the question of hardware and its upgrading has proven to be more problematic. By the early 1990s, AU had provided many of its tutors with computers and had assumed the responsibility for their maintenance and upgrading, but as these became more ubiquitous and essential for tutorial support in all courses, policies were changed to encourage the shift of this responsibility from the institution to the tutors themselves, with a concomitant monthly payment by the University to support maintenance and upgrading. Today, new tutors are expected to own their own computer, though the University continues to provide a modest per-tutor allocation monthly to support maintenance and upgrading.

3.2 Costs and financing

The operating budget for the academic year 2002/03 is some \$57.5 million, about double the amount five years ago. Whereas the government grant amounted to 72 per cent of AU's \$24.3 million budget in 1994/95, today it represents only 35 per cent of operating expenses. AU has gone from receiving the largest provincial government grant per full-time equivalent student (1994/95), to the lowest (about 50 per cent of the university average). This situation has resulted from AU's decision to significantly expand its student numbers relying financially only on additional tuition and other fee revenue (now representing over 60 per cent of 2002/03 revenue). This strategy is not available to campus-based universities that operate under a very different business model and whose ability to expand is closely tied to their physical infrastructure. Moreover, when one factors in research activity (generally about 30 per cent of an Alberta university's budget) and takes into account that AU is primarily a teaching university and commits far fewer resources to research than do other universities of comparable size, AU is treated equitably by government insofar as operating expenditures are concerned.

What differentiates AU's funding base from that of traditional sister institutions is the significantly reduced capital and operating budgets associated with physical infrastructure acquisition, renovation, and maintenance. Facilities and maintenance services currently

consume about 4 per cent of AU's annual operating budget. The recent investment of \$5 million in the acquisition and renovation of new physical facilities will provide the space required to accommodate central staff expansion to allow the University's current enrolment to double as planned.

Recurrent operating expenses are significantly related to staff costs (62 per cent), with 55 per cent of the total annual budget being allocated to functions associated with the development of the curriculum, its delivery and research. Student Services functions (counselling, advising, registry, library) account for a further 30 per cent of expenditures, with computing services expending about 10 per cent of the annual university budget. AU expends some 5 per cent of its budget on marketing and public affairs functions, with almost half of that being dedicated to marketing for the cost-recovery MBA programme.

Basic undergraduate tuition-fee levels in 2002/03 (\$355 per course, or \$3,550 per year) are slightly below the provincial level and are competitive in Canada even with the 15 per cent out-of-province tuition surcharge. Students residing outside of Canada pay \$615 per course, a competitive fee in the USA, but less attractive in Asia. All required course materials are provided for an additional fee of \$131 per course. The fact that these are delivered internationally by courier, at expensive rates, has recently led the University to increase the out-of-Canada tuition fee. While the amount of printed materials in the course package is decreasing, it is not anticipated that this fee will decline in future years, as it may be used to cover different information access fees that the transition to an online environment entails (e.g. library, commercial publishers).

With the exception of the much more expensive MBA fee of \$30,000, graduate tuition fees are set at around \$10,000 per programme, with marginally more expensive rates for international students. Whereas these fees are somewhat higher than for on-campus programmes, they are highly competitive with foreign institutions (primarily in the USA) that offer distance-delivered and online graduate programmes in Canada.

3.3 Technological infrastructure

The University's traditional dependence on a sound technological infrastructure to support the development and delivery of its distance programmes has resulted in the need for only minimal changes or

enhancements to support online learning. Nevertheless, the University's investment in support of this infrastructure has increased significantly, and over the last four years has represented an annual commitment of about \$2 million per year. Moreover, as technology has advanced and its applications have become more central to AU's success, several issues are resurfacing with increasing importance.

In the past the university adopted a decentralized approach to e-learning and allowed the proliferation of course management systems (LotusNotes; WebCT; and Bazaar, an institutionally developed platform), communication tools (the aforementioned, plus WWWBoard and NetMeeting), and multiple decentralized infrastructures in support of them. Today AU needs to conserve its scarce resources (financial and human) and prevent this diversity of infrastructures from adversely affecting quality. The decentralized approach to platform selection and support undoubtedly facilitated institutional adoption of e-learning. However, the greater similarity of today's platforms and the fact that e-learning is currently part of the AU mainstream mean that future standardization around one institutionally supported platform is now being seriously considered.

Similarly, the decentralized approach in AU's overall strategic management of information technology, where each of the three senior administrative officers has responsibility for different sectors but there is no one with overall institutional responsibility for information technology, is currently under review. This situation was less problematic when AU's online activities were relatively marginal, but this is no longer the case, and the advantage of having a chief information officer with proactive responsibility for the development of AU's integrated information technology strategy now seems obvious.

AU's location has also given rise to two other technology-related problems, which are currently being addressed. One concerns the overall shortage of qualified computing professionals and has proven particularly problematic when recruiting for a location in a small rural setting. The University has therefore recently relocated a dozen key information technology positions to the provincial capital, Edmonton. The other problem concerns the absence of a broadband infrastructure in the Athabasca community, which has resulted in the University paying much more for its bandwidth than would otherwise be the case. This situation should be resolved with the installation of the SuperNet infrastructure in the town of Athabasca in 2004.

3.4 Intellectual property ownership and copyright

Since the development of courseware has always been a core responsibility of AU academics and professional staff, the University has maintained ownership of intellectual property associated with distance and online courses. Where external subject-matter experts are used, the University requires them to sign over the intellectual property as part of the contract for services. In instances where courses are sold or leased to third parties, a revenue-sharing formula is applied to net profit, with the University and the faculty association being the beneficiaries. Earlier in its history, AU tried to apportion the employees' share to individuals, but the team-based approach to course development made this impractical.

The University has its own copyright office and is rigorous in its application of copyright laws. All materials are cleared for world rights and use by AU students. This can prove problematic when other institutions want to buy AU products, since the University's CANCOPY and other reproduction licences do not extend to other users. According to the University's lease and sale of courseware policy, however, AU is unlikely to share its materials with other institutions unless they are in a geographic area where AU is not interested or unable to compete.

Lessons learned

- The administration model for a virtual university should take into account that the organization of work is very different from the essentially professor-centric campus-based model.
- Though beneficial in several ways (e.g. reduced cost and easier recruitment), the use of a dispersed, often part-time labour force in virtual universities raises important administrative issues for how work should be organized, assessed, and evaluated.
- Online students demand quality not just in academic content, but also in support services. Online providers have to ensure that their administrative structures, policies, and sub-cultures reflect a customer-service focus.
- There are built-in tensions between and among (i) the student's desire for just-in-time (24/7), (ii) yet personalized (ideally same-person) service, (iii) the institution's unbundling of the teaching and support functions, and (iv) its use of part-time or teleworking

labour. Where an organization positions itself in relation to these four poles must be reflected in its administrative structures, systems, and policies.

- Financial savings in quality virtual universities result primarily from significant reductions in brick-and-mortar investments. Operating expenses, though different in nature from those incurred for face-to-face instruction, are no less expensive.
- Technology infrastructure requires constant renewal, and public institutions have to find a way for government to reflect this in funding formulae.
- Institutions need to address the relative merits of supporting one or several institutional course management systems. While it is advantageous for learners to experience different electronic learning platforms, and for faculty not to be tied down to a particular platform, there are significant costs associated with maintaining and supporting each course management system, costs that have to be justified on the basis of the value that the diversity adds.
- Where possible, virtual universities should ensure that the copyright ownership rests with the institution rather than the individual academic or course team. This is facilitated when e-teaching is considered as a core function of the staff and not as an add-on. In cases where external authors are used, the contract for services should be explicit in stating that the copyright will rest with the institution.

4. ACADEMIC ISSUES

Unlike most North American universities, AU's governance model is unicameral in nature, and the University Governing Council has ultimate responsibility for both fiduciary and academic matters. There is no academic senate with legislated authority over academic decision making; however, the Governing Council has established an Academic Council with delegated authority for all academic areas that would normally fall under the academic senate in a bicameral governance model. Though it operates *de facto* in a bicameral manner, the Academic Council's role and responsibilities can be rescinded at any time by the Governing Council.

Academics represent a clear majority of the Academic Council membership, but the administratively heavy and cross-functional nature

of the distance and online academic enterprise is also reflected in the Academic Council's membership. The Council is informed by the work of a range of standing subcommittees, including: Council of Centre Chairs/Directors; Student Services Group; Undergraduate Studies Board; Graduate Studies Board; Academic Research Committee; Ethics Review Board; Educational Review Committee; Library Standing Committee; Student Academic Appeals Committee; and Academic Award Committee.

Operationalized under the rolling three-year Educational Plan, programme and course-development decisions are framed within a seven-phase planning process:

- Phase One: General programme planning
- Phase Two: Detailed individual programme planning
- Phase Three: Individual course planning proposal for development and delivery
- Phase Four: Course preparation
- Phase Five: Delivery and tutoring
- Phase Six: Evaluation of teaching effectiveness
- Phase Seven: Course revision.

4.1 Programme development

Undergraduate

AU provides a full range of undergraduate programmes in liberal arts and sciences, business and administration, nursing, and applied arts. Though traditional in their course make-up, AU programmes are designed with considerable flexibility. The University's residency requirements allow students to transfer a significant number of credits earned at other accredited institutions (75 per cent for four-year degrees; 66.6 per cent for three-year degrees; and 100 per cent for the three-year Bachelor of General Studies). Provision is also made for the accreditation of prior learning, though the maximum number of credits admissible in such cases varies by programme. Last, course prerequisites are justified not on the basis of past practice in universities, but according to the relevance of the specific educational outcomes associated with these courses.

The three basic AU undergraduate programmes (Bachelor of General Studies; Bachelor of Arts; Bachelor of Administrative Studies) were planned and developed in close compliance with the

seven-phase development process. However, these programmes gave rise to numerous majors as a result of the gradual development of new courses that had been rationalized primarily in the context of general degrees without majors. As the number of courses in any one discipline reached a meaningful number, the argument was made that a new programme could be offered if just a few additional courses were developed. The same line of reasoning was later used to introduce the Bachelor of Science and, to a lesser extent, the Bachelor of Nursing, which had started out by developing a few courses for visiting students. The Bachelor of Commerce (and later its e-business major) and the Bachelor of Professional Arts (with its four majors), however, were approved on the basis of programme, rather than course, demand.

The 2002 SUP committed to a rationalization of the curriculum, so that new courses and programmes could be offered in the place of courses and programmes that have been eliminated because they attracted very few students or that were dated in their content and/or relevance. As the University has already expanded its programme and course offerings extensively without additional revenue from government, AU is no longer in a position today to increase the number of its programmes and courses without concomitant increases in base funding.

As the University's reach expands, it is expected that new markets will create greater demand for most of AU's existing courses and programmes, not just for the more popular online disciplines, such as business, health, and information technology.

Limited undergraduate programme expansion is being planned and prepared for certain areas (criminal justice, political science, and accounting) based primarily on a repackaging of the existing curriculum. Other disciplines will be developed.

When proposing new courses, faculty follow a detailed Phase Three process, which initially involves the circulation of a preliminary course proposal (primarily to Centre Chairs and Educational Media Development staff) with a view to providing opportunities for cross-listing, modularization, joint use of curricula and avoidance of duplication. Following the appropriate Centre Chair's approval, Phase Three is completed, providing a detailed description of the proposed academic content (unit by unit), assessment scheme, course-delivery model, and budgetary requirements associated with course development and delivery. In addition to the lead academic who is sponsoring the course proposal, Educational Media Development staff are consulted in the preparation

of the Phase Three document. If approved by the Vice-President Academic, the course is fully developed in accordance with Phase Three specifications. Subject-matter experts and academic contributors are assisted by an instructional media specialist, a visual designer and an editor, thereby forming a cohesive course development team.

Individual courses are assessed regularly (Phase Six) for their currency and teaching effectiveness, primarily through course-evaluation forms completed by students and by annual reports submitted by course tutors. Rolling revisions are regularly coordinated by the academic with responsibility for the course's delivery, and major revisions (Phase Seven) are undertaken as required, based on the relevance and currency of the course's content, primary learning materials, assessment, and technological platform.

Individual undergraduate courses are delivered within a regulatory framework that maximizes the learner's flexibility. While there are no entry requirements, there is an institutional responsibility to ensure that prospective learners have a real chance to succeed. To this end the university provides significant counselling services and opportunities (e.g. self-tests) for students to determine their readiness for both university and distance or online learning; a set of introductory courses to facilitate the transition to university-level studies (e.g. English for academic purposes; Developing writing skills; Basic critical thinking; Developmental mathematics) is also provided. Notwithstanding the University's open admission policy, very few learners enrol at AU for this reason, fewer than 15 per cent of the students admitted have no prior post-secondary experience (a percentage that has remained constant since the University's inception).

Students start their courses on the first day of any month and proceed at their own pace, submitting assignments and taking examinations when they are ready to do so. The basic tuition fee covers services for an initial six-month period (for a three-credit course), though students can purchase up to three extensions of two months each. Repeatedly, undergraduate students rate flexibility as the primary reason for enrolling with AU.

Individualized distance and online education represents the mainstay of the undergraduate operation (and accounts for in excess of 80 per cent of the course registrations), though some courses are also offered in cohort- or group-based mode because there is an identifiable group of learners who prefer this option. In this case, the

latter represents a mixed mode of delivery, where distance and online materials are complemented with group tutorials, either face to face, media enhanced (audio- or video-conferenced), or online.

Graduate

In sharp contrast to its undergraduate studies, AU's graduate programmes attract almost exclusively programme students. This is not only because the tradition in graduate studies discourages transfer credit, but also because AU is one of a very few universities that offer reasonably priced, flexible online graduate degrees designed for, and delivered primarily to, working professionals. Unlike AU's undergraduate degrees, the graduate programmes are cohort and semester based, requiring as they do considerable peer interaction and, in some cases, teamwork. Consequently, they are less flexible in their delivery. The MBA and the Master of Counselling require minimal on-site attendance, whereas the other AU graduate programmes can be completed entirely at a distance. While admission to graduate programmes is not open, they all provide an entrance route for students who, while they may not have an appropriate undergraduate degree, have demonstrated through the application process a strong likelihood for success.

Believing that it was an unjustified diversion of scarce funds, the University launched hesitatingly and for the most part unwillingly its first graduate degree programmes. There is now general acceptance that this bold move has turned out to be a key contributing factor to AU's recent success. Consequently, the 2002 SUP directs the University to continue to develop appropriate, self-funded professional online master degrees, to have its first online doctoral programme approved, and to increase its graduate student body so that it will represent 20 per cent of the projected 50,000 student base by 2010. The University's future, and its branding as a leading worldwide provider of online university programmes, is today recognized as being intricately linked to the expansion of AU's graduate programming and to the concomitant strengthening of its mission-critical research agenda.

Accreditation and quality assessment

Canada does not ascribe to a peer-driven system of national or regional accreditation. Universities are accredited by the province that funds them and where, generally, they operate. They are regrouped

in a national association (Association of Universities and Colleges Canada), which sets and applies criteria for membership, but is not an accreditation agency. Similarly, individual provincial governments in some cases (such as Alberta) require their institutions to adhere to a rigorous reporting of common key performance indicators, but this too differs significantly from formal peer accreditation.

The absence of formal peer accreditation in Canada has become a barrier to greatly expanding the University's out-of-country geographic reach, as the proliferation of degree mills and recently established educational establishments (particularly, but not exclusively, in the USA) has led consumers to pay particular attention to a provider's accreditation standing.

For this reason, AU applied for, and was awarded, candidacy status in June 2002 for US accreditation by the Commission on Higher Education of the Middle States Association of Colleges and Schools, indicating that AU has achieved recognition and provided evidence of sound planning. Final accreditation follows after a brief candidacy period. If AU's bid is successful, it will be the first university that is not incorporated in the US but is regionally accredited with a view to serving the US market. It is expected that this will promote significant expansion in North America, and compensate for the present lack of formal accreditation that is limiting AU's penetration of worldwide distance and online markets.

The absence of formal peer-driven accreditation has resulted in AU putting demanding internal quality control measures into place. The implementation of the seven-phase instructional systems development model outlined in the introduction to this section provides the framework for quality control and measurement. In addition, the Educational Review Committee of the Academic Council commissions regular reviews of programmes by external teams of respected academics, and charges the Institutional Studies department with conducting regular studies that assess both the academic and non-academic components of the AU education system. New delivery models and platforms are formally reviewed prior to full-scale implementation, and annual reports are provided on a complete range of related issues (e.g. course completion rates; course and examination currency; student satisfaction with course content and academic support; graduate satisfaction; graduate employment; student satisfaction with library services, computer help-desk assistance, and course materials receipt).

4.2 Teaching

Firmly rooted in the open distance learning tradition, AU's model was centred around multi-media (primarily print-based), individualized, self-paced learning materials, developed by a team of professionals (academic subject-matter experts, instructional and graphic designers, and a course materials editor) and supported with toll-free telephone access to course tutors. Assignments were exchanged by mail, examinations were conducted in regional examination centres, and student interaction was almost exclusively with the course tutor, whose role encompassed: remediation around course content and study skills; supplementing and contextualizing course materials; motivating and encouraging learners; and providing formative and summative assessment (in accordance with the course design).

The advent of the electronic age, and the immediate success of the new online graduate programmes in the mid 1990s, led AU to review its teaching model and to systematically consider the integration of online features that would enhance both the quality and attractiveness of its undergraduate curriculum. The 1996–1999 SUP formally set the context for AU's move into the electronic environment by calling for:

- the transition from predominantly print-based curricula to curricula presented in electronic format, print format or both, depending on the appropriateness of the medium;
- the dramatic expansion of computer-mediated communication systems to facilitate:
 - the electronic distribution of course materials produced in-house,
 - e-mail correspondence between students and staff (including mailing of assignments),
 - computer conferencing among students and between students and academic staff,
 - the provision of library, registry and other student-support services,
 - access to electronic databases, and
 - electronic formative and summative evaluation;
- the exploitation of distributed learning systems (e.g. the World Wide Web); and
- the provision of assistance to students learning to use systems (Athabasca University, 1996).

During the past six years, web-based technology has been integrated into individual courses and disciplines in various ways, though three broad categories have been established. Level One, or minimal integration, provides optional online resources that supplement a print-based, non-digitized course package. These courses provide regularly updated web-based information (course syllabus, student manual, interesting links to supplementary information), e-mail interaction with the course tutor, and the ability to forward assignments via attachments. Level Two, or moderate integration, integrates web-based activities and communication technologies as required parts of the essentially print-based, non-digitized course materials. Bulletin boards that enable asynchronous or (in fewer cases) synchronous discussions are common, as are online formative assessment activities. Students in these courses will generally take advantage of the opportunity to interact with their tutors and submit assignments through e-mail. Level Three, or full integration, requires all course components and activities to be online, with the possible exception of core textbooks.

Notwithstanding the success of the strategy adopted in 1996, and the fact that almost half of AU courses are currently at Level Two or Three, the University has recognized that there are persuasive reasons for implementing new measures to position the institution for the next several years. First and foremost, the current student body's adoption of computers (87 per cent of non-computing students have Internet access from home) is a clear indication that AU students are prepared to maximize the educational opportunities and advantages associated with online technologies. Second, there is every reason to believe that the AU student of tomorrow will expect even more of this institution's full-scale adoption of the online learning environment. Third, e-learning is just as likely to remove significant barriers to success in distance learning (such as the delays resulting from the use of regular mail, or the absence of peer interaction), as it is to further disenfranchise disadvantaged sectors of society through a significant digital divide. Last, today's workforce increasingly requires its members not only to be computer literate, but also to engage in lifelong learning in the workplace, learning that will increasingly incorporate online activities. Providing adult students with a formal education that does not prepare them for this reality is to provide them with a formal education that is inadequate.

The 1996 SUP's commitment to also provide undergraduate courses in primarily print form (lest traditionally disadvantaged students be further disadvantaged) means that AU has had to develop and maintain costly parallel infrastructures and systems, and that significant components of the curriculum continue to operate only minimally online, at Level One. Moreover, since e-learning had for the most part represented an option to the standardized print and telephone support model, the technological and systems infrastructure in support of online learning had not evolved consistently or uniformly across the organization. A noteworthy example of this level of complexity, both for learners and for the University, is that the AU computing help-desk currently has to support multiple electronic course authoring and management platforms.

For these reasons, the 2002–2006 SUP refines the University's online strategy and sets two overall goals (and associated objectives):

- the appropriate integration of proven online learning and assessment activities into all courses, thereby increasing the learner's flexibility in engaging in related activities; and
- the successful integration of appropriate technologies into course development, delivery, student support, and administrative systems, thereby enhancing the quality of courses and programmes (Athabasca University, 2002).

At the time of writing, all AU courses will be offered electronically at least to Level Two specifications, with access to all courses and services being provided through the student's U-Portal. Migration to a common course management system will be well under way, primarily affecting new courses and programmes as they go fully online. While the University's infrastructure and systems will be digitally based, course materials for many courses will still be available in printed format, though they will not have been designed primarily for that purpose. North American students, while encouraged to favour modes of electronic communication, will still have access to complementary toll-free telephone support.

Research

Whereas AU also supports its regular academic staff as they engage in disciplinary research, the success of the University's educational

model is intricately linked to the development of a strong mission critical research agenda that informs the open, distance and online learning pedagogy with which courses and programmes are developed and delivered.

The recently established Institute for Research in Open and Distance Learning at AU spearheads and coordinates the research agenda and the internal dissemination of related findings. In addition to its dedicated staff, the Centre draws on the resources of the university-wide Research Centre, two Canada Research Chairs in Distance Education, the Centre for Distance Education (the department that houses the Master of Distance Education), the professionals in the Institutional Studies department, and individual academics who may also be engaged in pedagogy-based research. Externally, the Institute manages the online International Review on Research in Open and Distance Learning with a readership of more than 30,000 subscribers.¹⁰

4.3 Learning support services

Online services

Student support services have always represented a critical link in the success of AU learners. Initially (as was the case with course materials and tutoring), services such as advising, counselling, library, registration and finance were provided through printed documentation and toll-free telephone access. Today, not only are all these services available electronically, but e-access has already displaced print and telephone as the primary mode of delivery (though toll-free telephone and print are still available for those who prefer these media, or do not have ready Internet access). A key service soon to be launched, and currently in beta testing) involves the implementation of a portal approach (MYAU) through which students will be able to personalize their computer access through a single portal to all their individual files and records (online courses, course conferences and chat rooms, grade book, institutional records, etc., as well as other AU web pages that they want to connect to regularly).

The dissemination of all information hitherto available only in the university calendar or catalogue is today assured primarily through the institutional website. The electronic version of the calendar, moreover, takes precedence over the printed version not only in its production, but also from a legal perspective. The North

America toll-free information call centre, established in 1996 in order to streamline all requests for information from prospective or current students, now handles electronically almost 50 per cent of the 10,000 enquiries it receives monthly, and has launched an IntelliResponse programme designed to automatically handle most enquiries of a general nature.

Student advising and counselling services have refocused their basic approach to assisting students in determining whether they are ready to undertake distance and online university-level studies and, if so, how to proceed. Potential students can follow an online process from the AU website and:

- determine their state of readiness (Am I Ready for Athabasca University? Am I Ready for Studies in the English Language? Annotated Review of English as a Second Language sites);
- hone their study skills (Study Skills Programme; Study Smart; Studying in the Kid Zone; Mastering Exam Anxiety);
- obtain advice on career options (Mapping Your Future; Annotated Review of Career Sites);
- seek out financial assistance and services for students with disabilities;
- plan their programme (online Programme Planner and Transfer Credit Database).

Finally, the web-based registration system now allows students to conduct all regular transactions online (admission, programme enrolment, course registration, examination request, financial payment, etc.) and 60 per cent of the transactions do in fact occur in this way.

The library exemplifies the shift in student services brought about by the online environment. Once a repository of holdings that students accessed by contacting a library staff member via a toll-free telephone line, today's library has evolved to the point where it is now primarily a gateway to information. Library staff who interact with students are no longer principally occupied with conducting searches on the students' behalf and determining the availability of identified resources. Rather, they are responsible for assisting students to perform these functions on their own, electronically, thereby adding a very important educational outcome to the students' experience, and one that distance learners could not master prior to the e-learning environment.

Student evaluations of their online experience

Since 1999, the Province of Alberta has commissioned two comparative studies¹¹ of the satisfaction of university and university college graduates, primarily in order to inform institutional allocations from a Performance Envelope Fund. The 2001 'satisfaction' survey was based on responses from 7,535 students in the four Alberta universities (Lethbridge, Calgary, Athabasca, and Alberta) and four university colleges (Agustana, Concordia, King's and Canadian). A total of 332 Athabasca University students participated. Though the data do not differentiate between traditional distance education and online learning, 40 per cent of the 2001 AU sample had completed their AU degree entirely online, and a further 25 per cent had taken online courses at least at Level Two (as described in Section 4.2).

Two questions were asked concerning the quality of the learning materials, and the respondents rated AU significantly higher than its sister residential institutions, both with regard to the range of courses offered (AU 82 per cent; Alberta universities student average 60 per cent) and their availability (AU 81 per cent; Alberta universities student average 58 per cent). Clearly, AU's policy of year-round enrolment is well appreciated, in contrast to traditional institutions where many courses advertised in the calendar are unavailable in a given semester.

Answers to questions posed about the overall educational experience also revealed high levels of satisfaction by AU learners, as 92 per cent of AU graduates demonstrated satisfaction (as compared to a 79 per cent provincial average). Even regarding such a traditional value as the quality of teaching (not necessarily an obvious criterion for the online environment), more AU graduates were pleased (79 per cent) than the average from sister institutions (74 per cent).

Last, the government survey sought to determine how graduates rated the acquisition and development of a skill set normally associated with higher education. In keeping with previous evaluations, AU graduates rated their ability to think creatively, to conduct research, to learn independently, and to write effectively more highly than did graduates from other Alberta universities and university colleges, though the latter believed that they had developed superior skills in the areas of effective speaking, interpersonal skills, and intercultural sensitivity.

Two formal rankings of AU's online MBA programme reinforce the Government of Alberta's surveys. First, the Association to Advance Collegiate Schools of Business benchmark studies that rank ninety part-

time MBA schools in North America based on exit surveys of their graduates: AU's MBA was rated first in 1998 and 1999, and second in 2000 and 2001. In a study taken at this time, AU came out first in eleven categories, including opportunities to pursue work-related projects, teamwork, computer skills, access to computer resources, course availability, fulfilment of expectations, willingness to recommend the programme to a friend. Another survey, conducted by the magazine *Canadian Business*¹² for the first time in the autumn of 2001, ranked AU's programme third in the country, and first with regard to course materials, aims achieved, and usefulness and benefit.

In what is also a revealing study, a joint research team from AU and the Ivey School of Business (University of Western Ontario) compared their students' assessment of how communication developed in an online learning environment (AU's MBA sample size of 111) and in a face-to-face cohort (Western's MBA sample size of 101) (Haggerty et al., 2001). Not surprisingly, the synchronous face-to-face setting reaped better results for social interaction, and was used more often, but not more effectively, for clarifying course procedures and requirements. In sharp contrast, the asynchronous online environment was used more frequently, and judged to be more effective, for making explanations about case facts, figures, analyses for cognitive interventions, and for encouraging fellow students to reflect critically on an issue and trying to persuade them to change their positions. Clearly, the opportunity in an asynchronous interaction to take one's time, to analyse different positions, and to formulate persuasive arguments is considered a key advantage.

Lessons learned

- Transforming an academic institution is about endorsing early converters, building on their successes, and knowing how far and how quickly to pull and push the rest of the organization without its reaching its breaking point.
- Late adopters require extensive training and support.
- Creating and maintaining an online organization requires leadership that reflects, through its daily actions, the online culture.
- Because there is the opportunity for the course teacher to work more independently online (s/he can be an academic expert, editor, instructional developer, graphic artist, web designer and producer),

there is a need to control quality by implementing a systems development plan (linking programme and course proposals with delivery, evaluation and review) and establishing policies that ensure an appropriate role for course development professionals.

- The online environment is unforgiving insofar as outdated course content is concerned. The course revision and maintenance of online courses place a greater demand on academics than was the case in traditional distance learning.
- Online learners have high expectations of the quality of services, of both academic and non-academic support. Failure to meet these expectations in a global online educational marketplace means loss of business.
- While online learning permits asynchronous interaction with faculty and peers that was not possible in traditional distance learning, the economic viability and scalability of the online model requires investing in systems and applications that also enable effective, automated interaction, be it primarily academic (e.g. self-testing) or non-academic (e.g. library enquiries).
- Academic policies and regulations need to take into account that learners in general, and online learners in particular, want flexibility in their studies.
- The online environment attracts students to all disciplines, not only the highly competitive business, information technology, and healthcare areas.

5. COOPERATION

As AU moves to enhance its national and international position, the establishment of strategic alliances has become increasingly important. On the provincial scene, AU is a key member of Alberta North,¹³ a consortium of six colleges and one university that collaborate on providing online curricula and a network of community access points in the region. Particularly in rural areas, community access points have proven to be a required aspect of the service and communications infrastructure in support of online learning. While this alliance does not greatly contribute to AU's student numbers, it is important given the University's mission to serve disadvantaged learners and its provincial funding basis.

On the national level, AU is involved in two key alliances: one with the Télé-université du Québec (Téluq), and the other with the Canadian Virtual University-Université Virtuelle Canadienne (CVU-

UVC).¹⁴ The AU-Téluq agreement¹⁵ combines the offerings and regulations of both institutions so that students can consult the combined online catalogues when planning their study programmes, knowing that courses will be accepted automatically as equivalents and as meeting residency requirements. Moreover, each university has appointed a student adviser who is familiar with the offerings and regulations at the sister institution, and tuition-fee differentials are also ignored. This collaboration, and the fact that it enables AU students to take courses in both of Canada's official languages, represents a key component in AU's institutional positioning as Canada's Open University.

With a view to expanding the AU/Téluq framework and establishing a national consortium of universities engaged in delivering distance and online programmes, AU launched the CVU-UVC in January 2000 and licensed the consortium to use the associated trademark – Canadian Virtual University – that AU had registered and had started implementing as part of its own branding. The shift in AU's strategic thinking on its institutional use of the CVU trademark resulted from the recognition that a consortium of Canadian providers of distance and online education was inevitable and that AU ought to be the mainstay of such an organization. Today, the CVU-UVC (whose secretariat is housed by AU) regroups 13 public universities that collectively provide 175 programmes and over 2,000 courses, all of which can be completed anywhere in Canada and many of which are available worldwide. By virtue of its size, and the fact that membership has implications for specific programmes and not necessarily entire institutions, the CVU-UVC cooperation is not as all-inclusive and transparent for students as the AU/Téluq partnership. Nevertheless, students are able to search the database and select programmes or courses from any of the member universities, and they know that these will be acceptable to their home institution, which will award the credential and that processing fees regularly paid for visiting students will be waived.

Important to the CVU-UVC initiative is the desire to rationalize course and programme offerings such that individual institutions can develop and deliver complementary rather than competitive curricula, and thereby use their financial resources to maximize quality and currency. The initial need to encourage membership, however, led the consortium to waive its planned requirement that all courses and programmes of its members be complementary. Now that CVU-UVC boasts cross-Canada membership, this condition is being enforced for

new members, and for the addition of courses and programmes by existing members. Moreover, it is expected that as members revise their programmes and courses, and as the partnership gains momentum, a rationalization of the existing curricula will follow.

A major offshoot of the CVU-UVC partnership has been the role that several of its members (including AU) have been able to play in the federally funded Campus Canada project. This initiative, which started up in July 2002, provides a website from which federal government employees can access online university and college programmes and added services, such as central registration, credit banking and prior learning-assessment credits (particularly workplace training credits). The requirement that all programmes that are to be part of the project accept third-party prior learning assessments by the Canadian Learning Bank, an assessment service offered by The Open Learning Agency, which allows individuals to receive recognition and credit for studies they have completed elsewhere, has meant that most CVU-UVC partners are unable to participate.

Internationally, AU considers strategic cooperation as a key component of branding, and seeks in this way to enhance its global reputation as a leader in distance and online university-level education. Again, partnerships can be bi- or multilateral in nature and target different parts of the world. The AU-Universidad de Monterrey (UDEM)¹⁶ partnership best exemplifies a bilateral partnership, and enables Mexican UDEM students in their last year of undergraduate study to take select online AU courses as part of their UDEM programme. As a traditional campus-based institution, UDEM has recognized that its graduates need to be exposed to online learning. Since this is not a current emphasis of UDEM, students are encouraged through advising and a transparent process to take an AU online class (i.e. registration for AU courses is part of the UDEM registration process and fees are paid to UDEM). Not only do UDEM students gain online experience, but this arrangement also contributes to attaining two other UDEM educational objectives: increased competency in English (reinforced by UDEM's close proximity to the US border and by the North American Free Trade Agreement); and the opportunity to study in an international context.

In contrast, the Global University Alliance¹⁷ is a for-profit company that regroups eight universities – one Canadian (AU), two American, two British, two Australian, one New Zealand – and a

commercial partner (NextEd). The Alliance seeks to position itself as a key provider of international online university degree programmes, primarily in Asia. In contrast to the CVU-UVC, courses and programmes are primarily graduate level and are delivered on a common platform and through a single course management system. This is provided and maintained by NextEd, whose network of servers in China also provide a reliable technological delivery infrastructure. Developing scalable online products at a cost-sensitive delivery point has proven to be this consortium's greatest challenge, though it is projecting a significant penetration of the global online education market in 2002 and 2003.

Lessons learned

- Effective bilateral partnerships are easier to create and implement than multi-partnered ones because the more partners there are, the more difficult it is to establish a common agenda.
- Meaningful partnerships require that institutions espouse a similar organizational culture.
- Partnerships involving several institutions and a for-profit partner are difficult to maximize given the slowness with which most universities reach decisions and the relative (in comparison to the for-profit sector) lack of control that university officers have in honouring commitments.
- Multi-member partnerships are an effective way of gaining brand recognition at home and abroad.

6. FUTURE DEVELOPMENT AND INSTITUTIONAL CHANGE

AU will have to face several key challenges during the next few years. First and foremost, it must speedily complete its curriculum conversion to the online environment, for without the full array of technologically enhanced products and learning systems, AU's course and programme offerings will soon become irrelevant. Part of this challenge involves planning for continuous change in the online environment, as new technologies and applications evolve with important implications both for the quality of the online learning experience and for the way in which its component parts are managed. For example, the imminent advent of a door-to-door broadband infrastructure will provide opportunities,

and raise learner expectations, concerning the presentation of content and the nature of learning activities incorporated into online courses. Directly associated with this will be the escalating cost of providing broadband-enabled content (e.g. simulation, animation, streaming video) and high quality, interactive content. Commercial publishers are positioning themselves for this eventuality and are putting significant resources into the development of highly effective, state-of-the-art learning resources that students will be able to access online to accompany and complement textbooks. Just as most distance learning systems found it impossible to compete with commercial textbooks, and chose to build their courses around them, so too will public online providers find themselves purchasing online resources and incorporating them into their online courses. This, coupled with the emergence of usable learning object repositories, has major implications for the role of faculty members or subject-matter experts in curriculum development, where creativity will revolve around unbundling and reassembly rather than original course content and development.

A second key challenge for AU involves the development of an individualized online course model that is as scalable as the traditional print and telephone-supported one. The challenge is pedagogical in nature, as it involves designing a model that will incorporate the advantages provided by asynchronous communication with peers and the development of communities of learners, without increasing variable delivery costs, and without losing the economy of scale provided by continuous enrolment and individualized (as opposed to cohort-based) study.

Third, as a single-mode provider of distance and online learning that operates in an increasingly global educational environment, AU must continue to grow to further develop its institutional brand both nationally and internationally. Without growth in numbers and in recognition, even AU's domestic market is at risk as other internationally branded providers prepare to compete in Canada. Doubling the current enrolment by the year 2010 must be achieved without compromising quality, and in a climate of reduced public spending on education. At the same time, the capacity must be found to introduce new programmes and to accelerate the speed and frequency with which existing courses are revised and updated.

Last, these key challenges have to be addressed at the very time that the institution is making the transition to a less centralized, more

networked organizational model. The geographic location in a town of 2,000 and the difficulties associated with recruiting and retaining the requisite labour force have made this change necessary. AU is committed to implementing a modified organizational model that is characterized by networked work sites and adjusted staffing arrangements. While it is anticipated that the Athabasca facility will remain the hub of the institution's activities, interconnected nodes or branch sites will assume increased importance. The University is moving to implement a function-based approach to staff location in order to offset both the limitations of its Athabasca location and the strategic advantage that the tele-work option can lend to the recruitment and retention of top-calibre staff.¹⁸

7. THE MOST IMPORTANT LESSONS LEARNED

The fact that online learning is borderless by nature, and is significantly more affected by globalization than any other educational model, represents perhaps the most important consideration in developing institutional, national and international strategies intended to make virtual universities flourish.

At the institutional level, this means acknowledging the highly competitive context within which virtual universities operate, and recognizing that their borderless nature has advantages and disadvantages. On the one hand, a virtual university can in principle recruit students worldwide; on the other, it has no protected local geographical region from which to draw the majority of its students. Consequently, quality, flexibility and cost – the three variables most likely to affect recruitment and retention of students – take on increased importance in the virtual environment. Hence, institutional management, policy setting and strategic planning must be exploited such that an institution's positioning with regard to these factors is maximized.

Quality

Instructional Systems Design, external peer review, and accreditation provide the framework for developing and maintaining rigorous academic quality. The implementation of an Instructional Systems Design model in a virtual university environment sets the framework for developing and maintaining courses and programmes that are of high quality. Courses should be developed by teams of academics

and professionals, thereby ensuring that sound pedagogical practices inform not only the effective online presentation of content, learning activities, and assessment, but also the pedagogically rooted interaction that is to occur with instructors and fellow students. Moreover, the same attention should be given to the editing and copyright clearance of online materials as in the printed environment. Given that the online medium makes it possible for individuals to amateurishly assume the professional roles of other course team members, policies and procedures have to be in place to safeguard against this eventuality.

Quality in an online environment, however, is not just about academic content. Equally important to the success of online learners, and hence to their recruitment and retention, are the nature and quality of academic and student support services. In seeking to establish, monitor and report on practices and standards for these services, virtual universities are well advised to shift their frame of reference away from traditional academia and towards private industry (including for-profit providers of online education and training), as this sector presents better and more relevant benchmarks and practices that can be tailored to meet a virtual university's needs. As a provider of online education, it is essential to recognize that one is part of the service industry, and that the development of a very strong service culture is hence a *sine qua non* of success. Policies and procedures that emphasize this are essential, as is recognizing the importance of the service culture as a value-driven leadership model, which demands that all senior executives and managers continually exemplify the targeted values.

Flexibility

Students have consistently identified flexibility as their primary reason for enrolling with AU. Virtual universities need to ensure that their core functions are rooted in processes, policies and regulations that maximize the students' opportunities to engage in flexible learning. Eliminating the geographical barrier constitutes one aspect of flexibility. The academic and non-academic regulations that have traditionally helped define our universities must also support flexibility.

At national policy development and planning levels, governments should capitalize on the fact that e-learning is the thin edge of a wedge that will not only break down geographical barriers to accessing education, but will also help confront the unreasonably closed nature

of most universities. Unjustifiable policies and practices regarding such key issues as residency, course prerequisites, transfer credit, portability of credit, credit banking, learning banks, and recognition of workplace learning will increasingly have to be defended as a result of the shift to a much more student-centred model that e-learning promotes. Given that virtual universities and virtual consortia are catalysts for change, governments need to take them into account when developing strategies for enhancing education systems and promoting online learning (for example, when funding the development of online curricula and related research).

Cost

Competitive pricing for online educational services is affected by the financial scalability of the educational model and the size of the marketplace.

Economies of scale in the virtual university depend on the relationship between fixed costs (e.g. of developing and maintaining online content, learning activities, assessment, or administrative infrastructure systems) and variable costs (generally associated with the labour for academic support and non-academic services). Given the investment in fixed costs, online learning can be said to have a scalable model when the revenue (e.g. tuition fee, government grant) generated by serving an additional learner exceeds the costs associated with processing and serving each new learner.

For online learning to maintain the economies of scale that are found in the more traditional forms of distance education, the balance between fixed and variable costs needs to be maintained. This is achievable as long as the new online variable costs associated with monitoring and stimulating the enriched form of peer-to-peer and peer-to-instructor communications that e-learning enables are offset by a reduction in other variable costs. AU has accomplished this by significantly reducing communication costs associated with student interaction (now primarily through e-mail); by eliminating many clerical administrative functions through web-enabled interactions performed directly by students (e.g. library searches and course registration); by introducing web-based advising and counselling services; and by automating in some instances functions previously carried out by course tutors (e.g. formative and summative assessment). There is little doubt that these economies of scale can be realized much more easily when

the organization's infrastructure, policies and practices are dedicated exclusively to online education.

For online education to be truly scalable in Canada – given its population – policy-makers need to maximize the ability of provincially established universities to effectively deliver online courses throughout the country. This entails eliminating provincial barriers, such as the requirement in several provinces for approval from a provincial quality assessment board, and establishing a pan-Canadian infrastructure in support of online learning that would effectively network core regional requirements, such as broadband development, virtual libraries, and learning object repositories. For their part, universities should maximize the economies of scale, which can result from the creation of virtual consortia, that allow participating members to rationalize their online offerings and to develop niche expertise that can serve not just their own organization but all consortia members.

Last, virtual universities operating in a language spoken by a significant population outside their country have the opportunity to expand their market beyond national boundaries. Meaningful access to international markets, however, increasingly requires recognized accreditation, and the absence of a Canadian accreditation system will seriously impede most of its universities from operating overseas. Canadian universities need to recognize this shortcoming and assign a high priority to mounting a national accreditation system for universities and colleges. Elsewhere in the world, the convergence of campus-based, distributed and e-learning offerings is providing virtual universities with the opportunity to gain accreditation from established regional or national accreditation bodies. This option is vastly superior to the alternative of creating special arrangements for accrediting online programmes, as the mainstreaming of accreditation for online education can only enhance its reputation and reach.

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NOTES

1. This committee published the report 'The e-learning e-evolution in colleges and universities: a pan-Canadian challenge', February 2001 (<http://www.cmec.ca/postsec/evolution.en.pdf>), though its impact on policy, practice and research has been very minor.
2. The complete report is available at http://www.broadband.gc.ca/Broadband-document/english/table_content.htm
3. <http://www3.gov.ab.ca/innsi/supernet/news.html>
4. <http://www.innovationstrategy.gc.ca>
5. The Vice-President Academic is assisted by an Associate Vice-President Academic and an Associate Vice-President Research.
6. All amounts quoted in the case are in Canadian dollars.
7. <http://www.athabascau.ca/misc/expect/index.htm>
8. <http://www.athabascau.ca/pdf/International.pdf>
9. Communications costs are borne by AU and academics are provided with one set of hardware that they are free to locate where they choose.
10. See <http://www.irrodl.org/>
11. See <http://www.athabascau.ca/reports/survey2001.htm>
12. See <http://www.canadianbusiness.com>
13. See <http://www.abnorth.ab.ca/>
14. See <http://www.teluq.quebec.ca> and <http://www.cvu-uvic.ca>
15. See <http://www.athabascau.ca/html/collab/teluq.htm>
16. See <http://www.udem.edu.mx/>

17. See <http://www.gua.com>
18. For a full discussion of AU's future staffing model, consult the Strategic University Plan.

Developments since 2003

8. ATHABASCA UNIVERSITY AND ITS CONTEXT

8.1 Institutional context

During 2003/04, Athabasca University (AU) continued to grow and served in excess of 29,500 students. Some 27,000 were enrolled in undergraduate courses, with an additional 2,600 registered in the university's six graduate programmes. This represents an 11 per cent year-on-year increase in students served by AU during the past five years.

The proclamation of the new Post-Secondary Learning Act in March 2004 by the Government of Alberta has prompted significant changes to the university's governance model: the university is transforming itself from a unicameral to a bicameral institution. The Academic Council now receives its authority from the government, rather than from the Governing Council; under the previous system the Governing Council had legislated responsibility for the university's academic affairs, which it in turn delegated to an Academic Council. All academic decisions (e.g. programme establishment/discontinuation and academic regulations) now fall under the legislated purview of the Academic Council rather than that of the Governing Council, though the latter still ultimately maintains full responsibility for all financial decisions. While some may regard this change as somewhat cosmetic, in that the Governing Council had previously delegated academic decision-making to its Academic Council sub-committee, symbolism can be very important to an academic culture. Vesting academic decision-making legislatively in the Academic Council is a change that the academic community had been advocating for many years.

AU nevertheless remains different from its sister institutions in Canada by virtue of the fact that the others are in fact tricameral, rather than bicameral. Unlike them, AU quite appropriately, given its national mandate, does not have a regional, community-based senate, embodied in the figure of a chancellor.

Changes in the composition of the University Governing Council also reflect the university's evolution and the fact that student fees

now account for some two-thirds of the annual base operating budget. This has resulted in a significant increase in student representation on the Governing Council, from one member to three (one of whom represents graduate students). However, in order to ensure that members representing the general public remain in a majority position, the latter's constituency membership has also increased. Lastly, public membership is no longer restricted to residents of Alberta, a change that Athabasca University welcomes, given its national student profile.

8.2 International context

With some 5 per cent of its total student population residing outside Canada, AU continues to prepare for meaningful international growth by pursuing accreditation in the USA. The absence of institutional accreditation within Canada and the natural wariness of prospective, non-resident students about the credibility of unknown virtual institutions, make accreditation by an internationally recognized, peer-review agency a prerequisite for significant global expansion in the area of individualized online learning. In order to address this, AU has achieved Candidacy Status, and is in the final stages of a process that should lead to US accreditation from the Commission on Higher Education of the Middle States Association of Colleges and Schools.

Expansion in individualized learning notwithstanding, a preferred model for international, group-based study is emerging as a result of the university's field tests of different partnerships in Asia over the last few years. The Group Study International delivery mode sees AU incorporating internationally accepted, two-year diplomas (e.g. Association of Business Executives Advanced Diploma) into its four-year Bachelor of Management degree, and working in collaboration with offshore providers in the blended, group-paced delivery of the remaining two years of study. While AU assumes primary responsibility for the curriculum, learning resources and assessment, the local partner is accountable for marketing, recruitment, academic (tutoring, instruction) and non-academic (advising, non-digital library) support services.

8.3 National context

The five-year trend that saw AU dramatically increase its student population in the Province of Ontario continued into 2003/04. Some

30 per cent of the university's students now reside in Ontario, in contrast to 39 per cent in Alberta. In fact, in the last year, the Province of Ontario enrolled almost twice as many students (1,065) in graduate programmes as the host province of Alberta (644).

National expansion remains critical to AU's ability to continue to gain economies of scale. However, a disturbing national trend is developing that jeopardizes the further development of a national market for online courses. In recently establishing its Campus Alberta Quality Assessment Council, the Province of Alberta was following in the footsteps of Ontario and British Columbia, each of which has its own, independent quality review process. While the mandates of these three councils are not identical (some apply to in-province public universities, others do not), all three require out-of-province providers, public and private, to seek permission for the right to operate (or indeed market themselves) as a university within that province. As permission is often granted on a programme, rather than an institutional basis, this would require AU to submit each of its more than 50 programmes for approval, at a projected institutional cost in excess of 5 million Canadian dollars (excluding personnel costs).

It remains far from clear where this will lead. The Council of Ministers of Education of Canada is seeking ways to establish reciprocal recognition by provincial quality assessment boards, but the outcome will be neither tangible nor timely. Most provinces do not even have such a board, and where they do exist they:

- are significantly different in their composition (e.g. they may be entirely or only partially appointed by government);
- operate under very different mandates (e.g. they may, or may not, apply to established public universities);
- adhere to different quality control measures.

In addition to the Council of Ministers of Education initiated collaboration in this area, provinces and territories are starting to explore bilateral or trilateral agreements. For example, in April 2004, the provinces of Alberta and British Columbia signed a Memorandum of Understanding on distance education. This states that they will improve online courses by reducing duplication of effort, and allow more information sharing between Alberta and British Columbia.

Regretfully, neither the individual forays into quality assessment boards, nor the bilateral or multilateral agreements that may ensue, really address the fundamental problem facing virtual universities in Canada: that is, the absence of a national, peer-regulated accreditation model for institutional approval and review that can provide online learners, both at home and abroad, with the assurance that they are dealing with an internationally recognized, accredited institution. In this regard, the recent initiative by the Association of Universities and Colleges of Canada, requiring the executive heads of all institutions to sign a two-page document entitled 'Principles of institutional quality assurance in Canadian higher education' serves little purpose.

9. ORGANIZATION AND CURRENT PROGRAMMES

9.1 Organizational structure

Since September 2003, AU has significantly revised its organizational structure by establishing an External Relations Division, by breaking up the Student Services Division and regrouping those functions that it previously brought together (with the exception of Computing Services) under an Associate Vice-President Academic, and by establishing the position of Chief Information Officer.

The creation of an External Relations Division, incorporating primarily public affairs and communications, alumni services, fundraising and scholarships, and responsibility for student union relations recognizes the increasing need for the university to diversify its funding sources.

The reorganization involving student services and their integration under the Vice-President Academic was driven by three factors:

- the desire to mainstream the responsibility for student services, given that the special attention that this portfolio had received over the last ten or so years had resulted in an imbedded acceptance of the increasingly important role that services to students must play;
- the evolution of the Vice-President Academic's role to incorporate more of the responsibilities traditionally assigned to a provost, and also to reflect the requirement that the President be more externally focused;
- a concern that the revised divisional structure not be perceived as a dramatic increase in the University's senior executive.

The reorganization of the Academic Division also involved other significant adjustments. Educational Media Development, the professional course development unit that primarily regroups course materials editors, instructional/web designers and graphic designers, was reassigned from the Vice-President Academic to the Associate Vice-President Academic, as was the unit responsible for tutorial and outreach services. Lastly, the position of Director, Arts and Sciences, with managerial responsibility for the academics in related centres, was established. This dean-like position functions as an intermediary between the Vice-President Academic and the academic centres reporting through it.

Finally, the establishment of the Chief Information Officer was seen as a critical strategic investment for the institution. Reporting directly to the president and a member of the senior executive group, the Chief Information Officer provides advice on the strategic planning and deployment of all academic and non-academic information systems, hardware and personnel.

Organizational structures must be fluid and responsive during a period when institutional and environmental change is so prevalent. Time will judge whether the major reorganization of student services and the academic division proves to be effective. Two significant gains would seem to have been achieved: on the one hand, the better integration of academic and student services; on the other hand, the reduced involvement of the Vice-President Academic in the day-to-day management and operational duties (only academic directors and associate VPs now report directly to the Vice-President Academic). While there is little doubt that these are distinct advantages, there may well be an element of risk in the reduced institutional profile (based on reporting line) assigned to student services. The functional importance of these activities has been maintained to a certain extent, however, by adding the Associate Vice-President Academic to the senior executive group.

9.2 Current programmes

Courses

The AU business plan is premised on maintaining more or less the same number of courses, while increasing course registrations by 10 per cent per annum. This strategy is based on two facts:

- the university needs to gain greater economies of scale, and increasing the number of courses without a significant increase in new funding is not economically justifiable;
- the online environment requires much more frequent updating and revising of courses than did earlier forms of distance education.

Programmes

Primarily by reconfiguring and regrouping existing courses, the following new programmes were approved by the Academic Council in 2003/04: B.A. in environmental studies; advanced university certificate in e-commerce, and university certificates in e-commerce, financial services, marketing and environmental studies.

This past year also saw university approval of the institution's first doctoral programme, a doctor in distance education. Although the doctor in distance education is considered a very important strategic development for the university, governmental approval is tied up in the Campus Alberta Quality Assessment Council process, resulting in an anticipated programme opening date of September 2006.

Interest in AU's programmes and their completion is further demonstrated by the fact that institutional graduation rates continue to increase dramatically. In 2003, 442 students graduated from undergraduate programmes, and 565 from master's programmes, a combined increase of 10 per cent over 2002.

Staffing

By March 2004, the total staff complement had exceeded 1,000 for the first time in the university's history (see Table 9.1).

Of these, 419 staff were assigned to Athabasca (including about 55 teleworking, regular academics operating out of home offices principally in the greater Edmonton region), 103 formally worked out of the Edmonton Learning Centre or the St. Albert (Greater Edmonton) Centre for Innovative Management (home to the MBA), and 13 were assigned to southern Alberta (primarily to the Calgary Regional Centre). The year 2004 also witnessed the introduction of a voluntary teleworking policy for academics assigned to the Athabasca main campus. In exchange for a one-time, set-up payment and modest standardized annual operating allowances, academics who agreed to this policy (where attendance in Athabasca is necessitated by job

Table 9.1 Athabasca University staffing table

	1996	2003
Academics (regular)	65	106
Academics (part-time)	31	161
Tutors (part-time)	174	258
Professionals	53	145
Management/Executive	12	17
Support/Temporary	132	262
Casuals	34	79
Total	501	1028

Source: Athabasca University annual reports, 1996 and 2003.

requirements rather than regular scheduling) were reassigned from regular offices to shared ‘hotel’ working space on the main Athabasca campus.

10. ACADEMIC ISSUES

As a result of the university’s recent adoption of a bi cameral governance model, the Academic Council has formed a sub-committee to review its mandate and bylaws. At the time of writing, it is expected to report its findings at which time a revised mandate and set of standing committees will be approved.

10.1 Accreditation and quality assessment

The creation of the Campus Alberta Quality Assessment Council represents another highly significant change brought about by the new Post Secondary Learning Act. The Council’s primary role is to review, and recommend to the Alberta Learning Minister, all new university-level programme proposals. Primarily intended as a way to depoliticize the process for community colleges to become degree granting, and to regulate out-of-province private providers, its implications are nevertheless far-reaching. Insofar as AU is concerned, the university (like all others) will now be obliged to submit all new degree programmes to the council. Whether or not this public (yet to be appointed) body will provide added value remains to be determined, but established public providers of degree-level education are concerned that it not

slow down the new degree approval process and/or introduce another political hurdle, albeit of a different nature. These fears are of particular concern to innovative, non-traditional institutions such as AU, who until now have benefited in Alberta from a more entrepreneurial, less regulated programme approval process.

10.2 Teaching

Transformation of the undergraduate curriculum to the electronic environment has been accelerated with the awarding of a CA\$1.5 million provincial government grant that will see the top 150 undergraduate courses, in terms of registrations, online by September 2005. In effect, this will result in online courses accounting for at least 80 per cent of undergraduate course registrations by that date. All graduate courses are already online.

The university also anticipates approving the phased-in transition to a single learning management system before 2005. This consolidation is considered to be essential by the executive group, if the university is to ensure that it maximizes resource allocation and e-learning pedagogy opportunities.

11. COOPERATION

The major thrusts remain unchanged, albeit that collaboration with college partners, particularly in Alberta, is gaining in importance. Increasingly, Athabasca University is seen by sister institutions as providing part of the answer to their own students' needs, and this is being translated into inter-institutional collaboration agreements. On the one hand, major community colleges, often with significant degree granting expectations of their own, consider joint degree delivery either as a means to this end, or as an end in itself. On the other hand, sister universities are for the first time interested in discussing collaborative agreements that would see Athabasca University open storefront offices on their campuses, thereby facilitating access by their students to flexible, online courses that would be accredited as part of their residential degree programmes.

12. FUTURE DEVELOPMENT

Athabasca University today finds itself in a period of transition, brought about primarily by a change in its senior leadership resulting from the departure, in a very short period, of the President and Vice-President

Academic. At the time of writing, the university was to engage in a new strategic planning process, directed by the new executive team. Of significant additional importance, is a dramatic change in the provincial government's commitment to the funding of post-secondary education, a direction to which it has assigned the highest level of importance. In contrast to the 31 per cent budget cut that Athabasca University faced between 1994 and 1997, commitments have been made to base budget increases of 6 per cent in each of the next three years, and considerable additional funding for increasing access to higher education. This change in the funding environment will inevitably affect the next strategic university plan.

Chapter 10

KENYATTA UNIVERSITY – AFRICAN VIRTUAL UNIVERSITY, KENYA

Magdallen N. Juma

1. THE AFRICAN VIRTUAL UNIVERSITY (AVU) AT KENYATTA UNIVERSITY AND ITS CONTEXT

The case describes the experience of Kenyatta University as a participating institution in the World Bank-initiated project, The African Virtual University. Although the focus of the case is on Kenyatta African Virtual University (AVU), a certain amount of information has been provided on the AVU project itself, information that describes the project context and its evolution.

1.1 International context – the African Virtual University

The African Virtual University was established in 1996 as a project of the World Bank. The official launch of the project in Africa took place in Addis-Ababa in February 1997. During the launch, there were representatives from six universities in six African countries, Ethiopia, Ghana, Kenya, Tanzania, Uganda and Zimbabwe, and subsequently the ministers of finance of participating countries, World Bank country representatives, and representatives of interested institutions signed the World Bank contract. Its operational headquarters were based in Washington DC.

AVU was originally conceptualized as a technology-based distance education network to bridge the digital divide in Africa, especially by building capabilities in science and engineering. The delivery model integrated satellite and Internet technologies, allowing the provision of

quality content from all over the world, while taking into account the technological and infrastructure limitations prevailing in Africa.

Grants of close to US\$200,000 were provided by the World Bank to each of the six participating countries for the implementation stage. The grants were used to purchase AVU satellite receive terminals and basic equipment to start up the AVU project in twelve universities. Universities that joined subsequently did not all receive grants, which resulted in diverse development among sites.

Objectives

The original objectives of the AVU were to complement and strengthen the ongoing efforts to:

- increase access to tertiary and continuing education in Africa by reaching large numbers of students and professionals in multiple sites simultaneously;
- improve the quality of education by tapping the best African and global academic resources, and by offering training to academics in African universities to prepare teaching materials for delivery through the AVU network;
- contribute to bridging the digital divide by improving connectivity in AVU learning centres and host universities, and by providing training in engineering, computer science, IT and business;
- serve as a catalyst for new investments and economic development by offering skills training and upgrading for professionals, and contributing to improving skills of the labour force;
- build the capacity of African tertiary education institutions and their faculty for better management, financial sustainability and extension of their reach through delivery of distance education.

Development strategy

The development of AVU was foreseen in three phases.

Phase one (1997–1999)

The ‘proof-of-concept’ or feasibility stage using courses provided by institutions in the USA, Ireland, and Canada, and facilities of the World Bank, with the support of vice-chancellors from various African universities.

Phase two (1999–2002)

The establishment of thirty-one AVU learning centres in partner universities in seventeen African countries (nine anglophone, seven francophone, and one lusophone), aiming to create more partnerships, train 23,000 Africans in journalism, business studies, computer science, languages, accounting, etc., and assess AVU's needs for providing sustained access to affordable quality education at tertiary level for Africans.

Phase three (2002–2007)

In 2002, AVU was established as an independent non-profit organization with headquarters in Nairobi. The objectives of this phase include:

- expanding to 150 learning centres in 50 African countries;
- introducing four-year degree programmes in computer science and business studies, both in French and English; and
- establishing AVU's own communications infrastructure: a hub, studio and VSAT¹ at its headquarters in Nairobi, Kenya.

At the beginning, the AVU management team at the World Bank consisted of the AVU founder (a World Bank manager), technical coordinators, a chief academic officer and an administrator. In most cases, consultants were deployed to develop various AVU products, such as the digital library resources, evaluation strategy and many other services.

As a project of the World Bank, all funding for the AVU was channelled through World Bank trust funds by donors such as the World Bank, the Canadian International Development Agency, Norwegian Agency for Development Cooperation, Irish Development Agency, and the European Union. All of these funds were managed by the World Bank.

1.2 National context – Kenyatta AVU

The situation of tertiary institutions in Kenya is similar to that of higher education in the rest of sub-Saharan Africa. While Kenya placed much importance on the role of education in promoting economic and social development after independence in 1963, the persistent sour relations between the government and universities have not augured well for the latter's financial support. This has been demonstrated increasingly through budgetary cutbacks and general neglect of problems facing

the universities. In 1980 Kenya spent around US\$3,402 per student; in 1983 this amount dropped to US\$1,521, and by 1988 it had dropped to around US\$1,000 in recurrent expenditure (World Bank, 1988).

Moreover, the World Bank and International Monetary Fund Structural Adjustment programmes have reduced the level of government funding of universities, and so-called rationalization programmes have been carried out on an ad hoc basis without any meaningful justification. The imposition of student fees, reduction or cancellation of student subsidies, and the privatization and commercialization of universities are recommendations that, though well intentioned, have not been suitable for the fragile economy of the country. A major problem that has further worsened the funding of public universities is the government's failure to rationalize the mechanisms for determining and allocating budgetary resources for universities.

In spite of these problems, public universities in Kenya have expanded very rapidly within the past decade or so. However, the high number of student admissions has not been matched with the provision of teaching facilities and resources, especially lecture halls and student housing, and tutorials are quite rare. Furthermore, following frequent closures of universities, a backlog of students has emerged since the mid-1980s that has necessitated a double intake. Since the facilities cannot accommodate regular intakes, let alone the extra intakes, this has meant that various groups of students have been forced to complete their semesters at different times within a given academic year.

The rapid expansion of the universities has also had a far-reaching effect on the quality of the teaching staff. To recruit academic staff for the public universities, the tendency has been towards relaxing the recruitment and promotion criteria. In practically all of the universities, a Ph.D. degree is no longer a requirement for tenure, and publication is a less important criterion for judging who should be promoted. Moreover, under these conditions, it is no longer possible to attract competent staff from abroad to teach in public universities.

The government has attempted to implement some measures to provide greater access to education. Unfortunately, they have been insufficient and the demand remains much greater than the available opportunities. For instance, in the 1999/2000 academic year, out of 30,243 school leavers (with a Kenya Certificate Secondary Examination) who obtained grade C+ and above, only 9,017 were admitted to public universities; and in 2000/2001, out of 40,498, only

11,147 were admitted. Of those left out, some were expected to enrol in private universities or polytechnics. Also, it should be noted that more and more students are studying abroad; in 2002 some 5,000 Kenyan students enrolled in US universities, while others have gone mainly to the UK, France and Russia.

Tertiary institutions in their present form – overwhelmed with problems related to access, finance, internal and external efficiency – are not able to provide quality education in sub-Saharan Africa. Enrolment levels are low. Limited space and declining budgetary levels prevent universities from servicing the growing demand for higher education. As a result, universities in sub-Saharan Africa suffer from low numbers of trained faculty, practically non-existent levels of research, outmoded programmes and poor quality of educational materials (e.g. African libraries have suffered immensely as collections have become out of date, and laboratory equipment is old, in disrepair or obsolete). Moreover, universities often do not foster critical thinking, problem solving and creativity, all essential skills for promoting entrepreneurship.

These constraints have prevented institutions of higher education in Africa from being able to produce graduates with skills that relate to the needs of the country. The profile of graduates is inconsistent with labour-market needs. To a large extent, many African universities have failed to remain relevant in a rapidly changing world, as a disproportionate number of their students graduate in the humanities rather than in the fields of science and engineering. It is thus highly questionable whether tertiary institutions can afford to continue to develop under this traditional model of higher education, particularly if the countries of sub-Saharan Africa wish to expand access to higher education while maintaining quality. On the other hand, the alternative of sending African students abroad for study is not a realistic option for meeting the needs of sub-Saharan Africa. Hence, the basic paradigm under which the system of higher education operates needs to be reassessed. At the same time, a technological revolution is taking place in the world, which makes the introduction of the needed changes possible.

As countries of sub-Saharan Africa enter the new millennium, the greatest challenge is to provide quality tertiary education to a majority of the population. However, bold steps have to be considered by governments if they are to provide their people with affordable access to education using methods of mass education. Even by using

these methods, not all aspirations will be met. One solution available to governments is to use new technologies as the means to deliver a variety of educational opportunities to individuals in their respective countries. Creating virtual learning systems like the African Virtual University is potentially such a solution.

1.3 Institutional context – Kenyatta University

Kenyatta University is situated about 16 kilometres from Nairobi on the Nairobi-Thika dual carriageway on 1,000 acres of land. The long journey to university status started in 1965, when the British Government handed over the Templar Barracks to the Kenyan Government which were converted to Kenyatta College for training secondary school teachers. Following an Act of Parliament in 1970, Kenyatta College became a constituent College of the University of Nairobi. University status was achieved on 23 August 1985, and Kenyatta University immediately started establishing new faculties and constituent colleges. The main mission of the university is to:

- provide directly, and in collaboration with other institutions of higher learning, facilities for university education, including technological and professional education and research;
- provide advanced university education and training to appropriately qualified candidates, with the award of degrees, diplomas and certificates;
- conduct examinations for granting such academic awards;
- determine who may teach, what may be taught and how in the university;
- play an effective role in the development and expansion of opportunities for Kenyans wishing to continue with their education (Kenyatta University Calendar, 2000).

Kenyatta University currently offers Bachelor's degree programmes in five areas: arts, commerce, education, science, and environmental studies, and offers postgraduate work up to doctoral level in the fields of education, arts and science.

Like other public universities, Kenyatta University obtains the bulk of its funding from the government treasury, and this covers around 85 per cent of its expenditures, both recurrent and for development.

Other sources include student fees, income-generating activities and some external grants.

With regard to the academic staff situation, the overall staff-student ratio is around 1 to 27, but this is a generally deceptive figure with regard to individual disciplines, where the ratio may be much higher.

2. CREATION, ORGANIZATION AND CURRENT PROGRAMME OF THE KENYATTA AVU

There have been innovative responses to the challenges facing higher education in Africa. The African Virtual University is clearly one of these. This section outlines how the project was implemented and developed from 1997 to 2001 at Kenyatta University, one of the participating institutions.

2.1 Creation of the Kenyatta AVU

The AVU inaugural workshop held in Addis Ababa in February 1997 was attended by a contingent of five people from Kenyatta University. After the conference, a contract was signed between the Kenyan Government and the World Bank and the supplier of the Satellite equipment COMSAT. Preparations, such as installations and renovations, were completed, and the Satellite Receiver Terminal was installed in June 1997. For Kenyatta University, participation in the AVU was seen to come at an opportune moment to revitalize and supplement existing academic provision in the following ways.

Increase provision

The six public universities and five private universities in Kenya cannot meet the demand for higher education. Admission to public universities is pegged on resources, and private universities are expensive and many of them offer mostly humanities courses. AVU can thus provide more university and training opportunities to qualified students.

Increase opportunities in science studies

AVU programmes will increase enrolment in science courses, such as computer science, computer engineering, information technology and electrical engineering. Demand is high but university departments offering such courses admit only between twenty and sixty students per year only (Joint Admissions Board, 2000).

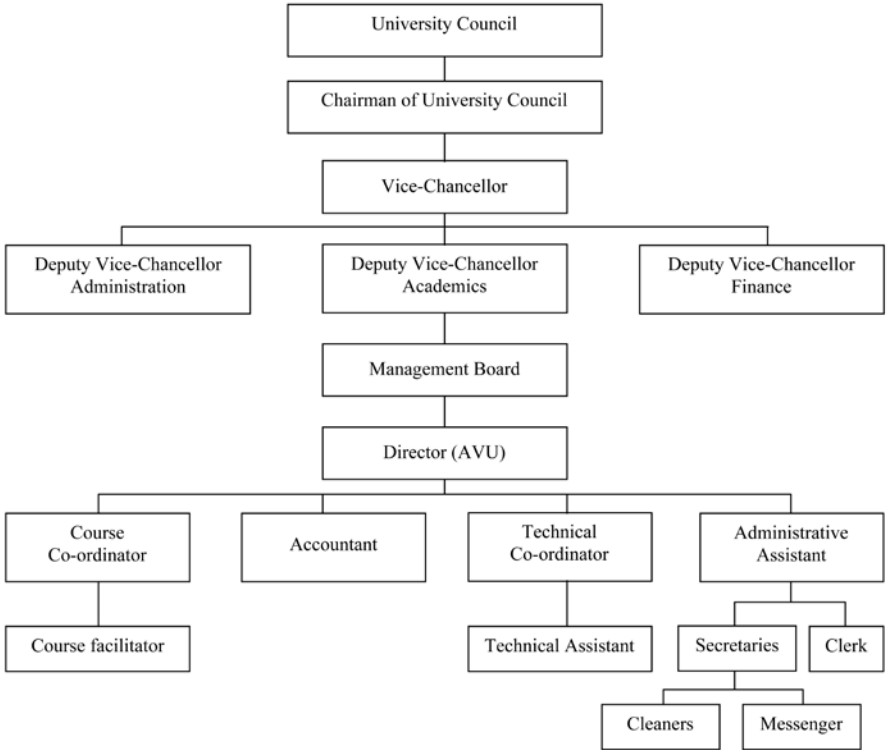
Increase opportunities in continuing distance education

Distance education programmes that provide degree courses in Kenya are very few, and many of these focus on humanities courses. In addition, employers from the private sector and from non-governmental organizations are faced with a huge need to train their employees.

Build capacity

AVU can play a pivotal role in capacity building for different kinds of people in different occupations. It provides an opportunity for professors, lecturers, students and other university employees to access knowledge, skills and positive attitudes towards information technology. In Kenyatta University, the demand for AVU courses has been so great that for the past three years only 5 per cent of the demand could be fulfilled. In the public and private sectors, demand for AVU

Figure 10.1 Organization of Kenyatta AVU



courses has come from government agencies (i.e. armed forces, police, various ministries), primary and secondary school teachers, lawyers, insurance and accounting firms, as well as from hotels, tourism boards, the sugar industry, breweries and banks.

Increase teaching/learning resources to the university

AVU helps to provide essential resources to universities. Access to digital library resources will improve research and learning at universities. Students, medical practitioners, lawyers, professors, etc. can have access to high-quality and current information.

Provide computers and Internet connectivity

AVU functions as a technology hub in some of the host universities, and its enhancement of Internet connectivity contributes towards revitalizing the technological capacity of these institutions. Resources such as computers, satellite transmitted lectures, tapes, course notes, textbooks, CD-ROMs, etc. can be shared by teaching staff and students, particularly in the faculty of science.

Contribute to bridging the digital divide

AVU contributes to connecting the participating institutions and to training knowledge workers with essential skills for the job market.

Increase participation of women in science and engineering

AVU is well positioned to provide alternative educational avenues using an IT learning environment and can enhance women's ability to enrol in computer science, computer engineering and electrical engineering courses.

2.2 Organizational structure

Kenyatta AVU has a director/campus coordinator, a technical coordinator, a programme coordinator/course coordinator, an administrative assistant, one clerk, one accountant, six technicians, one messenger, two secretaries, one gardener and two cleaners (see Figure 10.1).

All of these nineteen people are employees of Kenyatta University and can be transferred to other departments. Kenyatta AVU hires part-time staff to facilitate course delivery. These are either members

of Kenyatta University, or of other universities and institutions in the country. The teaching staff is made up of eight lecturers, who are paid by AVU at the rate of US\$9.30 per hour. Most of the course facilitators have the minimum of a Masters degree in relevant fields.

In some of the participating universities, as was the case at Kenyatta University, AVU was accorded special status as a centre within the Institute of Distance Education, and acted as the main technology hub within the university. However, in most other participating universities, AVU learning centres are not recognized within the general framework of the university, and they remain small, separate units. Such an arrangement is not ideal as AVU is not included in general university budgetary allocations, management planning and administration, which means that AVU learning centres function outside the mainstream activities of the university.

2.3 Current programmes

Enrolment in AVU courses

The first students at Kenyatta AVU were regular Kenyatta university students from the department of mathematics. Thirty-seven students opted for a Calculus One course offered during an AVU summer semester (14 July – 6 September 1997), which was transmitted from the University of New Jersey, USA, via satellite. The course credits the students obtained from the AVU were taken into account for their degree programme in mathematics. Later, about 100 Kenyatta students from the departments of physics, chemistry, mathematics and appropriate technology enrolled in AVU courses; credits from this coursework were also counted towards their final degrees. The courses that the AVU offered to regular Kenyatta University students were essentially science (i.e. physics, mathematics, chemistry) and engineering courses, including computer science courses.

At about the same time, the AVU also began offering courses to students who were not full-time Kenyatta University students, namely, the general public and primary and secondary school teachers. These courses, which were mostly for learning how to use computers and various Microsoft programmes (i.e. Windows, Word, Excel, Access, PowerPoint, etc.), as well as the Internet, provided learners with a certificate.

From 1997 to 2001, AVU increasingly focused its course offer on computer certificate courses and executive seminars. This is reflected

in Kenyatta AVU enrolment trends, where enrolments in certificate courses increased from 993 students in 1998, to 2,594 in 1999 and 3,324 in 2000. During 1997–2001, 45.6 per cent of all students enrolled in AVU courses took certificate courses (mostly computer courses), 17.4 per cent took university preparatory courses, 16.9 per cent took teacher-training courses, 15.9 per cent took seminars, but only 4.2 per cent were regular Kenyatta University students taking AVU courses for their degree programmes.

The certificate courses have been popular because of the quality of training, recognition of certificates and availability of facilities they offer. It is worth noting that the high enrolment in Microsoft Office courses, for example, is largely due to their relevancy to computer users, especially those who are working. It is also worthy of note that enrolment decreases as courses become more advanced. This being said, students nonetheless feel that AVU-Kenyatta should offer courses besides the current certificate courses, especially degree programmes in computer science and engineering. As of January 2003 the AVU network started offering a degree programme in computer science at various sites in Africa, including at the AVU centre of Egerton University in Njoro, Kenya. The four-year programme, transmitted from the Royal Melbourne Institute of Technology in Australia, will be available in its entirety or only partially, as a two-year diploma course.

Since Kenyatta AVU started, at least 2,417 people with various backgrounds have participated in AVU seminars, which can be on topics ranging from cyber rights and investigative journalism to economic growth and writing CVs. For example, 1,743 people have taken the seminar on writing a winning CV. The attendance at the seminars has been good so far, and is increasing each year.

Kenyatta AVU students

Most Kenyatta AVU students come from districts surrounding the capital city Nairobi; the Nyeri district, which is endowed with agricultural potential (coffee and tea), has the highest number of AVU students. The ability and willingness to pay for AVU courses is largely due to the socio-economic level of the district's inhabitants and an increased demand for education, especially for the computer skills now required for most jobs.

An analysis of the educational background of Kenyatta AVU students indicates that approximately 62 per cent of the students have

an O-level education, 10 per cent an A-level education, 13 per cent are university graduates and 1 per cent are postgraduates, with 'others' (i.e. other diploma holders) representing 14 per cent.

With regard to occupation, 62 per cent of Kenyatta AVU students are actually full-time students of other institutions, 25 per cent do not have a particular occupation, and the remainder represent a diversified group of teachers, farmers, homemakers, accountants, computer technicians, artisans, business people, etc. For example, most of the teachers who have been trained at Kenyatta AVU are primary school teachers. About 55 per cent are men, while 44 per cent are women. Kenyatta AVU students tend to be young, with many being under 25 years old and few over 35 years. In 2000, student enrolment at Kenyatta University declined by 7.2 per cent, from 7,758 in 1998/99 to 7,196 in the 1999/2000 academic year. Female students constituted 19.8 per cent of the total enrolment (Republic of Kenya, 2000a).

3. ADMINISTRATIVE ISSUES

The Kenyatta AVU administrative model is influenced by two different types of organization. First and foremost, AVU Central in Nairobi – the AVU headquarters and technology hub in Africa – provides courses, learner-support systems, delivery technology, quality assurance and evaluation systems for AVU participating institutions throughout Africa. Second, Kenyatta University, like any other AVU partner university, provides physical infrastructure, equipment, personnel and support so that AVU can function through its learning centre at the Kenyatta University site. Kenyatta AVU administrative processes are mainstreamed in Kenyatta University procedures, but the administrative structure can sometimes create challenges for Kenyatta AVU to function effectively as an AVU learning centre.

3.1 Administration

There are important differences in the organization and administration of short courses and degree programmes. For example, the short courses offered by Kenyatta AVU include computer courses and seminars which can last from two weeks to six months. Students who take short courses are part-time, while those enrolled in degree programmes are full-time. All AVU courses at all African sites are offered in learning centres. Students must present themselves at the learning centre to follow their courses, which may be transmitted from anywhere in the world.

The management of Kenyatta AVU is facilitated through regular meetings of the AVU Management Board, monthly AVU staff meetings and weekly plenary meetings with students. Virtual meetings are also held once per semester by AVU Central in Nairobi with all thirty-four learning centres in Africa, including Kenyatta AVU. The management of students includes student social counselling provided by the university, and academic counselling provided by the learning centre manager and course facilitators. Students are encouraged to participate in decision-making through the AVU student club, AVUNET, at Kenyatta University. This acts as a 'student council' which meets once a week to articulate student problems and ways and means of solving them.

Even though administration and management of Kenyatta AVU has worked well since 1997, there have been some challenges that have hindered the progress of the learning centre. Since Kenyatta AVU is part of Kenyatta University, its organization management and administration policies, structures and processes are in line with those of Kenyatta University. This kind of arrangement is not conducive to managing a virtual learning environment, which requires quick decision-making processes. For example, the Kenyatta AVU Director has no authority to purchase equipment, software or recruit staff. The Kenyatta AVU management team reports to the Board of Distance Education of Kenyatta University, which oversees the management of the AVU learning centre. Other issues pertaining to financing and academic programmes are also presented to the Board, which channels all matters to relevant university committees, including the Senate, for decision-making. There are important delays in this kind of administration system, which is appropriate for a face-to-face teaching environment but not a virtual learning environment. AVU academic programmes are another domain that requires the developing and implementing of new structures and procedures that are different from the face-to-face education model. An AVU learning centre, for example, requires designated satellite transmission viewing rooms, adequate computers, Local Area Network servers, good Internet connections, learner-support systems, printers and relevant software. All these teaching and learning resources must be procured in good time and managed so as to facilitate provision of quality education. However, delays in decision-making and a slow bureaucratic system pose a major challenge to effective delivery of

AVU academic programmes. Another impediment to the AVU mode of learning is the difficulty of attracting and retaining qualified computer scientists. Computer technology is a lucrative profession in terms of salaries, and yet universities remunerate computer specialists at the same level as university lecturers or senior lecturers. Computer specialists tend to leave for greener pastures in the private sector; Kenyatta AVU therefore suffers from a high turnover of these specialists. This poses a threat to the supply of part-time, qualified facilitators for the computer-based courses.

3.2 Costs and financing

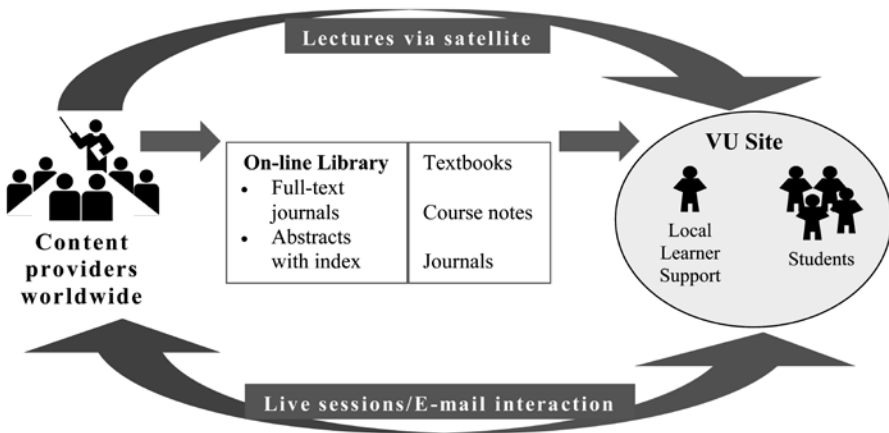
Although the World Bank gave an initial grant of US\$194,000 to Kenya, it was difficult for the Kenyatta AVU to obtain the funds from the Ministry of Finance due to bureaucracy and stringent financial policies. In response, the Director of Kenyatta AVU implemented a comprehensive marketing strategy, which resulted in many people with different backgrounds (i.e. students at other institutions, teachers, private-sector employees, etc.) enrolling in AVU courses.

The Kenyatta AVU learning centre became the highest income-generating unit of Kenyatta University. Kenyatta AVU managed to generate a profit, mostly from its computer short-courses. The learning centre was thus able to purchase computers, pay for course facilitators and Internet connections, and meet other operating costs.

3.3 Technological infrastructure

AVU uses a technical infrastructure that integrates satellite and web-based technologies to transmit video and data resources from anywhere in the world to the participating institutions in Africa. It also provides the flexibility to incorporate proven and emerging interactive tools and multimedia resources to support student learning and network operations. A combination of live and videotaped instruction, supported by textbooks, a digital library and course notes, are provided by the participating universities and content providers. Students interact with their instructors and other students via phone, e-mail, discussion forums or fax. AVU transmits courses and seminars via NSS803, a C-band international satellite whose footprint covers the entire African continent, Western Europe and the East Coast of the USA and Canada. Programmes are transmitted through AVU's American hub located at COMSAT Digital Teleport in Maryland, USA.

Figure 10.2 AVU delivery model



3.4 Intellectual property

The delivery of academic programmes is the core activity of AVU (see Figure 10.2). All partner institutions, including AVU-Kenyatta, participate in AVU-delivered courses. AVU Central in Nairobi uses three types of 'licences'. Since AVU Central does not develop and design course content itself, it procures courses from around the world. For example, AVU is currently transmitting computer courses from the Massachusetts Institute of Technology in the USA. For this kind of short computer course, the Institute owns the copyright and AVU purchases the course and is given a licence to broadcast course content to a specified number of learning centres and a specific number of students. This kind of licence is 'single use', which means that AVU is authorized to use the materials only once. The second type of licence is 'multiple use'. This permits unlimited transmission of course content to as many sites and students as possible, but for a specific period. The third type of licence, a 'one-time licence', is applicable to degree courses. In this case, AVU pays a fee to buy and own the licence. For example, AVU has paid for the licence for the four-year computer science degree course from the Royal Melbourne Institute of Technology in Australia, which started transmitting the course to AVU sites in Africa in January 2003. After the four years, the licence reverts to the Institute.

Lessons learned

- The administration and management of virtual universities is different from that of conventional ‘face-to-face’ universities.
- Learning centres within a university need to be autonomous for effective management.
- Flexibility in management processes and delivery systems will enhance business operations of an AVU learning centre.
- New learning needs emerge from a virtual learning system where students/clients want ‘just-in-time’ and personalized services.
- Delivery of quality education at an affordable price is the strong point of AVU courses.

4. ACADEMIC ISSUES

Kenyatta University is basically a single-mode conventional university offering some distance education programmes. The AVU Learning Centre is situated within its Institute of Distance Education. Due to the conventional orientation of Kenyatta University, academic and administrative responsibilities rest with the governing council, Senate, faculties, institutes and departments. The University Council is the highest governing body of the university, whose membership consists of distinguished Kenyan scholars and representatives from the Senate.

The AVU headquarters in Nairobi determine the academic programme for the entire AVU network in sub-Saharan Africa, including Kenyatta AVU.

4.1 Programme development

The AVU has attempted to address the issue of capacity building by partnering with universities in sub-Saharan Africa and content providers in countries such as the USA, Canada, France, and Ireland for the provision of courses.

Management of AVU learning resources

During the pilot phase of the AVU, all teaching and learning resources for the project were managed from the AVU unit of the World Bank in Washington DC. The Chief Academic Officer procured, coordinated and managed the delivery of courses to AVU institutions in Africa. INTELSAT provided satellite capacity, and instructors who taught and delivered courses via satellite were paid by AVU management. Textbooks,

course notes etc. were sent free of charge to AVU learning centres. During this initial phase, the AVU team in Washington together with local staff, including facilitators at the AVU sites in Africa, supervised and evaluated the AVU programmes. However, with the transfer of AVU headquarters to Nairobi in Kenya in 2002, the management of AVU learning resources is now coordinated from Nairobi.

4.2 Teaching

Although course-content production and delivery during the pilot phase of the AVU project was from the developed world to African universities, there was much input from students, lecturers and managers of AVU learning centres in Africa on what they wanted, which was important for contextualizing content to their local needs. For course-content planning, preparation and delivery, AVU relies on expertise from around the world to deliver knowledge. With satellite transmission and appropriate information and communication technologies, one expert is able to teach many people in different locations.

Pedagogical approach

In recognition of the learner environment in which AVU operates, a flexible mixed-mode delivery approach has been adopted. The approach uses a careful combination of synchronous video broadcasting, online learning materials, and pre-packaged learning materials on CD-ROMs and DVD, as well as synchronous chat sessions.

Interaction between the learner and the lecturer is primarily by e-mail and chat sessions. A team of teaching assistants prescreens questions asked by learners and prepares them for response by the lecturer during synchronous (real time) sessions. The teaching assistants are also responsible for synchronous chat and tutorial sessions with the students.

AVU is based on a Learning Centre approach. All students are expected to register at an AVU learning centre where they will attend specifically scheduled synchronous sessions. This is done in order to ensure that every learner receives an effective learning experience. It is particularly important for young African learners who need to be gradually exposed to ICT-enhanced learning.

Well-trained facilitators, familiar with the subject matter, support and supervise the students. The AVU digital library is being enhanced to include more journals and e-books necessary to support the degree programmes.

Academic strategy

The underlying principles guiding AVU's strategy are to provide a high-quality product, the transfer of skills and to maximize access. Implementing this strategy has involved the following steps.

Initially, an international institution provides the educational programmes, while the participating African institutions enrol students and provide local facilitation and support. AVU provides the underlying technology architecture, digital library, network management expertise and negotiates a cost-effective arrangement for the African institutions. AVU also provides expertise to the African institutions in the areas of instructional design and delivery so that they can convert their own programmes into an ICT-enhanced format for easy dissemination and marketing. A lead African partner university works closely with the originating international institution to take over the accreditation and running of the programme once the skill-transfer process is complete.

This approach ensures that:

- the quality of education is improved because global education resources are being utilized and African academics are being trained;
- the 'digital divide' is bridged because of the improved connectivity at African institutions;
- the brain drain is reduced because Africans can have access to international educational resources within Africa;
- economic investments and development in Africa increase because a skilled and entrepreneurial labour force is available;
- there is continuous capacity building at African institutions to offer ICT-enhanced programmes.

Lessons learned

- The AVU initiative is revolutionizing the delivery of academic programmes within conventional universities.
- ICT-enhanced learning requires that academics are favourably disposed to recognizing and appreciating its potential.
- Virtual learning systems encourage resource mobilization and sharing.
- mixed modes of delivery are pivotal in virtual learning;
- Efficient technology enhances teaching and learning.

5. COOPERATION

Kenyatta AVU does not have any partnerships with other institutions. AVU itself, of course, is based on a concept of cooperation through the partnership with thirty-one African institutions. AVU also cooperates with various organizations throughout the world, including the following.

Africa America Institute

AVU entered into a partnership with the Africa America Institute to seek joint funding, mostly from the US Government. The partnership, named African Technology for Education and Workforce Development, has been approved by the AVU Board of Directors.

Australian Agency for International Development

At the initiative of the World Bank, AVU will benefit from a new learning partnership between the World Bank and the Australian Government through the Virtual Colombo Plan administered by the Australian Agency for International Development. Under this initiative, AVU is expected to receive support of about US\$3 million over a 3-year period, which will be used directly for the payment of course content. AVU has partnered with the Royal Melbourne Institute of Technology of Australia to deliver degree courses in computer science and with Curtin University for business studies. The Australian universities will accredit these courses. AVU will receive US\$300,000 to assist it with administrative costs.

Association of Canadian Universities and Colleges

The Association of Canadian Universities and Colleges, in collaboration with AVU, has developed a project to provide a computer science diploma and degree programme to francophone AVU learning centres. Through competitive selection, Laval University in Quebec was selected to provide content, delivery and accredit the programme.

Lessons learned

- Partnerships that involve many universities are difficult to formalize due to the bureaucratic procedures in the decision-making of conventional universities.
- Bilateral partnerships depend on the policies of the participating organizations.

- Partnerships with AVU member organizations are an effective pillar for recognition and ‘branding’.

6. FUTURE DEVELOPMENT AND A TRANSITION TO AFRICAN OWNERSHIP OF AVU

Looking backwards first, the pilot phase of the AVU project:

- created a network of partner institutions in seventeen francophone, anglophone, and lusophone African countries, with learning centres hosted mainly in public universities;
- affiliated to a global network of leading universities;
- delivered in excess of 3,000 hours of instructional short-course programmes sourced from leading universities globally;
- registered over 23,000 students in semester-long courses;
- enrolled close to 2,500 professionals in executive business seminars;
- set up a network of 45,000 e-mail accounts and a digital library of more than 1,000 journals, with over 1 million hits per month on the website; and
- witnessed a large enrolment by African women in specialist programmes.

The pilot phase demonstrated that the concept of a virtual university to serve education and development in sub-Saharan Africa is feasible. In November 1999, vice-chancellors and rectors of participating African institutions met in Nairobi and drew the following conclusions:

- The AVU model of using technology to deliver education is one of the most practical solutions for increasing access to education and information; everything possible should be done to maintain it.
- The pilot phase has created high expectations and hope among students, corporations, parents, institutions and governments.
- There is a willingness to pay for AVU programmes, and partner institutions in Africa are committed to investing their own funds as well as funds from their governments to support the AVU.
- The African partners have assumed leadership of the AVU and there is a clear plan towards becoming self-sustaining.

- Even though sub-Saharan Africa represents a virtually untapped market for world-class degree programmes and associated resources and services in science and technology fields, the educational products that are developed must be sensitive to the social-cultural reality of Africa; there must be a strong organizational infrastructure to support the products in the market and to maintain quality control; AVU must establish an efficient, affordable, and flexible system of distribution, and use interactive technologies that make it possible to distribute the educational products and support the learner.
- Due to distance, academic, cultural and other barriers, and to differences between the USA, Europe and Africa, the programmes, policies, procedures and technology models to be implemented by the AVU should be developed, tested and proven in a time-limited operational phase in close collaboration with partner institutions, and then refined as needed before full-scale implementation.
- AVU's success is predicated on partnering with existing institutions in sub-Saharan Africa.
- The experience of some successful distance learning organizations that have provided a viable alternative for meeting market demand for access to academic programmes and services over the past thirty years, and how these initiatives were received in sub-Saharan Africa, should be assessed.

AVU was subsequently spun off from the World Bank, and in May 2000 it was registered as a non-profit organization with headquarters in Nairobi. It has a Board of Trustees and a Board of Directors. The Board of Trustees has fiduciary responsibility and appoints the Board of Directors. The Board of Directors is responsible for policy-making and management oversight. It has nine members, of which four are representatives of African vice-chancellors and rectors. The others are selected from among AVU's strategic partners and individuals who, in their own right, have been identified as having unique capacities for contributing to AVU's development.

Since the adoption of the 2000 business plan, many new and unforeseen challenges regarding the successful delivery of high-quality degree programmes on a large scale to the African continent have become evident. These challenges have arisen from the macro-environmental

context of AVU operations, where the organization was struggling to deliver its promise of providing access to high-quality tertiary education on time to as many qualified African students as possible. Some of the major challenges that arose include the following:

- The process for AVU to secure international accreditation of its curriculum, teaching methods and delivery modes is cumbersome, and has taken years. In addition, African universities are unwilling to enrol students without a clear pathway for obtaining accreditation of coursework.
- The African partner universities participating in the AVU network perceived AVU as a competitor rather than a partner for increasing access, gender equity and building capacity in higher education. They generally did not demonstrate the required levels of commitment to AVU goals because they were concerned that AVU would not evolve into an independent university within their campuses without a clear legal framework defining the relationship.
- The cost of delivering degree programmes via satellite-broadcast technologies became prohibitive despite its advantages. For example, it costs approximately US\$12,000 to deliver the required twelve hours of instruction per week per course.
- The rapid advances in the development of the IP (Internet Protocol) standards during the 1998–2001 period accelerated the migration of educational courseware to the Internet via online-learning management platforms. AVU's 100 per cent satellite-based approach was, therefore, threatened.
- AVU's evolution from a project supported by the World Bank into a non-governmental organization made it extremely difficult for AVU to collect fees from partner universities because the legal and operational framework stipulating how partner universities would pay AVU (as a non-governmental organization) had not been created.
- The emergence of pan-African initiatives, like the New Partnership for Africa's Development, and their focus on education as a foundation for development, reinforced the need for an African virtual university that could offer an internationally accepted curriculum, would be pan-African in outlook, and have the flexibility to adapt to the different contextual circumstances

of African countries. This reinforced the need for AVU to take a second look at its operational model.

6.1 The strategic review

To guide its future operations, AVU decided to redefine its priorities and strategic approach for the provision of degree programmes and building capacity in African institutions. AVU had to rethink its strategies, priorities and operational model, and determine how to deliver high-quality tertiary education to an entire continent without undermining the higher education infrastructure that already existed. AVU had to do this within a reasonable time frame because it did not wish to become yet another failed ‘African dream’.

Due to the complexities of the issues involved and in order to ensure maximum objectivity, the AVU commissioned an external professional organization to conduct a strategic review of its operations and plans.

The major objectives of the review were to establish:

- a new strategic direction and role from which it could deliver degree programmes immediately and scale up its operations in the future;
- the required capital investments and funding models to ensure sustainability, particularly to enable the right balance between educational mission and business requirements;
- the proposed products, technical infrastructure required, and implementation schedule for their delivery;
- the organizational and management structure, as well as location(s) of activities.

The main conclusion of the review was that to increase access to high-quality tertiary education on the scale needed by Africa and desired by Africa, AVU should reposition itself as the architect of an education network that connects universities with needed curricular content and creates a self-sustaining community of students, universities and educators. By enhancing connectivity among participants – universities, technical providers, donors, students, faculty, and content providers – and by facilitating interaction and transactions, AVU can help to enhance and expand higher education in sub-Saharan Africa.

The recommendations resulting from the strategic review were largely accepted by the AVU Board of Directors, management and

funding partners because the plan proposed would enable AVU to offer accredited degree/diploma programmes, which would immediately increase access to higher education in Africa.

The new operating model

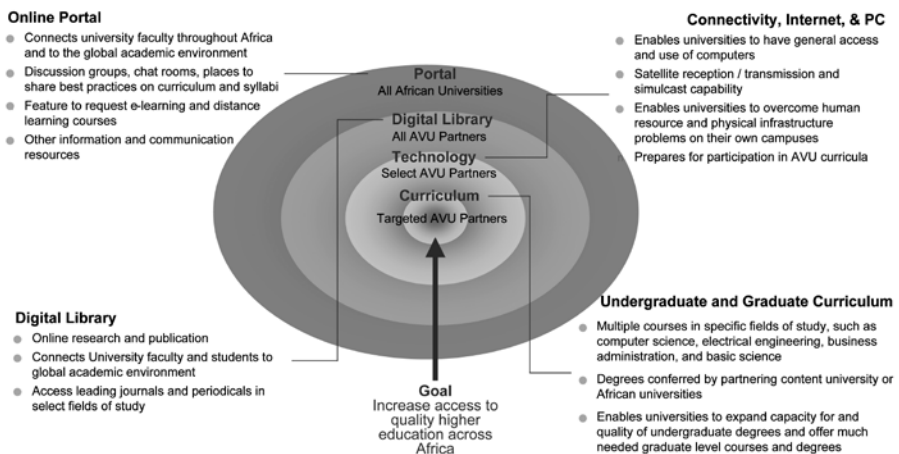
AVU has decided in the short term to redirect its role from direct service provider of accredited educational programmes to architect, facilitator and integrator of an education network that matches student needs to university supply. African institutions are to be linked to their counterparts on the continent, and elsewhere, while allowing the primary market players (i.e. the partner institutions) to maintain their own roles and incentives.

AVU will continue to assist universities by identifying educational programme needs, sourcing appropriate content, implementing the necessary technical infrastructure, aggregating demand to improve purchasing terms, and facilitating – not replacing or owning – the contracting and fulfilment process.

Under the new operating model, AVU will deliver the following products (Figure 10.3):

- accredited degree, diploma and certificate programmes in areas critical to sustainable development, but not adequately catered in existing institutions;

Figure 10.3 Proposed AVU products and targets



- an enhanced digital library with more journal titles and e-books to support the educational programmes to be offered;
- a portal to support outreach to the broader educational community;
- technical support services to African universities to enhance their capacity to access educational resources and to share knowledge generated at their universities globally.

A total of sixty-eight universities across Africa are expected to join AVU programmes by 2007, with some taking more than one programme. A slower uptake is anticipated in francophone-partner countries because distance learning has yet to be widely embraced in these countries as compared to anglophone countries.

7. KENYATTA AVU: MOST IMPORTANT LESSONS LEARNED

Turning back to the specific case of Kenyatta AVU, it is to be noted that it was deemed one of the best sites during the AVU start-up phase in terms of student enrolment, teaching/learning management, performance, and financial sustainability. As such, it is in a position to articulate a number of significant lessons learned from the experience to date.

- *University ownership of AVU.* Awareness and sensitization campaigns to make the project known among deans of faculties, chairmen of departments, lecturers, students, university managers, and subordinate staff are necessary for the success of the project.
- *Community awareness campaigns.* Public and private sectors of the country should be aware of the benefits of the project. Communities, particularly potential clients such as graduates, parents and university students, should be aware of the project.
- *Adequate learner support materials and equipment.* It is imperative to have enough computers, fast Internet connections, printers, television monitors, telephones, LCD projectors, screens and other resources, such as textbooks, workbooks and relevant manuals.
- *Manpower capability.* Adequate and skilled staff are necessary for the success of AVU.

- *Committed leadership.* AVU requires committed leadership, both for the project and partner university. The person in charge of AVU should be an academic with a minimum qualification of Doctor of Philosophy (Ph.D.), who has integrity and entrepreneurial acumen.
- *Capacity building.* AVU staff should continuously update skills in computer technology and management.
- *Delivery of quality academic programmes.* The delivery of quality programmes is a prerequisite for a high enrolment of students in AVU. Parents are ready to pay for quality education. In order to maintain quality education, the following quality assurance strategies should be put in place:
 - adequate marketing strategies to attract students;
 - high enrolment rates to generate reasonable income in order to sustain AVU;
 - efficient admission criteria and registration system;
 - efficient student induction programme for proper understanding of technology and mode of delivery;
 - efficient system of selecting qualified local facilitators;
 - induction programme for course facilitators;
 - adequate remuneration for course facilitators;
 - student database;
 - guidance and counselling of students;
 - well-designed evaluation system of students' performance;
 - supervision and monitoring system;
 - moderation of examinations;
 - adequate supervisors of examinations;
 - efficient system of grading and certification of courses.
- *Sustainability.* It is imperative for an AVU learning centre to be able to generate income and sustain itself. Financial procedures must be put in place. For example, an AVU centre should have a bank account with two signatories for proper control and management. A qualified accountant and an accounts clerk should manage the accounts. In addition, the director of the learning centre should also be its chief accounting officer. Procurement policies and procedures of the partner university should be followed in processing payments. Although the AVU centre may be autonomous, important accounting procedures,

such as yearly accounts and auditing, should be undertaken in connection with overall university auditing.

- *AVU student leadership.* Student leadership creates a sense of ownership and ‘belonging’.
- *AVU student association.* This is a good way to foster student discipline and maturity.
- *Plenary meetings.* As an indication of good leadership, supervision and monitoring, it is important for the Director of AVU, course directors, facilitators, and administrators to have joint meetings with students at least twice a month.

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NOTE

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1. The VSAT, or Very Small Aperture Terminal, is a satellite communications system that handles data, voice and video signals.

Developments since 2003

8. THE AFRICAN VIRTUAL UNIVERSITY (AVU) AT KENYATTA UNIVERSITY AND ITS CONTEXT

8.1 International context – the African Virtual University

There have been significant recent changes at AVU, including:

- the development of intergovernmental status in 2002;
- a change of leadership in 2003; and
- reconceptualization of the AVU to enable it to respond to operational challenges better, emanating from the initiation of the first degree and diploma programmes in 2003.

During its first phase of operations, AVU encountered challenges related to:

- high technological costs of satellite delivery;
- expensive learning management systems; and
- costs related to brokering content from international universities.

The initial model proved not to be ideally suited to the African higher education landscape, which necessitated a shift in approach for the AVU, so as to fulfil its mission in Africa:

to collaborate with, and support African higher education institutions in enhancing their capacities to utilize Open, Distance and e-Learning (ODEL) methodologies, so as to increase access to high-quality demand-driven post secondary education and training programs in disciplines critical for Africa's social and economic development. (Bateman, 2005)

AVU now uses its own and its partner institution's quality assurance models to ensure that learning objectives are met and that African graduates have the skills to participate in the economic and social development of their regions and countries. The new strategic objectives that AVU seeks to achieve include:

- improving the efficiency and effectiveness of the delivery of externally provided programmes;
- developing and implementing ODeL programmes through partnership consortia;
- enhancing the capacity of partner institutions to develop, deliver and manage their own ODeL programmes;
- designing, implementing and managing an AVU research and innovation facility to improve ODeL practice in Africa;
- improving the development and implementation of policies that will support the use of ODeL in higher education in Africa;
- establishing and managing relevant partnerships that support the attainment of AVU's mission.

8.2 National context – Kenya

According to the latest economic survey (Republic of Kenya, 2005), the number of students enrolled nationally in university education has risen from 59,193 in 2000/2001 to 91,541 in 2004/2005. This is attributed to the introduction of flexible learning programmes at various public universities, which target both public and private sector employees and qualified school leavers who could not find places in regular degree programmes.

The government has increased financial allocation to the education sector; the 2005/2006 budget provided 88 billion Kenyan shillings (KShs) for education, compared with KShs78 billion the previous year. This means that the Government of Kenya channels a third of the national budget into education.

As has been the case in past years, the bulk of this money will fund teacher salaries and free primary education. However, the government has also pledged more money for university education – KShs16 billion, compared to KShs14 billion in the previous financial year. Of this, the Higher Education Loans Board will receive KShs1.03 billion, which is still below the figure that the board needs to disburse to needy students.

8.3 Institutional context – Kenyatta University

The number of students enrolled at Kenyatta University in 2004/2005 accounted for 18 per cent of national university enrolment but 55.2 per cent of total part-time enrolment.

Kenyatta University has introduced a number of new programmes, including computer science and business studies degrees and diplomas. A total of 300 students are currently enrolled in these programmes.

9. ADMINISTRATIVE ISSUES – TECHNOLOGICAL INFRASTRUCTURE

Because of poorly developed Internet and telecommunications infrastructures in Africa, the AVU's technological focus has changed from relying heavily on expensive satellite technology to facilitating access to the Internet via VSAT to universities in its network. This includes pre-financing greater bandwidth capacity for students. Furthermore, due to the current unavailability of electronic digital resources, the AVU is facilitating student access to books while it prepares digital resources for its courses. Both of these policies will be reviewed because as student numbers increase they will become increasingly unsustainable.

The AVU is therefore adopting the following strategies to reduce its technology costs:

- moving from being a bandwidth aggregator and pre-financier to becoming a bandwidth aggregator and facilitator;
- moving from expensive proprietary learning management systems to non-proprietary systems in the understanding that cost margins consistent with African needs cannot be achieved with the current commercial systems;
- deploying locally hosted learning management systems at national exchange points (where available) in the countries where AVU programmes are offered, thereby keeping the Internet demands of AVU programmes low.

10. ACADEMIC ISSUES

10.1 Programme development

With the new strategic direction of the AVU, programme development has also changed to include the following principles.

- The curriculum offered by the AVU for each field of study must be comparable to that offered at other acknowledged leading African and global institutions, as well as relevant to the African social and economic situation.

- The curriculum is designed by a committee of experts selected from institutions in the AVU network and representatives from the best African and global institutions offering such programmes. Academics from African and international institutions are also invited to contribute to course design, development, content and evaluation.
- The AVU and the distance learning units of the universities involved in the curriculum development have joint production responsibilities and ownership of the course materials.
- The curriculum is designed to use ODeL in the African context, and to be consistent with the AVU methodology for teaching and learning using ODeL methodologies. All AVU materials are available in an electronic format and can be reproduced in a variety of media, such as print, CD-ROM, etc.
- The curriculum is designed for flexibility, greater student involvement in the learning process and the development of autonomous learners. Each AVU course is designed as a stand-alone course that can also be offered as a short course cum continuing education programme. These short courses lead on to diploma and degree programmes. The student is assessed continuously to ensure that learning objectives are achieved throughout the learning cycle.

In the medium term, the AVU will continue to focus on programmes in the following fields:

- ICT – computer science;
- business studies, including accounting;
- health programmes, especially in-service health worker training and education;
- teacher education and training, both pre- and in-service, with a focus on increasing the quantity and quality of teachers in mathematics and science, and the teaching of ICT across the curriculum.

10.2 Academic strategy

Overseas universities currently grant AVU accreditation and awards, but the ultimate objective of AVU's academic strategy is to empower African institutions – whether individually or as a consortium – to

accredit and award the programmes developed by the network. The original pathway to African accreditation was based on a two-step cascading model of international accreditation and quality control modalities: accreditation was to be delegated initially to a lead African partner university who would then cascade accreditation to other African universities. However, this model has so far proved untenable: a situation has emerged where the lead African partner university occupies a *de facto* position of superiority.

African institutions do not think that the cascade model fits with the character and spirit of the AVU as a network of peers: all universities should take advantage of the strengths of the network, and no one university should have supremacy. Universities in the AVU network are also of the opinion that all intellectual property belongs to the network and that the AVU headquarters should become the custodian of intellectual property on their behalf.

The AVU has therefore evolved into a consortium model, which is more attuned to the continent's needs than the lead partner university model. It is anticipated that under the consortium model, the following objectives will be met:

- achievement of economies of scale;
- increased access to education;
- high-quality and relevant ODeL curricula for and by African tertiary institutions;
- better use of available resources leading to gains in efficiency;
- long-term sustainability and growth.

Jointly developed programmes will be less expensive to develop and will belong to the consortium, which means that participating universities will not need to pay intellectual property rights for the use of content, and that surplus revenue can be used to further strengthen the consortium.

All consortium programmes are governed by the AVU/Partner Institution Consortium Advisory Council, which is made up of the Vice-Chancellor, Deputy Vice-Chancellor or Vice-Rector at each participating partner institution, and the managers of the Academic Programme Development and Management Department and the ODeL Initiative at the AVU. It reports to partner institutions' vice-chancellors and the AVU Rector, and is responsible for:

- coordination of AVU/Partner Institution Consortium processes;
- representation of each partner institution's interests within the AVU/Partner Institution Consortium;
- drafting of legal agreements for the AVU/Partner Institution Consortium (to be signed by the partner institution vice-chancellors);
- development of financial models for consortium programmes (for revenue generation and sustainability);
- inter-institutional management of consortium programme development;
- monitoring and reporting on AVU/Partner Institution Consortium activities and progress.

11. COOPERATION

AVU now partners forty-six African institutions in twenty-six African countries. AVU has also entered into strategic alliances with several entities to achieve mutual goals and objectives. The following institutions and organizations partner the AVU.

- *Partners in education.* Alliances with organizations working the field of (distance) education in Africa can foster the attainment of similar goals for the benefit of the African student. Educational partners include the Association of Universities and Colleges of Canada, AUF, Commonwealth of Learning and the Open University UK.
- *Partners in technology.* AVU partners institutions and businesses that fully support the technology options that AVU uses to deliver its academic programmes. Alliances have been established with Hewlett Packard, Microsoft and Netsat. In an effort to develop, design and deploy the best technology to support our vision and mission, technological institutions are encouraged to approach the AVU to establish partnerships.
- *Partners in development.* The AVU's mission and vision are in line with Africa's development goals as well as global development objectives, as defined by the Millennium Development Goals. The AVU is proud to partner development agencies and institutions to work together to achieve common development objectives. Partnerships have been established with the New Partnership

for Africa's Development, and the Ford, Rockefeller, McArthur and Carnegie Foundations.

12. FUTURE DEVELOPMENT AND AFRICAN OWNERSHIP OF AVU OPERATIONS

Following the strategic review in 2001, AVU decided to concentrate on brokering content from reputable and established European, North American and Australian institutions, then channelling it to African students via the Internet and live, satellite broadcast sessions. At the end of the first twenty-four months of offering internationally accredited programmes in this way, the shortcomings of the approach became glaringly apparent. The content-brokering approach had the following disadvantages:

- expensive to purchase content;
- difficult to scale student enrolment;
- lack of mechanisms to transfer skills;
- strained the already inadequate facilities of most universities;
- lack of economic sustainability.

This issue became a matter of concern to the AVU, who had to reconsider the question of why African institutions were unable to expand access to their programmes. It quickly became obvious that the real problem was not so much the absence of programmes at African campuses, but the structural rigidity of the programmes offered: they could only be obtained or delivered using the traditional lecture theatre approach. Programmes in other modes were needed. After several consultative meetings with tertiary education actors, the AVU decided that the solution to this problem was to make the programmes available in a variety of ODeL modes.

This assumption was corroborated after an extensive survey was carried out by the AVU at each participating partner institution to ascertain the institutions' current capacity for the development, delivery and management of ODeL.¹ The aim of the exercise was to obtain precise information on the available human and material resources available within the partner institutions for the development and delivery of quality ODeL courses. The data collected also laid the foundation for offering the partner institutions customized strategies to work towards the achievement of the AVU Capacity Enhancement

Programme (ACEP) Phase One. The findings reinforced the AVU's support for an alternative higher education and training system that is flexible, affordable, relevant and cost-effective.

The AVU therefore launched the ACEP, a series of capacity enhancement activities aimed at AVU partner institutions. The goal of these activities is to enable partner institutions to contextualize the programmes currently being delivered by external partner universities, so that they may continue to deliver them as their own ODeL programmes, and at the same time enhance their capacity to develop and deliver other ODeL programmes.

It is anticipated that this new strategy will:

- increase access to education for millions of Africans;
- end the competition between programmes offered by AVU and those offered locally by the partner institutions;
- ensure that there are no further problems regarding the recognition of awards given for participation in AVU-enabled programmes.

Once the External Partner University delivery contracts expire, partner institutions will face a significant challenge: they will have to absorb the students enrolled in those programmes into their own residential programmes and offer them partner institution degrees – simple enough in theory but difficult to implement – or provide them with another pathway.

The ACEP was designed to facilitate this transition, and enable the partner institutions to continue delivering the ODeL programmes that they are currently hosting when their current delivery contracts expire. It targets three key areas for ODeL programmes:

- materials development;
- delivery and technology;
- finance and management.

At the end of the programme, it is anticipated that the partner institutions will be able to take over the design, development, delivery, management and monitoring of the external programmes currently offered by the Royal Melbourne Institute of Technology, Laval and Curtin universities. The network established for the co-development

process should provide students with an alternative to these externally developed programmes, by delivering locally developed ODeL programmes across the African continent.

AVU also believes that the establishment of a community of practice and learning object repository, available to all partner institutions within the network, constitutes an excellent means of ensuring the sustainability and quality of the ODeL programmes developed during ACEP Phase One and in the future. The ACEP is therefore a key priority for AVU.

13. IMPLICATIONS OF THE NEW ODeL STRATEGY TO AVU-KENYATTA

The strategy is still very new, so most university decision-makers are still in the process of studying its financial and other resource implications to their institutions.

The AVU will initiate discussions with the partner institutions participating in the ACEP to establish what needs to happen before the programme can be implemented. This is a critical step. If the AVU and the partner institutions do not establish quality-control mechanisms, and if there is no legal structure to guarantee that the investment in personnel is implemented as intended by the ACEP, then the benefits of the ACEP may be only partially achieved, if not totally lost.

In addition to implementing the ACEP, the AVU intends to establish fully equipped ODeL Centres at ten of its partner institutions (eight anglophone and two francophone) participating in the African Development Bank funded AVU Teacher Education Programme. The partner institutions involved will receive equipment, including computers and VSAT equipment, and bandwidth. Those institutions involved in the Virtuel au service de l’Afrique francophone project will also receive VSAT equipment. Finally, the AVU will also provide the partner institutions involved in the Royal Melbourne Institute of Technology and Curtin programmes with VSAT equipment. Although this last group of beneficiaries will need to pay for their own connectivity, they do stand to benefit from preferential connectivity rates brokered by the AVU.

Even with the support described above, insufficient partner institution connectivity is another potential stumbling block for the delivery of ODeL programmes, and indeed the ACEP itself. The past experience of the AVU and its partner institutions, at a time when

Internet connectivity was severely limited, has made it clear that those partner institutions that wish to participate in the ACEP must take steps to ensure that they have adequate Internet capacity for the success of the project.

At the completion of ACEP Phase One, the AVU's partner institutions will be prepared to develop and manage their own ODeL programmes. This will be one important step towards increasing access to education in the countries concerned. Another is the development of a mechanism to assist partner institutions in the development of open content policies that will include strategies for structuring intellectual property rights agreements for ODeL materials.

Finally, in January 2005 the AVU created a research and innovation facility to promote research and innovation in the use of ICT and the development of open content. The three main objectives of the facility are to:

- establish a research and innovation facility portal to create a repository of information and materials related to higher education in Africa, with a special emphasis on ODeL. The portal will provide a space where articles, journals, learning objects and recent research can be freely consulted;
- organize an annual conference on e-learning in Africa, and
- publish and perhaps print an e-journal.

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NOTE

1. This analysis was financed by the Hewlett Foundation.

Chapter 11

L'UNIVERSITÉ VIRTUELLE EN PAYS DE LA LOIRE, FRANCE

Henri Ott and Pascal Geeraert

1. PAYS DE LA LOIRE VIRTUAL UNIVERSITY AND ITS CONTEXT

There are higher education institutions in the five departments that make up the region of the Pays de la Loire. They are spread over the three sites of Nantes, Angers and Le Mans, which are 90 kilometres away from one another and relatively close (between one and two hours by train or car) to the universities of Rennes, Tours and Paris. Each of the three state universities, as well as the private Université catholique de l'Ouest, has at least one or two branches located elsewhere:

- Université de Nantes in Saint Nazaire and La Roche sur Yon;
- Université d'Angers in Cholet;
- Université du Mans in Laval; and
- Université catholique de l'Ouest in La Roche sur Yon (ICES).

Besides these higher education establishments, there are also *grandes écoles* – eighteen engineering schools and two business schools. There are also specialized communication schools in Nantes and Angers as well as preparatory classes for the *grandes écoles* and Brevet de technicien supérieur courses, which enrol 19 per cent of the students in the region.

In September 2000, the 100,731 students admitted to establishments dispensing higher education (post-baccalaureate) in the Pays de la Loire region represented 4.8 per cent of national admissions. These students were divided as follows:

- 77,561 state sector (77 per cent);
- 23,170 private sector (23 per cent).

Action taken since 1984 in partnership with other local authorities (departments, districts, towns) to develop higher education in the Pays de la Loire has met many expectations and allowed the region largely to close the gap in this field. However, if one considers the proportion of students enrolled in higher education throughout the Académie de Nantes (the local education authority or school district, encompassing the universities of Nantes, Angers and Le Mans), the region still lags somewhat behind other regions in France: 35 per cent of the region's students are enrolled in second-cycle higher education compared to a national average of 37 per cent, and 12 per cent take third-cycle postgraduate studies compared to a national average of 16 per cent.

According to the latest published statistics, between 1994 and 1998 the number of employees in professional positions increased considerably (an average increase of 10 per cent) in the Pays de la Loire, and the 53,050 individuals represent 6.7 per cent of the regional working population and 3.5 per cent of all professional positions held in France (Association pour l'emploi des cadres – job centre for professional positions).

1.1 International context

The universities of Pays de la Loire have been committed to developing their international relations for many years. They attend many events abroad and have set up departments run by a vice-president or director of international relations responsible for developing these relations. They participate in the activities of the GIP Atlantech (Groupement d'intérêt public Atlantech), whose role is the development and promotion of the region's higher education offer in other countries.

However, it was not primarily this interest in international relations that caused the heads of higher education establishments and local authorities to orient their thinking in a direction that would ultimately lead to the creation of the Université virtuelle des Pays de la Loire¹ (UVPL). For a long time, some of these establishments had been reflecting on the integration of new ICTs, and participating in international activities. Indeed, since the 1980s, experimental activities to foster open and distance learning through community initiative projects (i.e. the Developing European Learning through

Technical Advance programme and the Community Programme for Education, Teaching and Training) have been carried out integrating these technologies.

In 1996, the Réseau africain de formation à distance (African Network for Distance Education and Training) was set up at the initiative of the French Foreign Office. This project, which aims at developing distance learning in Africa, brought together a French university consortium and a scientific sponsoring committee made up of the Centre national d'enseignement à distance (national centre for distance learning), Fédération inter-universitaire de l'enseignement universitaire (inter-university federation of distance learning), Institut national de la recherche en informatique et en automatisme (national institute for research in IT and automation), AUF² (Agence universitaire de la Francophonie), UNESCO and African universities. In 1999, this led to the birth of the Diplôme d'université (university diploma) in Multimedia Communications at the Université du Mans. The Université du Mans was thus able to make this experience – designing and setting up a course using ICTs for distance learning – a positive one, and use it successfully within the UVPL.

There are examples of landmark initiatives within the European Community, such as the Universitat Oberta de Catalunya (Catalunya Open University), or the creation of a national digital campus within a federation of German universities. The use of ICTs for lifelong learning in countries such as the USA and Canada is perceived as being modern and dynamic. What is more, the institutions responsible for education and learning in those countries have shown that they can adapt to these techniques, which have great potential for the future, and they have thus contributed to enhancing their country's influence and reinforced their international reputation.

UVPL rapidly linked up with counterparts in Schleswig-Holstein (Germany), Somerset, Scandinavia, Catalunya, Chile and Quebec with the aim to develop project-by-project levels of cooperation, and not just framework agreements, with properly constituted teams for setting up, where possible, double major courses along with exchanges of teacher-researchers and students. The project that was developed at Le Mans with Quebec, in the context of a Diplôme d'études approfondies,³ in 'E-learning expertise and man-machine communication' is a good example of the kind of activity UVPL and its partners wish to strengthen.

Any organization that wishes to develop these kinds of services cannot ignore its outside partners. However, enrolling students from a number of different countries in distance learning programmes requires providing them with a certain level of assistance. It is necessary, for instance, to create links between teachers and local establishments, even if it is only for organizing specific work, meetings and examinations that the student must sit in person.

In Europe, the interest in developing distance learning has given rise to the 'e-learning: *penser à l'éducation de demain*'⁴ programme set up by the European Commission to direct and federate initiatives in this area by the fifteen member countries.

The member states of the European Union have decided to work together to harmonize their policies in the field of educational technology as well as to share experiences. E-learning aims at supporting and coordinating their efforts as well as to accelerate the adaptation of educational and training systems in Europe (Viviane Reding, Commissioner for Education and Culture, May 2001).

1.2 National context

On the national level, the UVPL was born in the context of a profusion of projects, communication campaigns, and announcements, in short, in the midst of a multitude of ideas and initiatives. This contributed to making the public (university teachers, students, companies, decision-makers at all levels) aware of these initiatives. However, the media attention they received was often greater than the expected results, while a few rare cases with little media coverage had quite promising results.

In this environment, UVPL chose another strategy: defining the key objectives that were shared by all partners, which were then reflected in numerous projects of varying sizes, but feasible in terms of human, technical and financial resources.

The appearance of other new initiatives at the same time strengthened the UVPL undertaking. One example was the first call for 'campus numérique'⁵ projects launched by the French Ministry of Education in 2000 (<http://www.educnet.education.fr/superieur/campus.htm>), which aimed at grouping a number of institutions located throughout the country into one project. In addition to the political will to offer courses to international students that would enrich the existing distance learning courses available in French universities, there was an objective to maximize the energy and human and material

resources invested. This long-term approach was also a means of ensuring a French-language presence in the field of distance education, largely dominated by English-language, and particularly American, institutions. As the UVPL projects progressed, a number of thematic consortia were created, for example:

- Economics and management: Campus numérique d'économie et de gestion;
- Science: CampuSciences;
- Law: Campus Juridique 2000; ethical and corporate law: Campus ouvert droit éthique et société, Multidroit;
- Medicine and health: Enseignement, sécurité, santé et qualité à distance;
- Educational sciences: Formation en sciences de l'éducation.

There are also transversal consortia such as the Insertion socio-économique des thésards et enseignants (socio-economic insertion of thesis-writers and lecturers).

At the national level, it must be said that initiatives in open and distance learning are seriously hampered by the fact that, to advance their careers, teachers are encouraged to publish research papers, to the detriment of the development of innovative teaching practices. There are no formal means, either in terms of remuneration or career development, for recognizing the time that teachers spend on developing innovative teaching modules, even though the political position is to encourage teachers to become involved in distance teaching.

'Faced with private interests, distance learning is a challenge that should be taken up by the public service of the national education system' (speech by then French Education Minister Jack Lang, conference on e-education at the Education Fair, 22 November 2000). Thanks to a large number of individual initiatives, the number of distance learning courses has nevertheless grown. Not only do these courses help reach new audiences, but they also offer traditional students on-line assistance. National leaders are now looking at the issues of standards and quality assessment. These changes mean that production in the education sector is moving from a craft to an industrial stage. From now on, the importance of economic considerations will increase and the resulting issues will no longer concern just the individual author, but also the institution.

1.3 Institutional context

Five partners, each with a different status, have come together in the context of the UVPL project: the three universities of Nantes, Angers and Le Mans, the IUFM (Institut universitaire de formation des maîtres) of the Pays de la Loire and the regional authority, the Conseil régional des Pays de la Loire.

From a historical point of view, the initiative of linking higher education establishments in order to offer students in the Pays de la Loire a choice of quality distance learning programmes by using ICTs, belongs to François Fillon, then President of the Conseil régional des Pays de la Loire, and formerly three times minister in positions directly linked to higher education and new technologies. He was convinced that the social, economic and cultural development of a territory, albeit regional, could not be achieved by ignoring these means of communication.

Taking into consideration the importance of having human, material and financial means, the idea was to bring together all the experience, *savoir faire* as well as the teams of the different establishments participating in the UVPL project, and to set up new common work practices among the institutions. Without having been stated, this actually constituted a genuine cultural and organizational revolution for the universities, which since 1984 and the Savary Law had been concerned to safeguard their autonomy and were thus used to implementing their own policies without consulting one another. Moreover, higher education institutions tend to react immediately if they see local authorities interfering in their internal affairs. In spite of this, discussions got under way during the first half of 1999.

The various partners had both convergent and divergent motives.

Convergent

Over the past few years, a regular decline in the number of first- and second-year university students had been noted, which could continue until 2010. This decrease is due to different factors:

- a demographic decline starting in 1995, with an annual average decrease of 2 per cent, but of 4 per cent for the October 2001 intake; and
- increase in courses offered by engineering schools and Instituts universitaires de technologie (technical university institutes), and of Brevet de technicien supérieur (higher technical certificate) courses.

Even if large universities in the region, such as Nantes, the fifth largest university in France, felt safe from this decrease in enrolment, medium-sized universities such as Angers and Le Mans urgently needed to find ways to attract and keep new students in order not to lose government financial support, budgetary allocations and associated research laboratories.

Moreover, the Pays de la Loire region is two or three points below the national average in terms of students enrolled in second- and third-cycle university studies. Distance learning was seen as a way to reduce this gap.

Divergent

As one of the universities had more experience than the others in distance learning and had capitalized on its *savoir faire*, there was some concern that the leadership of the project might be appropriated by one member. Indeed, the Université du Maine (Le Mans) had already taken up the issue of organizing open and distance learning as a research theme, and had made it clear that the use of open and distance learning was one of its major areas for development, and would address all. This set the Université du Mans apart from the Université de Nantes, which had developed distance learning specifically for continuing education, and the Université d'Angers, which had not yet developed any distance learning programmes at all.

The IUFM not only operates in a different context, but also has a double function: offering initial training as well as continuing-education courses to primary and secondary school teaching staff. IUFM participates with the universities in the preparation of various recruitment examinations for teachers. However, in about ten years, 50 per cent of teaching staff, regardless of level, will have retired. This means that it is necessary to prepare recruitment examinations not only for the existing pool of potential teachers within regional boundaries, but also for candidates coming from a much larger population. The regional context is too limited to supply enough candidates for the various recruitment examinations. This type of difficulty has already been encountered in the recruitment of teachers for technical colleges.

With regard to the Pays de la Loire region and the launching of this distance learning project, there is, of course, the desire to present the local authority as a leader in this new field. Moreover, this local authority, which is responsible for professional training and continuing education courses, has found in the development of this initiative a way

to concretely implement lifelong learning, a concept that has become increasingly important to future economic development. It is the means of ensuring both the development and preservation of economic activity.

Finally, this initiative is in line with the general policy launched by the Conseil régional des Pays de la Loire at the beginning of the 1990s. Aimed at ensuring that people from all social levels can benefit from new methods of communication and information, this policy has resulted in various actions, for example:

- the installation of computer communication networks, or local computer communication networks in secondary schools under the responsibility of the Conseil régional des Pays de la Loire, on the basis of project proposals submitted by teaching teams;
- an interregional project (Brittany, Pays de la Loire) to develop a high-speed network (Mégalis);
- signature of agreements for multimedia equipment in regional universities;
- refunding 50 per cent of costs linked to cabling student housing;
- sending out calls for projects concerning secondary (*lycée*) students (Mégalycées project), or for economic, social or cultural issues (Mégalis project); and
- the installation of cyber-centres, including in rural areas.

It should also be noted that over the past ten years students have become familiar with the integration and use of ICTs in secondary education. As new university students, they have certain expectations with regard to the educational tools that a higher education establishment should be able to offer.

The creation of UVPL is consistent with this policy and dynamic.

2. CREATION AND ORGANIZATION OF UVPL

2.1 Creation

The UVPL project was launched in April 1999. Each university elected a representative to participate in a working group that was in charge of starting to reflect on the project and to consider its feasibility. The specific tasks of this working group were the following.

Identify the needs and expectations of target audiences to be defined

An external consultant was given the task of conducting market research based on a representative sample of the regional population. A comparison between these results and those of market research carried out in other regions of France was then to be made. The aim of the market research was to determine the best match between public expectations and courses that could be offered. The survey specifically aimed at defining the:

- potential clientele (quantitative and qualitative);
- course needs by theme, level and geographical areas;
- availability of potential students;
- expectations in terms of support and follow-up; and
- course scenarios according to different audiences.

Analyse the technical and financial feasibility of the project

Using market research and the findings for an existing audit carried out in the Pays de la Loire and in France, it was necessary to:

- define the organization (architecture) of the project, and describe its components;
- carry out documentary research on the environment;
- assess budgetary and technical feasibility, in terms of building and maintaining the project, as well as ensuring its evolution towards other national and/or international partnerships;
- draw up a general timetable for the project as a whole;
- set up a plan for holding meetings;
- monitor other similar projects.

It rapidly became evident that it would have been very difficult to put the results of this market research into practice, since it was more of a survey than true market research. For this reason, the option that was eventually chosen was to develop courses and online resources to improve qualitatively the teaching of traditional students through more modern educational practices and to introduce new services, such as tutoring, self-assessment tools or even independent learning. The overall objective that the virtual university set itself was to offer any

student enrolled in one of the participating establishments full and open access to all available online resources.

Three years later, on 12 April 2002, an agreement was signed between the universities of Nantes, Angers and Le Mans, the IUFM and the Conseil régional des Pays de la Loire, which marked the official creation of the UVPL. The official definition of UVPL is as follows: ‘a tool that aims at offering a tutored education leading to a qualification, mainly in the context of lifelong learning’. Instead of setting up a fourth state university in the Pays de la Loire, the creation of the UVPL has meant that the heads of the participating establishments need to share and make their resources available to one another.

The presidents of the universities of Nantes, Angers and Le Mans have entrusted UVPL with seven major objectives. They are:

- developing open and distance learning courses in line with the social, economic and cultural development of the Pays de la Loire;
- integrating the use of ICTs in education into traditional teaching;
- setting up professional training courses;
- developing research in e-learning expertise;
- developing partnerships with higher education establishments in France and abroad;
- greater sharing of resources among the higher education establishments participating in the UVPL;
- meeting the education and training needs of external organizations.

In all, more than three years were necessary to implement this policy. The working group that was set up in April 1999 to lay the foundations of UVPL became the Steering Committee, and over the years it has managed to create a climate of confidence among its members.

Various actions with regard to UVPL have been launched targeting university faculty; these include:

- information and awareness campaigns for administrative, technical and teaching staff within the establishments (24 January 2001, Université d’Angers);

- first UVPL summer school session (10–12 July 2001, based on the theme ‘What education methods for distance teaching?’); and
- second UVPL summer school session (10–11 July 2002, based on the theme ‘From European policies to regional achievements’).

Since 1993, contact has also been made with other regional consortiums, such as Grenoble universités campus ouvert in Grenoble and the Campus numérique Breton in Brittany.

2.2 Organizational structure

In order to facilitate effective financial support for these and future operations, it became apparent that UVPL needed to have its own administrative and financial structure, with staff and financial means being provided mainly by the Pays de la Loire region. The administrative structure of UVPL is provided by GIP Atlantech, a public interest group that was constituted on 19 February 2002. It groups together all the private and public higher education establishments in the Pays de la Loire region and offers them a certain number of services, such as:

- promoting regional capacities in higher education, as well as fostering transversal higher education and research tools and projects through the development of new ICTs;
- providing a forum for meetings and exchanges between university teachers and corporate representatives;
- supporting the international relations of its members through developing exchanges and facilitating the circulation of information.

Being an organization with financial autonomy, GIP Atlantech has a board of directors, with the state universities representing the majority.

The operating structure of UVPL is based on the concept of a ‘relay-station’ set up in each of the participating institutions. The ‘relay-stations’ act as a common service for the UVPL while acting on behalf of its own institution. They include:

- Université de Nantes: Campus ouvert (open campus);
- Université d’Angers: Service des technologies de l’information et de la communication (service for ICTs);

- Université du Mans: Centre d'aide à la virtualisation de l'Université du Maine (support centre for a Virtual Le Mans University);
- IUFM: ICT.

The UVPL Steering Committee has integrated GIP Atlantech, and the university presidents have reviewed its composition. It now comprises members nominated by the president or director of each member establishment. Generally, each establishment nominates two people, one for policy and the other for technical issues. The Steering Committee meets at least once every two months. A GIP Atlantech representative ensures the logistics of these meetings.

The Steering Committee has the following responsibilities:

- analyse projects;
- propose solutions and guidance;
- execute decisions made by the Strategic Committee;
- assess its achievements and its impact based on criteria defined by the Strategic Committee;
- give an account of its activities to the Strategic Committee;
- prepare the work of the Strategic Committee.

In short, the main tasks of the Steering Committee are to inform, recommend and execute the decisions of the Strategic Committee, which defines the strategic direction of the UVPL project and has authority over the Steering Committee. The Strategic Committee is made up of the university presidents of Nantes, Angers and Le Mans, the President of the Pays de la Loire region and the Director of IUFM (or their appointed representatives). It meets on the initiative of the President of the Pays de la Loire or, if need be, following a request made by one of the other committee members. In any case, the Strategic Committee meets at least three times a year.

A pivotal role is played by the project manager, who has the necessary skills with regard to open and distance learning, and is responsible for the following tasks:

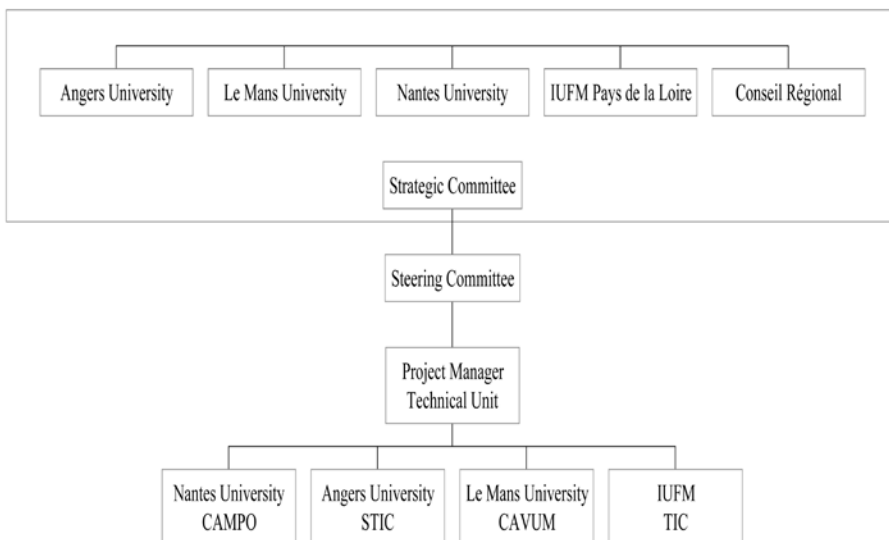
- advising those proposing projects;
- carrying out technical, educational and financial feasibility studies for projects;
- monitoring the implementation of projects;

- testing and validation procedures;
- initialization when projects go online;
- maintenance and evolution of the portal.

The project manager also manages contacts and monitors technological developments. The organization of UVPL is presented in Figure 11.1.

The usual method for initiating and setting up distance learning course modules is as follows. In October 2000 UVPL sent out a permanent call for projects to the staff of each member institution. This was done using ICTs for education and the UVPL 'relay-station' in each establishment. The 'relay-stations' pass on to UVPL the projects that seem the most pertinent and that fit the criteria defined by the Strategic Committee. Only projects that involve a minimum of two partners are retained. The UVPL project manager is responsible for ensuring the technical, educational and financial analysis of the project proposals and helps to define the relevant training needs for faculty and engineering, administrative, technical, health and service staff that the projects would entail.

Figure 11.1 UVPL functional organization chart



Typically, a project goes through the following steps:

- Projects Campus ouvert – Service des technologies de l'information et de la communication – Centre d'aide à la virtualisation de l'Université du Maine – IUFM;
- project transmitted to Steering Committee;
- project manager studies feasibility;
- Steering Committee analyses applications;
- Strategic Committee makes decision;
- the corresponding UVPL institution implements and then follows up on the project;
- project manager follows up on the implementation of the project;
- Steering Committee oversees the performance of the project;
- Strategic Committee is informed of the results.

A UVPL portal has been operational since September 2002 (see <http://www.uvpl.org>). It offers information, advice and work tools to students and teachers, as well as information for companies and other organizations.

The main functions of the portal are to:

- offer general information on the structure and operation of UVPL;
- advertise distance learning courses offered by UVPL establishments;
- provide educational resources, either through free access or restricted access limited to Pays de la Loire students;
- offer teachers access to resources that they can either integrate into their traditional courses or use to develop distance learning courses;
- give access to distance students to course platforms.

The UVPL portal will also offer standard options normally available on this type of site: diaries, news, links, search engines and online application forms.

3. ADMINISTRATIVE ISSUES

3.1 Administration

UVPL's administration can be considered from several angles: users (students, teachers and other staff), projects, portal, platforms and management.

UVPL has placed the user at the centre of its preoccupations: the administrative steps that students must take in order to be able to attain their educational objectives need to be made as easy as possible. The first step a student takes is to look for a programme of study. The UVPL portal provides detailed answers, information on available courses and their content, and other useful information that help to ensure that the choice the student makes is appropriate. At this point, the student has the possibility of submitting an application to enrol through the UVPL portal. Since UVPL itself is not an educational establishment, it cannot accept applications or hand out diplomas. However, the student's application can be treated according to the various procedures agreed on with the establishment offering the specific course or courses, without the student having to be involved. If the course has prerequisites, such as diplomas or a specific degree programme, the establishment must first validate the student's situation and confirm that s/he meets the criteria necessary to follow the course and, second, manage any requests for further information. What is more, current student enrolment procedures still require an original signed document from the applicant. Once the enrolment process has been completed, the information needed to set up an access profile for the UVPL portal is automatically transmitted between the database that manages the establishment's students and UVPL. The student is then given a login and a password like all traditional students. For students whose course requires access to a platform (Learning Management System) on the UVPL portal, a unique identification procedure allows them to move effortlessly from the portal to the platform (Single Sign-On procedure). As soon as students start a course, their progress is supervised by the teachers and tutors of the institution offering the course. This means that the teachers and tutors are in charge of the course and, in the context of the establishment's procedures, are responsible for ensuring the validation of the course. Awarding the diploma is also the responsibility of the establishment offering the course, in conjunction with partners if there are joint diplomas. Examples of representative exchanges are given in Table 11.1.

Table 11.1 Examples of representative exchanges

Tasks	Student	UVPL	Establishments		
			UVPL relay	Education	Teachers, tutors
Access for traditional students	D	I	I	E	
Creation of virtual classes	D				E
Creation of educational resources	D		I		E
Information request	E	I	I	D	
Application request	E	I	I	D	
Course information forms	D			E	
Login	D	I	I	E	
Enrolment	D			E	
Maintenance of resources		I	D		E
Putting resources online		I	D		E
Student exercises	E				D
Prerequisite tests	D		I		E
Tutoring	D				E
Validation	D			I	E
Validation and correction of student exercises	D				E

E Initiator: originates the procedure or information.
 I Intermediary: intervention is non-systematic.
 D Final target.

Source: UVPL internal documents.

The UVPL ‘relay-station’ in each establishment is responsible for the:

- logistics of distance and open learning courses;
- creation and maintenance of educational resources;
- configuration of work environments;
- transmission of information needed to update the database of student access.

They also provide UVPL portal with general information on courses and online resources, and are able to handle technical queries from users.

Managing the staff, teachers, tutors and technicians is the responsibility of each UVPL member university. Projects for developing

resources or courses are initiated by the universities. They are then analysed, assessed and validated by UVPL in accordance with a procedure described in detail below (Section 4.2).

The portal and platforms are supervised by the UVPL technical team. Using ICTs, the universities provide UVPL with information, resources and courses. User accounts are updated automatically and regularly. The UVPL technical team is often confronted with inappropriate contacts that arrive at the portal, and it forwards these to the relevant institutions whether they be individual or corporate requests or from other institutions.

3.2 Costs and financing

GIP Atlantech deals with UVPL's financial management, particularly with regard to grants awarded to projects. The Conseil régional des Pays de la Loire has allocated a specific budget for UVPL. The current annual budget of US\$1.6 million covers the costs of running UVPL, creating and maintaining the portal, remuneration of personnel directly linked to the project (project manager, webmaster, administrative assistant), and communication and courses. In total, nearly 85 per cent of the funds are directly available for creating course modules or online educational resources.

After UVPL institutions have submitted their project proposals to the project manager for technical, educational and financial analysis, as well as a feasibility study, the projects are presented to the Steering Committee and then to the Strategic Committee, which determines the financial base that will be necessary for the projects to be carried out. UVPL only finances costs linked to the initial development of a project, that is:

- remuneration of teaching staff and engineers on the basis of US\$291 per day for a teacher and US\$187 for a technician;
- purchase of specific software;
- travel costs generated by meetings between teams that are partners in a joint project.

UVPL does not finance the purchase of equipment. Other programmes, in particular regional ones, can be contracted for this kind of investment. The UVPL institutions bear the educational operating costs of online courses, which include tutorials, educational supervision, examinations,

and updating course content. However, if updating means totally revising the course offer, the project may receive logistical support from UVPL. Students who enrol in a course via the Internet do not enrol in UVPL as such, but directly in the institution offering the course, with fees fixed by the elected council of the institution.

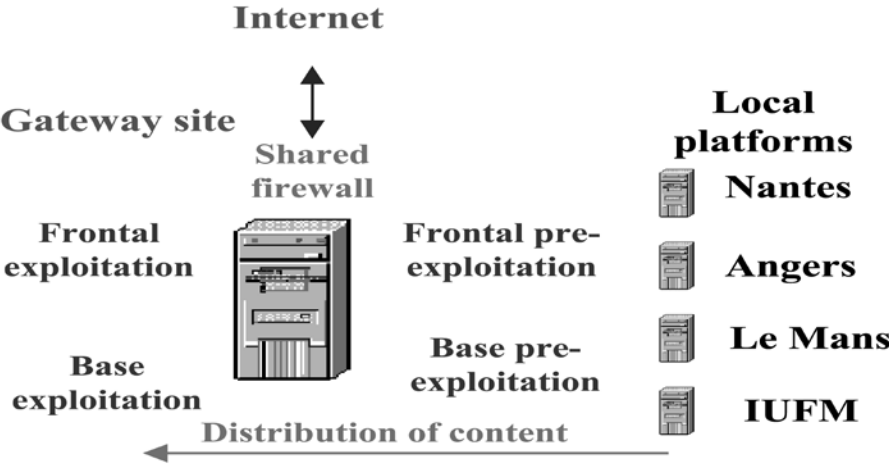
3.3 Technological infrastructure

The main idea was to create a system based on simple solutions that would reflect UVPL development. This desired simplicity will guarantee the system's robustness and its adaptability. The technical infrastructure is centred on the service offered to the users. Over and above the local elements that relate to the situation of each user, the heart of the system is the portal accessible via the Internet. The system's overall architecture is outlined in Figure 11.2.

The hub is the server. For both physical and computer security reasons, this server is currently housed by a service provider, pending a permanent home in the information technology department of the Conseil régional. This will mean large-scale savings in terms of maintenance and security as well as a connection to the high-speed network Mégalis with no extra cost.

The UVPL portal offers all the functions of a gateway site, with the added bonus of providing access to the course platforms chosen

Figure 11.2 The UVPL system's overall architecture



by the partner establishments. The aim here is not to adhere rigidly to the choice of a single platform supplier, but to maintain flexibility and adaptability with regard to what course platforms can offer. It is a forum for exchange where users have access to a specific area according to their individual profiles, for example:

- free access to educational resources available to everyone;
- course information for future students and companies in the context of professional training or continuing-education courses;
- restricted access to educational resources available to students and teachers from Pays de la Loire;
- open and distance learning possibilities for students, teachers, tutors or administrators.

The online forum, message service, shared or collaborative work spaces and discussions are only available through the course platforms and their integration is desirable for educational reasons. Indeed, all users are able to find within their own universities a personal virtual desk where these functions are available. It should be noted that setting up virtual desks (or student areas) started in the 1990s in the Pays de la Loire institutions. The regular use of such an area with a message service, storage space, Internet access, and the option of publishing one's own Internet pages, has given rise to a culture where ICTs are easily integrated.

The server also has an area that is shared by certain users. Teachers can load course modules that their colleagues may work on and revise. In the same way, course developers can share their work with one another as they progress. All the tools available through the UVPL portal promote working at a distance, whether it be for users or for teachers, administrators, and other participants. In addition to this server, traditional communication tools are also used, such as post, telephone, facsimile and videoconferencing.

The 'relay-stations' within each institution provide a wide range of technical expertise by grouping together computer programmers, course developers, e-learning experts and audiovisual technicians. In addition to obtaining information on UVPL, teachers are able to use this *savoir faire* to help them in developing open and distance learning courses. Each 'relay-station' possesses, to varying degrees, development

platforms for courses as well as digitization resources, computers, servers, scanners, digital workbenches, and audiovisual tools. The 'relay-station' staff use course development software that makes it possible to digitize resources and to plan the instructional design and logistics. In the initial test stages, they are able to work directly on the platforms of the portal in areas that are not yet available to students.

With respect to users, there are various situations.

- Students or future students may have their own computers and their own Internet access. This will allow them to work independently. If this is not the case, they can have free Internet access through computer centres in their universities. Open and distance learning students can obtain access through local partner universities or within their companies if they are enrolled in professional training or continuing education courses.
- A similar arrangement exists for teachers and tutors, which can be supplemented by the loan of a laptop computer at certain times, such as during development periods. This equipment may be loaned by the establishment managing the course or a 'relay-station'.
- For administrators, a computer workstation is part of their daily work environment. The only addition might be access to the Internet, if they do not already have it.
- For administrative tasks and access to the portal, UVPL uses the local GIP Atlantech network.

3.4 Intellectual property ownership and copyright

While, technically speaking, it is always possible to find more or less long-term solutions to meet the needs of teachers and other users, those involved with open and distance learning or online courses have yet to find a satisfactory solution regarding the rules governing intellectual ownership and copyright.

The conventional legal framework, which may be adequate to cover the use and dissemination of information in traditional face-to-face education, is not adequate to deal with issues regarding information dissemination on the Internet. These new means of disseminating information are so powerful that it has become impossible to control, or even to quantify, the publication of documents. There is also a considerable risk that courses may be duplicated and reused by third parties. Another problem that needs to be solved is ensuring that all

the information made available on the website by teachers is really their own work and that they possess the right to use, disseminate and exploit it. For resources that are to be used, rights can be or have been acquired by the institutions. Institutions consider that any document diffused on the Internet that has been prepared by teachers as part of their jobs is the property of the state that pays their salaries.

In the absence of clear texts to govern this very specific field, the current approach that UVPL has adopted at the request of its partner establishments is to let each establishment deal with copyright problems and remuneration of teachers internally. UVPL simply requests that each establishment provides an agreement regarding the rights for disseminating online courses and resources. This approach is in keeping with the spirit of UVPL, which does not wish to interfere with the management of its partner institutions and leaves them free to act as they see fit. UVPL posts a general copyright warning for users of its website.

4. ACADEMIC ISSUES

4.1 Programme development

E-learning tends to eliminate the distinction between initial higher education and professional training or continuing education courses. This is in keeping with the concept of lifelong learning, which, when implemented, creates a real continuum between the levels and modes of education.

At this point, the administration of initial education and that of continuing education are separate. However, the latter tends to be at the forefront of innovative educational methods and have specifically tailored courses for their learners. Continuing education services have been involved in distance learning techniques for many years, and are a valuable source of experience (e.g. for organizing tutorials) that UVPL can use for the teaching and education in general. Another interesting aspect is the knowledge about the economic environment that they gained through the experience of providing training to companies. One of the main objectives that the Strategic Committee has set for UVPL is openness to the economic, social and cultural sectors. The Strategic Committee aims at developing in the universities degree programmes leading to professional qualifications, such as the *Diplôme d'études approfondies* or the *DESS (Diplôme d'études supérieures spécialisées)*⁶

rather than putting classical university programmes online, whatever the level. It considers that this type of study can be dealt with at a national level or within the context of consortia that already exist or that are being formed.

With clearly set objectives and intentions, the Strategic Committee favours a pragmatic and realistic policy, and studies each project in light of the cooperation it may develop, its target audiences, its interaction between so-called initial education and continuing education. The point is not for UVPL to repeat what others are doing perfectly well, but rather to find niches that will be its own specialties (for example, continuing education programmes for pharmacists, or courses on industrial ownership or fiscal procedures courses, etc.). Nevertheless, it is important to learn from different experiences, at the beginning, project applicants who do not fit the criteria will not be rejected out of hand. However, a simple and rapid procedure for analysing projects has been set up.

Project assessment and the decision-making process

UVPL decided to put out a standing call for projects. In keeping with the objective of rapid development of UVPL and the wish to encourage a maximum of individual initiatives, the Strategic Committee decided not to impose a rigid calendar on those wishing to propose and implement projects. The call for projects was announced for the first time in Angers in January 2001, during the first conference introducing UVPL to university staff. More details were given about this approach during the summer session of July 2001, and the date for launching the call for projects was set for October 2001. A short two-page document was distributed so that each project could be presented to the Steering Committee.

At the Steering Committee meeting on 18 December 2001, UVPL correspondents presented an inventory of the project proposals from their respective establishments. There were sixty-one project proposals (thirty from Angers, thirteen from Le Mans, sixteen from Nantes and two from IU FM). The Steering Committee assessed these projects, particularly with regard to the UVPL objectives noted above, the quality of those proposing projects, and the possibility for a real partnership within UVPL. After this first assessment, the Steering Committee retained fifty-one projects for a more detailed analysis. They were distributed among different discipline areas as follows:

- ten for law and economics;
- eight for letters and social sciences;
- nineteen in scientific fields;
- eight in health fields;
- four for technology;
- two for the preparation of IUFM recruitment examinations for teachers at technical colleges (i.e. in areas such as truck driving and car-body building).

Many of these projects cover the full range of university courses: 21 courses are at the postgraduate (third cycle) level, twenty-three at the *licence* and *maîtrise* (second cycle) level, seventeen the first-cycle (first two years) level, and two are refresher courses for first-cycle students and those preparing for the Diplôme d'accès aux études universitaires (diploma for access to university studies).

At the beginning of 2002, a more detailed model for presenting the projects was made available. This document is in the form of a dossier with different sections to provide a full description of the project. This working document makes it possible to follow all the steps used for assessing the project: analysis by the UVPL project manager (educational, technical and financial feasibility); proposal by the Steering Committee after assessment; and decision by the Strategic Committee.

The main sections of the document focus on these different points:

- the commitment (in writing) of the different participants in the project: the individual proposing the project, the university's UVPL correspondent, the head of the university faculty who is administratively responsible to the university supporting the project and, finally, the partners inside or outside UVPL;
- a description of the project noting the issues it raises, its objectives, target audience and potential audience (initial training or professional training and continuing education courses), the type of model to be used (face to face or entirely distance learning, with variations in between), educational strategy, characteristics of the instructional design and logistics (with regard to students and teachers), student evaluation methods and enrolment fees;
- resources to be made available: static resources (the student does not interact with the content), interactive resources (the system

- reacts to information supplied by the student), and a collaborative environment (with communication tools, such as a message service, forum or chat, shared files, help);
- position of the project with regard to the marketplace, with an analysis of the existing offer and of the value added that the project would contribute;
 - organization of the project: composition of the project team, organization of collaboration and partnerships, task and resource allocation within the team, and provisional calendar;
 - provisional budget showing income and expenditures.

This document, which is compiled by the individual proposing the project with assistance from the UVPL correspondent, is evaluated by the UVPL project manager who takes into account its technical, educational and financial aspects. The results of this analysis are then presented to the Steering Committee, which decides whether it should be passed on to the Strategic Committee for a final decision. In some cases, it may be deemed better to postpone the decision or ask the project holder for further information.

The Strategic Committee, which has a summary of the project including the various recommendations of the UVPL project manager and Steering Committee, makes the decision whether to support the project and specifies the financial allocation. The university president and the project holder, as well as the other members of UVPL, are informed of the decision made by the Strategic Committee.

Once the project has been accepted, it is handed back to the person who proposed it, who proceeds to implement it with the assistance of the technical services in each establishment and, if necessary, of the UVPL Project Manager. Depending on the size and the complexity of the project, this stage may take several months to several years. The Steering Committee is responsible for examining the educational aspects of the project and gives the authorization for it to be put on the UVPL portal.

The final project generally consists of either:

- an open or distance learning system that, in most cases, will be housed on one of the platforms of the portal; or
- educational elements that constitute the resources utilized are made available to Pays de la Loire students, who may not be

necessarily enrolled in an open or distance learning programme, but who can use these resources freely throughout their university studies.

This approach fits the objective of sharing resources, which UVPL has defined for students and teachers. It should be noted that some projects have different objectives, for example, one objective may be developing tools for teachers so that they can enrich their traditional or distance teaching practices.

Information files on each new project (or programme) can be found through the Internet at the UVPL site. These files consist of:

- a presentation of the whole planning of the instructional design and logistics, and details on credits; and
- a presentation of online resources.

The information files have an identical format and, in approximately twenty standardized sections, show the main characteristics of each programme, its content and use. The objective of the files is to provide future students, students currently enrolled in a course, or any other users with an immediate overview and a good perspective of the basic approach. The programme is presented in a way so that it may also interest students or learners whose studies are in a different discipline.

In order to ensure the possibility of making the databases of these information files interoperable, their format has been conceived so that they can be integrated according to different international standards currently being established. Moreover, UVPL participates in the working group that will draw up proposals for the Association française de normalisation (French Standards Association).

For each project that is put online, an agreement is signed between GIP Atlantech and the establishment that has produced the project. This agreement defines the usage and distribution rights of the content that is online and has been put on the UVPL portal. The signature of the document releases funding for the project. Implementation and accessibility of the project on the UVPL portal can be on several levels:

- free access for certain resources;
- reserved access with login and password for students or any other user enrolled in a UVPL establishment; or

- individual access for students enrolled in an open or distance learning course.

It is up to each establishment to set the level of accessibility that it wishes to give to its online products. The objective of developing new products or systems favoured by UVPL has thus been reached: the project is now operational. The institution that submitted the project is now responsible for ensuring that the educational elements function properly and continue to function.

By July 2002, UVPL reached cruising speed. Twenty new initiatives were added to the sixty projects that were initially supported; in April and June 2002, twenty-seven projects were analysed of which fifteen were accepted by the Strategic Committee. This represents a financial commitment by UVPL of US\$681,000 for projects spanning the period 2002 to 2004. Moreover, the UVPL partner institutions have agreed in principle to make certain existing courses available on the portal. The development of an inventory is currently under way.

The time span from the initial project proposal to a decision by the Strategic Committee is approximately three months. The objective of optimizing the time frame thus appears to have been achieved. However, in order to maintain this momentum, it is important that all project holders are regularly informed of the progress of their applications, a task that is a matter of priority for UVPL correspondents. The flexibility that is gained through the absence of time limits for those proposing and implementing projects means that it is possible to deal rapidly with projects and to maintain momentum within the project teams.

The intended and real transparency with which information circulates among participants on all levels guarantees the credibility of the UVPL structure and of its project analysis and decision-making. This information flow allows project holders to be joined by other interested parties. What is more, the project holders become vectors for making UVPL known, and for making it a part of the daily operation of the institutions.

4.2 Teaching and learning

UVPL offers a series of open and distance learning courses. Each course has its own structure and instructional approaches, which vary according to the subject, the target and environmental constraints. Even with the

multiplicity of courses that have been or are being developed, it is possible to observe the emergence of models. Educational resources and a learning environment constitute the common basis.

Educational resources can be divided into two categories.

- Static resources (i.e. text, images or audiovisual): these represent the basic elements of a class plan or course but remain inert whatever the situation, these resources do not change.
- Interactive resources: these are elements that can integrate reactions or parameters supplied by students. For example, students fill in a table or a formula and the system calculates the answer or a three-dimensional animated object that the students can then move as they wish. Self-assessment exercises are another typical example of this interactivity: the students' replies are assessed and commented on, and a further course of study or revision can be proposed to the learner.

These resources are accessible online through the Internet, although they may be protected by a password in order to limit their use. This is done systematically from the moment a course is housed on a software platform. In certain cases, these resources are available on a CD-ROM so that they can be used without connection to the Internet, thus reducing costs and avoiding technical difficulties.

The learning environment is made up of both technical and human elements. The technical elements consist of tools that the various actors involved in course delivery use to communicate with each other and work together. The UVPL portal and its software platforms are the central element integrating:

- electronic message system ('private' contacts);
- forums (public contacts);
- electronic conversation areas, chat;
- the possibility of sharing applications at a distance;
- the possibility of accessing a remote computer; and
- file sharing.

These functions can be envisaged in different temporal areas, either synchronous (real time) or asynchronous (deferred time).

All these technical functions would be nothing without a team of people to operate them. The first actor is the student, who must be able to communicate:

- with the administrative structure to find a course and enrol;
- with teachers to obtain further information;
- with tutors to build up a course plan, follow it up and validate it; and
- with other students to share their difficulties and successes.

Only when these contacts function smoothly will the various participants be able to work together effectively, maintain their motivation, and keep the drop-out rate at a minimum.

Often courses combine some parts where students are present and others where they learn at a distance. These courses can be described as blended learning. In fact, only a few courses are completely distance education. Some blended learning courses have been operational in the universities of the Pays de la Loire for several years. Subject to the agreements, these courses will be made available on the UVPL portal.

One of the first blended learning programmes developed was the DESS entitled ‘Linguistic policies and educational technologies in language teaching’, set up by the universities of Angers and Le Mans. The programme is for students who have obtained a master’s in foreign languages, such as a degree in French as a foreign language, and who already occupy, or may in the future occupy, positions of responsibility in the field of linguistic policy. While the programme may be followed by students who are present on the university campus over a period of one year, there is a distance module to help students become familiar with this educational mode. Further, in order to meet the needs of people who already work and who are often abroad, this same programme can be followed at a distance over a period of two years. This provision is supported by the Office for French Foreign Affairs. In general, the students come from about thirty countries.

The programme comprises two three-week sessions with students present at the university in France. One takes place in July, when professional activities tend to slacken off and when those living abroad tend to return to France. This first session is an opportunity for students and teachers to meet one another, share knowledge and work together,

thus making long-distance exchanges throughout the course much easier. During the second session, which takes place between the first and second year, certain assessments are also made.

During the distance sessions of the programme, students have access to online educational resources. In the case of certain students for whom the quality or the cost of Internet connections is an obstacle, resources are put together on a CD-ROM, thus allowing students to use the Internet connection solely for contacting one another and/or teachers. At any moment, students may use the most relevant form of communication to contact the various actors in the course, be it other students, teachers, administrative staff, or course platform administrators. Although the electronic message system is the most frequently used means of communication, forums, chat or traditional methods are also used. UVPL is currently backing the development of a project with a similar structure: a DESS in 'language professions'.

Another programme worth illustrating in detail is the *licence* (bachelor's degree) in chemistry. It was set up in 2000 by the Université du Mans and currently has an enrolment of about forty students, most of whom are from France. This programme was accepted in the framework of the 'second-cycle physics and chemistry' Campus numérique project supported by the Ministry of Education and Research. The programme is comprised of eight modules that students can study for over a recommended minimum period of two years.

In addition to the educational environment described for the previous programme, many modules use interactive resources that allow students to carry out their own experiments. For each module, distance students submit weekly work to their teacher-tutor. They receive the corrected work within 48 hours. During two weeks per year, distance students need to be present for laboratory work. These periods are also an opportunity for them to sit examinations, which are identical to those given to students who are present on campus.

In September 2001, a joint programme for obtaining the Diplôme universitaire de français langue étrangère (university diploma in French as a foreign language) and for obtaining a *licence* in letters with a concentration on French as a foreign language, was started experimentally at the Université du Mans and became operational in September 2002. This programme has a vocational objective and is for people who would like to teach French as a foreign language in France, abroad in French organizations or in the private sector. This

programme is totally distance learning. Only the evaluation takes place on the campus of the Université du Mans, or at a partner university so that students do not have to come to Le Mans.

An example of another type of degree programme is the University Diploma in Multimedia Communications, which was created by way of local agreements. This programme was initially set up by a consortium of French universities that participate in a scientific Committee of which UNESCO is a member. It was organized within the context of the Réseau africain de formation à distance (African Network for Distance Education and Training), following the initiative of the Cooperation Service at the Office for French foreign affairs. The diploma is issued jointly by the Université du Mans and an African university. Lomé, Ouagadougou, Antananarivo and Dakar universities are in charge of the part of the programme where students need to be present, and organize the on-site multimedia classrooms where students can obtain Internet access and help from an assistant. These universities also participate actively in the assessment process. The Université du Mans puts the various courses online and is responsible for the tutorials.

The Master's degree in literature with an option in children's literature was also created as a total distance learning course. Again, only the evaluation requires the students to be present, and these can take place at decentralized sites. The programme may be completed in one or two years, and targets a very wide audience. When it was first offered in September 2001, students showed a very keen interest in the programme, far surpassing the initial forecast.

UVPL is also participating in the development of a *maîtrise* (Master's) in chemistry, which began in September 2002, as well as a *licence* in physics for September 2003. Several other online and distance projects are currently being developed: a professional degree for mediators in cultural heritage; a university diploma and Master's in 'Literature diversity of languages and culture'; preparation for the Agrégation⁷ in physics and chemistry; laboratory coursework in preparation for the Certificat d'aptitude au professorat de l'enseignement du second degré (secondary school teaching certificate) in physics and chemistry; a law diploma giving access to a law degree course; a university diploma in fiscal procedures; and a Master's in 'Geography and public policies for sustainable development'.

For the most part, students can take these programmes by modules. What is more, a number of other modules have been

developed to meet specific needs. For example, the UVPL portal will be offering a module concerning modelling and digital simulation for welding, and another module on data analysis and econometrics.

More than 2,000 students throughout the various universities and institutions comprising UVPL are currently following studies that are part of the open and distance learning programme.

5. COOPERATION

Considering the complexity of problems to be dealt with when developing courses and programmes to be available on the Internet, isolated projects have no future; a serious and, most of all, sustainable provision is only possible with regional, national and international cooperation. The sharing of knowledge, experiences and objectives between institutions – often with very different statutes – is not only a source of mutual enrichment but also guarantees a more open education for a wider audience. This is true of the development of courses and programmes for both initial and continuing education.

It is clear that the potential audience targeted by distance learning has increased considerably with the development of the Internet. Connections are becoming more and more rapid and less expensive for the user. The learner, who no longer needs to be a computer expert, generally knows how to use these techniques, and the content development tools are becoming more and more user-friendly.

First and foremost, however, cooperation is necessary to meet the needs of isolated learners whose quest for distance learning requires courage, willpower and combativeness to see the programme of study through from beginning to end, at which point the student's work is validated by a final evaluation. From now on, the distance learner, who is a well-informed Internet user, will be confronted by a wealth of options. Apart from the prestige of the institution or the reputation of the teacher who is in charge of the course, it will be the quality of the services available, specifically educational assistance, which will make the difference. It is important to provide the human and material means that are necessary for ensuring this assistance, taking into account time differences and holiday periods, for example, so that a vital social link will be created, thus limiting the drop-out rate.

Whatever the size of the establishment – and in view of the number of students likely to enrol in online distance courses (a demand difficult to quantify) – existing staff resources cannot be expected to

help each distance learning student on a regular basis. This is why UVPL has encouraged its member institutions to develop projects together in order to both accelerate the production of content and ensure faultless organization once the course is online, providing the support (tutorials, forum, chat and videoconference). That is essential if the student is to succeed. However, it is possible that a UVPL partner institution might already have formed close relations with one or several national or international establishments that are not part of UVPL. This does not in any way impede UVPL taking charge of the project, but in this case it is the responsibility of the UVPL institution to set up a suitable working arrangement with its partners.

If the target audience goes beyond the traditional client base of universities of the Pays de la Loire, some initiatives may need to seek partners outside of UVPL. An example of this is a project on industrial ownership that is currently being developed, which interests a wide audience of traditional students in a number of programmes of study, as well as companies seeking ways to better protect their industrial capital. Two of the partners for this project are the *Chambre régionale de commerce et d'industrie des Pays de la Loire* (regional chamber of commerce and industry) and the *Institut national de la propriété industrielle* (national institute for industrial ownership).

In general, UVPL accepts all partners of institutions that are members of the UVPL consortium, and even assists with calls for projects that are launched in other contexts (e.g. *Campus numérique français*). The needs expressed by individuals implementing projects, or their institutions, may also be reasons to support cooperation for the development of e-learning.

The development of distance learning confronts teachers with new difficulties that they have to solve. Good-quality distance teaching requires the use of new instructional approaches, a new division of tasks and different types of intervention, and the creation of tools that will allow distance learners to continually evaluate themselves or be assessed by their tutors. In order to do this, teachers can no longer work alone; they need to be able to benefit from a transfer of skills, and an exchange of experiences. They also need to be supported in their choices, have access to relevant training, and be aware of the changing technical alternatives that are available. The objective of any institution or group is to go beyond the personal initiative stage and commit itself to an institutional policy where each teacher can be responsible for his

or her share in the development of these new teaching and learning tools. Cooperation optimizes means, especially in terms of human investment, and it avoids reinventing something that has already been done elsewhere.

It should be made clear that all the services, modules and resources that have been created with the help of this kind of cooperation will also benefit the students who are enrolled in traditional university programmes. This is another major objective of UVPL to be met.

6. POLICY DEVELOPMENT, PLANNING AND MANAGEMENT AT UVPL: LESSONS LEARNED AND RECOMMENDATIONS

The UVPL portal was opened to the public in September 2002. The site is continually updated and enhanced, with the academic calendar for enrolment in the UVPL partner establishments determining when items will be put online.

Looking back over the experience of three years, one can see that a certain number of conditions need to converge in order to achieve results in the development of open and distance learning courses, and achieve this in a context of shared resources and experiences.

- Committed decision-makers: Without a strong sustained commitment on the part of the top management of institutions, it is an illusion to believe that putting in place the approaches and tools described in this case would go beyond the stage of 'passionate and intelligent tinkering'.
- The provision of adequate budgets by UVPL partner institutions: Those proposing and implementing projects need to have budgets that will enable them, when required, to find external help, and to create within the institutions technical positions that are indispensable for the implementation of distance education programmes and the follow-up of their students.
- A legal structure: A legal structure that can support a flexible and adaptable work environment, and a service that constitutes study, reflection and expertise available to all.
- On-site 'relay-stations': This support (logistics, advice, information exchange, help desk) is the essential link for accomplishing anything that will last. However, in order for these centres to be able to provide effective support and be

appreciated by users, they need to be given authority by the President so that they become more efficient in their actions and really recognized by their peers.

- **Technical capability:** A lack in this area has often been noticed, especially in e-learning expertise. Technical support is essential in order for a team to work confidently, for implementing choices, ensuring the smooth operation and presentation of online courses and resources, and producing online information files on these courses and resources.
- **Sharing know-how:** Teams working in this area should be enhanced. For example, university summer sessions are a good way for people to meet and exchange information. They provide an opportunity for creating group dynamics and letting 'people resources' emerge who can 'infect' others with e-learning.

The implementation of this type of new organization and practices in UVPL is hampered by two major difficulties.

- **Institutional inertia:** This is the main obstacle to change. This phenomenon is present at both the national and international levels. Perhaps only universities that have been specifically created for distance learning can avoid it, and perhaps more recognition and better career opportunities might lessen this resistance.
- **Copyright management:** Copyright is difficult to regulate. In this area – particularly with regard to online content – legal concerns have not been clarified and much remains to be done. For the time being, in France and elsewhere, everybody applies formulas resulting from negotiations and local customs.

Finally, it must be noted that this analysis is obviously incomplete since the main audience of UVPL, the learners, have not given their opinion yet. Indeed, their point of view will only be known in the months to come, after a study has been conducted by research laboratories specialized in education sciences and e-learning expertise. However, learner reactions to programmes that are already in operation indicate an encouraging level of satisfaction.

7. CONCLUSION

The UVPL project would not exist without the direct involvement of politicians and, in particular, without a personal commitment at the highest level from the President of the Pays de la Loire region. The significant adaptability in the functioning of UVPL makes it possible for those responsible for projects from the various UVPL partner institutions not only to realize their projects, but also to give them proper exposure. UVPL must live up to the hopes of the individuals responsible for the projects and learners, for many of them have previously been disappointed by broken promises.

UVPL started working with a small core of partners limited to public university institutions simply because they face the common issues. However, as was mentioned earlier, UVPL is one of the missions of GIP Atlantech to which all of the higher education institutions of the Pays de la Loire region belong. Tomorrow, UVPL will open its doors to all higher education institutions, as it has already started to do by accepting them as partners in projects presented by one of the founding institutions of UVPL. Moreover, so as not to make understanding the state of e-learning in France any more difficult than it already is, UVPL has decided to clearly define its field of action. This means that UVPL will not repeat what already exists, unless this would bring real added value. Further, UVPL will develop in a cooperative manner, whether that cooperation originates with UVPL or others.

UVPL is eager to take an active part in the increase of the education provision of open and distance education and training programmes in French. It looks forward to offering all learners – whether distant or not – new services, such as tutorials and self-evaluation methods. It also hopes to provide new tools with which learners can build customized study programmes. In addition, UVPL seeks to develop for a broad audience – with the help of simple and user-friendly tools – not only the desire to learn, but also the methodology that will make it possible for independent learning to succeed, and be validated.

In other words, UVPL has chosen to take a pragmatic, rather than a conceptual, approach to distance education. It is a step-by-step approach based on implementing projects and learning from them, and sharing these lessons with others, all of which contributes to developing the dynamic of the UVPL initiative – now well under way – even further. It is essential to be patient, persuasive and responsive, for an e-learning approach cannot be imposed. Also, if e-learning is to

develop, it is vital to take into account the experience gained elsewhere, which is exactly the intent of this publication.

NOTES

1. Pays de la Loire Virtual University.
2. Agency of Universities of the French-speaking World.
3. Level baccalaureate plus five years of university study.
4. 'E-learning: thinking of tomorrow's education'.
5. 'Digital Campus' projects.
6. Diploma of Advanced Specialized Studies – level baccalaureate plus five years of study.
7. Professional qualification for teachers in France; those who pass the competitive examination become *professeurs titulaires*.

Developments since 2003

8. L'UNIVERSITÉ VIRTUELLE EN PAYS DE LA LOIRE AND ITS CONTEXT

8.1 Institutional context

The founders of UVPL always assumed that the consortium would grow to include other higher education institutions in the Pays de la Loire region. This aim has not been forgotten: at a meeting on 31 March 2004, the Administrative Board of GIP Atlantech, which provides UVPL with its logistical support, decided to incorporate the regional association of *grandes écoles*, the Conférence des Grandes Ecoles des Pays de la Loire, as a full partner. As a result, 15 graduate schools, with a total of 12,000 students and 900 *enseignants-chercheurs* (teacher-researchers), officially joined UVPL on 7 March 2005.

8.2 National context

In 2000, 2001 and 2002, the Ministry of Education called for national, subject-based, digital campuses as part of its policy for developing distance education and training. The establishment of these consortia gives rise, however, to difficulties in terms of organization and resource sharing. In the realm of open and distance provision, as in all other areas, the ministry took into account the fact that an association of universities that were geographically close and had a history of contact with each other was more likely to see projects through successfully and within a relatively short period. The result, in 2003, was a fresh national call for the establishment of Universités numériques en région (regionally based, digital universities). UVPL saw this initiative as recognition of the model that it had developed.

The continued development of the Bologna Process has resulted in a succession of new projects for UVPL. The establishment of the LMD (*Licence¹-Master-Doctorat*) system generated reflection and discussion regarding the content and structure of courses. As a result, the way they were organized, and in particular their modular structure, was re-examined. Seemingly as a natural outcome of this, the *enseignants-chercheurs* have gradually proposed new arrangements for open and distance provision.

8.3 International context

For both France and Europe, 2004 was noteworthy for the accession of ten new countries to the European Union. This did not have a direct impact on UVPL activities, as the countries concerned were already eligible to take part in several European programmes. It is possible, however, that future university relations will undergo more extensive development in which the experience of UVPL may be shared with institutions in the new member states.

9. ORGANIZATION AND CURRENT PROGRAMMES

9.1 Organizational structure

The organization of UVPL, as described in the initial case study, has clearly demonstrated its effectiveness in terms of flexibility and adaptability.

Thought has been given to ensuring that the *grandes écoles* are represented in a way that preserves the balance of the existing decision-making and operational structure of the UVPL, at the same time as reflecting their relative contribution to the provision of higher education in the Pays de la Loire region.

9.2 Current programme

A collectively shared approach has become part of daily practice, as evidenced by collaboration between teachers attached to different institutions and the division of resources for the benefit of all students. This approach is also reflected in the formation of teams for an increasing number of projects, which bring together teachers and administrative staff from different partners and departments.

10. ADMINISTRATIVE ISSUES

10.1 Administration

In February 2003, UVPL decided to develop a targeted communications policy regarding its achievements, its operations and its services, so that it may become more widely known among the general public, the business sector, teachers, staff at institutions and, of course, students. It has followed a similar promotions strategy towards other national and foreign higher education institutions.

10.2 Costs and financing

The administrative boards of all UVPL member institutions have approved identical measures to establish the conditions governing financial responsibility for the remuneration of the teachers and technical staff engaged in devising content and the media used to deliver it, as well as for tutoring and support activities.

The UVPL budget has been maintained at the same level of 1.5 million euros a year, paid out by the Pays de la Loire regional council. This contribution is not the sole source of funding: institutions also contribute to the projects that they are involved in.

10.3 Technological infrastructure

The Single Sign-On procedure, described in the original case study, is fully operational. This means that some 70,000 students, teachers and administrative staff can connect to a personalized area on the UVPL portal, using the same login and password that they use for their own institutions.

10.4 Intellectual property ownership and copyright

In the continuing absence of clear national regulations, UVPL has produced its own rules governing dissemination of course materials and resources. Authors are required to sign an agreement that grants access to their materials to all students enrolled in the same subject, at the same level, at any one of the partner institutions. Several teachers offer entirely free access to their resources to any Internet user. For its part, UVPL formally agrees not to alter any content submitted.

11. ACADEMIC ISSUES

11.1 Programme development

On 10 May 2004, 60 courses were available to Internet users, including 20 leading to full national qualifications. Around 30 new projects are in preparation, and the number of courses on offer has continued to grow: by 10 May 2005, 70 courses and 130 resources were available.

UVPL is constantly broadening its range of subjects, as well as the levels at which they are offered, and has taken advantage of the opportunity to form partnerships with other public and private institutions. From September 2004 onwards, it will make a forty-hour self-learning module on innovation and industrial ownership available to the public,

in partnership with the Institut national de la propriété industrielle (National Institute for Industrial Ownership) and the Chambre régionale de commerce et d'industrie des Pays de la Loire (Regional Chamber of Commerce and Industry). This module may be freely accessed by any Internet user wishing to engage with these issues.

Other contacts have been established for non-traditional subject areas, at the request of outside bodies.

11.2 Teaching

Regular reliance on UVPL provision is beginning to spread within and between the constituent institutions and their departments. Thus medical teaching staff at the universities of Angers and Nantes have used the UVPL training platform to introduce personalized supervision of placements for in-class, fifth-year medical students. The platform constitutes the main area for students and their tutors to communicate with each other. Following the success of this first experiment, from the start of the next academic year teaching staff are thinking of extending the application to medical students in other years.

11.3 Learning

UVPL is developing several projects to communicate online learning and research methodologies to students. The principal initiatives cover management of documents, including how to search, access and cite references.

For over a year, UVPL has also been working to develop the skills of its staff, by establishing a set of special training modules for all teachers and staff involved in the organization of open and distance education provision, irrespective of their role. The annual UVPL symposium in July also contributes to this effort to train and inform staff from the partner institutions.

12. COOPERATION

UVPL cooperates on a number of projects with other French and foreign higher education institutions. For example, classes of Vietnamese students are now enrolled for the *licence* in chemistry. While resources have been developed jointly with engineering schools in the Baltic countries.

The Pays de la Loire region and UVPL have also taken part in a project under the European Union Community Initiative, Interreg

IIIC. On 26 April 2004, representatives from Switzerland, Lithuania, Scandinavia and Germany met to prepare HELPER (Higher Education eLearning Practices in European Regions). Besides providing an opportunity to exchange distance learning methodologies, the project seeks to study means of transferring training modules from one country to another.

13. FUTURE DEVELOPMENTS

UVPL plans to maximize the services it offers free of charge to both distance and in-class students. It is planning to provide students with as many methodological resources as possible to facilitate their studies and learning. Other matters under examination include the provision of support to students seeking to enter the workplace for the first time (e.g. training-linked placements or help with finding a first job).

14. LESSONS LEARNED

UVPL has now existed long enough for its practice and procedures to be meaningfully evaluated.

A full quality-assessment study has been carried out on one of the qualifications, the Licence professionnelle d'histoire médiateur du patrimoine (a professional undergraduate degree offering a historical perspective on cultural heritage). It has been made freely accessible on the UVPL website² in order to circulate findings and recommendations as widely as possible.

Examining the results of implementing open and distance learning in this way has proved to be of value for many aspects of teaching and learning in the partner institutions. As a result of these activities, for example, more and more teachers are altering their in-class teaching practice, while others have been inspired to undertake new projects.

UVPL encourages the use of existing online resources in its in-class teaching. It also supports projects with broader cultural goals. MUSEA, one of its first major achievements in this respect, is now available to all (see <http://ead.univ-angers.fr/~musea/>). A form of virtual museum, MUSEA enables students and teachers undertaking research to access a wealth of documents and resources, including multimedia materials.

UVPL is thus pursuing the policy it adopted when first set up: namely to work on behalf of all actors in higher education.

NOTES

1. Bachelor's degree, obtained after three years of university studies.
2. Lopez, M. 2003. *Radioscopie d'une FOAD*. <http://www.uvpl.org/pagdiv.asp?ID=60&RESSOURCE>. (Accessed 30 July 2005.)

Chapter 12

NETVARSITY, INDIA

Sugata Mitra

1. THE NETVARSITY AND ITS CONTEXT

The National Institute of Information Technology (NIIT) is a global IT solutions corporation that delivers software and learning solutions, as well as IT training, to customers all over the world. Based in New Dehli, it has a network of some 2,500 centres operating in 38 countries. It currently has close to 500,000 students enrolled worldwide.

NIIT was founded in 1981 by entrepreneurial IIT (Indian Institute of Technology) Delhi college friends, Rajendra S. Pawar and Vijay K. Thadani. P. Rajendran, who was also at the Indian Institute of Technology Delhi, joined them a few months later. They had an early vision of a society that would need to cope with the information age in the future, but that was unprepared to do so at that time. Their mission was: 'Bringing people and computers together, successfully'.

By 2002, NIIT was the 13th largest IT training company in the world and among the top five publicly listed IT companies in India. The company has been growing steadily, driven by demand for its software solutions products and development of its learning solutions business. NIIT grossed US\$200 million in revenues in 2001.

NIIT began with a vision of massive requirements for IT talent in a world moving into an information-based economy. Its mission has been to deliver IT training to a broad spectrum of people, from students seeking a career in computers to IT professionals requiring advanced

skills, and from managers seeking a competitive edge to schoolchildren using computers as a learning tool. One of NIIT's achievements has been to make this education easily accessible to people, in their own neighbourhoods, and now even within their own homes through the Internet.

Education and training

NIIT pioneered IT education and training in India in 1981 and over the years it has developed a range of curricula for people with diverse requirements. NIIT's focus is on providing advanced training on a myriad of software platforms and creating 'industry-ready' professionals who have the necessary 'hot skills' for a career in IT.

The entire education offerings from NIIT are divided into three separate categories: Futurz, Curriculum for Advanced Technology Studies and SWIFT.

Under Futurz, NIIT offers students a series of programmes, including the four-year comprehensive GNIIT classic programme, which is NIIT's flagship programme. The GNIIT course lasts four years and is equivalent to a Bachelor of Computer Applications degree course in the formal education system. The fourth year is a professional internship, where the student is placed in an appropriate industry for the final year. GNIIT is the only IT curriculum in India that offers such industry training where students are placed in organizations to gain work experience.

NIIT has also initiated a US\$94.62 million student loan programme with the International Finance Corporation (the World Bank's private investment arm) and Citibank that will allow around 40,000 students with limited financial resources to enrol in GNIIT programmes over the next five years.

NIIT's Curriculum for Advanced Technology Studies provides training on advanced technologies to experienced IT professionals, helping them to upgrade their skills and stay ahead of the competition. Alliances with technology leaders like Computer Associates, IBM, Microsoft, Oracle, and Sun Microsystems are giving NIIT a preview of the technologies of the future. These alliances also enable NIIT to launch its latest training offerings well ahead of others and help its education business to grow at a steady pace.

NIIT has taken initiatives to demystify computers for people from all walks of life. With its SWIFT India programme, NIIT provides

simple and affordable solutions for people who no longer want to be intimidated by computers.

Recognizing the growing importance of the Internet as a tool for delivering training, NIIT made its foray into the distance learning/e-learning domain through NetVarsity, the online university it founded in 1996. NetVarsity was in fact India's first online learning facility, based on the model of a conventional university. NIIT converted its online learning business into a new subsidiary, NIIT Online Learning Limited (NOLL), in April 2000.

In order to be able to cater to the IT learning needs of schoolchildren (primary and secondary levels) the company set up an independent business unit that focuses on the implementation of projects within specified quality and time norms. NIIT has already committed itself to a dominant share of this business in the three Indian states of Karnataka, Punjab and Tamil Nadu. West Bengal has also entrusted NIIT with the task of introducing computer education in 100 schools as a pilot.

NIIT training is available at 2,497 learning centres in countries including China, Malaysia, South Africa, Thailand, the USA, Viet Nam and Zimbabwe.

NIIT also develops software. At the start of the 1990s, less than a fifth of NIIT's revenues came from software development, which was on the periphery of its IT learning business. Today the two businesses represent an almost equal share of NIIT's activities.

It is important to note that the interplay of the vast range of related services in NIIT's software and learning businesses creates a synergy that benefits both businesses, somewhat akin to a hospital being attached to a medical college. The experience gained while working on software projects is used to provide students with real-life situations, making them hands-on practitioners. In turn, these practitioners provide the essential human resource input to create software solutions.

NIIT has set up one of the world's largest educational multimedia software development facilities. Its software business has been assessed at Level Five, the highest maturity level that can be achieved under the Software Engineering Institute's Capability Maturity Model for Software Process Capability. (This is a global standard in software development that originated from Carnegie Mellon University in the USA; it is the most respected standard in the industry.) NIIT became

the twelfth organization in the world delivering quality software as per this specified benchmark. NIIT's knowledge solution business has also been assessed at Software Engineering Institute Level Five, making it the first content developer in the world to be so assessed.

1.1 International context

NIIT aspires to be a global leader in information technology solutions, and part of this mindset is being a creator of technology. Any company with global aspirations cannot operate on the strength of somebody else's technology alone. NIIT's goal, therefore, is to be a net creator of technology. It will use available technology, but it will also create its own.

In the years to come, NIIT aims to expand its presence as a global player and strengthen its pre-eminent position in the knowledge management area by helping to create knowledge solutions for customers.

NIIT has very clearly outlined the goals for its key businesses. In the global learning business, the aim is to become the world's largest IT education and training company, while in the global software business the target is to become the best by setting new benchmarks in software development productivity, customer satisfaction, employee satisfaction, and product quality.

NIIT's growth strategy has been to address a global marketplace, in recognition of disappearing borders and increasing Internet use. In the early 1990s, less than a tenth of NIIT's business came from abroad. Today, half of its revenues come from the USA, Europe, and the Asia-Pacific region.

From a situation where NIIT has achieved all its growth through its own means, the company is accelerating its efforts to tap a wider share of the market through its equity-based strategic alliances with other technology companies.

Headquartered in New Delhi, India, NIIT operates in thirty-eight countries through 100 per cent-owned subsidiaries in the Americas, the Asia-Pacific region, Europe and Japan. NetVarsity is featured in all of NIIT's global plans.

1.2 National context

NIIT does not award degrees and is not authorized to do so. The issue of 'recognition' by the formal (state) system of education in India has

been debated many times within the company. The company feels that it is not feasible for its educational processes to adhere to the norms laid down by the formal system. These norms include such factors as faculty qualifications, staff-student ratios, space, fees and curriculum. In a company that operates privately in the IT skills area, many of these norms do not apply. For instance, faculty qualifications are no indicator of faculty skills. Since NIIT has no state subsidy and is a tax-paying entity, its fee structure must be substantially different from regular universities. Most important, the curriculum at NIIT needs to be changed once every six months or so, in keeping with the rapid pace of change in the industry. The university system in India has no process that can permit or certify such changes. However, the Indian Government has several large distance learning institutions, where some of these issues are being studied. The Indira Gandhi National Open University and the National Open School are both in communication with NIIT in regard to developing suitable models of IT higher education.

The Internet is available in most places in India. Connections are reliable and of reasonable bandwidth (28.8 Kb/s over phone lines) in most cities. It is felt that the telecommunications infrastructure in the country is adequate to support the use of ICT in education.

2. THE CREATION, ORGANIZATION AND CURRENT PROGRAMME OF THE NETVARSITY

In 1996, NIIT decided to set up an Internet-based education portal, in view of the anticipated growth of Internet accessibility.

2.1 Creation

The task of setting up the education portal was given to the R&D centre of the company, and the project was funded with NIIT's own resources. The decision was taken to set up the web servers in the USA because the Internet infrastructure in India at that time was both new and unstable. The initial design of the website was created by the head of the R&D Centre at NIIT (the author of this study). The site was created and hosted in a period of about two weeks and came online in July 1996.

The objective of the initiative at the time was to see whether sufficient people would be attracted to a (free) education portal. If so, a business model was to be created. The audience was expected to be

international due to the nature of the Internet and to the fact that IT skills training is sought after globally.

Courses on various aspects of IT were taken from NIIT's regular education divisions and converted to suit a web-based audience. The portal also included a virtual 'library' of links, a 'coffee shop' where students could chat with each other, and a 'swimming pool' where sports-related links were provided.

The NetVarsity consists of a server in the NIIT office in Atlanta, USA, connected to a service provider through a T1 link (a T1 line can carry 24 digitized voice channels, or it can carry data at a rate of 1,544 Mb/s per second). As mentioned above, it was decided to locate the server in the USA because the reliability of the Internet link was greater there than in India, but another reason was lower cost. This proved to be a good decision as the server has operated with almost no down time from 1996. It was based on Windows NT and Microsoft Back Office technology. The server and its contents were controlled from New Delhi, India, by a team of seven people, who constituted the staff of NetVarsity.

After NetVarsity's creation, it was decided to use an 'atomized' instructional design consisting of 'Skillettes'.¹ Skillettes are short units of instruction designed to be used on the Internet. During 1997–1998, NetVarsity offered short courses or just stand-alone Skillettes for a price ranging from US\$5 to US\$25. During NetVarsity's first year, there were about 10,000 hits per month and total annual revenue was about US\$700. Since this was not sufficient income to maintain the programme, some modification was necessary. In addition, it had been noted that students were having difficulty concentrating on screens with only text and pictures. They became bored easily, with the result that they did not complete their courses.

The first modification consisted of a link to the NIIT Intranet to allow faculty members from NIIT to interact with each other through a technology forum. This connectivity among 800 teachers working throughout India resulted in tremendous synergy and improvement in quality.

The second modification, in 1998, consisted of improving access for NIIT students by supplementing their virtual classroom education through a site called 'Tech Edge'. This site provided general information, state-of-the-art courses and a help desk. It was divided into four services:

- Ask an Expert: A help desk that referred questions to a panel of experts;
- Global Forum: A chat and threaded discussion forum for students and faculty;
- First Access: A section with short courses on emerging topics and technology;
- Online Testing: A section where students could take mock tests to check their understanding of courses before they took an actual examination.

In 1998, nearly 40,000 students used the site.

The third modification to NetVarsity was the introduction of Microsoft certification courses. This was the first hybrid education model that NetVarsity used: students would do self learning at home, then access a learning programme on the NetVarsity website and use TechEdge for the four services listed above. The Microsoft certifications are in high demand all over the world as they have de facto recognition, being authenticated by Microsoft. NetVarsity is the only online organization providing these courses. During 1998/1999, over a hundred students completed their online courses and received certification. These courses generated a revenue of over US\$100,000 for NetVarsity.

In 1998, NetVarsity was an online institution of seven persons operating from New Delhi, with a web server in the USA and networking around 50,000 learners and teachers together in a commercially viable manner. The model was deemed worth developing further.

In 1999, it was decided to introduce NetVarsity into the GNIIT programme, the NIIT flagship course described earlier. In the new version, called iGNIIT, launched in 1999, students who are admitted to the programme are automatically enrolled in NetVarsity. Each semester consists of 144 hours of courses, and almost all are expected to be taken in a physical NIIT facility, that is, in the classrooms or laboratories of a NIIT centre. An unspecified amount of extra time is to be spent on the Internet with NetVarsity. NetVarsity provides each student with a learning plan, self-paced online tutorials, mock examinations, projects, the TechEdge services and so on. Out of the 9,000 students who were admitted to the iGNIIT programme as of 2001, 4,000 were expected to graduate soon.

The NetVarsity experience, as described above, represents a purely Internet-based model of instruction that has evolved into one that is intimately connected with the large ‘bricks-and-mortar’ infrastructure of NIIT.

Lessons learned

- Students do not seem to be attracted to learning only from a web portal.
- Students do not want to pay for content that is solely conceived for – and available on – the web.
- Drop-out rates are high (50 per cent or more), even for the few students who paid for using the portal.
- Interactive environments are popular and attract both students and teachers.
- Hybrid education models (conventional classroom and Internet) can encourage students to use the web-based learning mode.
- Certification from a recognized organization is important to students.
- Attention spans are low on the web, and instructional design needs to be modified to take this into account.

It can be expected that institutions will use a hybrid system that includes e-learning only if such a system is more cost-effective than the classical system, while providing the same instructional efficiency.

2.2 Organizational structure

While NetVarsity started as a department of NIIT, it is now a separate company called NIIT Online Learning Limited. The company follows standard corporate law procedures. It has a board, which is constituted of industrialists, academics, technology experts and marketing experts. The company has a Chief Technology Officer and a Chief Pedagogy Officer, in addition to the Chairman and Managing Director. A technology team, an operations team and an administrative team run the company. There are about twenty-four persons in NOLL at any given time. This includes a continuous help-desk team.

NOLL is currently in the process of building a team of experts and other resource persons who will work for the company using the Internet.

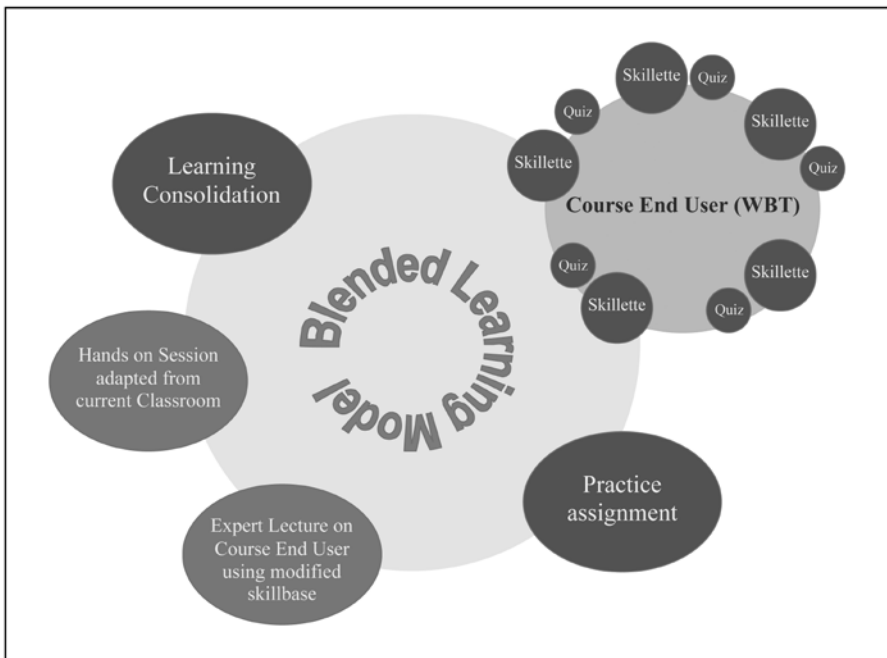
2.3 Current programme

In 2002, NetVarsity launched a completely new education model based on the experience described above. The new model, often referred to as a 'fusion' or blended model combines the GNIIT course with web-based content. Under this fusion model, certain topics are not taught in class at all. This model provides students with the option to study something in class or on the web. The model is applied across the board, such that all GNIIT students are automatically enrolled in NetVarsity and are required to complete twenty hours of the course each semester on the Internet. The remaining 120 course hours are spent in the conventional manner, in classrooms and laboratories of a NIIT centre.

For students who do not have access to the Internet, a CD-based version of the twenty hours of web-based instruction is also available. This is necessary in the Indian context where the availability of the Internet cannot be guaranteed.

The structure of the course model is illustrated in Figure 12.1.

Figure 12.1 The hybrid model at NetVarsity



Source: Developed in-house by NetVarsity.

Table 12.1 NIIT and NetVarsity students by gender

Gender	IGNIITians	NetVarsity ¹	No. of students
NULL	81		912
Female	1 503	26 106	27 609
Male	3 673	76 738	80 411
Total	5 178	103 754	108 932

1. The NetVarsity heading refers to those students who enrolled directly through the NetVarsity web site.

Source: Internal data from December 2002.

At the end of 2002 there were over 100,000 students enrolled at NetVarsity. Table 12.1 details the student-body composition enrolled at NIIT and NetVarsity according to gender.

NetVarsity has a large and varied student body. Courses attract relatively young students, with nearly 70 per cent of them being between the ages of 18 and 25. Their educational background varies from less than ten years of schooling to graduate and postgraduate degrees, with most of the students having at least two years of college before enrolling at NetVarsity.

The course materials are developed by a team of academic staff as well as by external experts. NIIT's own academic staff members generally consist of university graduates with an average age of about 27 years. There are equal numbers of men and women in the group. Support staff consists of four technical administration staff and seven software developers.

Development of the organization during the next few years will depend on the success of the fusion model described above.

Lessons learned

At this point, the main lesson from the NetVarsity experience seems to be that it is not commercially viable to operate a purely Internet-based learning programme unless it is linked in a direct way to a formal educational organization.

3. ADMINISTRATIVE ISSUES

It was expected that the issues involved in the administration of a virtual university would be different from those of a 'real' university. In view of this, a planning workshop was conducted with a senior educator from the Indian Government as the principal consultant. Each of the

functions of a conventional university were analysed and an equivalent in the virtual environment envisaged.

3.1 Administration

The actual operations over the last few years show interesting differences with regard to the originally envisioned structure. In our experience, many of the functions become redundant or can be automated in the electronic system. For example, the function of the registrar could be almost entirely eliminated. In the corporate environment, the chairman of the company takes the place of the Chancellor. The Chief Technical Officer effectively becomes the Registrar. The main administrative tasks relate to development of new instructional materials, answering queries and other student concerns, and upkeep of the network.

3.2 Costs and financing

All NetVarsity costs are covered by funds from NIIT. Total annual expenditure amounts to approximately US\$1.6 million. Fifty-two per cent is allocated to direct expenses which include technology infrastructure, incurring 23.9 per cent of overall expenses, services (including Expert Technical Services, Help desk, and e-Consumer Relations Management – CRM) and course material. Only 4 per cent of direct expenses is spent on course material, while nearly 18 per cent is expended on services. Sales and marketing, personnel and administrative costs constitute indirect expenses, which amount to 48 per cent of the annual budget.

In practice there may be a 30 per cent saving, especially on direct expenses, because of lower costs for technical infrastructure and expert services.

3.3 Technological infrastructure

The technological infrastructure of the NetVarsity is as follows.

Functional components of the NetVarsity architecture

Core NetVarsity portal

This is the common entry point for students, partners, experts and general visitors. It gives an overview of NetVarsity, its products and services, handles registration and subsequent sign-on, and connects visitors to designated components of NetVarsity, which deliver specialized services/functionality.

Online shopping and e-commerce engine

This module encapsulates the e-commerce capability for B2C (business to consumer) transactions and includes features such as a product catalogue, shopping cart, credit-card payment interface, etc. It also includes connectivity with the payment gateway services provider, and modules for learning delivery and revenue recognition.

Product and content management – Online manager application

This module provides the back-end functionality for managing products, including geo-specific pricing, merchandising, sales promotion, and cross-selling and up-selling.

Sales tracking, revenue recognition and financial accounting system

E-businesses have special requirements and statutory obligations vis-à-vis their order processing, payment collection, revenue recognition and financial accounting processes. This module is built to handle a huge number of low-value orders. It also implements a sophisticated revenue recognition system that operates on a daily basis.

Loyalty programme, CRM help desk, and MGM applications

These interrelated applications leverage the large registered user base to generate awareness about NetVarsity, reward users for desired behaviour, promote and support usage, and address any problems faced by users.

Content delivery and global load-balancing system

This module integrates the NexGen Web-Based Training engine with NetVarsity and handles the actual delivery of learning content. It tracks usage, ensures activation and expiry of courses in the LearnDesk. The module is being enhanced to support multiple geographically separated content delivery servers to address response time, scalability and fault-tolerance requirements. It will also be enhanced to support encryption and time-based licensing of content to third parties.

Asynchronous technical web services

These are a collection of web services, such as ExpertsAnswer, Online Testing, etc., which are designed to support e-learning. The services architecture is based on the Net platform, and the services are being designed to service multiple portals (rather than just NetVarsity) thus opening up the possibility of service revenues.

Magic Key activation and pre-paid retail product management system

This module allows us to distribute pre-configured product offerings that can be activated based on a Magic Key. It can be used for bundling offers to partners or for retail product packs of NetVarsity, which can be sold over the counter at cybercafes, bookstores, etc.

Channel management and B2B (business to business) order processing system

NetVarsity is rolling out Sales Partner and Reseller programmes, which will allow it to augment its online sales. These will address both online sales partners, such as B2C portals, and brick players including Systems Integrators, etc. The Reseller programme will enable NetVarsity to reach out to individual learners in small and medium-size enterprises. Unlike sales to individuals, these programmes will require a distinct sales tracking, order processing, registration, and course activation system in addition to the registration and management of partners themselves.

Partner zones and co-branding middleware

In special cases the core NetVarsity portal will need to be interfaced/integrated with partner sites through appropriate interfaces. NetVarsity is even considering publishing its course catalogue in the form of a web service to select partners in the future. Another strategy is to create special zones within NetVarsity for handling special alliances.

Learning Units system – Commoditizing e-learning

Instead of selling courses, NetVarsity is considering selling Learning Units. Learning delivery can then be stated in the form of Learning Units and bulk consumers can buy Learning Units as required. This system will particularly benefit the B2B2C and B2B2E (business to business to consumer, and business to business to enterprise). The Learning Unit management system will enable buyers (as distinct from individual learners) to purchase, deploy, and activate Learning Units for their population of learners.

Synchronous technical web services

NetVarsity does not offer such a service now. However, services such as Instant Messaging, One-on-One Mentoring, and Virtual Classroom have been identified for possible deployment in the future.

Table 12.2 Software used by NetVarsity

Web servers (6) <ul style="list-style-type: none"> • Windows 2000 Advanced Server • IIS 5.0 • MTS (Middle Tier) • Win 2000 SP2 	Database servers (5) <ul style="list-style-type: none"> • Windows 2000 Server • MS SQL Server 2000 (dual Proc Licences) • Windows 2000 SP2
Content server <ul style="list-style-type: none"> • Windows 2000 Advanced Server • IIS 5.0 • Win 2000 SP2 	E-commerce server <ul style="list-style-type: none"> • Windows 2000 Advanced Server • IIS 5.0 • 3.0 + Commerce edition Site Server • Win 2000 SP2

Source: Internal data from December 2002.

Software

NetVarsity has invested resources and time in choosing the best software possible. It utilizes the software indicated in Table 12.2.

3.4 Intellectual property ownership and copyright

The NetVarsity name and its course materials are copyrighted and held by NIIT Limited, as are several other trademarks, such as Skillette. Several patent applications have also been made.

4. ACADEMIC ISSUES

4.1 Programme development

The more than 300 NetVarsity courses currently span most of the IT areas, certain behavioural skills and sales planning. IT courses enable an individual to either acquire IT skills or upgrade his/her existing know-how. Sales planning is rapidly becoming an important criterion for measuring one's success. The courses help students to understand the art of selling. Lastly, behavioural-skill courses help students to complement the IT skill set with people skills. By far the major emphasis is on IT courses that support the GNIIT programme of NIIT, as described above.

The NetVarsity curriculum is developed by an in-house committee that uses market data from NIIT's customers on the requirements of IT professionals. All courses are offered in English.

Faculty are required to undergo training every year to upgrade their skills. This is also done through NetVarsity using a service called

eSEED (School for Employee Education). Most processes used are certified by International Organization for Standardization certification, and software quality is controlled through the Software Engineering Institute Capability Maturity Model Level Five standard.

4.2 Teaching

Courses are designed and educational materials are developed at NIIT's centralized development facility in New Delhi. This is a 'factory' of over 400 persons, of whom about 150 are instructional designers, making this one of the largest facilities of this kind in the world. NetVarsity contracts out content development to this facility. In addition, NetVarsity obtains material from other sources, such as experts in certain areas. The 'First Access' service of the TechEdge section of the NetVarsity site is provided by NIIT's Research and Development Centre (Centre for Research in Cognitive Systems).

Courses are designed through a process that starts with a vision of the course, its objectives and target audience. The course is then carefully designed for content, interactivity, lightness etc. The final product is tested for effectiveness by student volunteers.

Faculty are trained in designing and constructing educational material for the Internet at NIIT's School For Employee Education (SEED). This is a residential facility in New Delhi. The training is also available over the Internet through eSEED. In 2001, SEED conducted 45,000 training hours at a cost of approximately US\$22 per day. It is planned that in the future 15,000 hours out of this training will be taken through eSEED at US\$7 per day, representing a saving of 66 per cent.

4.3 Learning

Some aspects of the learning process have been described above. It is felt by the author that collaborative and interactive methods are more effective than support from faculty alone. Nevertheless, NetVarsity provides faculty support twenty-four hours a day, seven days a week.

Many students in India and elsewhere have difficulty in accessing the Internet on a regular basis. As a result, NetVarsity is increasing its course content for CD use and attempting to provide CD-based material to learners wherever required.

Laboratory and (physical) library work is done at NIIT centres, and registered students can use these anywhere in the world, irrespective of where they were registered.

The completion rate for purely web-based courses (i.e. courses where students are never required to come to a learning facility) is low, in the region of less than 50 per cent. However, student reactions to such courses are usually very good. The results of a feedback report for the eSEED programme are shown in Table 12.3.

Research

NIIT's Centre for Research in Cognitive Systems conducts regular research on learning in the ICT-supported environment. One of its many projects is 'The Hole In The Wall', a series of experiments that have been reported in the mass media and attracted worldwide attention. The experiment shows that given appropriate access to the Internet, groups of children can learn to use the computer on their own, irrespective of their social, economic or educational background.

At present, NIIT – with funding from the International Finance Corporation, the Government of India and the Industrial Credit and Investment Corporation Bank (India's second-largest bank) – is setting up 108 outdoor computers, connected to the Internet, throughout a large section of rural India to test the effectiveness of this approach. The pedagogical approach used is called Minimally Invasive Education (for more details refer to www.niitholeinthewall.com).

Other cognitive systems research projects include systems that can automatically interview students, remotely monitor examinations over the Internet, detect learning styles, and use bots (Internet robots) to help with the learning process.

5. COOPERATION

While there has been dialogue between NOLL and organizations such as the Indira Gandhi National Open University, no cooperative projects have been started to date. However, a mutually beneficial cooperation in the future would be a welcome initiative.

6. FUTURE DEVELOPMENT

Future development and institutional change for an initiative such as NetVarsity will depend on technological advances. The following points from a speech, 'Multimedia, tool or toy?' given by the author at the COMDEX conference, in Singapore in September 1996, examine potential developments in technology and e-learning delivery.

Table 12.3 eSEED feedback report

Description	Ratings*					Average
	5	4	3	2	1	
1 How clearly did you receive the information about your nomination to the course from the Supervisor/HR?	14 40%	11 31%	9 25%	1 3%	1 3%	4.00
2 How clearly were the objectives stated by the eSEED interface before the course started?	8 2%	15 42%	8 22%	4 11%	1 3%	3.69
3 How do you rate eSEED's initiative in helping you achieve those objectives?	11 31%	17 4%	6 17%	1 3%	1 3%	4.00
4 How do you rate your participation / initiative in achieving those objectives?	4 11%	16 44%	8 22%	8 22%	0 0%	3.44
5 Quality of content	9 25%	16 44%	7 19%	2 6%	2 6%	3.78
6 Flow of the course	12 33%	12 33%	8 22%	2 6%	2 6%	3.83
7 Pace of the course	5 14%	13 36%	12 33%	3 8%	3 8%	3.39
8 Appropriateness of learning services planned for the eSEED course (My question, PAs, PTs, chats [if applicable])	11 31%	11 31%	12 33%	0 0%	2 6%	3.81
9 Effectiveness of learning services planned for the eSEED course (PAs, PTs, chats [if applicable])	10 28%	15 42%	8 22%	1 3%	2 6%	3.83
10 Timely feedback/evaluation as applicable	15 42%	8 22%	10 28%	2 6%	1 3%	3.94
11 General support/assistance	14 40%	12 33%	6 17%	3 8%	1 3%	3.97
12 Quality of the responses received from the eMentor	4 29%	3 21%	4 29%	2 14%	1 7%	3.50
						3.77

Total number of responses: 36

* Ratings are from 5 (satisfied) to 1 (dissatisfied)

Proactive programming

Let us examine some of the issues dealing with proactive versus reactive computing. These terms are not generally used to describe computer programs, they describe human behaviour. Suppose that you are sitting harmlessly in your office and a visitor storms in hurling abuse. You could get up and start shouting at him while your secretary rushes about calling the security guards. That would be reactive behaviour. On the other hand, if you consciously control your rising adrenaline level, take a few deep breaths, wait until the visitor's tirade is over and then ask him what the matter is – that is proactive behaviour. It is generally considered more effective to behave proactively.

If you think about it, almost all computer programs behave reactively. In particular, all Graphical User Interfaces are purely reactive. They wait passively for someone to do something to them before they do anything. Whatever they do is purely a reaction to user input. The most modern programming languages are described as Event-Driven. That is, they are blatantly reactive. They will operate only when an 'event' occurs. When you click on a button in such an application, the program responds as programmed. It does not pause to analyse the input or to 'think' about how it should react.

As in the case of human behaviour, if programs could behave proactively they would be more effective. This realization is around the corner and the next generation of algorithms will be based on the concepts of such proactive programming.

How could a program be made proactive? I think the first step is to analyse the inputs before reacting to them. For example, if you always type the word 'and' as 'dan', then a word processor that remembers this and automatically corrects the error would be a proactive program. In fact, such word processors do exist and form the first examples of commercially available proactive systems.

To be truly proactive, a computer needs to be aware of its environment and its user. This does not mean that we have to wait until PCs acquire eyes and ears and the necessary software to analyse what they see and hear. After all, nature took several hundred million years to figure out how to do this in biological systems. But there are organisms much simpler than us that can behave proactively using simple signals from the environment.

I think to begin programming proactively, we should look for signals that are already available to the PC but that we are ignoring today. What

can a PC figure out about its user? Quite a lot, I think. For instance, it can figure out how quickly you can type. A person who types quickly on a PC keyboard is probably used to computers and knows a lot about them. Such a person does not need to be told something like 'Click on the NEXT button to see the next screen'. So a proactive program could remove that redundant instruction when it detects a computer-aware user.

Other such involuntary signals from a user that can tell a PC something about him or her, could be reading speed and hand-eye coordination. Reading speed is easily measurable every time there is text on the screen that you have to read and acknowledge by pressing a button such as OK. Once a PC has measured your reading speed, it can tell when you are skipping things and when you are reading slowly and sluggishly. It could even tell from your reading speed whether you use English as a first language or not.

The way in which a person uses a mouse contains hidden information about hand-eye coordination, acuity of vision, and familiarity with Graphical User Interface environments. You might even be able to figure out whether the user is a child or an adult. Armed with such information, the program could decide proactively about what typeface and size to use, how long to keep text on the screen, where to place buttons and of what size, and many things like that. The result would be a program that adjusts to a user's convenience automatically. In a world where most people ignore others' convenience completely, this may be a nice relief, in cyberworld at least.

Another important factor that contributes to proactive behaviour is experience. Computer programs usually do not gather experience, even when they can. For example, I always keep what I write in a directory called 'docs'. Every time I want to save, I have to click through a maze of directories and sub-directories before reaching the 'docs' directory. I have been doing this for years but my computer is not programmed to remember this. If it was, it would have proactively saved my word-processed files in the 'docs' directory without asking me.

Such proactive interfaces are beginning to emerge and, I am told, several large software companies, including Microsoft, are working on them. I think the first major impact of proactive programs will be on computer-based education. One of the reasons why a human teacher continues to be far better than any automated system of learning is because teaching is a proactive process. The teacher observes the student and works out instructional strategies based on such observations

and his/her experience. Teaching programs of the future should be designed to do similar things. Such programs will detect a student's learning style, psycho-social characteristics, physiological limitations and other parameters important to learning. They will then use their experiential data about other students they have 'taught' to decide on a teaching strategy. Finally, they will reach into their bank of educational materials to find appropriate content for the teaching task at hand.

One of the interesting features of such proactive teaching programs will be that two identical programs may become totally different in their educational approach over a period of time, depending on the student populations that have used them. They might even be programmed to solicit advice from each other.

Educational paradigms

Multimedia instructional materials have the following problems at the present time:

- They are reactive and merely respond to a user action. The response is always the same for the same user action. For instance, the response to a click on the 'Next Page' button would take the user to the next page without comment, regardless of whether the user spent one second or one hour on the page.
- They do not address different learning styles of learners and are designed for one common learning style.
- They do not recognize different physiologic responses from users. For example, differences in visual acuity and hand-eye coordination are disregarded.
- They do not accumulate user experience regardless of how many users have gone through the material. Neither do they develop an 'average user' profile.

There is a great deal of interest in the construction of learning materials for the Internet. Such materials, when available, have the following additional problems:

- They do not address the reduced attention span of users;
- They do not address the just-in-time nature of user requirements.
- They do not address the on-demand requirements of the user.

- They do not address the extreme heterogeneity of Internet users.

In order to address these issues, a new methodology for the creation of computer-based instructional materials suitable for use on the Internet has been created. In what follows, this approach is discussed.

The Skillette concept

It is proposed that education on the Internet be designed in modules called Skillettes. Each of these would be short units of instruction, with a focused and usable content. The usability of the Skillette is its most important component. Users of the Internet and, indeed, learners in general are increasingly expected to require on-demand and just-in-time education. This is a consequence of their reduced attention spans and the increased necessity to use what they are learning immediately.

A Skillette should have the following properties:

- It is not more than thirty minutes of instruction.
- It covers one specific and usable unit of education or training.
- Its usability (skill transfer) is discussed first and any conceptual material comes later.
- It is capable of adapting to user learning style.
- It is capable of adapting to user profiles, for example, reading speed, visual acuity, hand-eye coordination and attention span.
- It is capable of accumulating 'teaching experience'.
- It is delivered over media that permits education-on-demand and just-in-time modes.
- It is designed to cater to heterogeneous entry profiles.

Current software and hardware are adequate for the production of such material. We produced a prototype Multimedia Skillette having most of the above properties (except for accumulating teaching experience and catering to heterogeneous entry profiles). It was observed that the production effort for such material is about 2.5 times more than for conventional multimedia computer-based training material. The effectiveness of the developed Skillette is currently being studied.

In addition to the above experiment, a large number of text-based Skillettes have been placed in an Internet-based virtual university (see

<http://www.NIITnetVarsity.com>). The usage of such material since 1 September 1996 is being studied.

The limitations of current multimedia-based instructional material on the Internet may be removed through the use of adaptive Skillette-based instruction. This, indeed, may indicate the direction for distance education in the future.

Proactive Programming is currently found on CD-ROM. Such programming is bound to arrive and when it does it will make the management of distance learning easier and more customized.

E-learning experience and related strategies at NOLL

The e-learning experience of NetVarsity users essentially includes the following crucial activities:

- initial browsing experience, including registration and login;
- online content catalogue exploration and search;
- product/service selection and purchase;
- use of the LearnDesk and Web-Based Training;
- use of TechEdge, especially the Expert and Online Testing services;

The key performance criteria for these activities are as follows:

- Initial responsiveness and ease of use. For example, it is expected that the Home Page download time is four to eight seconds, or that registration takes not more than between thirty and sixty seconds.
- Intuitive navigation and context-sensitive search. Users expect to be able to complete transactions with minimum clicks, preferably from the Home Page itself.
- Reliability. Uptime should be 99 per cent or more.
- Customization and ongoing customer profiling. This is useful for both users and the services and marketing teams.
- Scalability. We will need to provide for greater than tenfold growth each year for the next few years. Scalability will be required both within a site and across sites as we increase our geographical reach.

NOLL is already working with a range of partners, including online and offline service providers. Given NOLL's overall 'brick-and-portal' strategy, there is a need to cater to both online and offline customers, especially through a flexible sales process.

Customers, employees, and partners all access the same common infrastructure. However, the system interfaces are quite different and in the future will require even more customization and personalization. For example, while an individual online customer may go through an online credit-verification check, corporate customers could place bulk orders using a pre-approved credit line. There may be alternative payment mechanisms for sales partners, especially those representing NOLL in other countries.

In light of the above, the strategy will entail the following:

- centralized information architecture deployment while retaining the flexibility of distributing content to edge networks closest to the learners. Thus, the core website applications and databases will need to work flexibly with distributed content servers. This functionality will be provided through an intelligent online learning management system;
- distributed order/service fulfilment capability. This could be both geographical and through multiple partnerships. The hosting infrastructure will be geared to supporting dedicated servers for servicing large customers who may require co-branded content delivery. Since, in the initial years, the majority of the customers will be in India, it has been decided to locate our core site in a world-class Internet hosting data centre in India. This will allow fixed costs to be kept low, and ensure that capacity is commensurate with load. It will also permit scaling up quickly, if required. In-house skills will therefore be oriented towards overall quality and responsiveness of infrastructure rather than routine administration;
- data warehousing and mining to support eCRM. These will be distributed to support geography-specific sales and marketing initiatives;
- high availability and responsiveness by outsourcing hosting infrastructure and providing dedicated high-speed communication links to support back-end processes from remote locations;

- leveraging technology partnerships with world leaders, such as Microsoft, Citrix, Computer Associates, Network Associates, Intel, Compaq, Sun, Oracle and others.

Content-technology road map

Learning is currently delivered through our NexGen 1.0 Web-Based Training engine. This engine combines a rich visual user interface with Flash technology to support a high degree of interactive learning. The current version of Application Service Provider that it is based on is fairly scalable, and an industry standard dual processor server is capable of serving nearly 240,000 learning hours per year. However, in anticipation of growing requirements, we expect to upgrade this engine using the Application Service Provider.Net architecture when it is available.

In addition to the primary Web-Based Training engine, we will be working on delivery engines for our publishing model and light IT content. In both of these areas we will build on industry standards, such as XML and SCORM, to ensure easy content reusability. For cost-effectiveness of content, we will work with technology solutions that allow us to:

- combine presentations with audio and supporting text; and
- combine recorded video with presentations and text.

We believe that, in pedagogical terms, learners will be in a position to fully benefit from video technologies. Therefore we have tuned our content and delivery technology to evolve towards videos by doing selective deployment for certain courses/partners as of 2002.

In order to maximize responsiveness, infrastructure for content delivery will be distinguished from the sales and marketing part of the site. Through the use of load balancing and web-caching technologies from service providers such as Speedera, Akamai, and others we will ensure that content is delivered to users at the desired speeds.

Services-technology road map

Our ability to provide online mentoring and access to experts, as part of our overall 'brick-and-portal' strategy, will ensure that online learners will receive an educational experience comparable to that of their face-to-face learning counterparts, while benefiting from the any time, any place, any pace e-learning paradigm.

We are already supporting users through our CRM Help desk and twenty-four hours a day, seven days a week Expert Services. We see these services evolving from the current e-mail support to:

- one-on-one interaction through instant messaging solutions based on public infrastructure;
- one-to-many interaction through chats and online forums. However, our experience shows that while technology may make chats feasible, we need to ensure effectiveness by controlling group sizes;
- with deregulation, we expect that our call centres will also be able to support voice;
- we expect to support live interaction using video. This may be in combination with videocassette recorder functionality or through collaboration tools expected to be integrated in the Windows desktop environment. In this context our requirements have been included in the specifications of the NIIT CLiKS system.

We have decided to adopt a Web Services architecture that will be compatible with the Microsoft Net initiative. We are working closely with the NIIT Center of Competence in this area. Our strategy is to ensure that our services infrastructure is flexible to support pure services-oriented initiatives with other partners. For example, the ExpertsAnswer service can be syndicated to portals and other learning providers across the globe.

In this context, we will deploy a two-level services architecture. Level One will be the core in-house services team, while Level Two will be the outsourced/distributed services team. Thus, for example, we will leverage the vast distributed base of NIIT faculty, and will partner with select call centres to scale up our servicing capacity flexibly and cost-effectively. Over time, end-customers will typically interact primarily with the Level Two services team, and only escalations will be addressed by the Level One team.

7. POLICY DEVELOPMENT, PLANNING AND MANAGEMENT IN THE VIRTUAL UNIVERSITY: LESSONS LEARNED

In conclusion, the experience of NetVarsity has a number of lessons to convey.

- We feel that an effective model of an Internet-based learning facility is yet to be developed. However, it is evident from the NetVarsity experience that a viable and effective model can be developed.
- The lack of resources and technological infrastructure faced by developing countries such as India point to the appropriateness of a hybrid or fusion model, such as that used by NetVarsity.
- It must not be forgotten that trying to emulate a classroom environment over the Internet is an erroneous thing to do, as the power of the virtual environment will emerge through collaboration and self-organized learning.
- Proactive learning environments are essential for maximizing the student experience.
- Recognition or certification is important to students, but the formal education-system requirements for accreditation are inappropriate for an enterprise such as NetVarsity with an IT curriculum that requires constant updating to ensure its quality. The recognition from the industry standard is more appropriate.
- It also follows that a student loans scheme is an important way of assisting students with limited resources to study in an institution that operates outside the formal higher education system of the country.

NOTE

1. 'Multimedia design for the Internet', Sugata Mitra, presented at the Parallel Convention, 13th Commonwealth Conference of Education Ministers, Gaborone, Botswana, 1997.

Developments since 2003

8. NETVARSITY AND ITS CONTEXT

NetVarsity was created in 1996 and represents one of the earliest learning portals on the Internet. Since the writing of the original case study, NetVarsity has become significantly more attached to NIIT Limited, its parent company. This is, perhaps, at variance with the original thought that it would behave like an autonomous university on the Internet.

At the institutional level, NetVarsity has become an integral and inseparable part of NIIT's education programmes, as will be described shortly.

At the national level, the number of Indians enrolled in NetVarsity has exceeded 500,000, while at the international level the number is around 60,000. Table 12.4 shows the distribution of enrolled and active students in NetVarsity. As is evident from the table, the dropout rate for registered students continues to be very high.

Table 12.4 Top ten countries from where NetVarsity students are registered

GROSS (20 May 2000–31 March 2004)		ACTIVE (7 July 2003–31 March 2004)	
Country	Reg. nos.	Country	Reg. nos.
India	499600	India	80,175
United States of America	9028	Vietnam	1370
Nigeria	6794	Nigeria	877
Philippines	6054	Ghana	527
Ghana	3545	Malaysia	359
United Arab Emirates	3009	Bangladesh	347
Bangladesh	2700	United States of America	346
Nepal	2634	Nepal	327
Vietnam	2550	Sri Lanka	308
China	2468	Malaysia	267

Source: NetVarsity management, Udai Singh.

9. ORGANIZATION AND CURRENT PROGRAMMES

Considerable changes have taken place in the organizational structure of NetVarsity. Content, technology and marketing are no longer considered to be separate departments and now exist as a single entity. The structure has been flattened: a single head looks after all aspects of the organization. The number of people employed by NetVarsity has reduced from forty to about seventeen.

The current programmes offered by the NetVarsity fall into two categories. All students enrolled for regular (classroom) courses at NIIT are now automatically registered for NetVarsity and are addressed through a special website (www.niitstudent.com). This section of the Varsity offers customized interfaces for NIIT students and provides a great deal of value to them in their regular coursework.

The general section of NetVarsity continues to provide Information Technology courses for beginners as well as professionals. There are also preparatory courses for students who wish to sit for examinations conducted by vendors such as Microsoft or Oracle.

10. ADMINISTRATIVE ISSUES

As a result of the restructuring, the operating costs of NetVarsity have reduced by about 50 per cent. This, when combined with the increase in revenue due to the induction of NIIT students, has resulted in overall improvements in profitability.

The technological infrastructure continues to be similar to that described in the original case study. The servers are located in Mumbai, India, and the hardware infrastructure is provided by an external company.

All content is owned by NetVarsity and appropriately copyrighted. In addition to in-house content creation, much of the content rights are also purchased from NIIT and its subsidiaries.

11. ACADEMIC ISSUES

It is perhaps in this area that the greatest lessons have been learned. The head of NetVarsity is of the opinion that the closer the pedagogy is linked to that of a 'physical' course, the better the results will be. She reports that courses are more structured and, at the same time, more 'human'. Personalized mentoring and numerous additional services are offered to learners. E-learning is no longer viewed as an alternative to the classroom but an invaluable supplement to it.

Collaborative environments are vital to course completion and this is achieved through ‘batches’ of learners, a ‘tech chat’ section and other e-community building exercises.

As a result of the new approach, course completion rates have increased to 45 per cent; this despite the fact that the worldwide figure for completion of pure e-learning courses continues to be no more than 25 per cent.

12. COOPERATION

NetVarsity collaborates with several subsidiaries and departments of NIIT. Some of the most important collaborations are with Enterprise Learning Solutions (dealing with corporate customers), Global Learning Business (classroom IT education, NIIT’s main line of business) and Human Resources. NIIT has a facility called SEED, which is now closely linked with the NetVarsity through a programme called e-SEED, which enables employees to take courses online while continuing to work.

Thirteen external companies have also taken customized courses for their employees through the NetVarsity.

13. FUTURE DEVELOPMENTS

One of the most important projects planned involves the setting up of an online ‘Placement Cell’ that will enable students to find and prepare for appropriate jobs, after completion of their courses. This cell will provide career counselling, conduct mock interviews and provide intensive online mentoring of students undergoing professional work experience with companies or in the first year of their jobs.

14. LESSONS LEARNED

In conclusion, seven years of experimentation with e-learning has enabled NetVarsity to become a self-sufficient organization. In the process, it has learned that the Internet can make traditional, instructor-led training more effective, rather than replace it altogether. E-learning makes traditional learning more flexible, personalized and empowering for the learner.

Chapter 13

MESSAGES AND LESSONS LEARNED

Susan D'Antoni

The preceding case study chapters presented the experience of those who have been involved in creating new institutions, extending existing ones, whether for profit or not for profit, or working with others in a consortium. The objective of the authors was to help the reader understand what the institution set out to do and how, and to convey the messages and lessons learned from the experience.

The final section of each of the case study chapters was devoted to drawing together these messages and lessons learned. However, it should be noted that many comments on significant issues are embedded in the other sections of the cases as well. The analysis that follows is based largely on those issues the authors deemed to be the most significant to the policy, planning and management of their institution, and which they enumerated and described at the end of the case.

Reading through these sections in each case, one is struck primarily by the diversity of the messages. Even when compared by type of institutional model or by region, it is still diversity that characterizes the comments and concerns. Since cases were selected to represent a range of institutional models and different geographical regions, perhaps it is not entirely surprising that there is more diversity than commonality in the comments. The institutions described have differing objectives and situations, which are compounded by the complexity associated with the development of these new initiatives.

Nonetheless, despite their breadth, the lessons and comments relate to five general issues:

- institutional development and organization;
- technology;
- management;
- academic programmes and concerns;
- national and international environment.

1. INSTITUTIONAL DEVELOPMENT AND ORGANIZATION

Perhaps the single most important decision with respect to creating a virtual university is the choice of the *institutional model*. This decision will have a wide impact on the policies needed, as well as planning and management strategies. The institutional model will need to reflect the situation of the institution, student demand and access to technology, among other concerns. The different models and approaches described in the case studies underline the fact, however, that there is no single model, and some of the comments by authors suggest that the best approaches have yet to be found.

Leadership and support from senior management is essential to the introduction of change in an existing institution or the creation of a new one. One of the barriers noted is institutional inertia, although there may be ‘random acts of innovation’ undertaken by risk-taking individuals. However, it is rare that this type of individual action becomes rooted in the institution as a whole. Because the development of an ICT-supported environment for teaching and learning normally implies significant institutional change, vision and leadership from the senior level will make it clear that there is institutional commitment to the initiative.

Institutional policy development is a challenge whether in a new or existing institution. However, although it may be more difficult in an existing institution with policies and procedures that have been developed for face-to-face education, the situation does provide an opportunity to review and question existing policies. The same may be said of the formal *organizational structure* of the new entity. Newly created institutions have the freedom to create the structure deemed most suitable, while initiatives of existing institutions will have to carve themselves an appropriate place in the organizational structure of the parent institution.

Since most virtual universities aim to reach learners in a global higher education environment, lack of information about potential learning opportunities constitutes a barrier to access. Students may be knowledgeable about the provision of higher education and even distance education in their own local area and country as there may be numerous sources of information available – for example, other students, government information offices or publications. In an international market, however, it is difficult for students to have information about the range of institutions offering educational opportunities through e-learning. The need for an *information, dissemination and marketing strategy* was identified in several of the cases, both to explain the new mode of education as well as promoting the services.

Whether an institution has been carefully planned, or has evolved through a process of learning by doing, the recommendation to *document the development process* is a wise one. With time, it is easy to forget exactly why a particular decision was taken or a particular approach followed, and that makes it difficult to evaluate outcomes.

2. TECHNOLOGY

Technology is central to most of the functions of a virtual university, both the technological infrastructure that supports the operation of the whole institution, and that supporting the teaching and learning function. The stability of the system and the scope of the support given to the users are both critical. Service must always be there when users need it, that is 7/7 and 24/24. Since one of the main advantages of ICT-supported education is its flexibility, students expect to study and be supported whenever they have time available, on their own schedule, not just during regular office hours. And the same can be said for teachers and tutors.

The building and maintenance of the appropriate *technological infrastructure* poses a number of challenges. First, rapid obsolescence necessitates careful planning to ensure that hardware and software are updated on a regular basis and that this can be managed within the annual budgetary planning and allocation process. Second, maintenance and student and staff support require trained technical staff and, sometimes, in larger numbers than initially envisioned.

The determination of an appropriate institutional model will be influenced by the ease of *access to technology*, particularly by the students. In some situations, access is not available easily or at a reasonable cost.

In such circumstances, institutions have developed different approaches and combinations of technologies. The African Virtual University sites such as Kenyatta AVU, rely on satellite delivery to groups of students in a classroom setting with interactivity by audio conference and the Internet, while the Campus numérique francophone de Dakar actually constitutes a resource centre that provides an Internet access service for distance education students for a low subscription fee. The Universidad Virtual de Quilmes invested in a small Internet service provider to ensure access for students in a geographic area where connectivity is difficult, and judged that that had been a good move. While this strategy proved to be appropriate in the context of a corporate entity, it might not be so for a publicly supported university. The lack of resources and technological infrastructure in developing countries suggests that a hybrid model, such as NetVarsity might be most appropriate.

The selection of *software to support teaching and learning* is a crucial decision. The technology must support the teaching and learning model effectively and there are numerous options from which to choose, and possibly with which to make expensive mistakes. Some institutions have chosen to build their own solutions, some to buy them. Developing proprietary software was noted to have important resource implications. The Universidad Virtual de Quilmes acquired the software programme developed by the Universitat Oberta de Catalunya through an inter-university agreement and a licence. This arrangement allows both universities to profit from the development of specially created software for a virtual university environment. It is important to have a software platform that makes navigation easy for students, with user-friendly interfaces. Technology should also be put in place to support the administrative functions of a virtual university. USQOnline entered into a commercial partnership with a private sector company, NextEd, for the provision of virtual campus software platform. In a developing country context, CNFD decided to transfer to Linux as an operating system gradually, and to use open source software, given the high cost of commercial software licences.

3. MANAGEMENT

The *management practices* and problems differ depending, to some extent, on the institutional model. Newly created institutions, whether public or private, have the opportunity to develop their management practices

according to the structure of the new entity. They can choose to implement a pragmatic business model, as was noted in the case of UVQ.

It is to be expected that in the case of the evolution of an existing university there would be some difficulty in implementing a new and different management structure. To address just this issue, the parent university created a private company to operate UVQ, which facilitated the introduction of modern management and accountability methods that were appropriate to the complex programme and the need to be flexible in coordinating the different players involved.

USQOnline was founded by a dual-mode institution already having considerable experience with distance education, and therefore with many of the financing and administrative challenges of a different teaching and learning model. Nonetheless, the creation of USQOnline was a carefully planned initiative that included a communication strategy, which was designed to ensure that the entire institution understood the planned development and the commitment of the senior level of the university. It was noted that every effort should be made to avoid debilitating administrative complexity by having a single set of regulations for all students.

A *senior level position* should be created for the head of the new entity to ensure that it is integral to the university and that it is recognized as such.

The assurance of adequate financial resources is stressed in a number of the cases. The cost of the technology that enables a flexible responsive offer of education is not to be underestimated. Once a commitment has been made to a specific instructional approach and technological infrastructure, it is essential to ensure that the resources will be available to continue development and maintain and upgrade the technology as necessary. Be prepared to invest and do not expect immediate returns – a blunt message.

4. ACADEMIC PROGRAMMES AND ISSUES

The *choice of programmes and courses* must be made carefully in order to ensure that subjects are chosen that are suited to the type of delivery planned, but also that they respond to demand. A *feasibility study* is recommended as virtual education requires high initial investment that can only be recovered with significant numbers of students.

The *teaching and learning model* receives a good deal of comment in the cases. First, it is essential to recognize that existing course

content cannot be shovelled into technology-supported courses. New pedagogical models are needed, and the challenge is to improve the process of interaction and knowledge construction. The model also needs to accommodate different types of learners. As the demand for higher education throughout life increases, institutions face an increasingly diversified student profile.

One message that stands out across the cases is that the need for training academic, technical and support staff should not be taken lightly. The difficulty of finding trained experienced staff that can work in a virtual university e-learning environment was noted repeatedly. This means that it is essential to plan for and support *staff development*.

Working in *course teams* is a well-accepted model for developing high-quality distance education, and it is a recommended strategy for e-learning. There are different skills required in course development: a team of individuals having complementary expertise related to the subject matter, instructional design, media, communications and editing is advisable. Working in a team is a form of staff development and UVPL, which represents the consortium model, stressed the advantage of people working together to develop the new skills needed in e-learning.

Classroom-based face-to-face education can be described as teacher centred – the ‘sage on the stage’ model – while e-learning in a virtual university setting is often described as learner-centred, with the teacher acting as ‘the guide on the side’. Learning in this setting requires that the student take more responsibility for his or her own learning and take an active role in the learning process. This means that the design of the learning experience and the *student support services* need to be of high quality to ensure the success of the learner. USQOnline uses asynchronous discussion forums to engage the student actively in the learning experience, and ensures support seven days a week, twenty-four hours a day. The challenge of the Kenyatta AVU experience was to ensure an adequate supply of teaching materials and equipment. Both UNITAR and NetVarsity use study centres, which allows face-to-face interaction and supports a hybrid institutional model.

In a virtual university, *student aid* is an important issue. Many developments have been undertaken to serve not only a wider audience in a more flexible manner, but also to generate revenue. This means that the student fees may constitute a barrier, and rather than increasing access for a broad range of students, virtual universities may serve

primarily financially privileged students. This problem was underlined in the UVQ case, as students are not required to pay fees to study in the parent institution. NetVarsity, although a private sector venture, has recognized the significance of fees as a barrier and created a privately financed student aid scheme.

Of all the academic issues put forward, one that reflects the concern of most in the higher education field, including UNESCO, is that of *quality assurance*. Athabasca University identified this issue first in the list of lessons learned, and noted that it was a national, peer-regulated accreditation model for institutional review and approval that was needed – and that this was lacking. At the institutional level, a good instructional design system combined with external peer review and accreditation constitute the framework for ensuring rigorous academic quality. The development of courses by teams of academics, and professional and comprehensive student services are essential. Kenyatta AVU noted that high-quality programmes are the prerequisite for high student enrolment. People are prepared to pay for quality education, and quality assurance strategies must be put in place in the institution.

5. NATIONAL AND INTERNATIONAL ENVIRONMENT

Distance education and e-learning can be deployed to expand provision of higher education in both developing and developed countries, but it cannot be done without considerable investment and the appropriate technical and administrative infrastructure. This means that it is vital to encourage *partnerships and cooperation* to optimize the use of the resources of all those involved. This is an important role for the national higher education system. Both Kenyatta AVU and CNFD contribute to a local increase in provision through arrangements with other universities. Athabasca University identified the removal of provincial barriers as a role for policy-makers, and recommended the establishment of a national infrastructure for e-learning. By creating virtual consortia, such as the Canadian Virtual University, participating universities could rationalize their offer and seek niche expertise to serve all members of the consortium. The consortium experience of UVPL was positive, and the authors of the case felt that it contributed to capacity building across the member institutions as staff collaborated on joint activities. In addition, the consortium intends to make a contribution to increasing the international availability of courses and programmes in French.

Although *copyright* was identified as an issue at the institutional level, it constitutes an important policy issue at the national level. Moreover, since virtual universities aim to cross borders, the issue becomes further complicated because international copyright clearance must be acquired.

The fact that virtual universities operate in a borderless environment outside their local or national policy context raises an important concern related to the issue of *accreditation and recognition of credentials*. This may be one of the more important policy issues.

Although the debate on international trade in educational services was not directly raised, a number of institutions referred to an *increasingly competitive environment* and a concern to find a niche within a global provision of higher education. This fact, and the desire of most institutions to reach students regardless of their geographical location, underlines the crucial need for national governments to define the policy objectives for higher education as a public good in a context of growing private and transnational provision.

International institutions such as UNESCO have an important role to play. In fact, recognizing two of the major policy concerns related to borderless education, UNESCO Education Sector established the 'Global Forum on International Quality Assurance, Accreditation and the Recognition of Qualifications'¹ to link existing frameworks dealing with international issues of quality assurance, accreditation and the recognition of qualifications and provide a platform for dialogue between them. With the Organisation for Economic Cooperation and Development, UNESCO has developed guidelines on 'Quality provision in cross-border higher education'.² The guidelines are non-binding, but are intended to enhance quality provision in cross-border higher education at a global level, by strengthening dialogue, mutual trust and understanding between providers and receivers of cross-border higher education. It is hoped that they will contribute to the development of robust quality assurance systems and help protect students from disreputable providers.

6. CONCLUDING COMMENTS

The study of the virtual university and e-learning was undertaken in the expectation that an examination of the experience of a number of institutions would contribute to a better understanding of a new development in higher education. The institutions described represented different institutional models and different geographical regions and had different stories to tell and lessons to share, but taken together they suggest that ICT-supported higher education can succeed.

Moreover, it was felt that looking at the experience of each institution at two points in time could prove to be an instructive exercise, potentially pointing out changes in orientation or direction and perhaps additional lessons. The four-year period during which the study was undertaken coincided roughly with the end of the roller-coaster years of the dot-com boom and bust. However, as of 2005, none of the institutions participating in this study had suffered the experience of so many hopeful initiatives that were launched during that period when there seemed to be an urgency to develop online education ventures and to ensure a market niche.

Over the years, various technologies have been seen to offer promise and hope for increased access, greater flexibility and more learner-centred education. Initially embraced with much enthusiasm and often inadequate planning, they were then found wanting and eventually either rejected or sidelined. Will the Internet and e-learning be added to the list of such disappointments? Perhaps not.

The chapters presented in this publication have important messages to convey, and the key issues identified have informed the strategy of IIEP to promote and support active discussion and debate by means of a series of Internet forums. These forums, and the international community of interest that is building, ensure ongoing reflection on a development that may have suffered from unrealistic expectations initially, but that shows every possibility of becoming a permanent part of the landscape of higher education worldwide – the virtual university and e-learning.

NOTES

1. See http://portal.unesco.org/education/en/ev.php-URL_ID=21666&URL_DO=DO_TOPIC&URL_SECTION=201.html
2. See http://portal.unesco.org/education/en/ev.php-URL_ID=29228&URL_DO=DO_TOPIC&URL_SECTION=201.html

THE VIRTUAL UNIVERSITY

Models & messages | Lessons from case studies

EDITED BY SUSAN D'ANTONI

E-learning and the virtual university are examples of the use of information and communication technology (ICT) as a teaching and learning approach and an organizational structure. Both raise issues associated with the phenomenon of cross-border education.

This publication explores the related ICT policy, planning and management implications of several new or reorganized institutions of higher education. Three background chapters describe the context – the trends and challenges and the impact of cross-border education. Eight case studies from different regions and representing various institutional models tell the story of their development and relate what they have learned.

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ISBN 978-92-3-104026-9

