Cyberspace, Distance Learning, and Higher Education in Developing Countries

Old and Emergent Issues of Access, Pedagogy, and Knowledge Production

Edited by N’Dri T. Assié-Lumumba

Brill
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Preface

In 1999, I was invited by the guest editor of the *International Journal of Comparative Sociology* (IJCS) published by Brill in the Netherlands, Tukumbi Lumumba-Kasongo, to submit an article to be considered for publication in the special issue *Dynamics and Policy Implications of the Global Reforms at the End of the Second Millennium*. This issue of the IJCS and a book with the same content were published simultaneously in 2000. My contribution entitled “Educational and Economic Reforms, Gender Equity, and Access to Schooling in Africa” was a winner of the 2001 Joyce Cain Award for Distinguished Research on African descendants. This award, offered by the Comparative and International Education Society, recognizes and honors excellence in scholarly articles that explore themes related to people of African descent and is presented to an outstanding article that demonstrates academic rigor, originality, and excellence and contributes to a better understanding of the experiences of African descendants.

Inspired by this achievement, as Editor-in-Chief of the new journal of *African and Asian Studies* (AAS), Tukumbi Lumumba-Kasongo invited me to serve as guest editor for a special issue of AAS. In some of my recent classes and research, I encountered gaps in the discourse on education as it relates to, for instance, constant and evolving questions of access, pedagogy, knowledge production, and learning. We wrote a paper entitled “The ‘Silent Crisis’ in the International Transfer of Knowledge in African Societies and their Education Systems: A Theoretical Perspective” (N’Dri Assié-Lumumba and T. Lumumba-Kasongo 1994) in which we raised important philosophical questions related to the general issues about transfer of knowledge and also the tools used for this transfer.

I have also addressed some of the questions that pertain specifically to the use of technology in education in several papers: “The Cultural Factor in Distance Higher Education in Africa: Lessons from Post-Colonial Classical Universities” and “The 1970s Policy of Educational Television Program in Côte d’Ivoire: Enduring Impact and Lessons Learned” presented at the Annual Conference of Comparative and International Education (CIES) in March 1998 in Buffalo (New York) and in March 2001
in Washington, D.C., respectively; “Distance Learning and Higher Education in Africa” presented at the Conference on Reforms and Innovations in African Higher Education held in February 1999 in Abidjan (Côte d’Ivoire). This conference was organized by the PanAfrican Studies and Research Center in International Relations and Education for Development (CEPARRED).

I have been pursuing some conceptual and experiential reflections on ICTs and the education process while teaching courses on “Distance Learning in Developing Countries,” and “Educational Innovations in Africa and the African Diaspora” at Cornell University and also at Cornell University while serving, in the fall of 1998 and 1999, as the Coordinator for the Africana Studies and Research Center’s distance learning graduate course on “Black Intellectual Tradition” jointly organized with Syracuse University (New York), Binghamton University (New York), and Morgan State University (Maryland) for their respective students enrolled in this course.

In February 2001, I attended the 10th General Conference of the Association of African Universities (AAU) on “African Universities and the Challenge of Knowledge Creation and Application in the New Century” held at Kenyatta University, Nairobi, (Kenya) and served as a discussant of G. Olarele Ajayi’s paper on “Information and Communications Technologies: Building Capacity in African Universities.” In May 2003, while I was a Visiting Professor in the Center for the Study of International Cooperation in Education, Hiroshima University (Japan), I gave a presentation on “Technological Transfer and Education for All in Africa: Prospective Reflections on the Educational Television in Côte d’Ivoire (1971-1981)” which was part of my ongoing book manuscript entitled, Technological Transfer and Democratization of Education in Africa: Prospective Reflections on the Educational Television in Côte d’Ivoire (1971-1981).

I have also recently developed a research proposal that I plan to carry out in different countries and that focuses specifically on the gender dimension in ICTs and education, “Distance Learning and Women’s Access to Higher Education in Africa,” which I plan to start with comparative case studies of Côte d’Ivoire and Tanzania. My earliest interests in the issue of technology dates back to the 1970s while I was affiliated with the Centre de Recherches Audio-Visuelles at Université d’Abidjan in the second half of the decade of the implementation of the educational television program in Côte d’Ivoire.

As many developing countries appear to be pinning their faith on ICTs and their use in education to unleash the development impulse, I welcomed this opportunity to invite scholars and policy analysts to contribute their insight and critical reflections on the impact of ICTs and distance learning
on various aspects of educational processes, a contribution that is needed in the development studies. The theme selected was “Cyberspace and Higher Education in Developing Countries: Old and Emergent Issues of Access, Pedagogy, and Knowledge Production in the Context of Mega-Universities and Distance Learning,” which was shortened in the final title.

Under the initially broader theme, the contributors were invited to select topics that they were free to approach from a variety of educational and interdisciplinary social-science perspectives. They were urged to critically examine broad sociological and philosophical issues of education as they relate to the use of ICTs. The time initially planned to receive the contributions proved insufficient, and extensions were needed and granted. I thank all the contributors for their willingness to embark on this long but rewarding exercise. I would like to express my appreciation to the AAS Editor-in-Chief and to Brill for giving me this opportunity and for their considerable patience that brought this process to fruition.

I would like to thank the Editor-in-Chief for inviting and supporting my efforts all the way. His constant intellectual insight and immense experience in the publication area were vital to the process of producing the manuscript. I thank all the contributors for accepting the offer to participate in the process of posing and analyzing critical educational questions. I would like to thank my graduate students who assisted on various aspects of the production of the manuscripts, particularly Marième Lo for her assistance on the final version of the article on the implications of communications partnerships in higher education in Africa. Some of the manuscripts, such as this one, were initially written for other purposes and thus required substantial revisions with contributions by the guest editor so that they would mesh with the objectives of this publication. I am grateful to my children Disashi, Enongo, and Lushima, for their usual understanding and supportive spirit, especially during the time-consuming final stage of completing the work. Finally, I would like to thank Esther Ashitey for her translation of one of the articles from French to English and Jan Schwartzberg-Douglas for copyediting and proofreading the whole manuscript, both on a very tight schedule.
Introduction

The information and communication technologies (ICTs) and their application to distance education are being increasingly adopted as cost-effective means to respond to the high demand for university and other types of tertiary education both in developing and in industrial countries. The programs of many eUniversities, for instance, consist of a dual-mode in which distance learning is designed as a supplement to, or side-by-side with, the regular face-to-face learning within classical, brick-and-mortar institutions. In addition, there is an increasing number of single-mode programs of distance learning in open universities that operate entirely as virtual institutions. This publication deals with the use of ICTs and distance learning in developing countries in general with a focus on selected case studies in Asia and Africa. The majority of the illustrations are located in Africa, in part given that most countries still facing the greatest challenges in meeting the social demand for education, even at the primary level, are in Africa. But it should also be noted that the papers published were based on submissions.

While African states and organizations joined the international chorus celebrating the new millennium, the continent as whole still faces real educational challenges. These challenges have been exacerbated by the economic crisis and the structural adjustment programs (SAPs) that started in the 1980s, with their numerous corollaries manifested in the shortage of social services and their negative implications for the political economy at large. In the specific area of higher education, for example, demand has consistently exceeded the capacity of the few existing brick-and-mortar institutions, with increasing pressure for access by applicants from different sociogeographical locations in each country. The various levels of screening processes encountered by applicants before they can reach the overcrowded classrooms and campuses have not curved the raw number. In part, because of this crisis and ensuing increased demand, distance education has decisively emerged as one of the untapped and promising solutions to meet these needs. Since the 1990s, distance learning with the use of ICTs has increased.
Distance education has been used for a relatively long time, since the colonial era, at the various levels of the educational system and with different audiences ranging from young children to adult learners of both the general public and professionals, specifically teachers. Distance education is, however, becoming more diversified in terms of the types of courses offered and audiences, and it is also becoming more technologically sophisticated. For instance, in terms of the technology, Garrison (1993) identifies three stages: correspondence, teleconferencing, and computer-based learning.

Generally speaking, with the exception of South Africa, Asian countries are more advanced in distance education, especially in the use of ICTs for education delivery. Some of them have even purposefully designed and implemented policies geared to increase enrollment not only for the general population, but also for specific hitherto marginalized social groups. For instance, some countries with significant gender imbalance in their education systems have adopted distance learning as a tool for increasing access. In *Distance Education in India: A Model for Developing Countries*, S. Manjulika and V. Venugopal Reddy (1999) locate distance education in its historical context and provide a “global perspective,” and focus on Indian cases including the Indira Ghandi National Open University. In *Empowerment of Women through Distance Education: A Case of Dr. B.R. Ambedkar Open University*, Pandit (1997) critically examines the case of in India. In *Climbing the Ladder: A Case Study of the Women’s Secondary Education Programme of Allama Iqbal Open University* in Pakistan, Haque and Batool (1999) illustrate a case of a locally conceived distance education to address the social problem of access relevant to the local cultural context. Indeed, research and observation indicated that there was a direct and positive correlation between the presence of women among the teaching staff and enrollment and retention of elementary school girls, particularly in rural and remote areas. One of the main objectives of the Allama Iqbal Open University program for women was initially to create a distance-learning higher-education institution for the education of female teachers for elementary schools. The results have been positive, as anticipated.

In the case of Africa there has been no systematic and large-scale distance-learning education program to respond the need for increase of specific hitherto marginalized groups. In the reflection on distance education at a time when it was decisively on the verge of an expansion in the early 1990s, the discourse focused primarily on its ability to help deal with access at a lower cost. As Paud Murphy and Abdelwahed Zhiri (1992) indicated in their presentation of the themes addressed at the 1990 seminar in Zimbabwe, “two of the more important questions to answer about distance education are how effective is it and how much does it
cost?” (p. x). This comment is a good reflection of the sentiment in the seminar as the issues addressed by the participants tended to focus on access and effectiveness. Hilary Perraton (1992) emphasized the question of internal efficiency and the related question of average cost per student (pp. 7-15). In her second paper, she discusses the question of access to second-level education for various groups, giving particular attention to the radio as a medium of communication (Hilary Perraton 1992, pp. 51-52).

In their review of the distance-education policy and practices of six countries (Ethiopia, Kenya, Lesotho, Malawi, Zambia, and Zimbabwe), Chris Curran and Paud Murphy (1992) concluded that these countries used distance education as a medium of solving problems of access for different target-population segments: recent primary school leavers, adults in need of a second chance, and teachers (pp. 17-40). Molly Maguire Teas (1992, pp. 41-48) focused on how to make use of distance education to promote gender parity through the simple question of access. Paud Murphy (1992, pp. 57-76) assessed the effectiveness of distance education in Malawi, Zambia, and Zimbabwe which targets young primary school leavers, while cost is the focus in his study on Malawi (Paud Murphy, pp. 77-100). Cost-effectiveness is also the focus in the case study by Egino M. Chale (1992, pp. 123-136) of Tanzania As for Peter E. Kinyanjui (1992, pp. 117-122), who studied a Kenyan case, the interest was in the process and organization of the program by presenting the different components: correspondence, radio, and face-to-face. In his conclusions regarding the lessons learned from this case, the author focused on effectiveness (teacher and cost), economies of scale, resources, motivation of the trainees, the training of the distance educators, cooperation (among various services involved in teacher training), and political support. In their forward-looking concluding remark, Paud Murphy and Abdelwahed Zhiri highlight the main areas that indicate the potential of distance education. As in the other papers, they emphasize issues related to costs, motivation of the learners, the need for “good technical practice,” and availability of adequate resources. In his paper entitled “Tertiary Distance Education and Technology in Sub-Saharan Africa” William Saint (1999, p. 1) raises “the question of how African nations might improve the balance between tertiary education access and funding without further sacrifices in quality.” He then indicates that: “the answer lies in the use of distance learning complemented, in some cases, with a selective application of new information and communication technologies.” (Ibid., pp. 1-2). But on the whole, the fundamental question of relevance of the content of the programs remains a crucial issue to be fully addressed.

Even if so much emphasis has been on access, there is no evidence that in the case of Africa distance education has been conceptualized
and organized to deal with it effectively, systematically, and productively, aside from the general expectation of general increased enrollment. In fact, statistics on the case of a single-mode institution, the Open University of Tanzania (Mmari 1998) and the dual-mode application of the World Bank’s project of the African Virtual University at Kenyatta University in Kenya (Juma) suggest that distance education is reproducing the same patterns of gender imbalance that exist in the brick-and-mortar institutions. For instance, the gender distribution (computed by this author from data in Mmari, Ibid., p. 532) indicated that in 1997, out of 958 learners enrolled, only 121 (13 percent) were females. The breakdown by discipline/program varies from two out of 15 (19 percent) in commerce and 40 out of 182 (18 percent) in refresher courses to 30 out of 323 (9 percent) in law and 18 out of 114 (8 percent) in letters/humanities (ibid.). Although this institution does not yet qualify as a mega-university as defined by Daniel (1996, p. 30), for instance because it does not yet enroll 100,000 learners, its enrollment has increased. And both new and established distance institutions have been expanding further. Thus, since 1996, the University of South Africa (UNISA) has formed, with Technikon South Africa and Vista University, the Confederation of Open Learning Institutions of South Africa (COLISA), with an increased domestic and international enrollment. Other universities, including the more recent University of Namibia, for instance, operate on a dual-mode basis. Despite the increase in institutions and enrollment, there is no indication that there or in other African institutions the trend is toward gender parity.

In fact, in a recent book edited by Eva M. Rathgeber and Edith Ofwona Adera entitled *Gender and the Information Revolution in Africa* (2000), Rathgeber wrote a chapter on “Women, Men, and ICTs in Africa: Why Gender is an Issue.” She warned against some factors and policy matters that are likely to create and worsen a gendered digital divide with resultant obstacles to development agendas, given the role that women play as a productive (and also reproductive) force in African societies. There is of course the issue of the right of women’s access to education and to relevant technologies as their means for success. It is important to consistently acknowledge and include women’s needs in all discussions and policies to avoid perpetuating the past and current patterns of inequality of the brick-and-mortar universities.

The Association of African Universities (AAU) commissioned a study on “Information and Communications Technologies: Building Capacity in African Universities.” The report of this research was presented at the 10th General Conference of the AAU on “African Universities and the Challenge of Knowledge Creation and Application in the New Century” that was held at Kenyatta University, Nairobi, Kenya, February 5-9, 2001.
This report totally failed to articulate recommendations that acknowledge the gender-equity question in African universities as they formulate their plans for the use of ICTs, which demonstrates how this vital issue is typically ignored. Yet, the AAU is a driving force in the formulation and adoption of significant higher-education policies on the entire African continent.

In a critique of the Ajayi report (Assié-Lumumba 2001) some relevant gender issues were raised. These issues relate to the composition of decision-makers and their awareness and sensitivity, or lack thereof, to gendered dimensions of the needs of actual and potential users of ICTs. One of the questions posed was: If the higher-education institutions must use ICTs to better perform their analysis of societal needs and delivery of service to the community, what are the overall gender factors among the agents of change and beneficiaries of the ICTs’ policies on and off campuses? For instance, in the case of gender and e-commerce, it is significant that in many African countries, particularly in West Africa, women play a major role in local, regional, and international trade. How does higher education deal with the issues of gender imbalance in the higher-education systems, service to the community, and relevant ICTs literacy programs? What programs can, for instance, provide training to target groups such as women traders, if women are altogether ignored in the debates and policies? This critique pointed out that the AAU-commissioned study failed to acknowledge the gender imbalance and to explicitly articulate recommendations that can guide the AAU and its member institutions in the entire African continent in their future efforts to promote ICTs in African universities.

The main point in this critique was to raise the issue that technology alone cannot change the social reality of inequality. As a matter of fact in Africa in general, to date, there have not been any indications that gender inequality, or any other specific social inequality issue, has been the subject for the adoption of the distance mode of delivery of education. It could be argued that, in terms of its philosophy, goal, and objectives, distance education should not be perceived as different from conventional education. Rather, it should be viewed simply as providing a technologically different means of delivery, not a different meaning.

The purpose of this book is to review and discuss some of the fundamental educational questions and policy issues in distance education cases that have been implemented or are still in the experimental phase. A number of fundamental questions, including the following, constitute the rationale for the book and guide the topics and arguments: Despite the fact that learning is brought to the learners in their sociogeographical environment, does distance education, conceptually and as applied,
take into consideration the local cultures? How have the objectives, philosophy, content, and the results (if any) been conceived to avoid cultural inappropriateness or downright “cultural imperialism” (Carnoy 1977) that was identified in the classical “ivory towers” of post-colonial classical universities born of the center-periphery framework? The articles discuss the processes through which distance education in developing countries have or have not been facilitating appropriation of the process of the production and use of knowledge.

In *Harnessing Distance Learning and ICT for Higher Education in Sub-Saharan Africa: an Examination of Experiences Useful for the Design of Widespread and Effective Tertiary Education in Sub-Saharan Africa*, Graham Till (2003, p. 35) refers to “some successes ... and recent ICT innovations [that] are making a significant difference in enabling new approaches and in helping existing approaches to work better.” He, however, also states:

> Where the architects and developers are external, they have found it difficult to adapt approaches to African cultural realities and resource constraints and to properly identify and define the needs of end users. Internal African-led projects have fared no better in terms of meeting end-user needs, with fundamental problems in materials quality and support structures. Client governments and institutions — and their advisers — have understandably inconsistent views on needs and priorities with the desire for early and scalable success using imported content sometimes more appealing than slower capacity building approaches. (Ibid.)

Whether the developing countries have equal access to technology or not and whether they choose to adopt them fully for educational purposes at all or for some levels of their respective systems, there is a need to inquire about issues of technology’s continued significance in educational processes. The question of the of the quality of technology and its relationship to social systems of production is relevant.

In *The Republic of Technology: Reflections on our Future Community*, Daniel Boorstin (1978, p. 3) characterizes technology as a democratizing tool, while according to Gerald Sussman (1997), “The modern history of technology is tied to the quest for markets, market power” (p. 21). Thus its application to educational processes in the international context must be analyzed in this context. As argued in “The ‘Silent Crisis’ in the International Transfer of Knowledge in African Societies and their Education Systems: A Theoretical Perspective” (N’Dri Assié-Lumumba and T. Lumumba-Kasongo 1994), “international is not necessarily universal” (p. 10). Nelly Stromquist (2002, p. 103) points out that while universities have been treated as “independent communities,” in reality “external forces wielding a substantial impact on the university are clearly linked to economic globalization” supported by “neoliberal economic ideologies.”
Among the assumed “promises” of globalization “is education — as advanced and sophisticated knowledge (heavily weighted in favor of science and technology) are deemed essential to the construction of the ‘knowledge society’” (Op. cit., p. xiii). Given this emphasis on “science and technology,” thus blurring the distinction between technology as a tool for education and as a content of area of education, the fundamental question of what kind of higher education for what kind of society is still the most important question in dealing with the discourse on development.

This publication is neither an endorsement or a rejection of the use of ICTs in education. As stated in the beginning of this publication project, the purpose has been to critically engage various dimensions of ICTs and distance learning, especially the educational implications for access, pedagogy, and the production of knowledge. Rather, given the realization that cyberspace and distance learning are part of the educational learning space, educators and education analysts cannot shy away from the need to inquire and understand if and how the various aspects of education processes are being impacted by technology. This publication is an effort to address, if not unravel, some of the processes from the international context of educational decision-making to questions of who has access to the “classroom” and pedagogical processes, old and new roles of teachers and students/learners, and the dynamics of knowledge production. Many of the issues raised are not new. In developing countries whose contemporary formal education systems were inherited from a colonial experience, issues such as relevance, stronger ties between the universities and the former colonial powers than with their own immediate national and local social surroundings, inequality based on access, process, outputs and outcomes, and so forth, have been part of educational analysis for decades. In the case of the issue of relevance, for instance, it was argued that the issue raised in the past about classical universities in Africa was:

one of finding the relationship between knowledge, metaphysics and social environment. We are arguing that knowledge as transmitted and managed by what we characterized as international institutions: (e.g. churches, multi-national corporations and schools), does not relate to the African metaphysics and social realities. Thus, there are some problems that are engendered in the effort of injecting and internalizing it in the Africa societies. (Assié-Lumumba and Lumumba-Kasongo, Op. cit., p. 12)

The question posed here is precisely that, given the euphoria about technology, and its perception as a panacea, What is the extent to which ICT and distance education are expected to address these old issues? Given the specificities of the various forms of ICTs applied to education, what are the new educational problems that might emerge and act alone
or compound old ones? In trying to address these questions, there is a particular interest for African countries in understanding some of the Asian experiences of domestication and ownership of the educational institutions and securing control over the process of the production and utilization of knowledge for social progress.

The set of articles in this publication constitutes a major contribution toward the effort to address and understand these pertinent and central issues in education. Higher education constitutes the main focus. However, education being conceived holistically, some of the articles address issues at other levels and also deal with informal education. However, to be consistent with the higher-education level that constitutes the focus, even the ones that address issues at the lower levels of the educational systems also consistently deal with the connection between the other levels and higher education. They point out constructive ways in which higher education could, or should, be productively linked through research and training of teaching/training staff needed at the lowers levels and also in the informal systems. This is the case in first article.

Indeed, in “ICT4D: A Frontier for Higher Education in Developing Nations” Colle and Roman, argue that ICTs have become important features in the social, geographic, and educational space in Africa and Asia in the beginning of the twenty-first century. They discuss the various types of institutions and forces that have shaped policies and influenced the formulation and implementation of specific programs in the application of these technologies aimed at contributing to community development. The main focus is the telecenter movement. The issues raised and discussed are illustrated by a large number of relevant and rich case studies that help reflect on the potential and challenges associated with the use of ICTs in developing countries. The authors point out the conspicuous near absence of the universities among the major actors that could play leading roles in areas such as research and thus help address the traditional criticism of the universities as “ivory towers.” By using these productive channels of involvement, they can become more involved in the actual programs for the development of the communities and their respective nations.

In “Communications and Partnership in Higher Education in Africa: Global Dynamics of Technology for Education in the 21st Century,” J. Habib Sy discusses Africa’s tremendous needs while ironically contrasting the obsolete and outdated programs, technological tools, and the capacity of the existing social institutions. He argues that technological and general societal development take place in the context of old Western hegemony and its current version of control through globalization. He contends that bilateral and multilateral assistance has been reduced by the debt burden. The implications of these programs have been worsening the
cycle of underdevelopment and dependence that hinder Africa’s capacity to create the context for utilizing technology for its institutions, including higher education, with the philosophy of ownership of development plans to eradicate poverty and sustain social progress, using technology as a facilitating tool.

In “Online Learning Communities in Africa: The UNISA Case Study,” Philip Higgs, L.J. Van Niekerk and J.F. Heydenrych argue that recent development of technology in the global context and its application to education have specific and major implications for higher education, especially on the African continent. They argue that the process of the democratization of education has been translated into increasing social demand for higher education that requires creative ways of responding to it. They discuss recent developments at the University of South Africa (UNISA) — which is the institution in Africa if not the world — with the longest experience in distance learning that uses technology. The recent adoption of online-distance and open-learning approaches aim to help increase the supply of education. They argue that in an effort to address the issues of educational and cultural relevance, the African philosophy of Ubuntu is used to shape the pedagogy and a learning experience heavily influenced by constructivism.

Chika Trevor Sehoole and Teboho Moja address the problem of relevance and pedagogy by focusing on the gender dimensions in the contribution on “Pedagogical Issues and Gender in Cyberspace Education: Distance Education in South Africa.” They argue that developing countries have been resorting more and more to distance education in general and information and communication technologies in particular to respond to pressing demand. They analyze pedagogical and gender issues as they relate to access, teaching, learning, quality, and research in distance education and cyberspace higher education in South Africa. They point out that in comparison to the celebration of the opportunities of increased access offered by distance education, there has been little effort to analyze the pedagogical and gender dimensions with structural problems embedded in distance education and cyberspace education.

In “Distance Learning and Virtual Education for Higher Education in Africa: Evaluation of Options and Strategies,” Stanley Moyo discusses the state of distance education in Africa in general with a focus on virtual higher education, examining the case of the African Virtual University (AVU) project of the World Bank. He identifies and discusses the objective conditions and factors that hinder the development of distance education in Sub-Saharan Africa. He argues that there are many opportunities that are offered by ICTs for higher education in Africa but that are not used because of hindering contextual factors that are reviewed in the article.
He makes recommendations for strategies to adopt in order to develop distance education that can potentially enhance the use of ICTs in higher education to contribute to development in Sub-Saharan Africa.

Kouassi Yao discusses a case study of one of the World Bank-sponsored projects of distance education that have been set up in several developing countries, including eight countries in Africa. In “The Chances for Success of the Francophone Centers for Distance Education of the GDLN: The Case of Centre d’Education à Distance de Côte d’Ivoire,” he examines the Ivorian case of Global Development Learning Network (GDLN) of the World Bank by presenting the national contextual factors of this project. He argues that, given the sociopolitical and economic problems that the country has been facing since the military coup of 1999 and the subsequent constraints after the suspension of the disbursement of financial resources from the World Bank, if this project can survive and develop then similar projects in the other countries can. He discusses some of the conditions needed to ensure local ownership and sustainability.

In “Higher Education Reform: Challenges towards a Knowledge Society in Malaysia.” Akiko Kamogawa discusses the case study of Malaysia, where the authorities have made a deliberate decision to systematically and aggressively pursue a policy of adopting technology in the entire society with specific implications for higher education. The author argues that if Malaysia reconceptualizes and succeeds in the implementation of its major project of the Malaysia Super Corridor, it will stand a chance of not only becoming a fully developed nation based on a knowledge, but it will also project Malaysia as a leading newly industrialized country championing South-South cooperation.

In “Strategies for Promoting Virtual Higher Education: General Considerations on Africa and Asia.” Kazuo Kuroda and Hossain Md. Shanawez recall the importance of the role that education in general, and particularly higher education, plays in the development process. They emphasize the specific role of institutions of higher learning in the production of knowledge in this new era where a knowledge-based economy for growth and development is central. They discuss the strategies for the application of technologies on a large scale that can help higher education respond to the call for more accessible, less costly, and more flexible delivery. They point out the importance of adopting careful strategies for planning, implementation, and delivery of quality virtual higher education that can provide opportunities for reducing the North-South knowledge gap and also for the development of the developing world, particularly in Africa and Asia.

In short, the chapters in this publication, written both as reflections and also from technical policy analysis perspectives, contextualize ICTs
in the education process and locate distance-learning paradigms within a power-relation framework. The local quest for ownership challenges the notion of technology as a neutral tool at the service of benevolent actions for assistance to developing countries. The response to the demand for education cannot be reduced to the issue of simple access to technology as a tool for transmitting knowledge. Reconceptualization and re-adaptation of technologies related to distance education require their democratization and actual appropriation in its multidimensional forms.

References

ADEA (ASSOCIATION FOR THE DEVELOPMENT OF EDUCATION IN AFRICA)
1998 Tertiary Distance Learning in Sub-Saharan Africa: Overview and Directory to Programs, Toronto, Roberts & Associates.

AJAYI, G. OLARELE

ASSIÉ, N’DRI T.

ASSIÉ-LUMUMBA, N’DRI T.


ASSIÉ-LUMUMBA, N’DRI T. AND TUKUMBİ LUMUMBA-KASONGO


1994a “Dependency and Higher Education Organization in Africa: The Case of the National University of Côte d’Ivoire,” the Institute for Higher Education Law and Governance, University of Houston, Monograph Series, 93/2.


ASSIÉ-LUMUMBA, N’DRI T. AND JOEL SAMOFF


BEOKU-BETTS, AND B. IKUBOLAJEH LOGAN


BOORSTIN, DANIEL


CARNÖY, MARTIN

1977 Education as Cultural Imperialism, New York, Longman.

CHALE, EGİNO M.


COLE, ROYAL D.

COOMBE, TREVOR

CURRAN, CHRIS AND PAUD MURPHY
1992 “Distance Education at the Second-Level and for Teacher Education in Six African Countries,” in Paud Murphy and Abdelwahed Zhiri (ed.), *Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training*, The World Bank, Economic Development Institute, Analytical Case Studies, No. 9, pp. 17-40.

DANIEL, JOHN S.

EVANS, TERRY
1994 *Understanding Learners in Open and Distance Education*, London, Kogan Page.

FALL, YASSINE

GANDHE, S.K., RUDDAR DATT AND SUSHMITA MITRA (EDS.)
1996 *Open Learning System in India*, New Delhi, Indira Gandhi National Open University.

GARRISON, D. RANDY
1993 “Quality and access in distance education: theoretical considerations,” in Desmond Keegan (ed.), *Theoretical Principles of Distance Education*, New York, Routledge.

HALLAK, JACQUES

HARBISON, FREDERICK HARRIS AND CHARLES A. MYERS

HAQUE, RIFFAT AND SYEDA NAJEEBA BATOOL

HARTNETT, TERESA AND WARD HANEVELD

HIGGS, PHILIP, ZOLA VAKALISA, TOBEKA MDA, AND N’DRI ASSIÉ-LUMUMBA (EDITORS)

HYDE, KARIN A.L.
INTERNATIONAL LABOUR OFFICE

JUMA, MAGDALLEN N.

KING, ELIZABETH M.

KINYANJUI, PETER E.
“The Organization of teacher Training at a Distance with Particular Reference to Kenya,” in Paul Murphy and Abdelwahed Zhiri (ed.), Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training, The World Bank, Economic Development Institute, Analytical Case Studies, No. 9, pp. 117-122.


LOCKWOOD, FRED (ED.)

MAGUIRE TEAS, MOLLY
1992 “Improving Educational Equity for Girls through Distance Education,” in Paul Murphy and Abdelwahed Zhiri (ed.), Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training, The World Bank, Economic Development Institute, Analytical Case Studies, No. 9, pp. 41-48.

MAKHUBU, LYDIA

MANJULIKA, S. AND V. VENUGOPAL REDDY
1999 Distance Education in India: a Model for Developing Countries, Dhaka: Associated Business Corp.; New Delhi: Distributors, UBS Publishers’ Distributors.

MANOHAR, K. MURALI (ED.)
1994 Distance Education in India: Studies in Quality and Quantitative Aspects, Warangal: Indian Distance Education Assn.

MLAMA, P.M.

MMARI, GEOFFREY
MURPHY, PAUD
1992 “Effectiveness of Full-Time Second-Level Distance Education in Three African Countries,” in Paud Murphy and Abdelwahed Zhiri (ed.), *Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training*, The World Bank, Economic Development Institute, Analytical Case Studies, No. 9, pp. 57-76.
“Costs of Full-Time Second-Level Education Using Distance Teaching Methods in Malawi,” in Paud Murphy and Abdelwahed Zhiri (ed.), *Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training*, The World Bank, Economic Development Institute, Analytical Case Studies, No. 9, pp. 77-100.

MURPHY, PAUD AND ABDELWAHED ZHIRI (ED.)
1992 *Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training*, The World Bank, Economic Development Institute, Analytical Case Studies, No. 9.

NEAVE, GUY AND FRANS A. VAN VUHT

OBANYA, PAI
1999 *The Dilemma of Education in Africa*, Dakar, UNESCO-BREDA.

PANDIT, P. VIJAYALAKSHMI
1997 *Empowerment of Women through Distance Education: a Case of Dr. B.R. Ambedkar Open University*, Hyderabad, India: Booklinks Corp.

PERRATON, HILARY
1992 “A Review of Distance Education,” in Paud Murphy and Abdelwahed Zhiri (ed.), *Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training*, The World Bank, Economic Development Institute, Analytical Case Studies, No. 9, pp. 7-15.
1992 “Post-Primary Distance Teaching,” in Paud Murphy and Abdelwahed Zhiri (ed.), *Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training*, The World Bank, Economic Development Institute, Analytical Case Studies, No. 9, pp. 51-55.

RATHGEBER, EVA M. AND EDITH OFWONA ADERA

RATHORE, H.C.S.

REIMERS, FERNANDO AND LUIS TIBURCIO
1993 *Education, Adjustment and Reconstruction: Options for Change*, Paris, UNESCO.

RUMBLE, GREVILLE
1997 *The Costs and Economics of Open and Distance Learning*, London; Stirling, VA: Kogan Page.

SAINT, WILLIAM S.
SHULTZ, Theodore W.

STROMQUIST, Nelly

SUBBARAO, K., LAURA RANEY, HALIL DUNBAR, AND JENNIFER HAWORTH

SUSSMAN, Gerald

SUTHERLAND-EDDY, Esi

TILL, Graham
2003 *Harnessing Distance Learning and ICT for Higher Education in Sub-Saharan Africa: an Examination of Experiences Useful for the Design of Widespread and Effective Tertiary Education in Sub-Saharan Africa*. [S.l.: s.n.]

UNESCO AND THE WORLD BANK. TASK FORCE ON HIGHER EDUCATION AND SOCIETY

UNITED NATIONS DEVELOPMENT PROGRAMME AND THE WORLD BANK

WORLD BANK
ICT4D: A Frontier for Higher Education in Developing Nations

ROYAL D. COLLE AND RAUL ROMAN

ABSTRACT

Information and communication technologies (ICT) have become important features on the social and geographical landscapes of Africa and Asia in the early twenty-first century. This article discusses the various institutions and forces that play roles in applying these technologies to the challenges of community development. Case studies punctuate the text to provide concrete examples of the ideas and potential flowing out of the ICT environment, especially manifested by telecenters. The discussion highlights the low visibility of universities among the major actors and argues that they should build their capacities to be partners in the ICTs for Development movement.

Every man and woman, school-age child, village, government office, and business can access information and knowledge resources through computers and telecommunications.

— A Vision of the African Information Society Initiative

Since 1997 [South Africa] has established 70 telecentres in rural areas, of which 26 had to be closed because they are not financially viable... The problem is that the community often does not see the need for using the internet or the telecentre.

— Universal Service Agency

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Introduction

Information and communication technology for development (ICT4D) has become a worldwide movement. Most revealing is the program for the 2003/2005 World Summit on the Information Society (WSIS) whose agenda included the importance of using information technologies to help reach the Millennium Development Goals. Likewise, the creation of various groups such as the U.N. ICT Task Force and the many organizations promoting ICT access for girls and women (Johnson 2003) indicate serious interest in, and hope for, a significant contribution of information technologies in a wide range of development challenges.

The quotations at the head of this chapter suggest both the promise and the challenges related to ICT4D. In the pages ahead, we will explore further both the potential and the problems that confront initiatives designed to build the knowledge and information resources that are fundamental assets in community development. Both implicitly and explicitly we will suggest a role on this frontier for universities in developing nations. We will draw most heavily from the contemporary community telecenter situation in Africa and Asia, recognizing that much of this also applies to developing countries elsewhere. Most African universities themselves are just beginning to get organized for the ICT environment. In fact, one observer contends that the current weak state of most African universities accounts for the lack of good Africa-relevant educational content on the Web (da Costa 2002). As digital technologies shape the new frontier for information and communication in this twenty-first century, higher education institutions in the Africa and Asia can become a more powerful force by applying them to education, training, and development issues rather than by abandoning them to commercial interests. Our discussion begins with a look at some aspects of the new information society.

The new information society

Africa has changed dramatically since William Hachten summarized the state of African media in his 1971 book *Muffled Drums*. The “muffled drums” were the emerging news media: newspapers, radio, television, and magazines, which, Hachten said, were “still too weak technologically, economically or politically to carry very far (Hachten 1971:xiii).

More recently, a headline in *The International Herald Tribune* declared “Africa is Missing Out on a Revolution” (Kapstein & Marten 1999). The authors, one a professor at the University of Minnesota and the other a U.S. Foreign Service officer, suggested that Africa missed out on the industrial revolution, and now it is missing out on the information revolution. They noted the relatively low percentage of Africans who use
the Internet. Recent data show that the figure is one out of 250 to 400 persons, with South Africa and northern African countries on the plus side and most other African nations on the minus side of a continental “digital divide.” Internet use is a good indicator of the information revolution, for it is accessibility to the Internet and other information technologies rather than the beat of a drum that has become the focus of contemporary communication in Africa.

To illustrate the potential of ICTs — including conventional media — here are some recent examples of social change projects drawn from the files of the Communication Initiative (http://www.comminit.com)

1. Capital Doctor — Uganda: A call-in radio show that reaches a general audience of 5 million, physically covering approximately 75 percent of the population, and 65 percent of these are believed to be outside of Kampala. As of March 1998, 2,200 questions had been answered on-air. Seventy percent of respondents at an STD clinic had listened to Capital Doctor, 91 percent of reported condom users were listeners to the program, and 71 percent of those who reported to “always” use condoms were listeners. Those who listened to Capital Doctor were more likely than non-listeners to use condoms. (http://www.comminit.com/id01-7of99/sld-485.html)

2. Sanjeevani — Nepal: Attitudinal changes occurred due to this TV drama on child health issues and gender equality in education. More than half of respondents, 57.6 percent, said that they learnt that female education is of primary importance for the development of the community. In addition, 22.5 percent learnt that health education is necessary, 12.5 percent learnt that there should be no gender discrimination and that daughters and sons should have equal rights, and 5.8 percent learnt that knowledge should be shared with others in the community. (http://www.comminit.com/idmay15/sld-2307.html)

3. Measles Communication Program — Philippines: A national multimedia project which resulted in the proportion of fully vaccinated children aged 12 to 23 months increasing from 54 percent to 65 percent. The average number of vaccinations that a child under 2 years received increased from 4.32 percent to 5.10 percent. Further, 64 percent of mothers who knew of the campaign had their children immunized while 42 percent of mothers who did not have the knowledge of the campaign had their children vaccinated. (http://www.comminit.com/idmay15/sld-2293.html)

4. Accessing Mass Media on Reproductive Behavior — Africa: In Namibia 61 percent of married women regularly exposed to radio, TV, and print media are currently using contraception compared
with 25 percent exposed to two of those media, 20 percent exposed to one medium and 12 percent exposed to no media.

In Kenya 53 percent of rural married women regularly exposed to radio, TV, and print media are currently using contraception; compared with 42 percent exposed to two of those media, 33 percent exposed to one medium and 22 percent exposed to no media.

In Zambia 15 percent of married women with no education regularly exposed to radio and TV are currently using contraception compared with 9 percent exposed to one medium and 7 percent exposed to no media.

In Burkina Faso all women regularly exposed to radio, television, and print media desire a mean number of children of 3.7 compared with 4.2 for women having regular exposure to two of those media, 5.7 for one medium, and 6.3 for no exposure to any media.

In Ghana: Rural women regularly exposed to radio, television, and print media desire a mean number of children of 3.9 compared with 4.2 for women having regular exposure to two of those media, 4.6 for one medium, and 5.3 for no exposure to any media.

5. Music Project — Nigeria: This program included the production and commercial launch of two family planning songs, six TV public service announcements and six radio public service announcements. Respondents who were highly exposed to the campaign were three times more likely to communicate with their spouses about family planning, five times more likely to have positive family planning attitudes, and almost twice as likely to use family planning when compared to those who were unexposed. Rural respondents with high exposure were seven times more likely to have positive family planning attitudes when compared to those who were unexposed. (http://www.communit.com/idmay15/sld-2358.html)

ICTs have become so important in education, commerce, and governance that many countries, including many in Africa, are establishing national ICT policies. However, the initiatives described above remind us that conventional media such as radio, television, and recordings are still important members of the ICT family. The enormous advances in audio and video technology that have lowered the costs, simplified operations, and miniaturized the communication tools reinforce this point. In fact, some argue that “the telephone and radio might have a higher benefit-cost ratio and lower overall cost as alternatives to and intermediaries for the Internet in poverty alleviation programs” (Kenny 2002:141).

As contrasted with approaches that emphasize face-to-face and small-group methods of contact, ICTs offer some significant benefits where
information and communication are important needs. These include the following:

- reaching many people simultaneously;
- overcoming geographic boundaries;
- overcoming social and literacy barriers;
- providing frequency and repetition of contact;
- storage of information for on-demand access;
- capturing the reality of events, by depicting them graphically and in real time; and
- greater efficiency (lower costs) in sending and receiving information.

In the 1990s, computers and digital networks exploded into the communication environment and provided additional dimensions to the list of ICT benefits. These newer technologies provided at least six additional features. These included opportunities for:

- relatively convenient individual information searching through a vast array of information sources, on-demand and often 24 hours a day;
- timely interaction between and among computer users that allows convenient and “contemplated” exchanges: exchanges that are quick but not necessarily instantaneous;
- “broadcasting” of information to many by ordinary individuals, including easier “bottom-up” message initiation;
- global reach almost constantly and instantly;
- convenient storage facilities for text, graphics, audio, video, and data; and
- intermixing of media forms and content.

These features of ICTs can translate into benefits in education and health, reducing social distance, better connections between governments and individuals, marketing advantages, and, overall, improved opportunities for information sharing. But there is still a more profound implication regarding ICTs. According to some analysts, writing and reading have long been symbols of, and contributors to, social inequality because these skills provide their holders with information and knowledge that lead to power and privilege. Now, “the rise of multimedia should provide an important opportunity to level the playing field of literacy by restoring the status of more natural forms of audiovisual communication that are in some ways more broadly accessible” (Warschauer 2003:116).

**ICTs for social change and development**

In *Knowledge Societies* published by the United Nations Commission on Science and Technology for Development (Mansell and Wehn 1998), the editors stress the need to harness ICTs for development by enabling their use for empowering the poor, and for scientific and technical capacity
building that is consistent with development. “The new technologies,” they emphasize, “can be implemented to support democratic decision-making, more effective governance, and lifelong learning” (Mansell and Wehn 1998:8).

The World Telecommunications Yearbook illustrates some of the potential of the new information and communication technology for Africa and other developing nations:

In rural southern Ghana, petrol stations are able to place orders with suppliers by telephone when previously they could only be made by traveling to Accra; in Zimbabwe, one company generated US$15 million of business by advertising on the Internet; in South Africa, lives have been saved since citizens have been able to call the police from strategically located community payphones; in the mountains of Laos and Burma, yak caravans employ mobile phones to call ahead and find the best route to take during the rainy season to bring their goods to market; and in China, a little girl’s life was saved when her doctor posted her symptoms to an Internet discussion group and received an immediate answer.

(Compiled from International Telecommunications Union 1998; Jensen 1999)

In the academic world, there’s the advent of the “digital library.” It goes beyond the work being done, for example, by the Carnegie Corporation in Botswana, Kenya, and South Africa where public libraries are digitizing their catalogs as well as connecting these libraries electronically to larger library networks (Akst 2003). (Scanning of library content is becoming more manageable with robot scanning technology that can digitize books and newspapers at a rate of 1,000 pages per hour.) Cornell University, with support from the Rockefeller Foundation, has created TEEAL, The Essential Electronic Agricultural Library (http://teeal.Cornell.edu) on 381 CDs. These CDs allow a library in a developing country instantly to have access to more than 140 research-quality agricultural publications published between 1993 and 2001. More than 20 African countries have purchased this “essential library,” including Angola, Benin, Cameroon, Cote d’Ivoire, Egypt, Ethiopia, Ghana, Guinea-Bissau, Kenya, Lesotho, Malawi, Morocco, Mozambique, Namibia, Nigeria, Senegal, Sierra Leone, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe. Complementing the CD version is the 2003 introduction of the TEEAL collection on-line.

Similarly, more than 6,000 correspondence course students all over Africa now can obtain advice and reading materials from their tutors at the University of South Africa (Jensen 1999). And beyond formal education, there is the case in Bhutan as reported by the U.N. Development Program in a newsletter item headlined “Weavers in Bhutan get ready to buy and sell online.”
According to the report, women weaving colourful traditional clothing in remote Himalayan areas of Bhutan will soon be able to use the power of the Internet to buy raw material from India online and advertise their products with a click of the mouse.

Many Bhutanese wear hand-woven traditional outfits, which can also potentially attract international buyers. But weavers lack market access and information regarding design and colour combinations in demand, and find it difficult to acquire quality raw materials, such as naturally-dyed yarn.

A pilot project aims to help the weavers solve these problems through the power of e-business; [they will] improve their skills and facilitate e-business development in Bhutan. Weavers participating will acquire the basics of e-business, including support for connectivity in their rural areas, and get help to improve working conditions and entrepreneurial skills (the full story appears at http://www.nndp.org/dpa/index.html)

At a 2002 Special Session of the U.N. General Assembly on information technology and development (June 17-18), Secretary General Kofi Annan succinctly placed ICTs among the important tools of development. Opening the session, he declared:

A wide consensus has emerged on the potential of information and communications technologies to promote economic growth, combat poverty, and facilitate the integration of developing countries into the global economy. Seizing the opportunities of the digital revolution is one of the most pressing challenges we face.

The potential of ICTs — highlighted by computers and networks — for development has prompted countless international conferences and workshops in an attempt to harness this potential. Enormous hours of work and untold sums of money were poured into the preparations and arrangements for the World Summit on Information in part to understand the implications of what has become known as “the Information Society.” The major actors supporting the movement include both multinational and national bodies such as the World Bank Group, UNDP, ITU, UNESCO, FAO, USAID, IDRC, and others.

However, widespread discussion in this decade points to a concern about the possible negative consequences of the uneven access to computers and telecommunications networks. This concern has resulted in the popularization of the term “digital divide” — for which there are now more than 800,000 entries on the World Wide Web (the “www” you see on Web page addresses).

Widespread belief that computers, networks, and other kinds of information and communication technologies can positively affect development has led to various approaches to providing people with use of these resources. In some countries, the emphasis has been on developing low-cost
computers, such as India’s *Simputer* and Brazil’s *computador popular*, and promoting lower-cost connectivity, such as wireless local telecommunication loops (Warschauer 2003:66-74). However, the cost of individual ownership and connectivity remains well beyond a majority of the populations in developing nations. In Africa, for example, the average total cost of using a dialup Internet account for 20 hours a month is equivalent to US$60, which is higher than the average African salary (The African Internet 2003).

**The telecenter movement**

In the last five years of the twentieth century, momentum began building toward the development of community-based communication centers as a means of providing access to information technologies. An email posted on an Internet listserv (November 4, 2003) by Lunghabo James contains a personal account of the significance of telecenters for rural life.

Community access centres are the way to go. In many third world countries, there is little chance to find individual ownership of all sorts of ICTs. Even mobile phones. I always come across scenarios in rural Uganda where two or three people own phones and are “forced” to offer public commercial calling services as a result of need. Telecentres create an aggregation of ICTs and enable the general public access to them at a nominal fee and yet benefit from the advantages that they have to offer. I have also learnt that because a number of rural folk are not exactly financially liquid, it would be good for one to explore the possibility of accepting payment for services using alternative methods, e.g. farmer X brings a heifer to the telecentre, valued at an amount xyz and getting the service for the equivalent.

The emphasis among foreign assistance organizations was particularly on reaching rural people in Africa and Asia. So early in the twenty-first century, communication centers of various kinds have been springing up around the world. The principal types include:

**Telecenters.** Telecenters tend to be in the public sector, operated by governmental bodies or nongovernmental organizations (NGOs). Generally they serve a low-income clientele and have a community development mission. Typically, telecenters offer a broad range of communication services related to the needs of the community, some of which are free or subsidized by external bodies such as governments or NGOs. Examples include the Community Learning Centers in Ghana and the Universal Service Agency’s telecenters in South Africa. Along with computer and Internet access, services might include: desktop publishing, community newspapers, sales or rental of audio and video recordings, book lending, training, photocopying, faxing, and telephone services. Some — like the Hungarian telehouses
and Western Australia’s rural telecenters — provide postal, banking, and employment services.

Here is a glimpse of a telecenter in Uganda.

The Nakaseke Multipurpose Telecenter — initially supported by IDRC, UNESCO, and ITU — has become one of the most internationally visible telecenter demonstration projects in Africa. The telecenter, situated in the rural areas of Nakaseke and Kasangombe (44 kilometers away from the capital city, Kampala), hosts a library with more than 3,000 volumes and provides access to different communication services (such as telephone, photocopying, and fax) and other information resources (such as videos and radio programs).

According to a recent report, 60 percent of the villagers are telecenter users (Etta and Parvyn-Wamahiu 2003:76). The library remains the most popular service, followed by telephone and newspaper use. The telecenter has transformed the lives of many villagers of the isolated community of Nakaseke in significant ways. Here are some examples. Now local leaders can visit the telecenter to read the newspaper. Before the arrival of the telecenter, Nakaseke villagers did not have access to printed news services. Students from the surrounding 23 primary schools and four secondary schools can access the community library to do their homework. Local farmers can get information about market opportunities for their crops. Health workers from the nearby hospital and other local health units can have access to relevant communication resources to carry out their jobs, while they make plans to initiate a telemedicine hub at the telecenter. And women line up at the telecenter to watch a very popular new multimedia CD-ROM titled “Rural Women in Africa: Ideas for Earning Money” (Etta and Parvyn-Wamahiu 2003:87).

When the telecenter was initiated, 24 villagers were selected to receive free computer training with the condition that they volunteer in the telecenter to train others in the community. In this way, more than 100 villagers have received computer training at the center.

One of the most important aspects of this project is the familiarization of villagers with information and communication resources and technologies that can be useful in their daily lives. Even though there are recurrent connectivity problems, “computers in Nakaseke are no longer strange and mysterious machines” (Dagron 2001b:334). (For more information, visit the Nakaseke telecenter web site at www.nakaseke.or.ug.)

Cybercafés. The commercially oriented cybercafés from those found on streets adjoining China’s Tiananmen Square to those in communities in Senegal and Zimbabwe have been an equally energetic movement. They are usually in the private sector and focus more narrowly on providing customers with the use of computers and connections to the Internet and
the World Wide Web. Often the principal attractions at the cybercafés are computer games and email. In Senegal and Nigeria, for example, computers are being added to private sector phone shops, as well as schools, police stations, and clinics (The African Internet 2003). Cybercafé clients tend to be more urban, more educated, and more economically well-off than the clients of community telecenters. A recent study of Internet cafés in Uganda shows that their clientele are the “haves” of Ugandan society, and though Internet cafés may have brought the Internet and ICTs closer to more people in developing countries, “the bad news is that these initiatives may only be increasing the digital divide within poor countries” (Henten, Falch & Anyimadu 2004). An Internet service provider (ISP) called AfricaOnline built a franchise system of more than 700 cybercafés spread across Cote d’Ivoire, Kenya, Uganda, Tanzania, and Zimbabwe before discovering that they could not generate enough income to survive (The African Internet 2003).

**Information access points.** Information access points (IAPs) fall between the cybercafé and telecenter approaches. As they focus on Internet and network services, they emphasize the opportunity for the community to seek information. The most dramatic example is Canada’s Community Access Program that established 10,000 access points in rural and urban areas across the country between 1994 and 2001. Computers and network connections were placed in community centers, libraries, schools, and other public places in order to make Canada “the most interconnected country in the world” (Pfiester, Roman & Colle 2000). Canada’s success energized other national IAP initiatives: in 2002, the Government of México designed a network of Centros Comunitarios Digitales (DCCs) as part of its Sistema Nacional e-México. The Government’s plan is to have more than 12,000 DCCs by 2006, covering 75 percent of the nation’s population (Rodriguez Oliveros 2002). Across the world, in the State of Tamil Nadu, the project called Sustainable Access in Rural India (SARI) initiated a plan to establish “tele-kiosks” in up to 100 villages in Madurai District as the first phase of an initiative that will see thousands of IAP kiosks flooding villages all over the state.

IAPs sometimes are reinforced by sectoral organizations such as those in health and agriculture that build special information systems. An example is the World Health Organization, which has set out a seven-year plan to establish the Health InterNetwork Project. It is an initiative to facilitate the flow of health information worldwide using Internet technologies. Among its provisions are: (1) making available reliable and relevant local and international public health content; and (2) establishing 10,000 to 14,000 new public health information access points linked to an Internet-based Health InterNetwork portal. Similarly, we are beginning to see kiosks
and terminals devoted to linking citizens more closely to government information and communications — a service often labeled as e-governance — and illustrated by a system in India where once hard-to-get land records are now easily available in Karnataka state via self-serve computer and network-equipped public kiosks (Warschauer 2003:175-77).

**Schools and telecenters**

The World Bank Institute initiated a program in the late 1990s to link students and teachers in more than 20 developing countries via the Internet for collaborative projects and integration of technology into learning and, as part of the process, to help teachers and students learn to use information and communication technologies.¹ An important complement to this activity, identified officially as World Links for Development (WorLD), was the creation of school-based telecenters that would be open to the community after the close of the school day and on holidays. The project established some 800 Community Learning Centers (CLC) across the developing world (WorLD 2003a).

In Africa, the first CLCs appeared in Zimbabwe in 1999. You can get to one of the WorLD Internet Learning Centres by driving 100 kilometers north from Harare, Zimbabwe. In Bindura there it is, one of 13 sites selected in the country for the dual-use telecenter. It serves students and teachers in the surrounding schools by day and the general community and adult learners during the evenings, weekends, and holidays. In Bindura’s Center, one of 13 in the country, there are 10 networked computers, a printer, modems, and an Internet dial-up connection. The dual-use character of the centre is important to Bindura because the small fees paid by the community for services help support the recurrent costs of hardware maintenance, power, supplies, and connectivity (WorLD 2003b).

Uganda is another place where the WorLD school-based telecenter system has taken root. A network of 15 telecenters was set up by World Links through support from the Bill and Melinda Gates Foundation. As in Zimbabwe, the schools use their ICT facilities during the day and make them available later to the community. Meddie Mayanja, who has been closely associated with both the WorLD project and earlier Multi-Purpose Community Telecenters pilot projects² gives us a close-up look at the service and the clients of the Ugandan initiative.

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¹ In 2003, approximately 200,000 students and teachers in those countries were collaborating over the Internet with partners in 22 industrialized countries on projects in a variety of disciplines (WorLD 2003a).

² These were supported by Canada’s International Development Research Center, UNESCO, and the International Telecommunications Union.
Generally, the computer- and Internet-based services vary depending on the needs and sophistication of the community.

All these telecenters train students and teachers in the use of the computers and Internet-supported facilities as tools for learning and teaching. Lango College Telecenter in Lira District and Kigezi High Telecenter in Kabale also receive a number of community users for Internet-supported services.

At Duhaga Telecenter of Hoima District, the user records for the last month indicate that there are clients from the community who have used the Internet to search on health, farming, and business issues (e.g., rice prices; the area is known for upland rice growing).

Ndejje Secondary Telecenter in Luwero district provides access to community institutions. For example, Ndejje University is one of the principal users. Without a computer lab or Internet access of its own, the university students and lecturers access Internet-related services and research at Ndejje Secondary Telecenter.

With their recently established school-based telecenter, many locals consider Moroto High Telecenter the most important communication center in the whole of Karamoja region in northeast Uganda. The region is home to the famous native Karamojong nomads, brothers to the Turkana in northwest Kenya. Government, the NGO community, and civil society from within Moroto and as far as Kotido almost 100 kilometers away use the telecenter.

In addition to general community users, selected SBTs [School-based Telecenters] will pilot high-impact knowledge services for specific client groups. These include telemedicine for the Moroto High Telecenter and e-commerce for Kigezi High Telecenter. The targeted training and product development activities at these sites are part of jointly coordinated pilot projects between the World Bank’s Energy for Rural Transformation, World Links, and Knowledge Economy programs (Mayanja 2002).

In another innovation designed to strengthen Africa’s steps into the Information Society, UNESCO is leading an effort that combines telecenters and community radio in Africa “to offer a communication and information platform for grass-roots development” (Digital Opportunities for Africa 2003). The first Community Multimedia Centres opened in mid 2001, offering computer training, email, and office services such as scanning, fax, and document binding. Radio programs promote the telecenters’ services, and radio broadcasting is expected to be used for relaying information drawn and edited from the Internet. At a two-day roundtable meeting in Dakar in mid-2003, a group of bilateral donors, foundations, and development agencies committed some US$1.2 million for the program, an approach that built on the strategy of the New Partnership for African
Development (NEPAD). As the centers mature, they are expected to offer a range of learning opportunities and services specifically designed to meet local development needs.

A similar ICT innovation in Africa is tied to the WorldSpace satellite network that covers the entire continent of Africa and much of Asia and the Pacific. An NGO called First Voice International (www.firstvoiceint.org) uses the satellite for a 24-hour audio service called the Africa Learning Channel. This service is devoted to a variety of pan-African issues such as AIDS, poverty alleviation, youth leadership, food security, and gender concerns. Using digital radios and computers, the system reaches listening groups, intermediary service providers, and a general public through 194 partner community radio stations. An example is the RANET development information project. It is described in an email posted by Aaron Sundsмо to GKD-DOTCOM Listserv, November 18, 2003.

The RANET Project was designed to make weather, climate, and related environmental information more accessible to remote and resource poor populations in Africa. Initially this was attempted through the Internet, but it soon became clear that sending digital images, animation, and other memory-intensive files simply was not possible even to capital city offices, not to mention more remote extension workers. Through a partnership with First Voice International, the RANET project is now sending all of its content on a reliable, low-cost line to partners in 35 African countries in the capital cities, secondary town, and rural areas. Additionally, every site that has the equipment also receives the content from all of First Voice’s other projects including medical journals articles, agricultural best practice information, news, community radio support materials, and much much more.

**Telecenters and development**

Much of the attention in the past 10 years has been on the *connectivity* side of making ICTs accessible to individuals and communities. While these issues have not yet been completely solved,³ we recognize that there are other challenges that need to be addressed if ICTs are to be significant forces in reaching the Millennium Development Goals as well as goals associated with eGovernance, eCommerce and other digitally related enterprises. We build our discussion around telecenters because they — and their close relatives, cybercafés and Information access points — represent the starting place for much of the world’s population for using computers and telecommunications networks, as well as telephones, DVDs, and other recent technologies.

³ See, for example, Oyelaran-Oyeyinka & Adeya 2004.
In the next stage of telecenter development in Africa, Asia, and other developing areas, initiatives will need to concentrate on how to use ICTs and telecenters effectively for development. This question of telecenter effectiveness merges into discussions of content, demand, sustainability, and viability — significant subjects that are woven throughout telecenter planning. (For example, see Proenza 2001; Short 2001; Sabien 2001; and Dagron 2001a.)

In the remainder of this chapter we examine the challenges related to these issues. While the issues are many, and involve complex technical and political matters, we concentrate on ten challenges beyond connectivity that appear relevant to telecenters in many countries across Africa and Asia. ¹

1. Concerted efforts to make telecenter content relevant to local needs

There are probably more than 2.1 billion Web pages on-line, and of those Africa generates 0.4 percent. For nations outside of South Africa, the estimate is 0.02 percent. A general judgment about Africa’s involvement with the Web is that it is not being fully exploited as a new and interactive medium, and there is very little original content commissioned especially for the Internet (da Costa 2002). An important point is that content is related to demand.

Telecenters need to be demand-driven, whether they are publicly funded or supported by user fees. A demand-driven telecenter translates, among various factors, into the need to provide people in host communities with access to relevant and useful content. Some organizations, such as the Country Gateways promoted by the World Bank, are working on the content issues but much of the information available via electronic networks may not meet communities’ needs for local and localized information on agriculture, health, entrepreneurship and jobs, and nearby markets. A telecenter may also have low relevance if information is in unfamiliar or inappropriate language or dialects. For example, while there are more than 100,000 Web page listings under “health” on the Internet, the material is useless to many because most of it is in English and much is expressed in ways unfamiliar even to English speakers. Most of those 17 million people in Nigeria whose language is Igbo cannot use those listings because Igbo is “all but completely absent from the Internet” (Kenny 2002:150).

Even where the mainstream language is English, there is evidence that this is not sufficient to attract people to ICT information resources. A study by the Children’s Partnership in the United States looked at the extent to which currently available content met the needs of diverse communities.

¹The 10 items are adapted from Colle and Roman 2003.
The study reported that the greatest barrier keeping people with low incomes away from information portals was a lack of locally relevant information. The low-income persons needed such practical content as adult literacy programs, information on public benefits, easy-to-understand health encyclopedias, consumer and credit information, and information related to employment and training (Warschauer 2003:88-89).

Although ICTs and Web sites provide an enormous volume and variety of information, it is the quality of information that matters most in community development and poverty alleviation. Someone remarked that even if the woman in the village has access to the Internet, she will not necessarily be able to use the information to improve her child’s health because “trying to get information from the internet is like drinking from a fire hose — you don’t even know what the source of the water is” (McLellan 1998:352).

The quality of information refers to its credibility, validity, trustworthiness, relevance, and usefulness. While a web site called One World (www.oneworld.net) and its offspring Digital Opportunity Channel (www.digitalopportunity.org) focus on sustainable development and on providing a platform for organizations and community leaders from developing nations to express themselves, the need for local targeted information (such as the name of a veterinarian) remains a major challenge. A 2002 multinational study by the International Institute for Communication and Development (IICD) in The Hague suggests that “easier access to globalised knowledge is fast turning us into ‘consumers’ of distant and potentially irrelevant information” (Ballantyne 2002:1; emphasis added). Local content, the report says, faces intense competition because big content initiatives tend to push their external content onto local communities. In the same vein, another IICD report suggests that “More worrying perhaps, developing countries are being ‘invaded’ by foreign ideas and values that may undermine or overwhelm local cultural heritage and economic livelihoods” (Batchelor 2002).

Commissioned by the United Kingdom Department for International Development (DFID), the first IICD study mentioned above was carried out in association with the Tanzania Commission for Science and Technology and focused especially on the issue of developing appropriate local content. The report indicates the need to:

- stimulate all kinds of local content expression for local application and use;
- stimulate eContent creation and communication for local and global use;
- develop eContent exchange and broadcast systems; and
strengthen the “synthesis and adaptation” capacities of organizations working with both “global” and “local” content. These priorities can be addressed, the report suggests, by actions directed toward valuing local content, motivating local content, making local content visible, addressing local language issues, connecting with traditional knowledge, building local adaptation skills, engaging in joint action, promoting local ownership and participation and by strengthening the local skills base (Ballantyne 2002:2).

Most of the content offered by African telecenters is in English. This affects who accesses and uses the content services offered by the telecenters. For example, in a report conducted by Acacia, a Canadian Government ICT project in Africa, the researchers report that “telecenters are perceived as places providing services for the educated on account of the language of the content, most of which is in English” (Etta and Parvyn-Wamahiu 2003:xiii). Nonetheless, the main purposes of telecenter use in the African context are to contact family and friends (principally through the telephone), prepare documents for social events (using telecenter printing services), obtain computer training, and find sources of personal entertainment (through television and video, radio, and newspapers). There is hardly any use of telecenter resources to find professional or practical information for economic or educational purposes (Etta and Parvyn-Wamahiu 2003). There are at least two factors accounting for this situation: (1) on one side, there is a general lack of community awareness about the potential of new information and communication technologies (as we observe in a section below); and (2) on the other side, there are inadequate human resources (including skills and motivation) to provide localized content in telecenters.

There are, however, some cases of successful telecenter content creation and dissemination in Africa. In the year 2000, the manager of a telecenter in the township of Mamelodi, South Africa, put together a database that contains useful information about the community: the Mamelodi Directory of Services, a publication of 22 pages, updated on an annual basis and sold at an affordable price. The second edition offered a wide range of community information on private and social services such as ‘Supermarkets,’ ‘Pharmaceutical and Healthcare,’ ‘Adult Education,’ ‘Legal Assistance,’ or ‘Trade and Industry.’ This database was constructed by asking neighbors about community resources and by visiting local businesses and organizations (Roman 2000). A telecenter in Nakaseke, Uganda, presents a different approach to content dissemination. The Nakaseke telecenter provides a library and document service for community use, and has become the most important library facility in the area (Etta and Parvyn-Wamahiu 2003).
Additionally, Nakaseke telecenter managers have created some educational videos on issues such as agricultural practices.

Besides telecenters, there are many initiatives in Africa whose mission is to provide demand-driven and contextually relevant content for socioeconomic development goals (such as agriculture, government, and health information). Some creative cases of electronic content creation for community development goals in rural Africa can be found at www.ictupdate.cta.int.

A case in India shows how the staff of a “village knowledge centre” dealt with the issues of local character, relevance, and language. The centers, established in Pondicherry on the southeast coast of India by the M.S. Swaminathan Research Foundation (MSSRF), demonstrated ingenuity, creativity and sensitivity in developing their information products. In one case, coastal villages were highly dependent on weather and tides information. Because many fishermen there were not literate, digital network information such as weather reports was downloaded and converted to audio by the village knowledge center. The audio versions were then played on loudspeakers in the open air. In addition, project volunteers in the villages built their own information resources in the center to complement the external databases, thereby providing local and localized information on agricultural, health, and government programs for low-income people (Dagron 2001b:319-324). With the project staff, many locally useful databases were designed and developed, including, for example, a directory of general and crop insurance schemes; a list of about 130 schemes available as entitlements to rural families; a directory of hospitals and medical practitioners in Pondicherry grouped according to their specializations; bus and train schedules covering Pondicherry and two nearby towns; and pest-management information for the sugarcane crop (Harris 2003:111).

2. Policy and political leadership

It is useful to have a policy framework that can serve as a support and reinforcement for senior political leaders at the national, state, and local level whose endorsement may be critical to mobilizing government officials, NGOs, business groups, and important resources to support telecenters. Governments may need to create the regulatory environment for investment. An appropriate policy and a regulatory body that implements that policy are important preconditions for successful and sustainable telecenters and to make their services affordable to the population. The support of the international community is useful in developing decision-makers’ awareness of the need to adopt policies that promote the building of an information society. Such polices include license obligations to serve rural communities, subsidies by means of rural telecom development funds, vari-
ations of build, operate, and transfer arrangements, low-interest loans, and the like. The World Bank supports regulatory arrangements that promote communications in rural areas, appropriate licensing, interconnection, revenue sharing, and tariff arrangements. It is trying to promote solutions that have the capability of attracting private investment and expertise to rural areas (Stovring 2004). The ITU, USAID, and others have been organizing regional seminars and workshops to raise awareness among decision makers and policy makers about the potential of ICTs to promote economic and social development in rural and remote areas.

The UN Economic Commission for Africa (UNECA) produced an Action Plan in 1995 whose “overriding goal is to realise the African Information Society Initiative (AISI) for a sustainable information society by 2010” (Mansell and Wehn 1999:113). The AISI vision included these expectations:

- Information and decision support systems are used to support decision-making in all the major sectors of the economy in line with each country’s national development priorities.
- Every man and woman, school-age child, village, government office, and business can access information and knowledge resources through computers and telecommunications.
- Access is available to international, regional, and national “information highways” providing “off-ramps” in the villages and in the information area catering specifically to grassroots society.
- A vibrant business sector exhibits strong leadership capable of forging the build up of the information society.
- African information resources are available which reflect the needs of government, business, culture, education, tourism, energy, health, transport, and natural resource management.

UNECA has also created an Information Policy Development and Implementation unit that assists member states in the development of sectoral, national, village, and regional policies, plans, and strategies related to ICTs. An Information and Technology Centre for Africa (ITCA) demonstrates to African policy makers and planners the value of ICT for development.

Many countries are in the process of developing policies to improve their positions in the Information Society. Guided by the AISI vision, most African countries have started on their “national information and communication infrastructure” (NICI) and in 2003, 17 had completed their strategies. In 2003, these included: Benin, Burkina Faso, Cape Verde, Cote d’Ivoire, Egypt, Gambia, Mauritania, Mauritius, Morocco, Mozambique, Rwanda, Senegal, Seychelles, South Africa, Sudan, and Tunisia (Etta and Parvyn-Wamahi 2003).
in rural areas through the use of telecenters (Etta and Parvyn-Wamahiu 2003). As an example, Namibia’s policy includes reference to rural access to information, developing the ICT professional community, strong ICT public education in schools, strengthening the nation’s ICT infrastructure, and attention to e-commerce, e-business, and e-government.

In its domestic program, the Canadian Government went beyond the rhetoric of an information society and committed people and funding to make the Internet affordable in rural and urban communities across the nation through community access points (or IAPs as we labeled them earlier). It made a six-year commitment, providing start-up money and an infrastructure to help local organizations participate in the initiative. While the resources offered by the central government were not enough for a complete, comprehensive multipurpose telecenter, the imprimatur of the Canadian government combined with some serious money significantly motivated a nationwide community-based effort that commanded provincial, regional, and local participation (Pfiester, Roman and Colle 2000).

Besides the direct funding available and the administrative push, a national policy can also be instrumental in providing a favorable regulatory and tariff climate, and in producing the human resources that are vital to a telecenter movement. Some telecenters in Uganda and Senegal, for example, had to go through considerable bureaucratic hurdles simply to have imported equipment released to projects or simply repaired (Etta and Parvyn-Wamahiu 2003:xiv).

To support its policy goal of becoming an information society superpower, the Indian government doubled the number of persons it would graduate from its technology training institutes. The Egyptian Government’s plan for incorporating ICTs in its business and socioeconomic development includes — besides Technology Access Community Centres in rural areas — creation of facilities in all its 27 provinces that can train 30,000 people annually in computer use (Kamel 2000).

3. Partnerships for translating national policy into action through governmental and nongovernmental bodies at the regional and local levels

National policy and national government funding do not necessarily translate into centralized planning and operations. Hungary has demonstrated that a former socialist country steeped in centralized planning could develop a “telecottage” system built on local nongovernmental organizations with community ownership and management. It is called a “civic initiative” with its emphasis on local NGOs applying for government telecottage grants and showing that they have the support of local governments or private organizations (Gáspár 2001).
Intermediary organizations are important potential partners. Richard Heeks of the Institute for Development Policy and Management in the U.K.’s University of Manchester suggests that intermediaries are organizations or individuals “who own ICTs and who can act as gatekeepers between cyberspace and the organic, informal information systems of those on the wrong side of the digital divide” (Heeks 2002:7). Heeks suggests that good intermediaries bring more to the process than connection to information and communication data and hardware. Motivation is a key element. Heeks asserts that too often projects assume motivation is present and too often it is not. In designing ICT systems within development projects he indicates that it is critical that someone have an answer to the “Why should I” questions: Why should I learn ICT skills? Why should I access ICTs? Why should I use ICT-borne information? It is widely accepted that one of the basic lessons related to maximizing the benefits of ICTs is that they be embedded in broader development issues. One report summarized the issue by suggesting that information alone cannot solve problems.

ICTs can deliver potentially valuable information to end-users like market prices to poor rural farmers and medical advice to rural healthcare workers. However, market information is useless if there are no roads to transport goods, and medical advice is meaningless if there is no money to purchase medicines. As evidence from research on Botswana SMEs [small and medium enterprises] confirms, information is important, but it is only one part in a chain of resources (infrastructure, skills, money) required for the end-user to have the capacity to act (UNDP 2001).

Intermediaries can provide the local institutional context within which a communication resource can flourish. Expansion of the intermediaries concept is important in the demand-driven approach to telecenter community service. Various community organizations and institutions have the opportunity to build demand among their constituents for telecenter services. Schools, health centers, agricultural extension agents, and input suppliers, community leaders, and cooperatives can be partners with telecenters in identifying what specialized needs exist and in encouraging their constituents to use telecenters.

In the short term, telecenter managers need to reach out to community groups and demonstrate how telecenter resources and facilities apply to development activities. The Millennium Development Goals which will be timely for the next decade provide a convenient policy-level rationale for forging partnerships that will arouse demand for telecenter resources. Meanwhile, agricultural extension, community health workers, school teachers, and government officials will need to reexamine how information technology can contribute to their work. For example, traditionally
supervision of community development workers and paraprofessionals has implied face-to-face contact. However, if one dissects the concept of supervision into its specific activities (education, training, counseling, technical assistance, monitoring, evaluation, and the like), it is clear that ICTs, including computers and networks, can replace some of the labor-intensive and traditional face-to-face contact (Esman, Colle, Uphoff, and Taylor 1980).

Where are the universities? One of the oddest characteristics of the telecenter and ICT4D movements is the absence of universities as partners in the production and packaging of research-based locally relevant quality information. Some have been very active on the technical side, including, for example, India’s Institutes of Technology, the Massachusetts Institute of Technology’s Media Lab, and as we pointed out earlier, considerable effort in southern Africa regarding distance learning. The social role of the university historically has been to create, store, and diffuse knowledge, a collection of activities that partially parallels some telecenter operations. Yet few major programs link universities to telecenters as an institutionalized source of information and support.

The role goes further than content development. Universities could play a significantly broader role in the world’s efforts to employ ICTs for sustainable development and combatting poverty. For example, universities could:

- conduct continual research on community information needs so that appropriate information resources can be developed;
- conduct ongoing eReadiness studies at the regional and community level and interpret their results for regional and local policy formulation and action;
- convert its own research and “academic” knowledge into education, information, and training packages suitable for community use;
- mobilize, interpret, integrate, and package information from external authoritative sources and tailor it to the needs of populations in surrounding communities;
- build curricula that train students in the application of ICTs to development problems and that reward faculty members for participation in these types of programs;  

There are various ways universities can get students involved in ICT studies and research, for example by: assigning them as student interns at community telecenters; having them collect indigenous case studies and “lessons learned” related to development initiatives; involving them in data collection and processing related to eReadiness and information needs-analysis studies; and training them in the process of information packaging.
• design and execute ICT training programs for various community
groups, especially those that are likely to be bypassed by conventional
ICT training;
• prepare a new generation of “champions” in various sectors to use
and support the application of ICTs and telecenters for community
development and poverty alleviation;
• provide ongoing monitoring and evaluation support to ICT and
telecenter initiatives;
• actively contribute to the Country Gateway (information portal)
system;
• orient university officials and faculty to ICT-for-development so they
can support ICT initiatives, build ICT-related curricula and research
programs, and be opinion-leaders in this area; and
• initiate “university-based” telecenters similar in approach to the
school-based telecenters of WorLD, but exploit the opportunity to
use them also as learning and research labs for ICT4D.

This agenda is likely to require a major shift in the culture of colleges
and universities in Africa and Asia, where there tend to be few incentives
for professors and instructors to move beyond their classrooms out into
the community. There clearly is a need to gather systematic data on
the readiness of universities to move in the directions beckoned by ICT
opportunities.  

A small start is being made in India where the University of Veterinary
and Animal Sciences (TANUVAS) revamped some of its extension centers
to make them support units for village information centers. While telecenter
patrons in the villages can access Web pages from distant places, they
will also have information available from the university’s research labs,
packaged for their needs by the TANUVAS information support unit.

Some universities already have experience and commitments that are
relevant to community development information and training through
ICTs and telecenters. For example, universities have been involved in
extension, a system designed to link researchers with potential users of their
research. And since the days of correspondence courses, universities have
used a variety of media for distance learning, especially focusing on formal
education at secondary school and college levels. As we indicated earlier,
the University of South Africa has long offered correspondence degrees
and vocational courses using mail services. However, few universities
have yet taken the step toward linking their knowledge and research

7 By readiness, we refer to factors such as physical resources (computers, etc.), human
resources (digitally skilled and motivated faculty and support staff), and appropriate
university norms and academic programs.
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resources to telecenters and to the potential of ICT4D. Headway was made in mid-2001, when several universities became involved in new Country Gateway activities. For example, universities in West Bank and Gaza, the Dominican Republic, Rwanda, and Nicaragua received planning grants from the World Bank’s infoDev program to host Country Gateways (Personal communication from Robert Valantin, World Bank).

4. Local “champions” (innovators) who can mobilize others (early adopters, opinion leaders) to accept the vision of an ICT telecenter initiative

The main reason for the extraordinary reputation of the Gaseleka Telecenter as one of the most active and vibrant in South Africa is Masilo Mokobane, director of the Gaseleka project. In spite of nagging infrastructure and economic problems, we discovered him to be a telecenter visionary. He personifies what we call a “champion.” In the account that follows, we capture some of the spirit that marks a champion of innovations such as ICT and telecenters.

There are no roads to Gasaleka. The outside visitor spends two hours carefully and slowly driving on a path of swamped holes, stones, and sand, surrounded by infinite extensions of palm trees, before reaching the first hut of the village near the borders of Botswana. This remote village of mud huts and red sand lanes accommodates the first telecenter established by the Universal Service Agency.

In spite of some infrastructure and economic problems, Gasaleka Telecenter remains as one of the most active and vibrant in South Africa. The main reason for that vitality in the midst of daily adversity is Masilo Mokobane, the director of the project and a genuine telecenter champion. Mokobane is a telecenter visionary. From the first day, Mokobane has not only been fighting for the survival of the telecentre, but he has also been entertaining new ideas to better serve his community through the use of new communication technologies. He remembers the day the Gasaleka Telecenter was inaugurated: “It was a great day for us. Everybody came to celebrate.”

The early success of the center is partly explained by the computer training offered. Another factor is that there is no other place in the area to make a phone call. However, according to Mokobane, “the business is going down due to the problems we have with the telephones. Sometimes the phones are not working. And the customers say the calls are very expensive.” When I arrived in Gasaleka, the three telephones were not working due to days of heavy rain.

Mokobane is nevertheless optimistic about the future of the project. Hardships do not shadow his enthusiasm. He is full of new ideas, and he explains them with a wide smile. One of his most innovative plans is the publication of a community newsletter. The villages that integrate the Gaseleka community are not reached or covered by any news service. “We have many news in
Gasaleka, but they are not reported to the community,” says Mokobane. The telecenter will not only work as a reference resource center offering access to information and communication technologies, but it will take on a new role as an organization for the production and dissemination of local information. “The telecenter can become the memory, the history of this community,” explains Mokobane.

(This account was published earlier in Dagron 2002b).

The obscurity and abstractness of the “information society” requires the missionary zeal of individuals like Mokobane who can translate and demonstrate the relevance and application of these kinds of concepts to the realities of the community. And for the innovator to be from the community itself increases the credibility and potential diffusion of the telecenter initiative.

5. The significant value of community volunteers in operating telecenters

In most communities, volunteers bring a variety of benefits to multipurpose telecenters. They contribute to the day-in, day-out supervision of the facilities — a potential personnel expense that many could not otherwise afford. But the volunteer has deeper significance: The variety of volunteers in a system provides telecenter clientele with personal models with whom they can identify and feel comfortable. In telecenters throughout the world, one can find high school and college students, retired business people, active and retired school teachers, and others providing one-on-one and group training and assistance. In some places, women do not feel welcome in a telecenter because of the “maleness” of the environment and the accompanying intimidation. The presence of self-confident women volunteers helps overcome some of these obstacles. For example, as part of a strategy to attract women to participate in telecenter activities in Pondicherry, India, the Swaminathan Foundation requires that at least one woman is engaged in the management of each center (for instance, the telecenter in the village of Embalam is led by four female volunteers).

Volunteers can also contribute to enlightened decision-making in the telecenter because they reflect a variety of community constituencies. One of the most important results of our needs assessment activities in India as part of the TANUVAS project mentioned above was the creation of a local steering committee for each telecenter site. These committees, formed by a diverse group of villagers (including people of both genders, youth and elders) are in charge of monitoring the economic and social sustainability of the telecenters, in close contact with personnel at TANUVAS. For example, these committees decide about new services by taking the pulse of village needs, and they administer existing resources and look for new ones (including looking for volunteers in the community interested in
collaborating in telecenter activities). The steering committees act as local telecenter champions and agents of demand actualization. The challenge for telecenters is to move from largely spontaneous use and management of volunteers to developing an explicit strategic plan for recruiting, training, and rewarding volunteers. The important issue is to find incentives to fit the kind of volunteers available. For some it is the recognition they receive, for others it is free time on the computers, and for others it may be college credits in the local university or discounts contributed by local merchants.

The Acacia survey of African telecenter reports that telecenter staffs and volunteers are usually poorly trained to carry out their daily tasks (Etta and Parvyn-Wamahiu 2003). Additionally, telecenter personnel often lack incentives to remain in their jobs. Deficient or nonexistent economic remuneration together with a lack of professional training on how to properly administer telecenters constitute serious obstacles to the managerial stability and quality of telecenter staff in rural Africa (Roman 2000).

6. Clustering or networking telecenters to develop and share resources

Creating appropriate localized content is very labor intensive, and without volunteer resources it can be quite costly. The clustering of telecenters in some fashion can help support a localized information service with the cost of producing local information being spread over a number of telecenters in a relatively small area. For example, in eastern Canada, community Internet access sites sometimes join together to make available French language material for local francophone populations (Pfiester, Roman, and Colle 2000). Da Costa (2002) predicts that in Africa’s future Internet and Web development there will be a demand for ICT content in indigenous languages. Clustering arrangements are more likely to make that happen sooner.

Latin America’s Somos@Telecentros Network (S@T) was one of the earliest significant regional community-based telecenter networks. After it had been in existence for two years, S@T published a study in which it listed the lessons it had learned. The very first on the list was: “No telecenter is an island.” The study asserted: “If telecenters are to make their mission more effective, they need to organize themselves in overlapping national, regional, and international networks” (Somos@Telecentros 2003). Somos@Telecentros has done this, bringing together 350 telecenters in Latin America and the Caribbean area. This networking arrangement allows S@T to share resources and to get access to resources more easily. Content appropriate for the region has been an important outcome.

Experts in Brazil (Kyle 2001) and in Hungary (Gáspár 2001) make persuasive arguments for building clusters of cooperating telecenters to
expand content-related services (such as Tele-agriculture, Tele-business, and Tele-culture) that are more affordable when serving multiple branches.

The Western Australia Telecenter Network Support Unit illustrates well what can be done when telecenters are combined in some way so that they share a support system. This Support Unit lobbies, seeks funding, develops initiatives, and carries out a variety of other management functions for the 76 members of the Network (Sabien 2001).

Architects of telecenter systems can build such support components into their systems and devise a method for funding them, such as membership fees. One of the major recommendations to the Government of India that came out of a 2001 national ICT workshop in Chennai was that the GOI foster the establishment of an NGO National Association of Telecenters, similar to those being developed in Hungary and Australia. The recommendation included the following list of tasks for such an association:

1. coordinate content supply with developers and suppliers;
2. negotiate with resource suppliers such as companies selling computers and related equipment;
3. arrange public relations advocacy and awareness campaigns for ICT and telecentres;
4. provide liaison with government departments and NGOs;
5. train telecenter personnel and organizational users of telecenter facilities;
6. promote and support practical research and evaluation for telecenter operations;
7. provide liaison/negotiating with other communication enterprises (for example, cable television operators, radio broadcasting organizations); and
8. provide leadership and enforcement of minimum standards of service and professional codes of conduct.

An addition to this list could be: collecting, archiving, and diffusing information on telecenters (possibly in collaboration with a Country gateway).

7. A systematic, persistent effort toward community awareness about information and ICTs as a valuable resource

Stories abound about the difference that access to information technologies makes in the lives of individuals and communities. A woman in India who complained about her vision (she said it was like having a sari over her eye) learned at a telecenter about a traveling health team visiting her area. She had a simple operation and the “sari” (cataracts) was removed. Another story is about the farmer in northern Shaanxi Province in China who traveled 500 kilometers to an agricultural information center where
he found information online that helped him profitably market his apples and start up a pumpkin export trade. Despite the anecdotal success stories about ICTs and telecenters, there is still widespread lack of understanding about the role and benefits of information technologies. And skeptics were reinforced by computer giant Bill Gates, who startled many in the information technology field when he declared in the *Guardian* newspaper that “the world’s poorest two billion people desperately need healthcare, not laptops” (Helmore and McKie 2000).

The Acacia study of 36 telecenters in five African countries indicates that only a small percentage of the population uses the telecenter facilities, and most of them are youth and young adults (Etta and Parvyn-Wamahiu 2003). Also, fewer women than men use telecenter services in practically all the centers surveyed by the Acacia researchers in rural Africa. Evidently, socioeconomic-based differential access to telecenters may have multiple causal explanations (including literacy level, education, age, gender, and service cost), but community awareness about the value of information and communication services available at telecenters (and even awareness about the location and existence of telecenters) appears as one of the key factors pointed out by Acacia researchers.

Malaysia’s National Information Technology Council recognizes the challenge in establishing a community’s awareness of the benefits of information. Its vision is “to evolve a value-based knowledge society in the Malaysian mould where the society is rich in information, empowered by knowledge, infused with a distinctive value-system, and is self-governing.” So, high on its strategic agenda is an effort to develop a national *mindset* that includes making Malaysians aware of the emerging e-world and to enable the diffusion and acculturation of ICT at the grassroots level. (See http://nitc.org.my/.)

The Acacia report on African telecenters links awareness to sustainability. It says:

One of the most basic conditions for the success of a community telecentre is an expansion of clientele. With fewer than 50 users per month and an average of only 8 customers per week during the first year of operation of the well-resourced Timbuktu MCT, it is no wonder that profits cannot be made. (Etta and Parvyn-Wamahiu 2003:40)

Government or private sector initiatives targeting popular participation in the Information Society will need to consider carrying out vigorous campaigns to illustrate the benefits of information as an important resource for daily living — assuming they, themselves, are reasonably convinced. The target should include producing “ICT-fluent” professionals, including leaders in education and government.
Information and public relations campaigns promoting telecenters is part of the solution, but the parallel challenge lies in the appropriate development of services. Telecenters can systematically assess community information needs and the communication needs of various local organizations and be creative and entrepreneurial in dealing with these needs. As the Hungarian experience demonstrates (Gáspár 2001), it is this more comprehensive community service approach to the information society that helps centers become more firmly woven into the fabric of the community and puts them on the road to self-sufficiency.

Clark (2001) describes how her organization used various techniques to change the mindset of people who thought that “the telecenter is only about computers.” The small Boyup Brook Telecenter, one of approximately 100 in the province of Western Australia, uses a variety of community activities to attract people to diverse telecenter-sponsored activities. These include cultural events, workshops ranging from Belly Dancing to tractor driving for women, and other activities that put the telecenter into the mainstream of community life, rather than an oddity on the fringe. In the process, the telecenter and its ICTs are perceived as supporting the needs of the community. Similarly, among the telecottages in Hungary, there are more than 50 different services offered to the community (Gáspár 2001; Proenza 2001). In fact, major sources of support for the country’s telecottages are the contracts that they obtain from government agencies, thus becoming (for a fee) extensions of government services (Bihari and Jókay 1999).

A very obvious point (though frequently ignored or overlooked) is the importance of making a telecenter a nice place to be. Telecenters can learn about this from some of the better cybercafés. The BusyInternet (BI) telecenter in Accra (Ghana) takes seriously the issue of atmosphere. To attract people to the center who might not otherwise be interested in technology, movies are shown at the center on weekends. Another magnet is Liquid, the BI Accra restaurant and bar with its cool-blue bubble design. This is where the local cyber-crowd hangs out to network and dream up ideas. The BI philosophy is that creating a social scene around technology will help spark an innovative technology culture, and it places equal importance on both social and financial return. For example, to raise awareness about national ICT policy, the telecenter hosts monthly debates and organizes experts’ lectures. Low- or no-cost Internet access is offered to those attending HIV/AIDS workshops and other socially oriented programs. Those who cannot afford the normal daytime prices of fee-based services can pay half-price at night (BusyInternet 2003). The frivolity of the Korean baang (a very social cybercafé) may be too much, but
the cheerlessness and sobriety of the rural or small town telecenter is not the answer.

The importance of awareness-raising was illustrated in Korea. In November 2001, a conference was held there related to gender and ICTs. Given the recent release of a major study indicating the importance of ICTs and telecenters for women in developing nations (Haskins and Taggart 2001), we asked a participant to report to us on the outlook of women attending the program. She comments:

The thing that was wonderful was that the women suddenly realised that the Telecentre Movement was so powerful, not just another project but a movement that they could collectively use to make their voices heard while assisting their communities. They realised that this was a tool which was readily available to change things and make a difference and that they could be a part of it. (Personal communication)

Information and public relations campaigns promoting telecenters are part of the solution, but the parallel challenge lies in the appropriate development of services. Telecenters can systematically assess community information needs and the communication needs of various local organizations while being creative and entrepreneurial in dealing with these needs. It is this more comprehensive community-service approach to the information society that helps centers become more firmly woven into the fabric of the community and puts them on the road to self-sufficiency.

8. Research as a telecenter management tool

Universities and telecenters have a common professional stake in research. Research for needs assessment and for project evaluation is an important component of telecenter operations because a research program suggests the steps that can be taken to meet community needs and a research regimen can monitor the financial viability of the telecenter. However, research is not a common practice in telecenter initiatives. Even though many telecenter endeavors are self-labeled as “research and development” or “pilot” projects, not many of these projects carry out a rigorous research program (Hudson 2001).

Research for needs assessment and evaluation should be integrated as a natural component of any telecenter project, not just internationally funded initiatives that come with a mandate to produce feasibility studies and evaluation reports. Universities typically have the intellectual tools to work on these kinds of issues, although we find that many are not well prepared to apply them outside the realms of academia.

Telecenter personnel should have simple, reliable tools to use in ongoing operations — tools that (1) help them discover and continuously monitor
the needs of the community; (2) give a reliable picture of the demographics of the area; (3) systematically monitor ongoing operations; and (4) check on outcomes and consequences. This goes beyond counting the number of users, although this is an important statistic.

Harris (2003) describes an activity in Malaysia that is essential to creating a demand-driven telecenter. Prior to the establishment of a telecenter in the small settlement of Bario in Borneo, the project collected data on the information needs of the community. The data reflected the type and amount of information that members of the settlement would like to receive, what they were currently receiving, the type and amount of information they were sending, and the sources and channels used. The survey data revealed that “the community placed most importance on information relating to agricultural, medical, and religious practices [with] information technology, job opportunities, government policies, and family matters rated slightly less important” (Harris 2003:106). In addition, using Participatory Action Research (PAR) methods, project leaders and the community were able to agree on a “prioritized set of information needs.” This resulted in one person assembling and documenting best practices for the production and treatment of Bario rice, for which demand outstripped supply. This process not only revealed an information need but also provided a local information resource.

Research is important in identifying needs that can be factored into decision making about content to be made available through various ICTs at a telecenter. However there is another role that research should play in a demand-driven telecenter approach. Although there is a lot written and said about the potential of ICTs for rural development, to this date there is no solid inventory of documented development outcomes resulting from telecenter initiatives. Research evidence of impact is at best sparse and anecdotal. Some authors are very critical about the scarcity of evaluative evidence about impact and the lack of assessment of local needs. One suggests that

[W]hat is urgently needed is an assessment of what information, in which areas and in what institutional — social, economical, educational, and political — context contributes to developmental goals. Only then can we start to assess how information technology can . . . contribute to development in all areas of society. (Van Audenhove 2000:288)

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8 Participatory Action Research (PAR) has become an important tool in obtaining the kind of data that reflects a community’s perspective on its needs, and thus implicitly, its demands. While it is often used in developing countries, it has also been useful in cities like Indy Estate in Queensland, Australia (Coco & Jolly 2003; Harris 2003).
Richard Heeks notes that “there are far more one-line, rose-tinted vignettes of claimed success with ICT than there are long-term analytical studies by independent researchers” (Heeks 1999).

At the macro level, there are many analysts studying economic changes (such as growth of the ICT sector, number of computers and users, and GDP) but even leaving aside the major difficulties of measurement, these economic indicators do not gauge what is happening in the field (how is the technology being used, if used at all, by whom, and for what, and what are the social constraints and opportunities for equitable and effective use). Many of these studies are labeled e-readiness assessments and usually concentrate on national structural factors. [For an exception in Australia, see Coco and Jolly’s Queensland study (2002).] At the micro level, there are several international research-and-development projects that are testing ICT uses and applications for rural development. Although there are some efforts underway along with serious awareness about the importance of research, there are few scientifically based reports about the viability and functions of rural telecenters (Roman and Blattman 2001).

Some would rightly argue that it is too early to assess impact, yet grassroots-level research for needs assessment and evaluation is the first step toward meeting community needs, designing locally relevant applications, fostering community participation, and monitoring the financial and social sustainability of a telecenter.

The study conducted by the Acacia Initiative is a positive sign that things are changing in researching the telecenter movement (Etta and Parvyn-Wamahiu 2003). The evaluation of the African telecenters is a good example of how research can have a practical application: The recommendations based on the evaluation will serve to improve the telecenters studied, while at the same time they have the potential to inform public policy and inspire ongoing and future telecenter operations in other parts of the world.

9. Long-term financial sustainability and business plans that fit the culture of the community

Factors influencing long-term financial sustainability of telecenters are diverse. Telecenter sustainability is closely dependent on the list of other factors presented in this chapter (content relevance, community awareness, participation, well-trained staff). An essential aspect of financial sustainability has to do with the cost of the equipment and its maintenance. The high cost of technology, supplies, and maintenance often affect the financial stability of telecenters in rural Africa. (Note our earlier description of the WorLD project efforts to deal with this challenge.) Sometimes technical problems — from power failures to computer breakdowns — may result
in discontinuity of services. From the point of view of economic sustainability, however, the high costs of technology and maintenance usually are reflected in service charges that many community members cannot afford to pay. Most telecenters face the dilemma of being sustainable while providing “public goods” for poor people whom they are expected to serve. Some telecenters use the income from user fees and other income services to make public goods more affordable or free. Out of the 36 telecenters studied by the Acacia project researchers, only two of them were found to be solvent: the Phalala telecenter in South Africa and the Guédiawaye telecenter in Senegal (Eta and Paryvn-Wamahiu 2003).

Other than urban cybercafés, most telecenters operate in a not-for-profit mode, but that does not mean not-for-income. Typically donor agencies reduce or discontinue financial support for telecenters after an initial incubation period. Gumucio Dagron (2001a) argues that telecenters that have a mandate to contribute to a community’s welfare should not be responsible for their own full financial support any more than a community library is. Proenza (2001) offers a contrasting view, suggesting that telecenters should be more rigorous about adopting business models. Perhaps the compromise answer is that telecenters need to have a financial plan for whatever the sources of support will be.

Telecenter systems have been innovative in developing income-producing activities to support telecenter operations. Among the telehouses in Hungary, there are more than 50 different services offered to the community. As we mentioned earlier, a major source of support for telehouses are the contracts that they obtain from government agencies, thus becoming (for a fee) extensions for government services (Bihari and Jókay 1999). The Queensland (Australia) Open Learning Network’s Learning Centres offer training courses which are paid for by trainees’ employers or by the individuals themselves. Businesses and industry groups pay for use of the teleconferencing facilities, and institutions in the community pay membership fees to the Centres. (We have seen very few instances of telecenters soliciting individual memberships, or linking up in e-commerce enterprises.)

In our research on telecenter training (in which we surveyed a panel of experts from around the world), one of the most frequently suggested areas of training for telecenter managers was in the area of business planning aimed at making telecenters self-sufficient and sustainable (Roman 2000).

10. A strategic approach for gaining community participation

With widespread interest in the “digital divide” issue, broad-based community participation may become part of a telecenter’s mandate. This may present a challenge in reaching out to ethnic minorities, women, children, and the elderly who are often on the minus side of the divide. Sometimes
the “learning” label on a center, or the technology, or its location in a library or school intimidates those who might benefit from the services. So physical connectivity may not equal sociological access.

Building an atmosphere of community participation and ownership (though not necessarily in the literal sense) is an important consideration in the demand-driven formula. Yet, one of the most under-appreciated aspects of the participation issue is that participation is not a spontaneous phenomenon. Once we get beyond the rhetoric of participation, we discover that participation has very practical value for telecenters. It is generally accepted that conscientious attention to participation can yield benefits in such activities as assessment of information needs, planning, and operations. It comes in various forms including participants as telecenter users, participants as telecenter staff volunteers, and participants as telecenter advisory groups.

Participation of community members in telecenter activities is problematic unless they aware of what a telecenter is and understand its potential to improve their lives. Our research in India reveals that most villagers do not know what a computer or the Internet can do for them. Most important, they don’t know what a computer or the Internet is. From lessons learned in development communication projects, it is clear that people most in need of a specific information or communication service may not necessarily respond to simple service availability. Applying a “field of dreams approach” (“build it and they will come”) is naïve. And it can also be dangerous: Our focus group research in India reveals how village elders and leaders traditionally act as a main source of information and communication; if a telecenter ignores this tradition, it may bring power clashes and conflicts that hamper any ICT-enabled development initiative. This indicates the importance of raising awareness about the role of the telecenter while also exploring every opportunity to sensibly integrate the telecenter into the existing local communication and social structures.

Do community members have problems in accessing the center? We have to ask ourselves: Where is the telecenter located? It is clear that if the telecenter is away from the usual community meeting points, it might hinder participation. In South Africa, the telecenter in the township of Mamelodi, in Pretoria, was originally located in the local library. Later, they decided to move to an independent location. Esme Modisane, the telecenter manager, told us the reason why: “The library location was not appropriate because it appeared to the community as an official or government site. People were intimidated by the library and what it means; they think it is for ‘intellectual people.’ They do not feel it as their own community center if it is located within the library.”
One way of promoting community participation is through the constitution of telecenter management committees. This is often the case in rural Africa. However, Acacia researchers report that the responsibilities of management committee members are not always clear. Usually committee members are just in charge of mobilizing resources for telecenter sustainability, while most of the control of telecenter activities rests on executing and funding agencies (Etta and Parvyn-Wamahiu 2003). Telecenters are mostly owned by these agencies. According to the Acacia report, “ownership ought to confer control, and evidently the local communities were not in control” (Etta and Parvyn-Wamahiu 2003:37).

It is important to look at efforts to help women express and execute their demand for relevant information and communication resources. The cultural barriers that hinder women’s access to ICTs, and especially computers and the Internet, are more problematic and complex than simply making computers available in a library, telecenter, or other public facility. Those barriers include literacy, education, language, cost, locality, the perceived role of women, and technophobia. These are not inherent in the female condition as we can see in thousands of offices across the world situations in which men are often less competent in dealing with computer programs and putting the toner in the office copy machine. Nor are they barriers uniquely experienced by females. But they are barriers that exist widely and more severely for women, particularly in Africa, Asia, and Latin America. A recent study of telecenters in Africa focused especially on their approach to gender and found that a women’s perspective was largely lacking in their operations (Johnson 2003). Some of these obstacles are as resistant to change as female genital mutilation. They are deeply embedded in cultural practices, such as denying school opportunities for girls, which is where the computers are most likely to be and where the girls are most likely to learn to read (and thus also become familiar with computer programs). Ultimately, these factors all influence women’s participation in community telecenters.

In India there are thousands of poor women attached to self-help groups (SHGs) that are involved in a wide array of micro-economic enterprises. Many have been mobilized by NGOs that have a commitment or mandate to improve the welfare of their constituents. For example, in Gujarat, the Self-Employed Women’s Association (SEWA) has a membership of more than 200,000 women in some 790 villages. SEWA helps these members organize into groups or cooperatives so that they can cooperate to build stronger enterprises. The promotion of women’s SHGs is seen as an effective means to empower poor women and enable them to participate in and drive their own development. SHGs are now recognized as a key transmission belt for development efforts by the state and the civil society.
Development authorities prefer such village-level collectives as institutional mechanisms because they are gender sensitive, participatory, and cost-effective grassroots organizations.

Many of the women in these groups are not benefiting from ICTs because of some of the cultural barriers mentioned earlier. TANUVAS initiated a new project (with UNESCO support) in 2002 broadening low-income women’s access to ICTs by having representatives of their SHGs trained in ICT use — for example, in “information seeking” on the Web, using email, and working with self-learning and distance-learning multimedia packages. An initial step was to identify the women’s and the SHGs’ needs and build the appropriate (responsive) information and other services into the existing telecenter operations. For example, a group of SHG representatives might be trained to use telecenter ICTs, with the training material built around micro-enterprise management. The SHG representative might then perform any of four roles: (1) serve as an information source on micro-enterprises for her SHG, using telecenter resources; (2) be the group’s and individuals’ liaison with the telecenter for obtaining information on other issues and for communicating for them with relatives or other contacts; (3) facilitate distance- and self-learning programs for the SHG or its individual members; and (4) carry out informal ICT peer training within their groups so that SHG members might be motivated and empowered themselves to use the telecenter’s ICT services directly.

This scenario sees the representatives as linking SHGs and the information resources available through ICTs (which may include, besides computer-based technologies, a range of other media such as audio and video recordings) and opening paths to such newly emerging ventures as e-commerce and e-governance. While the setting for this initiative is South India, the concept can be applied in many other places.

From a management point-of-view, part of the challenge results from the ambiguity of the participation concept, and the need to translate it into concrete action terms. At a minimum this might involve answering the following questions:

1. Why is participation important to this project? Among the answers might be: because it conveys a sense of community ownership; it provides indigenous wisdom; it helps reflect community values and will help identify information needs; it provides important resources, such as volunteers or technical expertise, at a favorable cost; and some people need the telecenter’s services.

2. Who should participate? The answers may flow from the first question, but they should be made explicit; it is not enough to say “the community.” What groups of people should receive specific attention because of the possibility they will be marginalized — women, poor
people, minorities, the elderly? In Africa, the elderly are the least represented group among telecenter users.

3. *How* might people participate? The easy answer is to say that all can participate through their use of the ICT facilities and services. But there are other ways community members can participate telecenter: volunteers who oversee daily operations; tutors who give lessons; advisory groups for making policy for and managing the telecenter; people who provide links to other community organizations; and people who manage particular data bases and add value to information resources.

4. *How much* participation should be sought? Is maximum participation the goal, or should there be a target called *optimal* participation? Some would advocate a kind of participation where the community is fully responsible for the telecenter, from policies and management to raising money and caretaking. Local culture and people resources may dictate a more limited role for the general community. It is not hard to imagine situations where there can be too much participation.

5. *When* should participation take place? This depends on what kind of participation (the *how*) is being considered. It probably should begin no later than the time in the planning when participation itself is being considered. By making participation an issue in the planning process, it sets the climate for implementation in various aspects of telecenter life — and being specific about the timing avoids the “we know it’s important but haven’t got to that yet” excuse that we have heard in some telecenter operations.

6. *What incentives* can be offered? How people participate is related to what incentives should be offered for their participation. Benefits they receive from the telecenter’s services may satisfy most. Money and public recognition are important, but so too are special privileges regarding use of telecenter facilities or, for telecenter volunteers, discounts from shops in the community.

**Conclusion: University ICT-readiness**

From Mexico to India and across the continent of Africa, we have questioned why universities have not participated more fully in the ICT revolution. Why have they not taken up some of the challenges raised in the foregoing discussion? Why have they not contributed more research-based information to Web sites or involved students in telecenter activities as practical learning labs? We have some clues: equipment shortages; poor or missing digital skills; lack of incentives for faculty members to expand their academic territory; failure of universities to make outreach a priority. The
questions beg for systematic research and should be followed by concerted support from the international community, governments, and civil society to remove the obstacles.

Meanwhile, nostalgia and romance surely must keep alive the idea of drums as a grassroots communication medium in Africa. However, the drumming of fingers on a keyboard is the sound that is going to have the greatest impact on Asia’s and Africa’s participation in the twenty-first century information society. The first decade of this century will be a vital time for leaders in higher education, government, and such crucial service and economic sectors as agriculture, commerce, health, and the schools to treasure and preserve traditions, but also to study and apply the new information and communication technologies to their efforts to harness the communication revolution. A recent report of The Digital Bridge to Africa laid out the challenge that faces Africa but it could be equally applied to many developing nations in Asia and Latin America.

Given the speed with which Information and Communication Technologies are developing and the breadth of their socio-economic impact, it is imperative that Africa is not excluded from the technology revolution. The use of ICT has been integrated into virtually every aspect of commerce, education, governance and civic activity in developed countries and has become a critical factor in creating wealth worldwide. Yet, in Africa, ICT has barely taken a foothold. Computer illiteracy and the lack of access to ICT are widely recognized as an increasingly powerful obstacle to the economic, civic and political development of Africa.⁹

References

ONLINE

AKST, D.

BALLANTYNE, P.

BATCHelor, S.

BHARI, G. AND C. JÓKAY  

BUSYINTERNET ACCRA: ICT-ENABLED SERVICES CASE STUDIES SERIES  

CLARK, J.  

COCO, A. AND L. JOLLY  

COLLE, R. AND R. ROMAN  

DAGRON, A. GUMUCIO  
2001a “Prometheus Riding a Cadillac, Telecenters as the Promised Flame of Knowledge.” *The Journal of Development Communication* 12/2 (December).  

ETTA, F.E. AND S. PARYVN-WAMAHIU (EDS.)  
2003 *The experience with community telecenters.* Ottawa, Canada: International Development Research Centre. [Online: http://www.idrc.ca/acacia]  

ESMAN, M., R. COLLE, N. UPHOFF AND E. TAYLOR  

DA COSTA, P.  

DIGITAL OPPORTUNITIES FOR AFRICA: COMMUNITY MULTIMEDIA CENTRES  

GÁSPÁR, M.  

HARRIS, R.  

HEEKS, R.  

HENTON, A., M. FALCHEN AND A. ANYIMADU  

HUDSON, H.  
2001 The Acacia Programme: Developing evaluation and learning systems for

**INTERNATIONAL TELECOMMUNICATIONS UNION**

1998  

**JENSEN, M.**

1999  

**JOHNSON, K.**

2003  

**KAMEL, S.**

2000  
Egypt goes online. *Information Technology in Developing Countries* 10/32 (December).

**KENNY, C.**

2002  

**MANSELL, R. AND U. WEHN (EDS.)**

1998  

**MAYANJA, M.**

2002  
Online: [http://www.TechKnowLogia.com](http://www.TechKnowLogia.com)

**MCLELLAN, F.**

1998  
“‘Like Hunger, Like Thirst’: Patients, Journals and the Internet,” in *Lancet*, ol. 352.

**OYELARAN-OYEYINKA, B. AND C. ADEYA**

2004  

**PFIESTER, A., R. ROMAN AND R. COLLE**

2000  

**PROENZA, F.**

2001  
“Telecenter Sustainability: Myths and Opportunities.” *The Journal of Development Communication* 12/2 (December).

**ROMAN, R.**

2000  

**SABIEN, B.**

2001  
“Some principles of financial sustainability based on telecentres and a telecentre network in Australia.” *The Journal of Development Communication* 12/2 (December).

**STOVRING, J.**

2004  

**SHORT, G.**

2001  
SOMOS@TELECENTROS

VAN AUDENHOVE, L.

WARSCHAUER, M.

WORLD
Partnership in Higher Education in Africa: Communications Implications beyond the 2000s *

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ABSTRACT

To date, the possibilities for African countries to use information and communication technologies to respond to the challenges and the demand of higher education have been limited. An assessment and analysis of the development, state, and usage of telecommunications in Africa constitute in fact an indication of Africa’s overall marginalization in the global system. Communication technologies do not operate independently of the global economic system, which is characterized by structural inequality. Various initiatives devised by governments and development agencies to address the effective and productive integration of telecommunications technology into the educational system have been hindered by the contextual and structural impediments to harnessing and fulfilling their promise, especially for higher education. The paper explores innovative and multi-stakeholder partnership strategies to enhance the development and relevance of new telecommunications technologies to the African education system, especially higher education, for long-term and rooted socioeconomic development.

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Introduction

Africa’s dilemma in the area of higher education is best exemplified by the outstanding contradiction between obsolete, outdated programs and the demands for more democracy, more relevance, more equity, less dependence vis-à-vis the former colonial powers, U.S. hegemony, and so-called globalisation. Drastic changes in international relations have pushed Africa further to the margins of history and the global system. Bilateral and multilateral assistance have been drastically reduced, while the debt burden is worsened by unbearable interest rates compounded by endemic corruption and an endless cycle of crises. Value crises, deteriorating economies, cultural extroversion, political upheavals and social mayhem, global poverty, famine, and wars engineered by external forces that exploit, exacerbate, or create internal contradictions and that lead to massive loss of lives and displacements of entire communities are striking images of Africa’s plight on television screens throughout the world.

Several landmark events and conferences have addressed the compounding challenges of development, poverty, and education and the centrality of new information technology to development. Recently, the Dakar 2000 Conference, the World Education Forum, reiterated the vision of the World Declaration on Education for All (Jomtien 1990) and the commitment to harness the potentials of new information and communication technologies to achieve Education for All goals.

The paper analyses the overall context of telecommunications development in Africa, its relevance to African socioeconomic development, and the contextual and structural impediments to harnessing and fulfilling the promise of these new technologies, especially for higher education. It then provides a critical account of various initiatives devised by governments and development agencies to address the integration of telecommunications in the educational system, the various challenges and strategies to foster greater relevance of African development, and the challenges of globalisation. It finally assesses innovative strategies, including partnerships to usher Africa and the African higher-education system into the information and knowledge age.

The paper is structured in four parts. Part one discusses the context and state of telecommunications development and usage in Africa. It also provides an overview of the education system, the compounding challenges of access, quality, and relevance to development. Part two contextualizes the challenges of African higher education reforms. It analyses the lost opportunities of the African higher-education system to fully harness the potentials of new telecommunications to expand access to and improve the quality of higher education as well as the relevance of higher education to development. It further expounds on the potential
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The contribution of telecommunications to the survival of African higher education. Part three addresses education strategies and the promise of new telecommunications technology development in Africa. The paper concludes with an assessment of various scenarios and strategies for expanding the development of new communications technologies in Africa and extending their usage in the education system. It also explores multi-stakeholder partnership strategies to enhance the development and relevance of the new telecommunications technologies to the African education system and to socioeconomic development.

The State of Education and Telecommunications in Africa

In 1990, Africa’s share of world trade was about 4 percent, while its total population rose to 642 million in 1990 and to 739 million in 1995. In comparison to the physical size of the continent, the total population of Africa is relatively modest, as the whole continent is less populated than India or China. This is due in part to centuries of the drainage of its people in the transatlantic enslavement and to the massive devastation caused by brutal colonial policies. Now, however, Africa has now the highest rate of population growth in the world. It is estimated that in 1985, 51 percent of the total population of Africa lived in absolute poverty. The number is expected to rise to 265 million people — or some 43 percent of the population — by the year 2000 (UNESCO 1995). While poverty is worsening year after year, Africa has been a net exporter of capital to the international financial institutions and OECD countries (Rodney 1982; Amin 1993). Structural adjustment programs (SAPs) have significantly aggravated Africa’s debt crisis. They have contributed in no small way to perpetuating the primacy of old educational programs, some of which date back to the colonial period. Unemployment is prevalent, especially among out-of-school young people aged 15 to 24. In some cases, the rate of unemployment among educated persons (doctors, nutritionists, pharmacists, and the like) tends to be higher than among persons who have not been in school (UNESCO 1995).

Africa is the only region in the world that has been reducing its per capita expenditure on education: $26 in 1985 and $28 in 1990 and 1992 as opposed to $27 in 1985, $39 in 1990, and $49 in 1992 in developing countries as a block. Meanwhile, illiteracy rates for women are higher than 60 percent in many countries, which has adversely affected the ability of women to empower themselves as meaningful change agents and decision makers (UNESCO 1995). Women’s participation in higher education is lower still. In 1991, there were only 27 percent of women in Sub-Saharan Africa’s (SSA) global student population as opposed to 33 percent in Eastern Asia and 36 percent in Southern Asia. The same year,
there were 5,000 students per 100,000 people in North America, 2,500 students per 100,000 in most developing countries, and only 100 students per 100,000 people in Sub-Saharan, Africa (1995). Federico Mayor (1991), UNESCO’s former Director General, accurately summarized the situation of African universities when he highlighted the impacts of the imposed history on African higher educational institutions. This history has caused a lack of originality to the societies they are embedded in and an adverse effect on the relevance of their academic programs. The negative impacts pertain to: the compartmentalization of subjects; the enrollments balance between the sciences and the humanities; the orientation of research; the adoption of African languages as languages of instruction; and the chronic shortage of qualified personnel and human resources for development.

Powerful winds of change are blowing on the old continent (Democratic Republic of Congo, Liberia, Kenya, South Africa, Angola, and elsewhere). Conservative governments have been obliged by angry young students to engage, albeit timidly, into reforms, national consultations on education, and the building of stronger and more democratic partnerships among universities and communities, students, the private sector, and even non-governmental organizations (NGOs). Progress on that score has been woefully slow given Africa’s overwhelming educational needs. While Africa is dragging her feet towards genuine progress, industrialized nations and several Asian countries, at an increasingly greater speed, are developing scientific and technological advances as well as new educational services and research opportunities. OECD’s economies have reached a stage where brainpower and knowledge brokerage have become quintessential features for growth, new ideas, exploration of new frontiers, globalization, expansion, and hegemonies.

The past two decades have witnessed the rise of huge communications empires and the advent of new communications technologies with striking abilities and the potential to alter lifestyles, growth, information flow, and scientific and technological achievements. Africa has been marginalized in terms of access to telecommunications infrastructures and communications software (Sy 1984, 1992, 1996). In most countries, SAPs have forced African states to liberalize and privatize the telecommunications and information sectors (Noumba 1993). But the bottom line is, Africa’s telecommunications sector is the most underdeveloped in the world. Brussels has more telephone lines than all SSA countries less South Africa. There are four times more telephone sets in Japan than in the entire continent.

More important, Africa has no dedicated communications satellite capability and no access at all to the world’s geostationary resources (Sy 1996), which means that she has fewer chances to democratize access to cost-effective and timely communications services beyond the 2000s (Kone
and Sy 1993). PANAFTEL, RASCOM, AFROSAT and several other telecommunications ventures have proved to be ill-conceived, and in any case irrelevant, to national and international demands for higher levels of performance and excellence in the educational sector.

Africa’s involvement in and access to the Internet, an information superhighway used perhaps by more than 600 million people throughout the globe, is also of a marginal nature. It is estimated that only 6 million in Africa (International Telecommunication Union 2002) have access to the Internet, despite significant improvement in access to the Internet in recent years. Very few countries, with the exception of South Africa, Tunisia, Egypt, and Zimbabwe have full access to the Internet. Electronic mailing (e-mail) has been described as an embryonic sector (AAS/AAAS, 1992). Most existing networks are directly controlled and generated by external forces or international cooperation. It has been suggested that 90 percent of telephone traffic and 88 percent of telex traffic between African countries is routed via non-African countries. Furthermore, 67.6 percent of this traffic is handled via the former colonial powers as a result of poor or inadequate communications links between neighbouring countries (Adam and Hafkin 1992). Table 1 displays African Internet statistics in 2002.

In addition, transborder data flow in the African region is hampered by lack of skilled personnel to install and configure data communications equipment and software, insufficient mastery of computer-mediated communications software, unavailability of direct telephone lines for communications links, poor communications lines, management and administrative problems, unavailability of basic data communications supplies and equipment, and the like (Adam and Hafkin 1992). Additionally, systemic impediments such as the brain drain and low levels of education and literacy amongst the population have contributed to the scarcity of skills and expertise at all levels, from policy making down to the end-user (Jensen 2002). The general technological context has implications for African education, with particular significance for higher education with a focus on universities.

**African Universities and New Communications Technologies**

Between the 1960s and the mid-1970s, the newly built African states seemed to be attracted by North America’s and Europe’s discoveries in the area of educational technology. Several projects were launched in countries such as Côte d’Ivoire, Kenya, Egypt, Senegal, and a few others, which were seen as a showcase of Western capitalism. In Côte d’Ivoire, Kenya, and Senegal distance learning projects using television, radio broadcasting, or instructional satellite were launched under the auspices of the United Nations Transport and Communications Decade and North American
## Table 1

African Internet Statistics 2002

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universities (Stanford University, MIT, and others). Within a decade all these projects had failed, either because they were ill-conceived or as a result of foreign experts’ lack of understanding of African cultures and their interplay with several other factors, including inadequate training of educators at the primary-school level, poor infrastructure, embryonic telecommunications equipment, and the inadequacy of a program entirely based on foreign languages.

These failures have also been attributed to an identity crisis within Africa’s institutions of higher learning which prompted them to redefine the mission of African universities in several meetings, including a seminar on the Development of Higher Education in Africa held in Accra (November 25-29, 1991) under the auspices of UNESCO. Participants suggested that the African university’s principal mission was “the generation, dissemination, advancement and application of knowledge in the service of society at the local, regional and international levels.” Participants also recommended the setting up of units to develop partnerships with industry, the computerization and development of library facilities, and the optimization of information technologies in university management (UNESCO 1991).
Several programs were sponsored by the Association of African Universities (AAU) and the Association for the Development of Education in Africa (ADEA, formerly Donors to African Education-DAE) to study and recommend solutions to the educational crisis. For instance, a set of eight studies (B. Abegaz, T.A. Aina, N.T. Assié-Lumumba, R. Gaidzanwa, G.T.G. Mohamedbhai, K. Mwiria, J. Negrao, and G. Sawadogo, 1994) was commissioned by DAE and published by AAU, serving as background papers for the Joint Colloquium of AAU and DAE on “The African University: In the 1990s and Beyond” which was held on January 16-20, 1995 at the National University of Lesotho. A summary of the eight were published (Assié-Lumumba 1996) in the *South African Journal of Higher Education*. In their book entitled *The African Experience with Higher Education* that was commissioned and published by AAU, Ajayi et al. (1996) contextualized and articulated African higher education in the global system and history and attempted to provide a better understanding in order to propose relevant solutions to recent higher-education programs and projects.

In other words, Africa seemed determined to re-invent an educational system almost entirely left in foreign hands or inspired by outdated colonial doctrines. What was at stake here was the recognition that governments should create an enabling environment to train specialized educators in sufficient numbers. It was also governments’ responsibility to clarify the mission of their respective universities so that they become centers of excellence sensitive to the pulses of their respective nations and communities.

The definition of the African university’s mission suggested above by African educational authorities had strong communications components for generating, disseminating, advancing, and applying knowledge to social progress, economic empowerment, and cultural enlightenment. It was basically an act of communication and thus had a commitment to the ideals of telecommunications development. The extension of such functions at local, regional, and international levels required powerful and reliable telecommunications systems nationally and throughout the entire continent, including distant and isolated settings.

In 1992, delegates from “francophone” Africa met in Dakar under the auspices of UNESCO around the same topic as in Accra. There was an outstanding debate on the introduction of new communications technologies in Africa’s educational systems. Several constraints were identified in the following areas: data processing, handling, storage, dissemination and utilization; poor conditions for the adequate training of manpower to manage such information technology systems; and the lack of multidisciplinary and integrated high-level teams to design and manage curricula, training
packages and educational tools in a regional perspective and in view of minimizing related costs (UNESCO 1992).

More recent subsequent meetings, such as the UNESCO 1998 conference’s framework for priority action, urged a move from the traditional to the virtual era to integrate and develop new information technologies as pathway for education quality and enhanced relevance to development. Furthermore, the World Education Forum (the Dakar 2000 Conference) and the 46th International Conference on Education (ICE) in Geneva in 2001 called for concerted and committed actions and policies to integrate technologies into the learning process and instruction and to usher societies into the digital realm for greater socioeconomic benefits and development. Currently, several initiatives are under way to improve the information technologies and communications outreach and spread on the continent.

The conference of Rectors, Vice Chancellors, and Presidents (CORE-VIP) of the Association of African Universities (AAU) that met in Mauritius in March 2003 underscores the role of African higher-education institutions in the building of the African Union and in meeting the key challenges of poverty reduction, education response to the HIV/AIDS pandemic, and conflict resolution in Africa, which constitute continuing challenges to African higher-education institutions’ relevance and quality. It also recognizes in its resolution the role of education as an agent of change, premised on broader inclusion and the adaptation of new information communication technologies.

Additionally, the New Partnership for African Development (NEPAD) reaffirmed the pledge to bridge the “digital divide” and fulfill the Millennium Development Goal. NEPAD plans to strengthen the university system across Africa; to establish and strengthen institutes of technology; to establish regional distance-learning and health-education programs to improve the situation in the health and education sectors; and to develop and produce a pool of ICT-proficient youth and students from which Africa can draw trainees, ICT engineers, programmers, and software developers and which will spur knowledge accumulation through the development of local-content software based on Africa’s cultural legacy (NEPAD 2003). NEPAD reiterates in its action plan the quintessential contributions of science and technology as catalysts for national and human development and emphasizes the role of information and communications technologies in re-engineering the African education sector and in ushering Africa into the knowledge-based sector with high-level manpower capable of spurring its socioeconomic growth and development (NEPAD 2003). Despite these lofty goals, NEPAD’s ICT plan has been described as an unrealistic and outward-oriented initiative (Sy 2002). Further, it may aggravate Africa’s dependence on external capital, particularly on transnational corporations.
Finally NEPAD’s vertical approach to technology transfer makes it particularly unattractive to most African civil-society organizations, intellectuals, and ICT specialists who are opposed to the “Build Operate Transfer” mechanism ingrained in its weak if not idealistic business plan (Sy 2002).

Before and since the meetings mentioned above there have been dozens of meetings, seminars, workshops, teleconferences, exhibits, and the like, mostly organized by bilateral, multilateral, and private organizations with the ultimate objective of opening Africa to the promise of a global telecommunications market in full expansion. New utopias and crusades in the name of the “information society,” the “global village,” Internet, and cyber-communications were presented as magical formulas to cure all of society’s ills through dissemination packages and software. Over the past decade, extremely powerful financial forces and huge communications empires have generated a global euphoria on the demise of old ideologies and the rise of cyber-innovations.

The ubiquity of the “information age” is pervasive and at the same time misleading. Despite Porat’s findings ascertaining that 53 percent of the United States economy is generated by an information sector and knowledge industry in full swing (Porat 1978), the question of power relationships and the struggle between social classes for the control of communications processes and their packaging and re-packaging as commodities are entirely ignored by dominant speeches on development and growth through cyberspace (Mattelart 1979; Mouline 1996). African communications scholars have not fully and critically explored the implications of this debate on Africa’s educational system either. In fact, most communications specialists are conservative in their approaches and tend mostly to ruminate on ideas produced in Europe or North America. Over the past two decades, African communicationists have been unable to significantly challenge dominant paradigms on education through communications and more important have been unable to produce new and relevant ideas in the fundamental debate on how to develop Africa while protecting her interests and sovereignty.

With the ongoing process of telecommunications globalization and the increasing weight of North American and European telecommunications carriers (Sy 1996), the very concept of democracy is threatened. Access to Internet services, distance-learning opportunities, computerized library packages, or strategic databases will not be within reach for isolated and poor African nations, which in turn will be unable to integrate their economies and brains into a powerful and respected community of states. The promises of the information age are all about money and financial leveraging. Nothing will be free. Services will be available for all, but based on money and power, not philanthropy. When a service
is offered for free during a brief period of time it will be a marketing incentive or a mechanism to create within a recipient country some kind of addiction to turnkey communications ventures. This process is firmly rooted in Africa’s neurotic attraction to new communications technologies. A few African “technocrats,” paid by international financial institutions, are busy selling the concept of a virtual university as a panacea to Africa’s severe educational crisis. If African decision-makers fall in this new trap, it will cause untold damage to generations of Africans unable to benefit from the existence of modern universities of the kind actually enjoyed by industrialized countries.

What we are witnessing through this anecdotal debate on the relevance of virtual African universities is a transfer to African soil of a larger debate initiated by industrialized nations. The central question giving sleepless nights to political and military strategists is how this twenty-first-century world will cope with a fundamental break in humankind’s history, namely our perception of and relationship with time. In a few decades we were able to pass through the walls of sound and heat. The wall of sound was crossed by supersonic and hypersonic aviation. Rockets able to place human beings and spacecraft in orbit and make them land on the moon and soon on Mars transcended the heat wall. The third wall, the wall of light cannot be crossed. You travel through it. We are at a juncture in history where this new time wall (light) and the speed required to “travel through it” has become humankind’s principal contradiction. Reaching the light wall (starting with optical fibers) is a major historical event, which bewilders history (Virilio 1996). This major fact also distorts and confounds the relationships between beings and matter. The battle between virtual and real time entails a rewriting of geo-politics, geo-strategy, geo-finance, and geo-democracy. Cyberspace is a new form of perspective, a perspective of real-virtual time with a digital element allowing one to remotely touch, see, hear, and perhaps feel. Information superhighways are just the tip of the iceberg. They are a means, a channel through which a unipolar world dominated by a triumphant United States of America wants to reach global hegemony. What is called “globalisation” is a flashing mirror hiding the phenomenon of virtualisation. For what is effectively globalized through simultaneity is time, a unique time, a world time within which global and local time or glocal time are reachable (Virilio 1996), thereby becoming an instant conduit for manipulation and control (Beniger 1996) by the forces dominating the world (namely political and financial forces, not what conventional economists misleading refer to as “market forces”).

Scholars holding that Africa is evolving outside of history because of her scientific and technological backwardness ignore recent progress and the potential to reverse the trend of marginalization and minimize the
digital divide. The twenty-first century will evolve through “glocal” (global and local) time. Africa and the world are already immersed in this new wave of technological imperialism which enables Western strategists to simultaneously and instantly control natural resources through remote sensing, to control capital through cyber financial empires, and control labor through a digital hypermarket of virtual, temporary jobs and golden collars (intelligent computers) fully aware of the “glocal” character of markets, industries, and democracies.

Another indication of the fact that Africa’s communications systems are dominated by global networks is the noise on good governance and democratization introduced into all our communications channels by multilateral and bilateral organizations as well as international financial institutions (World Bank and International Monetary Fund). Bill Clinton’s concern in his new “Priority Africa Initiatives” was not democratic development. His goal was to conquer the African market (as is already the case in South Africa, Nigeria, Democratic Republic of Congo, Angola, and Egypt, the giants of Africa). Two weeks after he announced to the world his intentions in Africa, Bill Gates secretly visited South Africa and Nigeria in an attempt to strike a deal with far-reaching consequences for these two countries and Africa as a whole.

The global information infrastructure placed on the international agenda by Albert Gore, then Vice-President of the United States was concerned with selling technology and harmonizing laws for countries (markets) utilizing electronic superhighways. This objective is contradicted by less liberal French laws applied by “francophone” Africans on property rights (Queau 1996). The implications of all these laws and the most recent General Agreement on Trade and Tariffs (GATT) followed by the Treaty on Intellectual Property Rights (TRIPS) within the framework of the World Trade Organization are a global empowerment of the richest countries over the poorest countries and within countries of the powerful on the powerless. Schools, universities, libraries, and non-profit servers and nodes throughout the world are bound to sell information and documentation to end-users, when instead universal access to the world’s scientific and cultural heritage should be guaranteed to all. In the twenty-first century African schools, universities, and museums as we know them today will not be able to afford the payment of services which would make them universally competitive. In addition, the future of online services in the banking, cultural, and technological industries will be determined by who will control what share of cyber economics (Netscape Communications, First Data, and Microsoft with Bill Gates and his “Bill dollars” which perhaps would have replaced the dollar bills).
Africa should be aware of the fact that digital technology is not a central factor for entrenching democracy, the free flow of information, knowledge dissemination, and social relationships freed from inequality or oppression. This is an illusion, a utopia cynically packaged by Western strategists for public relations purposes. The outstanding reality of today’s world is that 20 percent of the world population controls 80 percent of global resources while 80 percent of the world population control less than 20 percent of the world’s resources.

In a country such as Senegal, one of the poorest countries in the world, more than 60 percent of the people live below the poverty line with an annual income of less than 100 US dollars and more than a quarter of the total population (10 million people) cluster in a capital city where value systems are collapsing at a speed directly proportional to the economic crisis. Fortune magazine’s 100 richest persons in the world control more assets than the combined fortune of one and a half billion habitants in the world. These shocking inequalities have tripled over the past 30 years according to a recent survey carried out by the World Bank and the United Nations. In 1960, 20 percent of humankind’s richest social segments were 30 times richer than 20 percent of the poorest in the world. In the 1990s, the former were 60 times richer than the latter (Galeano 1996).

Structural adjustment programs (SAPs) and poverty reduction and growth facilities (PRGFs) aggravate Africa’s state of chronic poverty and are in many ways contradict the basic ideals of liberalism. All industrialized countries, and particularly the United States, have strongly and on a long-term basis subsidized their educational sectors and schools systems (free books in public schools; creation of subsidized state universities, for example). On the contrary, in Africa PRGFs bear a significant responsibility for aggravating Africa’s educational crisis by forcing states to cut educational expenses, especially at the higher-education level, and to privatize universities and an increasing percentage of public education utilities.

Full access to Internet services, e-mail, and digital communications is still embryonic (ITU 2003). A great number of projects have been launched over the years to salvage Africa from oblivion through virtual communications. The World Bank launched the Info Dev Program in the 1990s followed by the “development gateway” in 2000 with the aim of “creating an enabling environment for markets in which the private sector has the primary responsibility in the areas of capital investment and provision of services.” Universities are targeted in this scenario, but only in so far as they would commercialize online library services to an already impoverished student and faculty population. (In Nigeria and Kenya, for instance, faculty members earn and average amount of $US 150 to 200 per month!)
The African Virtual University (AVU), launched in 1997, has been a significant attempt, at the continental level, to harness the potentials of modern information and communications technologies (ICTs) to expand access to educational resources in SSA. AVU is also a World Bank-led effort to provide university degree programs and meet the high yet unmet demand for education in technology, science, medical studies, and electronic library services through an international network and partnership for sharing digital satellite- and computer-based academic resources. Saint (1999) expounds on the various innovative initiatives undertaken and in the pipeline in SSA to meet the challenges of tertiary education, access to education, declining funding, and resources for education.

In francophone Africa, France and its Western French-speaking allies decided to launch a network offering access to the Internet, e-mail, and Syfed-Refer databases on a moderate and promotional-fee basis. Similarly, Darkwa and Mazibuko (2000) provide a critical overview of the state of distance education in Africa, identifying the institutions offering distance education and their delivery systems. They discuss the challenges of distance education in Africa and the opportunity of distance education in the educational reforms in Africa.

In 1996, in South Africa, then President Nelson Mandela and the G7 along with other Southern partners convened a meeting on The Information Society and Development. Later, on the occasion of the Okinawa G8 2000 summit, “Building a Global Development Partnership,” a strong pledge was made to bridge the digital divide and to integrate new ICTs and network readiness in developing counties with potential application in the education, business, and health sectors. At present, the G8 countries are still observing a cautious stand on financial issues and have not provided any particular timetable or intention to provide Africa with even a minute fraction of the massive level of investment needed to place the continent in the global information infrastructure.

The Leland Initiative spearheaded by USAID extended to 21 countries in Africa. It aimed at privatizing and liberalizing telecommunications services as well as ensuring Internet expansion in Africa. It failed to reach targeted objects. In the mean time, the European Union failed to fully operationalize a mega electronic network in view of fostering international trade (Renaud 1996; Noumba et al. 1993). The International Development Research Center’s Acacia Initiative, despite all its promises, failed to deliver any tangible results other than a few public-relations actions with little if any consequence for Africa’s abysmal digital record.

A common denominator for all these programs is their central drive for the widespread utilization of new communications technologies, including universities, as an ideal means for Africa’s integration into a global market
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This strategic goal may prove to be wrong soon for two reasons. First, unless social revolutions with far-reaching consequences take place in Africa, the small number of end-users will not grow significantly any time soon as a result of widespread and growing poverty, poor telecommunications infrastructure, and high illiteracy rates coupled with extremely small numbers of graduates and computer literate people. Therefore, marginalisation risks will be real between the 2000s and 2020s, which would represent a setback for OECD’s trade expansion aims. Second, telecommunications deregulation was never the condition for digital communications growth and expansion anywhere in the world and this will certainly not happen in Africa. In the United States, the number of computers connected to the Internet was stimulated by state subsidization of telecommunications infrastructures, including in institutions of higher learning and public school systems. Since the advent of structural adjustment programs or PRGFs and PRSPs, African countries have been forced to cut the insignificant level of subsidies for the sector, including in schools and universities. In contrast, the Internet was heavily subsidized between 1986, when it was created as a United States Defense Department project, and 1995 when the federal government decided to gradually phase out its support and encourage privatization. In addition, the Internet benefited from huge grants provided by a good number of research and development ventures mostly located in universities (Renaud 1996).

Access to knowledge beyond the 2000s will become a major source of tension between North and South. As soon as the unfair World Trade Organization’s Intellectual Property Rights mechanisms and treaties are set in motion and enforced globally, access to knowledge and information will be directly proportionate to information costs and related economies of scale. Information pricing will widen the gap between information-hungry nations and information-affluent societies.

Within Africa itself, such costs will be unbearable for students and faculty members and will aggravate social, economic, and educational imbalances. They will further widen the gap between the haves and the have-nots. If present educational and telecommunications trends remain constant or do not change drastically, it is likely that African universities will be unable to secure access to the Internet and global electronic services. At the time they will be able to secure adequate budgets for accessing such services, the Internet may already belong to News Corporation, Time Warner, or Bill Gates’s Microsoft empire, with contents and tariffs of less relevance to academia and university communities.

Access to Internet services by farmers in distant locations or the informal sector evolving at the peripheries of poorly managed cities will become
even more elusive as a medium-term goal. The African poor as well as all the other wretched of the world will certainly have the greatest difficulties accessing the Internet since most of the Southern countries will remain in zones with weak telecommunications backbones and bandwidth. The African women, children, and populations at risk and the millions of refugees abandoned on the battlefields of civil and economic confrontations for the control of natural resources and political power will remain in the prehistory of communications, unable to enter in the digital age.

This reality should prompt African scholars and decision makers in the educational sector to stop fantasizing about the Internet, so-called information superhighways, and all the other myths of the Information Age and the Planetary Village. The harsh reality is that Africa does not and will have neither a communications industry and nor satellite communications capacity in the foreseeable future. Telephone sets, computers, even radio sets, microwave technology, optical fibres, switching equipment, earth-stations technology, satellite dishes, connectors, transponder hardware, submarine cables, and the like are all imported at extremely prohibitive costs.

African universities, which are still extremely underdeveloped or in many cases remnants of nineteenth-century technology introduced by colonialism, should become central niches for building and reconceptualising in cooperation with national and foreign private-sector communications industries that. Investing in this sector is key to Africa’s national-security interests. Perhaps the very future of African states as we know them today is at stake. They could be recolonized — and the process has already started — through telecommunications technology entirely in the service of the corporate world and through the powerful federations of the twenty-first century (Europe and its Eastern European allies, Brazil, the United States and its NAFTA allies, a self-reliant China, a stabilized India, a new Russia with a reorganized economy and society and its independent allies of the former Soviet empire). For the time being Africa can still afford to ignore such threats, but for how long? Universities are literally transformed into battlefields among rigid Ministries of Higher Learning, angry students, and frustrated faculty members who have evolved for the most part in ivory towers isolated from industry, the private sector, and grassroots communities. These stakeholders can no longer ignore each other. The time has come to actively promote the conditions for their positive interfacing. What is at stake in this particular instance is not so much digitalization or technocratic approaches and policies (they are always within reach for any dependable and visionary government) as a full integration of the value systems and immense heritage of universities, communities, students, educators, and the private and public sectors.
Relevant Education Strategies

UNESCO’s countless meetings and recommendations are usually not challenging or potentially significant mechanisms for social change. The reason is simple: States are making final decisions and they are the outposts and the gatekeepers of the Organization’s decision-making mechanisms. The Director General’s Program of Action for the Development of Higher Education in Africa (1990-1995; UNESCO 1992) performed a good diagnosis of Africa’s educational systems, but its recommendations were timid and lacked vision. Now that the period covered by this program has ended, progress is nowhere in sight except in the case of a few isolated and insignificant “success stories.” The African Regional Consultation Preparatory to the World Conference on Higher Education (Dakar, Senegal, April 1-4, 1997) was even more disappointing. The Second Conference of Ministers of Higher Learning and Research of West African States, which took place in Ouagadougou (April 9-12, 1996), presented to the UNESCO Consultation in Dakar several recommendations. The recommendations and subsequent framework for action have been further developed and reaffirmed in recent conferences such as the Dakar Conference on Education for All in 2000, NEPAD Plan of action, the 46th International Conference on Education (ICE) in Geneva 2001, and the Dakar 2000 Conference on Education.

Most of these initiatives suggested ambivalent and perhaps unrealistic educational objectives and visions. At the national level, the following recommendations were suggested: reform of the baccalaureate exams; diversification of areas of specialization in institutions of higher learning; adoption of global scientific and technological research policies; training of teachers and researchers; creation of linkages between universities and research centers; dissemination of scientific and technological information; fostering linkages between research centers; and creation of a data bank on Africa’s scientific and technological potentialities. Let us have a look at teach of these options.

Reform of the the baccalaureate exam

This exam is actually an extremely elitist examination and a way to eliminate high-school students whose enrollment is beyond the African universities’ infrastructures and financial capabilities. Africa’s primary and secondary school systems should be entirely reformed and rebuilt almost from scratch to break away from the old colonial educational doctrines. All the national examinations at each gate of the primary and secondary school systems should be suppressed while ensuring quality of education of those in the system. Their only function is to decrease the number of university and high-school graduates because unemployment rates over the
past three decades have consistently reached extremely high levels (between 20 and 70 percent). The baccalaureate examination should either be partially suppressed or thoroughly reformed so that it becomes a formality as in the U.S. (with an option for the more challenging and competitive International Baccalaureate).

Africa’s secondary schools’ lack of computer programs is an aggravating factor in the endless cycle of crises in these schools and students’ frustration over the lack of reliable digital information sources and educational tools available over the Internet. Computer penetration is truly marginal in secondary schools and even universities. This single factor explains without the shadow of a doubt African students’ low level of academic performance and expertise.

**Diversified areas of specialization in institutions of higher learning**

A positive interface between universities and development processes does not really depend on the diversification of areas of specialization. It is more a question of relevance of specialization offered by universities. Quality rather than quantity should be the focus. Further, useless and costly duplications of specialization should be stopped. There should be a systematic and permanent consultation process between African institutions of higher learning so that they can harmonize their programs, iron out difficulties among francophone, arabophone, lusophone, and anglophone educational systems, and create pools of specialization per region or subregion. Access to digital courses and the utilization of computer-assisted workshops and lab demonstrations should be systematically enhanced in view of closing the gap between African and North American, Japanese, or European youth. South-South cooperation (for instance between India and Africa) may certainly yield important results and have a positive impact on Africa’s school systems.

**Adoption of global S&T research policies**

The question of what should be the best research policies for Africa has been debated at length during a countless number of meetings. The problem is to convince governments of the relevance of S&T research to development processes and therefore of the urgent need to rank research in Africa’s top priority lists. Financial scarcity at the national level pleads for the creation of regional centers of S&T specialising in priority areas of the future not of the past (for example, research on monoculture crops undertaken by centers created by France in its former colonies). S&T research should aim at ensuring Africa’s development through democracy, growth, equity, regional integration, and self-reliance. For instance, all African countries should create together a regional version of the Bellagio
Foundation in Italy, attracting the best minds in Africa and the world and empowering researchers to outline Africa’s present and future with more confidence and through their own lenses.

**Training of teachers and researchers**

There are too many unrelated training programs and there are too few specific training sessions for researchers. This problem should be solved through the creation of two African centers for research and training, one covering Northern, Western, and Central Africa and one covering Eastern and Southern Africa. Such centers would be subregional in scope and controlled by a Board of Governors comprised of academics from both subregions with an observer status for concerned states and donors. The mission of such regional centers, entirely managed by African themselves, would be to provide administrative assistance, institutional support, and harmonization to African research institutions and stakeholders and knowledge brokering to the benefit of governmental, nongovernmental, and civil-society organizations and the private sector. The financial sustainability of this joint undertaking would be ensured through grants (from states, private-sector entities, and bilateral as well as multilateral donors), income-generating activities (commercializing consultancy services from universities and members of the two research centers; organizing intellectual property rights in cooperation with existing regional bodies on a fee basis; offering library online services to research institutions, private sector, government agencies on a competitive fee basis; and the like) and the creation by universities and private sector of research laboratories selling services in the medical, agricultural, electrical engineering, and communications fields. Training mechanisms, tools, and processes would be designed, operationalized, and evaluated outside the realm of states and development assistance agencies lacking flexibility.

**Linkages between universities and research centers**

This particular aim is a status quo proposal. Linkages between these two entities should be done on a subregional basis and according to the guidelines suggested in the paragraph above. We already know that Africa has played a pioneering role in the invention of the Internet, particularly through Philip Emeagwali, the brilliant Nigerian scholar who built one of the fastest-ever computers in the world. Africa can harness the serious potential represented by the emergence of ICT expertise at a speed that forces young and promising scholars to sell their skills to other countries or international private sector.
Dissemination of S&T information (STI)

National and regional STI dissemination mechanisms may be created with a twofold focus: promoting research results and encouraging their utilization by end-users. The precondition for the existence of such mechanisms is the existence of reliable, integrated, and competitive telecommunications infrastructures both nationally and regionally. Existing trends in national telecommunications-sector privatisation under SAPs will hurt Africa’s national interests and hamper future regional integration objectives as private foreign investors’ motivation for profit and growth do not necessarily take into account imperatives such as moderate telecommunications tariffs and services to universities and research centers.

Another precondition for the launching of relevant STI mechanisms would be to ensure access to international databases in a coordinated fashion and to create an enabling environment for the acquisition, handling, dissemination, storage, and preservation of strategic and primary data.

Fostering linkages among research centers

If research centers remain unchanged in their respective missions and their lack of relevance to end-users and to democratic development, trying to link them up would be next to impossible and useless in any case. Beyond the creation of appropriate mechanisms linking research centers around realistic objectives, it is essential to develop Africa’s S&T publications and book industry. This particular goal is almost completely ignored by governments and donor agencies. Initiatives such as the African Book Fairs, the African Books Collective, and joint efforts to develop health-sciences libraries and training packages for African librarians should be encouraged. But most of these projects are donor-driven when Africans should support them themselves (philanthropists, private sector, banks, public sector, private investors). Success in this area will depend on the relevance of African universities to all these stakeholders.

A data bank on Africa’s S&T potentialities

This represents a minimal program. It is indeed not enough to present policy makers and investors with a public-relations tool on Africa’s S&T potentialities. The questions at stake here are much larger and should entail transborder data flows between Africa and the rest of the world, assisting universities in indigenizing both content and hardware, rebuilding existing university libraries, and creating efficient libraries with a subregional scope in each of the five African subregions (North, West, Center, South, and East).
The acute challenges facing African countries to overcome the digital divide and harness the potentials for socioeconomic development call upon a multistakeholder partnership and synergistic actions.

Creating Partnerships: Which Way to Go?

Joseph Ki-Zerbo rightly pointed out that education is the “software in the central computer that programs the future of societies” (Ki-Zerbo 1989). In today’s world education cannot take place outside the realm of the information sector. In past decades there has taken place a fundamental shift in humankind’s pursuit of excellence through education: Knowledge has become the engine and the fuel of the most powerful economies and societies. Knowledge conditions the control of power but only in so far as relevant and value-added information fuels the process of knowledge acquisition. But the acquisition of knowledge has a cost precisely because it has become the new resource (brainpower) for economic performance, productivity, growth, and, more important, transparency and accountability. An editorialist (African Business June, 1997) contended that knowledge is quintessential to add value to ourselves, and that educated people neither let despots rule over them nor the tyranny of poverty to crush them.

Mahathir Mohammed, Prime Minister of Malaysia was quoted as saying: “It can be no accident that there is today no wealthy developed country that is information-poor, and no information-rich country that is poor and underdeveloped” (Talero and Gaudette 1995). It has also been suggested that “those nations that establish [their information] infrastructure and develop a broad range of application first will have a tremendous competitive advantage over those that lag behind. This advantage will accrue not only to the telecommunications industry, but also to such industries as manufacturing, banking and entertainment and to such activities as education and healthcare” (Allaire 1994).

All around the world, and particularly in the OECD countries, education correlates with employment, income, and opportunity (Talero and Gaudette 1995). In Africa it is quite the contrary. In several African countries doctors, pharmacists, teachers, journalists, computers analysts and engineers, pilots, electrical engineers, mathematicians, and communications specialists are finding it extremely difficult to make a living or even find a job. The brain-drain process paralysing Africa and many underdeveloped countries is almost encouraged by irresponsible governments preferring to run the risk of losing national graduates rather than having to tolerate their grievances.

No one would dispute the fact that government action is necessary because it is the manager of taxpayer’s contributions; nor can aid agencies take in their hands alone the destiny of an entire nation. In any case,
governments are compelled to establish broad partnerships with the private sector, grassroots communities, nongovernmental organizations, civil-society organizations, international organizations, and development agencies.

A few years ago the United Nations created a program entirely focused on harnessing information for Africa’s development. Talero and Gaudette suggested the following guidelines for government action in the information sector (Talero and Gaudette 1995).

Government intervention to harness information for development is necessary on several fronts: as policy-makers, as major users of information technology, and as compensating influence against market failures. Also, government must supervise and coordinate education, the key to human economic development.

As policy-makers, government set many rules of the marketplace and must do so fairly. The role of government includes the policies, laws, regulations, and institutions needed for the information economy.

As user of information products, governments can capture large benefits from information technology and can influence the supply as a major consumer. Government work is by its very nature highly information-intensive in terms of data collection, archiving, dissemination, and processing. Government procurement will, for better or worse, affect standards and offerings of the information technology market.

In each of the areas where government intervention is necessary there is a strong role for universities and research institutions. African local administrations have been unable to hire and keep on a long-term basis the best graduates whose studies were costly in all respects to taxpayers and governments considering their shrinking national budgets. Researchers and universities can play a pivotal role and be empowered to assist government in designing, implementing, and evaluating policies, laws, regulations, and institutions, programs without which information cannot be harnessed for development. African governments spend several billion U.S. dollars per year on various consultancy fees. The bulk of these expenditures are paid to foreign “experts,” mostly imposed by bilateral and multilateral aid agencies.

The privatization of telecommunications carriers in the African context is a serious mistake and a major threat to Africa’s national security interests. Africa’s telecommunications sector is increasingly under siege through the combined effects of adjustment policies and OECD countries pressuring to the limit African governments to sell their telecommunications industries to multinational corporations. These private interests have aggressively positioned themselves in a monopoly situation through local markets and within highly strategic sectors, including water, electricity, telecommunications, mineral extraction, and agro-industry. This process may lead to
Africa’s economic, financial, and political recolonization. The World Bank and the IMF are also to blame for this sad state of affairs. They have convinced the African governments that the OECD countries have themselves liberalized and privatized their telecommunications industries, which is true. What they are not saying is that the United States telecommunications sector is essentially controlled by internal capital except in a few instances where other OECD telecommunications carriers have been able to capture a small slice of the huge U.S. knowledge industry. In Europe, the situation is different, since the giant U.S. companies have been able right after the war to capture and control a sizeable segment of national telecommunications marketplaces. Despite their community of interest in several strategic sectors, including in the defense industry, Europe is gradually trying to regain its independence.

The biggest threat with regard to the privatization of Africa’s telecommunications sector will come through the contradiction between foreign private carriers and universities, research institutions, and researchers in search for special telecommunications tariffs. Primary and secondary schools would also appropriately want to benefit from such reduced tariffs. Who will subsidize such needs in countries where poverty has destabilized the entire society, including civil servants whose income has been significantly slashed by SAPs, inflation rates, unemployment, devaluation, and extremely costly imported goods? That is why, when the international financial institutions advise African governments to “push the education agenda” and “jump start the private sector,” they must be asked how this kind of major contradiction will be resolved.

It has become fashionable to compare the performance of Asian and African economies and to come to the conclusion that Asia is doing better than Africa because it has understood the value of investing in education and the information sector at the same time. The World Bank suggests that “education is the main theme of the story of the differences in growth between Sub-Saharan African and the East Asia high performer” (The World Bank 1993). Again, the Bank is comparing apples and oranges. Eastern Asia and Black Africa do not share the same history (including slavery, colonialism, and strong influence of former colonial powers in ongoing policies). Sub-Saharan Africa never benefited in the past decades from the same level of investment opportunities as Eastern Asia. In addition, there have been huge transfers of technology, including the installation of computer and information technology industries.

India is sometimes compared to Sub-Saharan Africa to explain why it is “taking off” in “high-tech” information related sectors while Africans are still at the margins of history. Africa’s first graduate in this sector came a decade after independence in the 1960s, whereas England’s colonial
educational policy allowed native Indians to benefit from access to universal education before World War II. When the Democratic Republic of Congo acquired its independence in 1960, the country had less than ten university graduates! So, what are we comparing here?

A UNESCO survey (1996) indicated the following features for universities’ information systems:

1. Existing computerized management systems in Africa’s universities do not adequately meet present needs; most universities need new systems.

2. Overall there is no dominant computer hardware and software supplier. Current systems are not changed as a result of financial scarcity and a significant “brain-drain” hemorrhage that prevents universities from employing qualified computer specialists.

3. There are four possible approaches for the development of improved management and administrative system: (a) developing all the systems in house but incorporating packages if relevant; (b) using externally produced packages but with minor modifications; (c) collaboration between universities in either (a) or (b); and (d) the exchange of software among universities.
The survey indicated further that option (a) may be unrealistic given the amount of time required to complete the process while option (b) may prove to be costly (the cost of purchased commercial packages can be significant, between US$ 500,000 and US$1,000,000). Options (c) and (d) were recommended while option (b) might be considered worthy of attention only if universities can undertake that jointly.

Partnership is therefore needed among information hardware and software suppliers, universities, governments, and the private sector. It should be the responsibility of government to create an enabling environment (see Chart on STI Dissemination, Utilization and Planning Strategy, Figure 5) so that access to reliable and cost-effective telecommunications services, intelligent computers, and robots is possible for researchers, students, and administrators. Governments should also be held accountable for empowering researchers through motivational mechanisms showing that brainpower is really promoted and not destroyed. STI dissemination and the promotion of its utilization will require adequate communications channels such as dedicated satellite communications capability, instructional radio and television broadcasting, full access to the Internet, and teleconferencing and distance-learning services. It is unrealistic to expect that the African state be able to secure funds and know how to perform all these tasks and set in motion nationally and regionally integrated information systems. The only way out of this nightmare is to develop joint projects and tackle the issues both nationally and regionally.
Private-sector-university partnerships should be based on a basic and simple rule: they should develop linkages that are mutually interesting and beneficial to both of them (see Figure on University/Industry Partnership — Figure 6). Both university and industry should agree on what they would offer in the linkage and on what is highly relevant to their respective missions and objectives (Kinyanjui 1996).

Students should have access to computer facilities, which is not the case most of the time. It is not uncommon to see graduate students in francophone Africa with no exposure at all to personal computer technology and software until the end of their tenure. This rule also applies to faculty members. This trend must be completely reversed immediately. Given the declining costs of computers it should be possible for any
university to prioritize on its budget the acquisition of PCs and the construction of a computer center of moderate size available to all enrolled university students. Such centers may be managed with the assistance of senior computer science students, with faculty and staff providing technical and educational backup. These centers could sell consultancy services that would make them more sustainable. They could be involved in the University outreach programs such as HIV/AIDS education campaigns, adult literacy programs, and coaching primary and secondary schools students in sports. In other words, African universities’ output should be students with a competitive level of expertise, ready to function in the job marketplace and with a degree of utility to the university itself and to the community. Such a student should be a money maker (with access to assistantships for the best ones) and a provider of services to the community and the private sector.
Figure 5. STI Dissemination, Utilization, and Planning Strategy.

The states, as suggested earlier, should provide the entire nation with an enabling environment making telecommunications services available to the university, the private sector, and communities. Indeed distance-learning programs cannot function with unreliable telecommunications systems and lack of access to databanks, online library services, and cost-effective transponder facilities.

NGOs and CSOs need information-exchange mechanisms able to link them with other partners pursuing the same goals within and outside...
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Figure 6. Mutually Beneficial Relationships.

Africa. They should also have access to efficient and relevant extension services with adequate STI dissemination and utilization tools and mechanisms.

The private sector needs well-trained students from the university with the ability to handle specialized software, intelligent computers, and robots. In addition, the private sector’s expectations from industry or the private sector may focus on the following types of links that could:
1. contract research of support research through grants;
2. sponsor a university chair alone or jointly;
3. support graduate students to do industry related research;
4. hire summer students;
5. provide support for postdoctoral studies
6. support university professors to do research on company premises;
7. allow company scientists to hold part-time university appointments;
8. create management structures with explicit responsibility for university links;
9. assign senior executives responsible for specific university links;
10. participate in university-based centers of excellence;
11. give input into degree-granting programs;
12. allow company employees to pursue advanced research degrees; and
13. have a scientific advisory board (Potworowski 1991).

Concluding remarks: Challenges Ahead

Both the private sector and the university are undergoing fundamental changes in terms of their respective information technology needs. From the 1960s to the 1980s, data processing was the priority (Figure 1). Starting in the 1980s, a new wave of technological innovations generalized networking technologies. This was an indication of the universal shift from an industrial economy to an information economy. Africa may not have undergone the same waves of technological changes, but she is following the same paths towards the utilization of innovative IT systems compatible with what the rest of the world is using (see the Figure on Shifts in IT Technology — Figure 2).

Partnerships between higher learning institutions and other partners (NGOs, CSOs, public sector, private sector, communities and students) have strong communications implications (see the Figure on Partnership in Higher Education: Communications Implications — Figure 3). The ideal situation for a university is represented in the Figure on IT Types and Formats — Figure 4. But in real life there are no ideal situations. Partnerships should be revisited and reinvented on a permanent basis. It is in the nature of education to constantly question its objectives and the output of its programs. Partnerships contracted by higher-learning institutions follow the same pattern of being endlessly and critically appraised. Educational programs should be revisited every five years and evaluated, redesigned, retested, and critically appraised by students, faculty, the private sector, and administrators. What is relevant in a given year may become obsolete a year after given the extraordinary rapidity of technological changes, especially in the telecommunications and multimedia sectors. The African
University is, so to speak, condemned to constantly appraise itself or else run the risk of rapidly sinking into the abyss of prehistory.

The social turmoil we are witnessing in our campuses is an expression of this constant struggle between old and new, relevance and irrelevance, status quo and evolution. African university administrators may have become too old perhaps to understand the times they are living in and how to lead their student populations and faculty colleagues. Given their training and scientific records a sizeable number of vice-chancellors are not fit for the job. Most of them are selected by heads of states on the basis of political preference, instead of academic merit and ability to lead their institutions and people in the complex world of the future.

This exploratory exercise will not end with a conclusion. Most African universities still belong to the past. They are a vivid legacy of colonial adventurism and African subservience despite their modern look. They may have computer labs, teach research methodologies, and manipulate artificial intelligence. But they still function, behave, and think in an artificial manner, outside the realm of history and the future. Africa is yearning for new and bold partnerships that would reconcile her with her past, present, and future destiny with ICTs as major tools for social change, knowledge brokerage, and equalization. Drastic political changes are necessary for such strategic goals to become fully realized. A new wave of enlightened and patriotic leadership is a must. How long will it take to fulfill this basic premise? The answer to this question lies in the direction the African social movement may take in the years ahead.

References

AAS/AAAS


ALTBACH, PHILIP G.

AMONOO NEIZER, E.H.

ATHOARENA, DAVID AND ANDRÉ DELLUC

BAMBA, ZOUMANA
1999 “Using ICT’s in University Libraries to Improve the Quality of Training

BANYA, K.  

BENIGER, JAMES R.  

BURKE, THOMAS J.M. AND LEHMAN MAXWELL  

CHALE, EGINO M. AND PIERRE MICHAUD  

CLARK, N.  

DARKWA, OSEI AND FIKILE MAZIBUKO  

HIGGS, P.  

HIGGS, P. ET AL.  

INTERNATIONAL TELECOMMUNICATION UNION (ITU)  


JAMES, TINA  
2003 Information and Communication Technologies for Development in Africa. Dakar: Codesria/IDRC.

JENSEN, M.  

KINJANJUI, WILLIMA G.  

KI-ZERBO, JOSEPH  
1989 “Societies in Crisis and Education: Prospects.” UNESCO: Regional Office for Education in Africa.
KOTZE, Y. AND C. DREYER

LYNCH, DUDLEY AND KORDIS PAUL

MASON, DAVID

MATTELART AND SIEGELAUB SETH

MAYOR, FEDÉRICO

MOULINE, ABDELAZIZ

MUSISI, NAKANYIKE

NEW PARTNERSHIP FOR AFRICAN DEVELOPMENT (NEPAD)

NOUMBA-UM, PAUL ET AL.

OKUNI, A.

POTWOROWSKI, ANDRÉ J.

QUEAU, PHILIPPE

RATHGEBER, EVA M. AND OFWONA ADERA, EDITH (EDS.)
2000 *Gender and Information Revolution in Africa*. Ottawa, ON, Canada: International Development Research Center, IDRC.

SAINT, WILLIAM

SANDOVAL, VICTOR

STROMQUIST, NELLY P.
SY, JACQUES HABIB

SY, JACQUES HABIB AND HUGHES KONE
1995  La communication pour le développement durable en Afrique. Abidjan: PUCI.
2002  Pauvreté et hegemonismes: les societes civiles africaines face aux ajustements structurels de type nouveau. Dakar: AT/OXFAM AMERICA.

TALERO, EDUARDO AND GAUDETTE, PHILIP

THE WORLD BANK

UNESCO

UNICEF AND UNESCO

WOHEREM, EVANS E.
1993  Information Technology in Africa; Challenges and Opportunities. Maastricht: RILKS.
Implementing The Online Learning Community in Africa: A Unisa Case Study

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Abstract
Recent global occurrences are significantly affecting institutions of higher education, particularly on the continent of Africa. In addition, the process of the democratization of education has inevitably led to the explosive demands by the citizens of the different African countries for open admission to institutions of higher education.

Against this background this article discusses recent developments at the University of South Africa (UNISA) which have been concerned with the adoption of online distance and open learning approaches in order to achieve greater accessibility and the massification of educational products. This is especially pertinent during this era of technology-driven educational innovation, so as to make university programmes not only accessible but also relevant to the needs and aspirations of African communities.

Traditionally, higher education in most parts of Africa is considered an elitist commodity, hence the concept of “ivory towerism.” With current global developments, where the majority of people now demand the right to acquire knowledge, higher education is gradually transforming into a mass system in terms of student diversity, variety of courses offered, management styles adopted for institutional governance, and ideological orientation including core values and foci.
Today, universities the world over face the difficult challenges of meeting the need for productive employment, including the adoption of information and communication technologies (ICT) for offering their present face-to-face programmes, while at the same time operating flexible and lifelong learning programmes which encourage global competitiveness, networking, and partnership. Dikshit et al. (2002) are of the opinion that educational leaders — managers, teachers and policy makers — have to respond to the provision of individualized mass education with a greater sense of quality assurance and at a lower financial cost. In order to meet this challenge, it has become necessary for universities to restructure, re-engineer, and reform their practices. Hence the shift towards the mindset that advocates flexible and lifelong learning which in turn necessitates the repositioning of institutions of higher education in order to effect the change from selective learning to lifelong learning, from what we offer to what you need and to simultaneously develop the skills of learning how to learn in their clients.

Peters (2000, p. 28) explains that the universities of today should, of necessity, embark on drastic changes directed at refocusing their initiatives and commitments in many areas and by so doing, reposition themselves for meeting the expectations of future changes and challenges. He remarks that:

- all universities, in several aspects, need to be open universities and practice lifelong learning;
- university teachers, besides their commitment to research and extension, need to refocus their commitment to the improvement of teaching as a primary activity;
- provision should be made to increase access of the majority to education and at lower cost. Education and training should be made accessible to diverse, heterogeneous, and hitherto disadvantaged sections of society. Several universities have made successful social intervention in this regard, but much more can and should still be done; and
- there is a paradigm shift from teaching to learning, such that learning is therefore geared towards establishing a linkage with the world of work in order to prepare learners for a worthy living in an information society.

In order to achieve this vision, a curriculum review and new programme initiatives should be embarked upon. Education should be a right and not a privilege in all the countries of the world, developed or developing, and such education and training should be geared toward individual needs. Knapper (1988, p. 128) argues that open, flexible, and lifelong learning opportunities not only provide people with access to education and
training, but that such learning also should be need-based, self-directed, and unlimited in scope for the individuals to be well equipped in meeting the demands of a complex, dynamic, contemporary society.

One of the educational strategies that can guarantee these advantages is distance education (DE). Distance education practice is currently in vogue among many African universities as a process of delivering educational programmes because it is becoming extremely difficult for universities to accommodate the explosive demand for full-time studies on campus. Faith (1988, p. 128) stresses that DE is a global and rapidly growing phenomenon which offers formal learning opportunities informally, especially to those people who would otherwise not have had access to schooling. She concluded that teachers and students are separated by physical distance and time but use a variety of communication channels, which range from basic materials and the postal services to highly sophisticated information and communication technologies to facilitate teaching and learning. In this regard, this article provides a case study of online learning in the context of one of Africa’s mega-universities, the University of South Africa (UNISA).

The University of South Africa and re-evaluating distance education

In 1946, a Director of External Studies was appointed at the University of South Africa, and this step established UNISA’s distance education delivery. The situation in 2003 is that UNISA has 130,000 registered learners. It delivers 4000 different courses through 60 teaching departments, and learners can take examinations at 500 centres worldwide. The institution can be regarded as a mega-university in terms of the definitions of Daniel (1986, p. 16 & 1996, p. 30) and Peters (1998, p. 157), because its active student enrolment in degree courses exceeds 100,000.

UNISA has a well-oiled production system in place, which is well-staffed; in fact, the number of administrative and technical support staff is 2063 compared to 1244 teaching and research staff. Educators are the authors who write study materials. From the authors, materials go to an editorial department, then to a print production department whence they are dispatched to learners.

The delivery mode is mainly print-based with very little communication between educators and learners. In some instances audiocassettes and video materials are added to the course packages. A few departments still hold discussion classes in major cities; there is a tutor system in place but it is understaffed; and a few departments have contact via videoconferencing with groups of learners at four learning centres.

The University of South Africa (UNISA) is, therefore, credited with having established correspondence studies as a regular mode of academic
teaching. But this analysis has also placed UNISA in the position of a single-mode correspondence distance education provider. Peters (1998, p. 162) compares the institution to a nineteenth-century correspondence college. Although his assessment takes cognisance of the fact that the institution attempted to upgrade its practice and delivery in 1995, he criticises the low value placed on structured DE courses, the lack of support for students, and the dominance of texts as compared to other available media and technologies.

When the criticisms of Peters regarding support and text content were considered, it was evident that the use of new Internet communication technologies could provide some solutions to the problem. It was, therefore, important to identify a form of online provision that could address the problems of the lack of ongoing learner support and static print-based delivery of learning materials.

It has been, and still is, our contention that the creation of an online learning community can improve the learning experiences of learners at UNISA. The collaborative nature of such a community can provide opportunities for interaction between students and educators that the dominant print-based product cannot. Unfortunately, the very efficient but compartmentalised industrial print-based production context of UNISA at present cannot easily accommodate all the new facilitation responsibilities that a successful online learning community would demand. A new change-oriented approach will have to be adopted.

This article discusses the implementation of an online learning community in the print-based delivery environment of UNISA, in an attempt to address problems and bring about technological innovation.

**The technological imperative**

Institutions of higher education, whether they engage in direct contact teaching or distance education, face the pressures and challenges of integrating technology into their teaching. As part of a distance education initiative, communication technologies can be used to market educational products, support communication and other forms of structured activity, or deliver courses completely online. Higher education institutions are also facing strong competition from the new virtual and corporate universities. The virtual university is mimicking the traditional university while the corporate university has taken the opportunity to provide just-in-time training to staff of multinationals (Heydenrych 2000). Following the technology imperative, institutions may engage technologies for the sake of technology or in order to provide learners with needed technological skills for the workplace. But when the pedagogical imperative is given priority, the quality of teaching and learning stands to be enhanced.
UNISA, therefore, is faced with the challenge of changing its production culture in order to accommodate new products and services. The lifelong learning needs of working adults are changing rapidly, and universities will have to react to these needs (Bates 2000, p. 7). It is possible that institutions of higher education could transform into competitive education businesses using new communication technologies without changing obsolete teaching practices. Such a scenario would demand maximum economic efficiency and competitiveness, but these qualities are often in competition with quality teaching and learning. An institution may therefore have a comfortable niche market while persisting with outdated practices, systems, and organisation. The change in teaching and support demanded by environments like the online learning community, however, challenges face-to-face and correspondence DE practice. Institutions of higher learning cannot remain undisturbed under such pressure, neither can instructional designers (educational technologists) who are meant to be developers of innovative learning experiences.

The challenge: technology and distance and open learning

Institutions (whether direct teaching or correspondence) have to position themselves timeously to accommodate the information technology revolution as a positive factor in learning. The pressure to implement technologies is high, but universities are slow to develop policies regarding proper support for Internet courses (Schnorr 1999, p 115). Graves, Henshaw, Oberlin, and Parker (1997, p. 448) are of the opinion that “institutions that continue to resist these structural changes will not realize significant benefits from the new technologies.”

UNISA is not unique in facing the challenge of having to change its correspondence-based practice and production when confronted with the advance of new technologies. Daniel (1996, p. 40) sees problematic teaching and support as a strong characteristic of mega-universities. The production and delivery cultures of mega-universities are unique and they may experience problems when they implement new technologies to improve teaching and learning. However, a strong teaching culture and a commitment to learner support would probably assist with the transition.

A discussion of situations at international mega universities is important to illustrate the value of innovative teaching and extensive learner support. In 1996, the annual purchase of printing paper at the Indira Gandhi Open University (IGNOU) in India was 1100 tons (Daniel 1996, p. 40), a significant indication of its print-based correspondence tradition. While there is a desire to use other media as modes of delivery, external constraints limit their options. At that time, however, IGNOU had 229 study centres and was experimenting with establishing other communication technologies to
enhance teaching with the help of 12 800 part-time and support staff while remaining competitive.

The Open University of the United Kingdom has over 300 learning centres supported by 7 500 tutors (Booyse et al. 1995, p. 11). These statistics also provide evidence of a strong commitment to student support and communication.

In contrast, after experiencing rapid growth in student numbers during the 1970s and 1980s, UNISA did not properly establish a quality teaching and support system as it entered the reality of mass distance education. The current print-based delivery was founded on the tradition of transmitting knowledge to learners who have to accept it uncritically. There is a lack of learner-learner and teacher-learner interaction in most learning packages. This is similar to the situation in India in the 1980s, when correspondence courses in general were of poor quality (Daniel 1996, p. 172) and were accompanied by minimal student support. The quality of UNISA’s correspondence learning in terms of learner support was questioned in the 1990s by authors like Tait (1994, p. 28) and Peters (1998, p. 161).

Daniel (1996, p. 174) reports that the striking feature of IGNOU’s planning documents is “their focus on making the current system work better rather than looking for solutions in new technology.” In contrast the Centre National de l’Enseignement à Distance (CNED) focused on employing “glamourous” technologies, such as satellite video transmissions, to enrich and not to fundamentally change its traditional correspondence teaching methods (Daniel 1996, p. 171).

Bates (1991, p. 12) is of the opinion that it would be easier to create new institutions of higher education based on online technologies than to convert old industrial-model institutions doing mostly conservative correspondence teaching. Such an opinion suggests a difficult road for institutions like UNISA. Daniel (1996, p. 25) concurs and goes on to say that when new knowledge media is targeted, new institutional types have to be established as part of a comprehensive re-engineering of the provision of learning. At UNISA, however, an attempt was made to marry the independence of learners and the production of a “perfect package” of materials, with as little tutor intervention as possible. The result was the development of instructional industrialism (Evans and Nation 1989b, p. 243) and economies of scale. Alienated staff, who seem to have gradually lost affinity with the experience of the learner, are delivering the product. In an attempt to extend the delivery mode beyond print, the possibility presently exists that the characteristics of UNISA’s current print-based delivery may be replicated online. This would be the advent of “online instructional industrialism.” A transformation is therefore demanded in
teaching and support as part of learning provision. In effect this would change the roles of mega-universities. This changed role should mean that universities should not only be “purveyors of information but also purveyors of humanity, preparing learners to communicate and to think productively in society” (Pepichello and Tice 2000, p. 55). In the online learning community the role of the instructor changes to that of facilitator. He or she no longer merely provides information (Naidu and Oliver 1999, p. 333; Cohen 1999, p. 221; Brandon & Hollingshead 1999, p. 121). In this learning process faculty members become partners with learners in an environment that is cooperative, collaborative, and supportive. A flexible and empowering learning environment is supported. The shift is, therefore, from teaching to facilitating learning and as such it demands a commitment to engage with learners.

Within the UNISA production environment, instructional designers (educational technologists) assist with the packaging of texts. In a sense they represent the requirements of the system and might not necessarily advocate change towards good teaching and learning practice during the materials development process. There is a restrictive production and delivery process that does not allow for innovation in DE nor opportunity for the instructional designer to challenge the system sufficiently towards change. This production culture has given rise to two situations:

- Quality distance education is equated with a text that is produced according to strictly enforced specifications, and “human services” are neglected.
- A production environment calling itself a distance education institution develops around print production with a limited role assigned to the instructional designer.

Initially in this environment the course design team functioned only partially (limited labour responsibility was assigned), and unfortunately the role of the instructional designer evolved into that of an agent who had to uphold the specifications of a text-based learning experience. The result is a very strong production culture that will not necessarily be successfully changed by decree. In this context implementation of Internet communication technologies in order to deliver distance education will prove a challenge.

The results of this challenge in the UNISA context may force stakeholders to realise that their standard “systematised” or industrialised practice may not be a justified “economical comfort zone.” Bates (1991 & 2000) and Daniel (1996) are adamant that institutions cannot remain undisturbed regarding organisation and practice when implementing the new learning technologies. Implementing online learning provision without significant disturbance of practice and systems may mean that the mission was misun-
derstood, or that mere “technological window dressing” was accomplished. Stakeholders will have to be challenged to explore innovative teaching and learning via the online learning community. A change in teaching culture will have to be initiated. Lecturers who have proven their competency in the online learning community will probably develop a different perspective of their own correspondence teaching, and it is expected that they will also become agents of change.

A learning experience, in the form of an online learning community, based upon engagement and support, would demand a different development approach and a subsequent change in teaching practice. The researcher reporting on this project is also an instructional designer who has had to take up a different role in the UNISA context in order to initiate a process of change. It is a mission supported by Bates (2000, p. xiii):

> Academic staff need to control or tame the virtual campus by ensuring that technology is used as a tool or as a means to further academic ends. This control will not be achieved, however, without aggressive intervention on the part of academic leaders and faculty members.

**South Africa, global change, and learning needs**

South Africa, like other countries, has been forced to contend with unprecedented change driven by the globalisation of business and education, the impact of information technologies, and a communication revolution deriving from pressures to use new information communication technologies. At the same time there has been a rise of regionalism with a strong need to increase human capacity in the Southern African Development Community (SADEC). Such change demands different skills from workers and citizens. Global change and the new emerging learning needs are important considerations when attempting to implement a new delivery mode in a context based on hitherto unexplored technological frontiers.

**Global change and higher education**

The change mentioned above has an impact on the activities of higher education institutions in that they will have to reconsider their services and delivery mechanisms. With the competition from private institutions, there is no longer a certainty of statutory guarantee for higher education institutions. Kovel-Jarboe (1996) and Inglis, Ling and Joosten (1999, p. 13) have provided some of the factors contributing to rapid change:

- globalisation, which is leading to increased emphasis on the internationalisation of curricula;
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- changing demographics deriving from longer lives, longer work days, larger urban areas, more diverse populations, and more frequent moves;
- restructuring of employment, as future workers may have to contend with six or seven different sequential careers;
- accelerating technological change;
- increasing demands for accountability at higher education institutions;
- increasing sophistication of higher education consumers;
- increasing interests for partnerships between business and education;
- continuing growth of information and knowledge resources;
- new ideas about teaching and learning;
- aging of university faculties;
- growing interest in educational institutions as communities; and
- restructuring and new patterns of decision-making in higher education.

Learner needs have changed and certain skills and competencies will have to be part of the offerings. New skills for an age of regionalism, globalisation and continuing change are listed by Bates (2000, p. 11), Rowley, Lujan and Dolence (1998, pp. 10-11) and Greening (1998, p. 24) when they warn that higher education providers need to adapt in order to provide learners, or future workers, with:
- good communication skills;
- independent and lifelong learning;
- social and teamwork skills;
- critical thinking skills;
- knowledge navigation skills;
- the ability to accommodate change;
- a responsible attitude;
- problem-solving skills;
- intercultural communication skills;
- ethical judgement;
- collaboration skills; and
- technology skills.

Whichever mode of education is adopted will demand a system able to facilitate knowledge construction and refinement of these needed skills in an environment that resembles the global village. The popular question is: Are universities keeping pace with the public demand for well-prepared, well-educated citizens responsive to today’s needs? According to Siktberg and Dillard (1999, p. 128) in order to prepare graduates to meet society’s needs, the focus in education must become learner-centred. It is no longer acceptable to broadcast knowledge to learners as passive recipients.
Distance education and new technologies

Investigating the nature of distance education is important when the implementation of new technologies is explored because its definition may guide the consideration of suitable technological options to attain the desired learning experience. The definers of DE point towards a few key characteristics:

- separation of teacher and learners;
- occasional face-to-face contact;
- two-way communication;
- a host organisation;
- the use of technology and media; and

Although the authors group these characteristics in different ways, elements of all of the above are found in their definitions of DE. Two important elements can be deduced: two-way communication facilitated by technology and a host organisation with industrialisation of delivery (the latter can become problematic in the form of instructional industrialism). Inglis, Ling and Joosten (1999, p. 32) point towards agreement amongst distance educators that the most important component of teaching is the opportunities that are provided for learners to interact. They identify three dimensions:

- interaction supporting personal construction of knowledge;
- knowledge construction demanding a social context provided by interaction; and
- interaction challenging learners’ understandings and enabling them to make conceptual shifts.

Lally and Barrett (1999, p. 148) use Moore’s explanation of distance learning. For him “distance” refers to more than a geographic separation of learners and teachers; it is also about the difference in understandings and perceptions that he calls “transactional distance.” Lessening this distance, which is much about acknowledging “that learners have different needs, learning styles and motivations based on their cultural, economic and educational backgrounds” (Wah 2000, p. 126) is of paramount importance in effective distance learning. For such effective learning to take place proper preparation and planning have to occur. Moore categorises these planned learning experiences as dialogue and structure. Dialogue describes the interaction between the teacher and the learner, while structure refers to elements in the course design that determine how effectively an education programme can accommodate a learner’s individual needs. These two sets of variables determine the extent of “distance” in an educational programme.
With sufficient communication and support, learners should be able to construct knowledge in a horizontal structure with facilitators and fellow learners, as opposed to the lecture where the transmission approach is top-down. The DE learning experience has to be an open one and the “learning package” should not be closed thus preventing dialogue from fulfilling a constructive role (Evans and Nation 1989a, p. 248; 1989b, p. 37; Simpson 2000, p. 8). Other terms describe such an open approach as “mediated learning” (Laurillard 1993, p. 29), and “guided didactic conversation” (Holmberg 1995, p. 47). The important realisation is that the learning experience is one of facilitated constructivist learning through dialogue, or an open-ended, nondogmatic, and emancipatory discourse (Harris 2000, p. 39).

**Online learning and committing to a different learning philosophy**

In order to avoid a “tired and stale pedagogy,” it was regarded as essential that the online learning community be founded upon a commitment to a sound learning philosophy in order to exploit the full potential of Internet communication technologies and to facilitate delivery in a meaningful way. A social constructivist learning philosophy was adopted. This required the collaborative construction of knowledge in a community setting with the teacher enabling communication and interaction while facilitating and stimulating the sharing and testing of ideas and constructs. The learning scenario is also in line with the requirement that distance education should be about a mediated conversation between all stakeholders in the learning experience. But such a learning scenario was found to be significantly challenging to the current print-based learning experience. This implies a challenge to teaching and support staff, and it calls into question the efficiency and legitimacy of current instructional design staff and their procedures.

In discussing the essence of computer-mediated distance learning, Paloff and Pratt (1999, p. 163) quote Don MacIntyre of the Fielding Institute, who makes a very powerful statement in this regard:

> In talking about distance learning, I keep stressing that our focus is on the learning process not the technology. Many institutions are jumping on the technology bandwagon so as to become a part of the information super-highway. In doing so their goal is to use the technology to transmit a tired and stale pedagogy over fiber optic cable — as if fiber optic cable will somehow transform the pedagogy.

The assumption that one can dump materials (texts) online, leave them to ferment and mature, and trust the technology itself to assure that learners will learn is not acceptable.
Rather than critically assessing the points of view of theorists on the nature of online learning and technologies, this chapter will explore the suitability of Internet communication technologies, more specifically the online learning community (OLC), as the foundations for a delivery mode that would address today’s learning needs from a DE perspective. In order to avoid a “tired and stale pedagogy,” it is regarded as essential that the OLC be founded upon a commitment to a sound learning philosophy in order to exploit the full potential of Internet communication technologies, and to meaningfully facilitate delivery. Research will be cited regarding the success with which the OLC was employed by teaching practitioners, as well as the warnings for a particular and unique institution like UNISA.

Knowledge production and the new learning experience

The university can no longer claim to be the ultimate source of knowledge and continue with a content-transmission approach. The learner should no longer receive information, but instead construct knowledge (Inglis, Ling and Hoosten 1999, p. 27). A multitude of information sources are available, and it is a tutor’s responsibility to facilitate the construction of knowledge relevant to learners’ professional needs and contexts.

The constructivist learning experience is one “in which the learner is building an internal representation of knowledge, a personal interpretation of experience. This representation is constantly open to change, its structure and linkages forming the foundation to which other knowledge structures are appended...” (Bednar et al. 1992, p. 21). Through this approach learners are constructing their own knowledge by reflective assimilation.

Savery and Duffy (1995, pp. 36-38) derive eight instructional principles from constructivism:

- Anchor all learning activities to a larger task or problem, moving beyond the simple “It is assigned” rationale for assignments.
- Support the learner in developing ownership of the overall problem or task, rather than simply focusing on passing the test.
- Design authentic learning tasks, ones which reflect the kinds of cognitive challenges faced in similar real-world situations.
- Design the task and learning environment that learners must function in at the end of the learning. This is consistent with cognitive apprenticeship theory.
- Give learners ownership of the process used to develop a solution.
- Challenge learners’ thinking, not dictate how they should think.
- Design the learning environment to support and challenge the learner’s thinking.
- Encourage the testing of ideas against alternative views and alternative contexts. Since knowledge is socially negotiated, depth of under-
standing can only be accomplished in a social environment where individual views are measured against the ideas of others. This can be effectively done in the context of collaborative learning groups or learning communities.

- Provide opportunities for learners to reflect on both content and the learning process.

Institutions that consider going online will have to consider the new learner needs and the very demanding learning environment a priority. Mass-correspondence DE institutions like the University of South Africa will have to carefully consider its reasons and commitments for establishing online learning as a second delivery mode, especially in terms of current practice and systems.

**Distance education and supporting a different learning philosophy**

Correspondence DE is known for its characteristics where learners can control, self-pace or self-direct their studies (Richey 1986, pp. 52-53). Learners are independent of classrooms and other lecturing infrastructures and contexts. It provides independence of time and place, and this contributes to the potential of self-pacing. Learners are supported by guidance from within the materials that is the result of the course development team trying to anticipate learner needs during the initial design and evaluation.

**Knowledge production and active engagement**

Correspondence DE is often blamed for employing an objectivist epistemology and a behaviourist learning philosophy. This criticism sees learners as passive recipients waiting to be filled with expert content that is decided upon by specialists in isolation. Learners are put through rituals in this process without being able to supply input. Their own experiences and perspectives are not integrated into the process of generating knowledge. Evans and Nation (1989b, pp. 237-263) see the learner as alienated in this correspondence, or independent study, approach. Viewing learners as empty vessels and passive recipients of information tends to encourage inactivity rather than thinking (El and Amerlia 1998, p. 695). Passive learning limits learners and causes them to mirror the presented knowledge rather than allowing them to grow their own experience (Moller 1998, p. 115). Greening (1998, p. 24) and Herrneckar (1999, p. 7) reject this “traditional” development of the knowledge base of learners. They suggest that the pace inhibits reflection and experimentation, and the mechanisms of simplification tend to deny the development of associations between concepts, leaving the resulting knowledge as static. Learners’ application of knowledge should be given preference, and meaningful thinking should arise out of a reflective thought process that actively engages the learner. From
such a constructivist point of departure the learner should be involved in continual introspection as multiple perspectives challenge his or her views. According to Greening (1998, p. 24) constructivism wants learning to occur as an act of cognitive restructuring rather than transmission — the shift in emphasis to learner-centredness is evident.

**Social constructivism and learning**

But those who advocate the use of Internet technologies to enhance learning go a step further. For them continual introspection and critical reflection towards knowledge building is not necessarily sufficient for ideal learning. Naidu and Oliver (1999, p. 330) want learners to add to their learning by sharing real life examples with one another. Their authentic experience becomes part of the course. Through collaboration they can articulate their thoughts in public, and such a process of externalisation enables further reflection that in turn leads to deeper understanding. Collaboration and discussion can therefore assist a deeper and more active engagement in the learning process. Dubravka and Webb (2000, pp. 73-85) use the critical theory of Jurgen Habermas in proposing a communicative model of collaborative learning. Habermas argues for an ideal speech situation that is translated into an ideal learning situation. The ideal learning situation should generate communicative practice free from any kind of distortion, or any form of coercion and ideology; it only includes the force of the better argument. Meaningful communication in a collaborative setting should lead to effective learning.

Social constructivism, as a learning philosophy, evolved from the work of Piaget and Vygotsky, who were of the opinion that learning occurs more effectively through interpersonal interactions in a cooperative rather than a competitive context. In the Vygotskian view of cognitive development an individual’s cognitive structures develop through a process of mediation and modelling of the cognitive structures of other people demonstrated during communication. However, the cognitive structures of other people must be within the individual’s zone of proximal development for modelling to take place (Brandon and Hollingshead 1999, p. 111). Therefore, during interaction, learning occurs when learners are exposed to a slightly higher level of difficulty than what they have already achieved cognitively.

The key feature that distinguishes collaborative learning from individual and competitive learning is its social nature. In a group setting learners share their ideas and solve problems cooperatively. Their learning takes place in a particular social milieu, and apart from developing their intellectual skills, involves developing their social skills and establishing interrelationships.
The potential of Internet communication technologies

Guglielmo (1998, p. 36) identifies online education as a third generation of distance education when it complies with the above by employing Internet/CMC technologies. First and second generation DE systems, which were respectively about correspondence (texts) and multimedia (such as computer-assisted learning), centered largely on the production of learning material and its delivery to the learning community. Two-way communication with the learners, and between learners, is kept to a minimum. It is significant that these types of education do not treat learning as a social process in which priority is given to teacher-learner and learner-learner interaction. This principle has been the foundation for the development of third-generation distance education systems in the form of the online learning community. The aim is that learners should interact with one another within a learning community where isolation is overcome and relationships are formed in order to foster collective development.

A new literacy

The effective use of new information communication technologies will influence the stakeholders in the learning experience. Whereas the teacher traditionally supplied information, he or she now has to step back, as databases connected to the World Wide Web can do this more effectively. With powerful search technologies, the learner is in control of retrieving his or her own information whenever he needs it. As teachers move into a more horizontal structure in the learning experience, learners have to take more responsibility for their learning. El and Amerlia (1998, p. 694) and Anstendig et al. (1998, p. 78) stress that learners need to acquire a new literacy that is about being able to communicate in a post-typographic world. Being literate now involves integrating reading and writing, navigating through information sources, discriminating between important and unimportant information, responding to e-mail, and engaging in electronic chat sessions.

Empowering the learner

Teachers are challenged to duplicate with CMC the conditions that encourage productive interchanges, such as those that occur when people meet in person (Warren & Rada 1998, p. 71). But in spite of this challenge by technological advances, much of current Internet delivery is about “throwing learners at the Internet” and calling it sound pedagogy (Greening 1998, p. 30). The mere uploading of content on the Internet does not mean learning has taken place (Rosenlund et al. 1999, p. 195). Learners have to be engaged, and the technology is not necessarily always employed to effectively empower the learner to develop his or
her capacity in a group setting (Herrneckar 1999, p. 6). CMC can, therefore, reduce transactional distance by facilitating academic and social dialogue between learners and facilitators. Authors like Herrneckar (1999, p. 8) argue for an enhanced constructivist environment with the help of CMC. For them effective DE is established through instructional and technological collaboration, not through an obsession with technology. Web-based instruction provides for a nonlinear construction of educational comprehension and significance; but then instructional design and delivery must create the opportunity for interactivity and improvised change. With all the potential that Internet technologies have, they can therefore become powerful tools for cognitive reflection stimulated from a variety of perspectives.

**Benefits of Internet communication technologies**

In summary, the Internet forms the backbone of a number of asynchronous and synchronous communication tools such as e-mail, chat, conferencing, the World Wide Web resources, and file transfer. Learners have richer and more effective learning resources available, and communication is enhanced. A shortened list of benefits are:

**Access to resources:**
- a source of identification, verification, evaluation and incorporation of information sources.

**Collaboration towards construction of knowledge and greater understanding:**
- a medium of cooperation, discussion, conversation, communication, and exchange of opinions;
- an international platform of artistic and cognitive expression, contribution, and understanding; and
- a medium of sharing and imagining experiences and of cognitive cooperation.

**Addressing learner preferences:**
- independence of place;
- greater choice of when to study;
- increased self-reliance;
- improved computer literacy;
- social cues such as gender, race, rank, physical appearance and other public identity features are filtered out, participants gain greater anonymity; and
But there is also the possibility of problems such as narrow bandwidth, security, authoring in appropriate languages, (sufficient) access, timely updating, prior skills, information overload, copyright, inadequate technology, and less contact with learners when appropriate pedagogical commitments were not part of the design of communication. The research done by Boshier, Wilson and Qayyum (1999, p. 275) proved that most sites originate in the United States, and course architects are prone to include a large number of links back to U.S. cultural ideas about what is good and what is bad. In a sense one should guard against “Americanising” courses and take sufficient cognition of one’s own culture when one designs for Internet delivery.

Computer-supported collaborative learning

Instructors and instructional designers face a substantial challenge in developing educational activities for online groups, which involves reconciling technological, pedagogical, and learner issues into an effective learning experience. Greening (1998, pp. 27-28) states that hypermedia for use in constructivist learning environments are seriously threatened by instructional development approaches which have not recognised both opportunities afforded by the technology and the attributes that are valued by constructivism. The “prescriptive approach,” or objectivist approach, which does not provide a means by which the learner can be actively in control of the learning process, is prevalent. Brandon and Hollingshead (1999, p. 111) and Naidu and Oliver (1999, p. 33) define collaborative learning as the acquisition by individuals of knowledge, skills, or attributes through group interaction in which group members share work and develop shared meanings about a group task. The social creation of knowledge as a basis of learning is accepted, and meaning cannot be prepackaged and delivered to the learners for memorisation.

The online learning community

Learning communities can be defined as “small subgroups of learners characterized by a common sense of purpose that can be used to build a sense of group identity, cohesiveness, and uniqueness that encourage continuity and the integration of diverse curricular and co-curricular experiences” (Kellogg 1999). In addition to similar ideas of shared purpose and cohesiveness, Lally and Barrett (1999, pp. 150-151) identify four distinctive features of the online learning community: the role of socio-emotionality, the importance of cooperative approaches to learning, the democratisation of participation, and the equalisation of community members.

According to Bulach, Brown and Potter (1998, p. 442) learners cannot be taught, nor can learning be fostered, until learners are convinced the
teacher cares about them — learners have a human need to feel cared about. Galegher, Sproull and Kiesler (1998, p. 496) report that when people face uncertainty, stress, and pain, they tend to seek and benefit from opportunities to share their feelings with others. From this perspective Bulach, Brown and Potter (1998, p. 442) give priority to the principle of caring. They analyse caring as having feelings for others, having relationships, and demonstrating values of kindness, respect and faithfulness, sincerity, attentiveness, being tolerant, explaining work, encouraging one another to improve, helping with personal problems, providing guidance, and going the extra mile. They report from research that “caringness” is identified by learners as the most important quality they look for in an instructor. Learning can be enhanced in such a caring community environment. For Bulach, Brown, and Potter some level of trust is required for learners to risk learning. For this reason teachers and administrators should be aware of behaviours and structures that create a caring learning community.

Moller (1998, p. 116) sees the functions of community as providing social membership and reinforcement that aim to satisfy the human need for self-esteem. Shared values, norms, and preferences keep the community together. Another function is information exchange. Computer-supported communication environments allow geographically separated learners to create and share knowledge. The exchange allows alternate information and perspectives to be considered.

The online learning community can provide opportunities for support necessary for real learning to take place. An adaptation from Lin et al. (1995) summarize the nature of efficient online learning communities as environments which provide learners with such opportunities:

- to plan and execute independent research towards problem solving and resource identification;
- to work collaboratively and take advantage of distributed expertise from the community;
- to use various technologies to build their own knowledge rather than using the technologies as “knowledge tellers”;
- to expose themselves to continuous feedback and criticism so that they can revise their own thoughts, assumptions, and arguments; and
- to improve responsibility, attitude, and emotional intelligence in a group context.

**Enhancing the conversation**

The pedagogical principles underlying the online learning community, and the potential of the technology to enable such principles, form a sound foundation from which to establish sufficient communication and support. This will enable learners to construct knowledge in a horizontal structure
with facilitators and fellow learners as part of a learner-centred approach. The important realisation is that the learning experience can be delivered in the form of a conversation between all stakeholders.

Accommodating African values

The Ubuntu philosophy

Worldviews are ingrained in the African perspective on human existence. Centuries-old African values and worldviews come to play an important role in supporting the typical online mode of teaching and education. For online learning one specific Zulu word captures the African spirit: Ubuntu.

South Africa is a multicultural country, and educators are aware of the importance and urgent need for values in the classroom and in education (Living Values 2002). Such values address peace, respect, love, honesty, responsibility, and happiness (Living Values 2002). These values of respect, human dignity, and compassion are effectively encapsulated in the Ubuntu philosophy. It requires an authentic respect for human rights and related values, and an honest appreciation of differences. Online teaching, where the teacher partly facilitates views expressed by students, needs to have these values in place for effectively accommodating diverse and opposing values, views and styles in an interactive environment.

Important values related to the philosophy of Ubuntu

Caring. Ubuntu articulates a worldview and vision of humanity (Mbigi & Maree 1995; Social Studies 2002). Ubuntu regards humanity as an integral part of ecosystems that lead to a communal responsibility to sustain life. Human value is based on social, cultural and spiritual criteria. The White Paper on Welfare in the South African Government Gazette of 1996 (Social Studies 2002) captures it as follows: “the principle of caring for each other’s well-being … and a spirit of mutual support… Each individual’s humanity is ideally expressed through his or her relationship with others and theirs in turn through a recognition of the individual’s humanity. Ubuntu means that people are people through other people. It also acknowledges both the rights and the responsibilities of every citizen in promoting individual and social well-being.” This is cleverly symbolised in the South African flag.

Consensus. Ubuntu also has an element of consensus interwoven into its philosophy. Traditional African democracy operates in the form of discussions (Social Studies 2002). While there are always leaders, everyone gets an equal chance to speak until some kind of an agreement, consensus or group cohesion is reached (Louw 2002). African traditional culture subsequently has an almost infinite capacity for the pursuit of consensus.
and group cohesion (Louw 2002). The term simunye (we are one, unity is strength) reinforces this community sentiment (Louw 2002).

Learn from others. Ubuntu also inspires us to expose ourselves to others to encounter the difference of their humanness so as to inform and enrich our own (Louw 2002). Ubuntu furthermore inspires us to be open to others, to learn from others as we learn of ourselves. This respect for difference in others is paramount to Ubuntu (Social Studies 2002), and respect for elders in terms of life experience and wisdom (Obanya 1995) is a core value in traditional, rural, and urban African societies.

Respect for individuality. As such, Ubuntu’s respect for others is also respect for individuality. But it differs from traditional Western concepts of individuality as expressed in the famous Cartesian maxim, “I think therefore I am” (Social Studies 2002). The individual in Ubuntu is not solitary, but rather is defined in terms of his or her relationship to others. As relationships change, so do the individuals. According to this definition, individuals only exist in their relationships with others, and as these relationships change, so does the character of the individual.

The abovementioned four aspects of the Ubuntu philosophy support the basis of good educational principles and are relevant and applicable to online teaching.

Research on the online learning community

Brandon and Hollingshead (1999, p. 110) state that a substantial body of research indicates that collaborative learning can be effective in generating positive academic and affective outcomes in traditional classroom settings. This is supported by successful experiments in the online environment (O’Donnel & O’Kelly 1994; Paloff & Pratt 1999; Harasim et al. 1995). When Horton (2000, p. 25) compared general online learning with traditional modes of delivery, he found a significant difference in learners’ performance and results. In fact, he claims the two are equally effective.

Harasim (1995, p. 110) mentions research at the Open University of the United Kingdom (OUUK), one of the world’s mega universities, which indicates that learners were positive about the value of computer conferencing for distance education. Learners are generally reticent to use the telephone to contact tutors and find e-mail and computer conferencing better alternatives. The OUUK experience also found that computer networking had a considerable equalising effect on status and diminished hierarchies in the traditional communication structures. Another institution from a different part of the world, the University of Phoenix, that provides accredited online degree programs, experiences similar results. White (2000, p. 57) states that recent research by the Institutional Research Office
of the University of Phoenix indicates that online instruction is “every bit as effective as regular classrooms in serving working adult learners in business and management programs.” They attribute this success to the highly interactive online learning model that encourages more regular communication with online instructors and other learners than usually experienced in onsite classrooms.

Research on collaborative learning has established that higher achievement and quality of learning can be enhanced with adequate technological support (Dubravka and Webb 2000, p. 73B85). By enabling social interactions via an electronic medium, unrestrained by time and place, Web technologies actually expand and transform the social interaction space of collaborative learning. Learners can work together, achieve shared understanding, and cooperatively solve problems in the online learning community. Chapman’s (1998, p. 21) research indicates that learners in traditional college courses recognise CMC as being advantageous in terms of increased access to instructors and learning opportunities. This was balanced by learners’ criticism related to access, time commitment, and unequal participation of fellow classmates. The research confirms that factors such as gender, educational status, and personality type do not have a major effect on learner participation and attitude. Lack of computer skills, computer experience, and self-confidence in traditional learning situations did emerge as pertinent factors in some situations.

Brandon and Hollingshead (1999, p. 119) warn that there may be resistance to CSCL based on learners’ comfort with the use of CMC technology. Althaus (1997, p. 165) found that e-mail users are more likely to engage in voluntary computer-mediated discussions than nonusers. This implies that if learners are positive towards the technology, they may be better users of CSCL. In the research done by Atamian and DeMoville (1998, p. 33) 87 percent of learners agreed that e-mail helped improve teacher-learner communication. The learner evaluations showed that learners preferred using e-mail to visiting professors in their offices. In addition, timely CMC interaction can also result in learners perceiving the instructor as more accessible than in the traditional classroom.

Access and flexibility

When Ward and Newlands (1998, p. 171) suspended face-to-face lectures and published materials on the Web, learners indicated that they exercised greater choice of when to study. The experiment appears to have saved learners time and financial expenditure. Learner reaction to Siktberg and Dillard’s (1999, p. 131) asynchronous collaborative delivery was that they liked the flexibility of studying in this way and that course environments were available 24 hours, 7 days a week. Chapman’s research (1998, p. 24)
indicates that access to facilities and connectivity can, however, still be a problem. Some learners were able to work only at university computer laboratories.

Commitment and responsibility

Numerous research projects have found that courses based on computer-mediated communication improve the commitment and responsibility of the learners. Fowell and Levy’s (1995, p. 205) research found that learners perceived themselves as more responsible in CMC mediated courses. One learner reported that such courses can be beneficial to learning because learners are encouraged to become personally involved since there was less of a teacher-pupil relationship. Learners appreciated the opportunity to take ownership and responsibility for their own learning when CMC was used to support group projects. In another study learners were observed assuming a high level of responsibility the more they became engaged in their online writing and learning, especially as assignments were sufficiently open-ended to provide learners with some degree of choice (Anstendig, Meyer and Drivers 1998, p. 79). In Hiltz and Wellman’s (1997, p. 47) experiments learners worked harder in courses taught in virtual classrooms. Surveys of learner responses found that 55 percent felt more motivated to be attentive and hardworking in their studies than they would be by merely reading their course materials.

Enhancing learning

When community and collaboration are incorporated into an online course, there tends to be a promise of higher educational achievement and personal fulfilment (Goldenberg 1999, p. 19). In a study conducted by Cronjé and Clarke (1999, p. 221), masters-level learners in a cooperative learning environment generated contributions on a wider range of topics than the presenter had provided. Learners’ messages contained ten additional topics to those posted. In addition, research by Naidu and Oliver (1999, p. 344) saw learners placing a higher value on the knowledge they gained and the ability to share it with other learners. Hacker and Sova (1998, p. 340) measured higher achievement gains when computer-mediated delivery strategies were employed as compared with traditional university delivery methods, while Rosenlund et al. (1999, p. 198) obtained consistently higher test scores for Internet groups than for learners in the traditional classroom in the nursing courses they piloted.

When Naidu and Oliver (1999, p. 344) connected nursing practitioners to a collaborative learning environment with CMC, there was evidence that learners reflected on critical work-related incidents, described what happened, and assessed their actions. This was aided by the fact that
such evidence from other practitioners was also available online. Learners reflected more deeply and were better able to identify problems. In another online community consisting of nursing students, Siktberg and Dillard (1999, p. 131) wanted to strengthen collaboration with other health care workers in order to share technical knowledge. According to the course survey most learners found the experience helpful and overall outcomes were positive. Learners engaged in work-related problem solving, and critical thinking skills were enhanced in these courses. In the experiments of Anstendig et al. (1998, p. 72) learners became active agents in the process of learning. Learners were supported in creating their own multimedia projects, and in the process it seemed to evoke deeper learning than the passive use of multimedia.

In their research Hewson and Hughes (1999, p. 113) obtained evidence that learners became very critical and reflected deeply before posting comments on course forums. This challenge was almost intimidating for learners as all other learners would be able to see what was posted online in writing. Learners valued the opportunity to consider and construct contributions to the online discussions. The asynchronous nature of the communication allowed them to think properly and structure their responses carefully. They experienced better-constructed learner contributions than in a normal class.

Another method employed as a way for learners to practice their writing in a nonevaluative way and to participate in conversational learning is the Web-based conferencing system (Anstendig et al. 1998, p. 72). In the study in question learners reported that they appreciated WebBoard because it made them think more deeply about the subject and they were able to obtain many different angles and points of view. Pearson (1999, p. 232) is of the opinion that CMC is about writing, rather than communication. Learners in his course were fearful of criticism from others about what they had written. The research of Anstendig et al. (1998, p. 70) provided similar results. Learners became motivated and engaged, writing more than in similar courses, and willingly revised their work for online publication. In the process, their writing improved.

Nursing practitioners involved in Naidu and Oliver’s (1999, p. 344) online delivery produced evidence that learners integrated theory and practice. In a similar attempt Herbert (1999, p. 40) successfully developed a set of Web-based courses that provided opportunities for teachers, wherever they might be, to work together on common problems. About 95 percent of participants agreed or strongly agreed that the program helped them bridge the gap between theory and practice. They were able to face classroom situations similar to those described in the cases in the online courses. The
teachers in the course were able to significantly expand their knowledge and understanding.

Establishing community

Lally and Barrett (1999, p. 150-151) aimed at satisfying four distinctive features of the online learning community: the role of socio-emotionality, the importance of cooperative approaches to learning, the democratisation of participation, and the equalisation of community members. They successfully established a socio-emotional quality in their learning experiences. Learners did experience a sense of group identity and community, and they indicated that they did not feel isolated.

In the online learning community learners are able to draw support from one another. Naidu and Oliver (1999, p. 344) were able to identify many examples in their courses and learners also indicated that it was an opportunity that they were grateful for. Rosenlund et al. (1999, p. 198) were confident that they had succeeded in establishing the social interactive climate required for the program. They saw the number and content of e-mail messages alone as proof of this. In Ward and Newland’s (1998, p. 179) study learners indicated that they did not miss the face-to-face contact with lecturers and other learners in the traditional environment. Further advantage in this regard is that learners may also form supportive relationships with one another outside of the public communication forums. Cronjé and Clarke (1999, p. 17) found evidence that learners did establish such relationships, as most messages were sent directly from one learner to another, bypassing the listserv provided for the course. Trainee teachers in a school-based program conducted by Pearson (1999, p. 229) considered electronic communication useful for social contacts (95 percent), discussing education issues (81 percent), dealing with personal and professional problems (71 percent), and developing a sense of community amongst participants (81 percent).

Collaboration

In the supposed isolation that learners studying online might experience, collaboration might be considered impossible to achieve. However, this is not necessarily the case. Naidu and Oliver (1999, p. 344) investigated learner attitudes toward collaborative learning. Their findings showed that learners found collaborative learning enjoyable and valuable and they appreciated that with help from others in the group they were able to persevere. For most learners the use of CMC seemed to have started off as a frustrating experience that grew into a positive one as their attitudes changed towards the use of CSCL. In their attempt to provide structured access to interactive online facilities to learners, Wilson and
Whitelock (1998, p. 91) report that learners felt less isolated, found the work easier, liked the groupwork, and felt more at ease to ask for help. Learners indicated that they would make more use of such a system if they were to take more courses presented in such a collaborative environment. Treadwell et al. (1998, p. 503) also reports that participants in their courses, who formed a coalition with other learners, were more satisfied with the course than learners who did not make a successful association. However, learners do take some time to get used to collaborative environments.

**Research approach**

The introduction of the online learning community, will force the system and its agents to take a critical look at their practice — they will be empowered by being supported to criticize their roles and products, as well as the system. Such a context may cause lecturers to realize that they have been merely sending out information in print form. Being involved with learners in a supportive environment may lead them to challenge the system in terms of quality teaching. In addition, the inability of the system to handle different “products” may also be disturbed for the better. Specific parts of the system, and the people operating them in a somewhat deskill fashion, may change to accommodate innovation and improvement. The introduction of the online learning community in this context may be problematic in the following respects:

The current correspondence-based teaching and support tradition promises to be tremendously inadequate and insufficient to be converted into an online environment.

The impact of such an innovative teaching experiment may challenge the current structures, processes, and systems of the organization.

In this regard it is appropriate to quote the opinion of Michael Moore and Geoffrey Cozine (2000, p. i):

> With such growth of the technology, knowledge of how best to apply it in delivering instructional programs lags far behind. There is a number of plausible explanations why this is so. One is that the educators, both in the classroom and in the administration, are unable or unwilling to make the necessary organisational and structural changes in their institutions to take best advantage of the technology. Simply giving high-powered machines like computers and modems to teachers may extend their influence and improve the quality of their teaching, but can only do so marginally. Significant improvements require machines and humans to be reorganised into delivery systems that are more sophisticated than those existing before.

There is no shortage of research proving the value and successes of collaborative online learning (Brandon and Hollingshead 1999; O’Donnel and
O’Kelly 1994; Paloff and Pratt 1999; Harasim et al. 1995; Horton 2000; Stacey 1998). But these researchers departed from a mainly face-to-face production and delivery context, and the successful implementation of online learning reported is presented against such production environments which may not be relevant to the nature of a print-based production system. No research could be found where a mass-correspondence distance education institution (with low levels of intervention in the learning experience) introduced innovations such as the online learning community that has strong levels of interaction and support.

The overarching aim of the research project was to intervene in order to stimulate critical reflection on current practice and systems within the institution. The institution was informed regarding the development process and its results in order to plant the seeds of a development and production culture which promotes a new understanding of learning and teaching. The question that had to be answered from this context is: Can the online learning community (based on integrated support and facilitation) be a successful and quality learning experience in the UNISA context?

The objective of the research project was to inform the institution regarding the quality learning that can be achieved in order to stimulate critical assessment of the quality of current print-based learning.

Research methodology

The introduction of the online learning community, and the challenges it implied in UNISA’s unique context, demanded an evolving methodology. Participants were expected to emancipate themselves from a given production context into becoming empowered to initiate change and innovation. Through the research participants had to be enabled to change practices, roles and systems in order to accommodate a different delivery mode.

Action research was adopted as it is conducted in cycles of planning, acting, observing, reflecting, replanning, further implementation, observing, and reflecting. As the spiral develops, understanding and practice evolve through the process of group critique and collaborative action. This process helps to obtain a reasoned justification of practices, processes, and systems.

Our research project also reported on the use of action research methodology to generate a critical reflective collaborative setting. The aim was to address the entire learning development and delivery process. The story will be told in terms of qualitative feedback. There was a need to infuse the institution with the results of this study in order to stimulate debate on the issues regarding change in practice and systems. The commitment of the researchers was to use the research to stimulate critical reflection with a considerable number of stakeholders in order to effect
change in practice and systems on a larger scale. This research therefore can only reflect a moment in a process of change that is continuous.

**Collaborative work**

A third-year course in Industrial/Organizational Psychology, Human Capacity Development was developed for the online learning community. The Human Capacity Development course proved particularly effective in allowing for multiethnic education. It not only bridged racial and ethnic groups, but also broadened the umbrella to include gender and other forms of diversity. Research was conducted over a period of 12 months, allowing for two successive deliveries of the course. The research developed through a spiral of two cycles.

The core teaching team consisted of teaching and support staff who collaborated in assessing teaching and support. They met at least once every two weeks. Observations and feelings were noted and collaboratively reflected upon, and changes in teaching practice were effected immediately. Reflections and action on this level were discussed at development team meetings.

The course structure and presentation, as well as facilitation and support, were planned before each delivery in response to feedback from the development team, which was made up of tutoring, support, and administrative staff. This group also analysed and reflected on the observations after each delivery in order to plan new action for the next delivery. This group was expected to initiate changes in working relationships between different units, structural change and recommendations towards change.

**Data sources**

Support staff, who were all volunteers, were asked to keep a record of all their emotions, fears, needs, and actions. Staff were advised to keep professional journals for the duration of the course in order to keep a record of the reflections on events and practice. The course coordinator kept a journal in which observations and feelings about developments were documented on a continuous basis.

It is easy to lose sight of learners’ needs in a mass distance education environment. Course evaluation questionnaires are sent out quite often, but they seldom provide an opportunity for learners to tell their stories. Respondents were therefore simply asked to relate their experiences as OLC members with reference to their experience as correspondence learners. Each learner respondent was only involved in one interview at the end of a particular course delivery.

In summary, the following sources of data were used during the research process:
• scheduled core team and development team meetings (25 in total);
• contents of discussion forums (18 in total);
• development team reports;
• institutional documents;
• e-mail message contents;
• interviews with staff and students (19 in total);
• research journal.

Discussion of results

The research approach sufficiently addressed the research objectives in that it confirmed the success of the online learning community in the UNISA context. It also provided valuable information regarding the nature of paper-based studies at UNISA. In the following sections the findings of the research are discussed.

Which learners?

Learners may have work commitments and family commitments which prevent them from attending face-to-face classes. Shaun, a programmer, had strong family commitments and he could only opt for some form of distance learning (interview, 15/11/2001). Diana, a systems developer and a South African living and working temporarily in Washington D.C. in the United States, did not want course packages and couldn’t commit to face-to-face classes because she had to be mobile and ready to travel at any time (interview, 13/11/2001). For Elaine, owning her own business and having recently started her own marketing company, this course came at the right time and she only wanted to take this one course as she already had a degree in commerce (interview, 13/11/2001). Kobus, an aircraft technician who eventually discontinued his studies, was living in a boathouse on Hong Kong harbour. He worked very irregular hours and couldn’t attend classes to finish his degree, which he had started with UNISA a number of years ago (Student Café forum contribution, 17/2/2001).

It is evident from the above that learners who take online courses may come from a variety of backgrounds. Sometimes these realities or circumstances prevent them from taking face-to-face courses. The following are some of the reasons why they might decide to take an online course:
• They may be constantly travelling the globe.
• Quality courses are not within reach.
• The online environment appeals to them (race, appearance, colour, disability, accent, shyness, anxiety, and the like may be qualities that prevent them from enrolling in face-to-face courses).
• Freedom of speech is the norm.
• Personal circumstances (family commitments) can be accommodated.
Table 1

<table>
<thead>
<tr>
<th>Age groupings</th>
<th>1st delivery</th>
<th>2nd delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 22</td>
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<td>0</td>
</tr>
<tr>
<td>23 24</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>25 29</td>
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<td>2</td>
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<td>3</td>
</tr>
<tr>
<td>35 39</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>40 44</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

- Adult and lifelong learning needs can be met even where it would not be appropriate or convenient to go back to university.
- Work commitments make committing to particular times of the day inconvenient.
- Training can be provided just-in-time.
- Online courses may be less expensive than face-to-face courses.

Demography of online groups

Certain learner characteristics are prevalent in a distance delivery environment and more specifically in online learning. The following sections will address the learner demography of the two groups.

The age of learners. The following table provides the age groupings of the learners who eventually registered for the two deliveries of the pilot course (Table 1).

The majority of learners were between 30 and 44 years of age (statistics obtained from the Bureau for Management Information on 12/12/2001). The age of learners is an important factor when a learning experience is developed as they need to be engaged as adults. Lewis in White (2000:34) calls for the andragogical approach, which is adult-centred. For him the virtual medium requires learner discipline that presumes a high level of maturity and a facilitator approach that presumes he or she is leading adults.

Economic sector. As the average age was relatively high, it was accepted that most learners were economically active. Their diverse experience and knowledge was an important part of successful learning in a community. Table 2 provides information on the economic sectors from which the learners were drawn.

Table 3 provides information on the occupations and careers of learners (statistics obtained from the Bureau for Management Information on 12/12/2001).

It is understandable that learners tended to come from work environments such as human resources, higher education, management, and ad-
ministration as this is a course offered by the Faculty of Economic and Management Sciences. Admission restrictions were removed for the second delivery and learners from more diverse backgrounds were eligible to apply. The diverse backgrounds and experience of learners formed a rich resource which could be exploited in the community and collaborative environment of the course. Most learners on the pilot course were in their thirties or older, and were economically active. This probably made it easier for them to study online because of higher levels of access to connectivity. Learners who are not economically active may not have regular access to the Internet.

**Diversity.** In the South African context race and by implication cultural differences are important in the learning environment, the recent political changes notwithstanding. Table 4 provides information on the race of the two groups of learners (statistics obtained from the Bureau for Management Information on 12/12/2001).

### Table 2

<table>
<thead>
<tr>
<th>Economic sector</th>
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<td>2</td>
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<tr>
<td>Manufacturing</td>
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<td>1</td>
</tr>
<tr>
<td>Transport and public utilities</td>
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<td>Business and related services</td>
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<td>0</td>
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<tr>
<td>Entertainment services</td>
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<tr>
<td>Secondary education sector</td>
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</table>

### Table 3

<table>
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<tr>
<th>Occupation</th>
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<th>2nd delivery</th>
</tr>
</thead>
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<td>Computer specialist</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Personnel officer</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Lecturer</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Technician</td>
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<td>0</td>
</tr>
<tr>
<td>Manager/administrator</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Clerical and related</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Member of the military</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Fulltime learner at UNISA</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Fulltime learner elsewhere</td>
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<tr>
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<td>2</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
According to Kearsley (2000, p. 65), online learning is as much a social activity as a personal one. The advantage of studying online in this context is that alienating factors such as colour and other physical differences, or even disabilities, are not relevant as they are not visible. In fact it could be said that the priority for any online learning community, especially in the South African context, should be to have a diverse group of learners which reflects the ideal society. With these alienating factors removed, such a learning experience can still be complex, because, in order to accommodate a diverse group of learners, one has to be aware of cultural differences which dictate the nature of interaction with others. This reality will demand cultural sensitivity and tolerance from participants.

The online environment, hiding many personal aspects of people as it does, is a very complex environment. It can be full of ambiguity, and facilitators should understand that meaning is created in interaction amongst people and it includes all human qualities, attitudes, feelings, and emotions (White 2000, p. 2). As a result, good people skills are essential. The behaviour demanded from participants may be very different from that which prevails in a face-to-face or independent correspondence experience. For this reason and because of the collaborative environment of the pilot course, social skills were regarded as very important.

Although this is not related to issues of race or religion, Gwen admitted (interview, 23/06/2001) that she, without meaning to, took on a different personality because she was allowed to speak freely. Indeed her performance was interpreted by Magda (interview, 28/06/2001) as being aggressive. Magda felt the accommodating atmosphere of the course was negatively influenced by such behaviour. In general, however, the diversity of the two groups did not present a problem for the facilitator of this course.

**Previous studies**

As one of the objectives of this project was to determine the success of the online learning community and to invite comments from the learners regarding print-based study, it was essential that most learners should have had past distance learning experience at UNISA. Table 5 presents

<table>
<thead>
<tr>
<th>Race</th>
<th>1st delivery</th>
<th>2nd delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Coloured</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>
Table 5

<table>
<thead>
<tr>
<th>Institution</th>
<th>1st delivery</th>
<th>2nd delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNISA</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>RAU (SA)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>UWC (SA)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Foreign</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Not applicable</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

statistics on previous enrolments (statistics obtained from the Bureau for Management Information on 12/12/2001).

The majority of learners had previously studied at UNISA, and learner feedback on past print-based experience promised to be an important factor in change and development of new practices and systems.

A successful online learning community

A successful online community is characterized by the following:

A community of friends

In this social environment learners formed friendships outside the course and felt that they were in a supportive environment. Zeta (interview, 16/11/2001), Gay (interview, 14/11/2001), Nomsa (interview, 23/06/2001), and Gwen (interview, 23/06/2001) mentioned strong friendships. When the first course forum closed, Diana requested all learners via e-mail to continue in the Student Café:

Hi everyone

Can we continue to debate and interact in the Student Café during the next two weeks?

Thx

Diana

As a South African living temporarily in Washington D.C., she clearly enjoyed and benefited from being part of the group and felt “at home.” Magda (interview, 28/06/2001) was comforted by the fact that she was a member of the group and knew that she was not alone in her struggle to make a success of this course.

Sharing ideas and experiences

The pilot OLC-based course was an environment that was rich in resources and a number of learners reported benefiting from others’ experience and ideas, and were able to test their own ideas against those of other participants in public. Most learners appreciated the resources offered
by this environment and benefited from others’ experience by sharing ideas. Gwen mentioned that she felt ‘robbed’ of the experience that some of the ‘lurkers’ did not share with her (interview, 23/06/2001). In this learner-centred environment participants could contribute actively to the entire learning experience. They were able to gain enough confidence to express their opinions in public and even to criticise the facilitator (as Gwen [interview, 23/06/2001] and Arney [interview, 19/11/2001] did).

Alex and Zeta posted the following greetings showing appreciation for the fact that they could share ideas and experiences with fellow learners in this environment:

Farewell

Posted by: Alex
Date: Thursday, 22 November 2001, at 12:41

Thanks to Rian and Japie for hosting this very interesting course as well as all the other learners whose contributions were very enlightening (to say the least).

I am off to Durban for 10 days to do absolutely nothing. All the best to everyone over this festive season.

Bye

Al

Greetings

Posted by: Zeta
Date: Thursday, 22 November 2001, at 10:37

Hi everyone

This has been a very interesting course and has definitely made me more interested in being a life long learner. Thank you everyone for all the different comments and ideas given, it really makes one think and embrace diversity and culture differences more willingly.

Thank you Rian and Japie for your comments. It has proved valuable to me in my work environment and already I have seen the difference as I have implemented the various ideas given in this course.

Cheers

Zeta

Engaging the learner

Greg Kearsley and Schneiderman (Kearsley 1999, p. 67) present engagement theory as a framework underlying learning in the online learning community. Engagement theory suggests that learners should be actively engaged in meaningful tasks for effective learning to occur. This means
that they should be designing, planning, problem solving, evaluating, making decisions, or should be involved in discussions.

A collaborative, constructivist learning environment was created for this course, embracing the idea of situated learning in drawing on a community of experience. Learners collaborated and integrated their experience, with the result that materials and activities became realistic and directly related to learner interests. Learners engaged in this learning environment with a serious intention of reaping the benefits, and they expected everybody on the course to be committed and to contribute equally from their experience and knowledge. Diana even wanted to increase the size of the group (interview, 13/11/2001). She was quite a strong participant and wanted the debates and interaction to be stronger — she found it unacceptable that some learners “take a free ride.” The majority of learners reacted positively to being involved as compared to the print environment’s isolation and passivity. Alex labelled print-based study as anonymous in this regard (interview, 19/11/2001). But being engaged and doing your best lead to self-imposed pressure and commitment. Lea (interview, 23/06/2001) reacted negatively to this pressure, but Jolene (interview, 28/06/2001) considered it essential for her success on the course.

**Becoming empowered**

In the online learning community learners became empowered as they were guided to take control of their own learning. The learners in this course needed to master skills, processes, and netiquette and strove to build an online community of peers working together to provide mutual support and to challenge each other. This concurs with the findings of Harasim et al. (1995:218). Through authentic contributions and critical evaluation, the learners became empowered. They were exposed to a wide variety of opinions and were able to make positive contributions by pointing out inconsistencies. Jolene reported (interview, 28/06/2001) that she became critical of her own input and of what others had to say. In the online course environment her opinion was regarded as important.

Arney made very positive comments about the way this course was presented, but as an empowered learner he did not hesitate to express his concerns about the way the facilitators performed their duties:

**Overall feedback**

Posted by: Arney  
Date: Monday, 19 November 2001, at 07:14

I found the course overall to be a positive experience. I think a lot more true learning took place during this course than in courses where one has to memorise theory. I have to congratulate Japie and the people at UNISA who made this
possible. If UNISA can have more courses like this, I am sure that it will create a huge demand for its courses amongst adult/mature learners.

However, there is one thing I think could be improved on to enhance learning further — the facilitators could have acted more like learning facilitators. As it were, they were usually most active only at the start and end of each forum, and usually in the form of a summary, more information or an exhortation. In other words, they acted more like conventional lecturers than learning facilitators. I expected them to be active in questioning our views, challenging our assumptions, stretching our minds etc. Learning facilitators should be true to the root meaning of education (“educare” which means “to draw out”) — and prompt us to surpass ourselves without telling us what to do.

I have some ideas for how one could participate in such online communities to enhance the process of community building, based on the principles of building other communities e.g. as discussed in Scott Peck’s “Different Drum” or as contained in the principles of improvisation. I shall share these at a later stage once I have collated all the material.

Once again, thank you for a great course.

Arney

It is evident from the responses of participants that the online environment is challenging. It changes a person’s views on how problems and criticism should be handled. Priest (in White 2000, p. 44) uses Gross’s perspective on how empowerment takes place in the adult learning environment. Learners have to take command of their own learning and they should not rely on receiving “ready made” knowledge through transmission. These learners need to have a greater zest for learning and make better use of their time. Success in learning depends more on the learners’ own engagement than on the subject itself. Almost every aspect of the adult learner’s life has a latent power to enhance learning, but only if the adult learner takes control and initiates ways to utilise prior experience.

Critical thinking and deep learning
For Palof and Pratt (1999, p. 60), collaborative online learning is similar to Chris Argyris’s double-loop learning. Learners cannot simply mechanically apply a concept that has been fed to them; they need to reflect critically on their own behaviour and then change the way they act. Within the online learning environment learners connect to the learning experience via technology, and then they are not simply confronted with course material, but are also challenged to look critically at the learning process and at their own performance in the course environment. Learners are transformed by their engagement in the community experience. In the sample course, learners realised that they had to think deeply and even do some independent research before they could make a contribution online. They felt quite exposed and were not prepared to make contributions of
an unacceptable quality. This aspect caused the workload to increase for many learners.

**Personal transformation and metacognitive development**

Learners like Zeta (interview, 16/11/2001), Jolene (interview, 28/06/2001), and Shane (interview, 15/11/2001) reported that they had changed as people while being in this course (transformative learning). Shane specifically mentioned that the experience that he gained from this learning environment would help him to approach his job differently. He might even consider starting a new job. Zeta started applying different ways of communicating at the office as a result of how she had learned to communicate in this course (interview, 16/11/2001). In this regard Elaine posted the following message at the end of the second delivery:

Goodbye!

Posted by: Elaine  
Date: Friday, 23 November 2001, at 16:22

Hi everyone  
I just wanted to say goodbye to all my classmates, and to thank Japie, Rian and Vasie for the absolutely amazing course which you prepared for us. The last few months has been a complete paradigm shift for me, and I don’t remember when I last learnt so much — and enjoyed learning it!  
Thanks so much for all your time and effort.  
I want to wish everyone a very happy and restful festive season ... and good luck with all the results!  
Thanks so much.  
Elaine

Metacognitive development occurred with most learners. They were thinking differently about how they wanted to learn. Content provision and venue-linked examinations were not preferred, and they had learned the value of teamwork and communication in order to reach objectives. Learners had become critical about the way they used to learn. Vanessa (interview, 28/06/2001) reported that she learned a lot and the course experience took her outside of the content boundaries through independent research and discussion. Her personal struggles and views became relevant in this learning experience. The limited scope of print-based content was not good in this regard. During the online experience she could discover what she could learn and not what the lecturer could teach. For Neville, a learner on the first delivery, this module became a learning experience that remained with him, and he wanted to stay informed about how the project
progressed. Halfway through the second delivery the course coordinator received the following e-mail:

Hi Japie

Thought I’d send you a quick e-mail to let you know my e-mail address has changed. It is now neville@anonymous.com. How has the second delivery of the second delivery of the online course IOP377-J been going?

Regards

Neville

Facilitation and support

Teachers are challenged to duplicate with CMC the conditions that encourage productive interchanges such as occur when people meet in person (Warren and Rada 1998, p. 71). But in spite of this challenge by technological advances, much of current Internet delivery is about “throwing learners at the Internet and calling it sound pedagogy” (Greening 1998, p. 30). The mere uploading of content on the Internet does not mean that learning has taken place (Rosenlund et al. 1999, p. 195). For the online learning community to be a successful learning experience, facilitation is probably the single most important element. One failing of many CMC DE learning programs has been the inability or unwillingness to facilitate a collaborative learning process (Palof and Pratt 1999, p. 82). The whole learning experience is to be a mediated conversation — a dialogue started in an open-ended course environment with limited structure. With the help of facilitation, learners are expected to work together to generate deeper levels of understanding and critical evaluation of the study material. The facilitators of online courses should provide sufficient support or should direct learners to sources of such support. Although most participants in the online learning community may be self-directed adult learners, they will be in need of meaningful relationships. They will need feedback from trusted people in their struggle with concepts and issues (Priest in White 2000, p. 41). Communication has to be effective, and special sensitivity is needed to deal with these unique experiences.

The responses from the sample course indicated that facilitation and immediate support was highly appreciated, although the learners indicated that they would like to see improvement in the facilitation provided by Rian. For Neville, the support and help was just a button away (interview, 23/06/2001), and Shane did not hesitate to state that he had communicated more in one online course than in the 29 other modules that he had completed with UNISA (interview, 15/11/2001). Zeta provided a striking perspective on the role of the support staff in the online learning community — they provide the external boundaries
for the group (interview, 16/11/2001). The online environment can also be a place where one can behave without the necessary considerations for others. Zeta (interview, 16/11/2001) and Gay (interview, 14/11/2001) were both intimidated by the two very strong learners who were extremely visible and contributed very assertively. Gwen admitted that she underwent a change in personality and was perceived as almost aggressive in the way she reacted to the opinions and ideas of other learners (interview, 23/6/2001). Facilitating a community demands a strong commitment to the promotion of equal opportunities, netiquette, and respect for others.

**Gaining confidence and accepting responsibility**

Learners found the discussion and groupwork environments labour intensive, but they were all certain that they had gained from their fellow learners and were able to share their own ideas and opinions. However, this did not come without some independent research “behind the scenes.” Mary reported having had trouble initially but then she gained confidence and searched the Internet for more information (interview, 15/11/2001). She eventually joined some professional human-resource associations online. A number of learners, such as Neville (interview, 23/06/2001), complained about the difficulty and intensity of the online groupwork. But some learners took up this challenge. Diana, a strong learner and coordinator for one of the small groups, did everything in her power to keep the group together and to motivate them as far as possible. Early in the second delivery Shane, who changed jobs, disappeared for a while. The course coordinator received the following e-mail from Diana:

Hi Japie

Do you have any idea of what happened to Shane? I contacted the other people assigned to Group 2 and received an answer from Grace. She seems to have problem with Internet access, but I cannot get hold of Shane.

Thx

Diana

Later after she had followed up on information she received regarding Shane’s new e-mail address:

Hi Japie

Yes, Shane has answered. I have just spoken to everybody via e-mail. It seems as if there are some de-motivated people in the group at the moment. I will go to the course website to see whether someone has reacted.

Regards

Diana
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She kept the team going and also offered her own time, knowing that some learners might have been busy studying for their other courses:

Hi guys and girls

Shane has not received any input from the rest of the team yet. Although the presentation is only due by the 22nd, we need to start wrapping up. It takes some time to compile the final product.

Please make sure you are using Shane’s correct e-mail address when you send your contribution.

Let me know if you need some help with the content or if you are running out of time. We are not busy at the office at the moment, so I have some time during the day to get to studies.

Good luck and study hard for your other subjects.

Diana

Groupwork needed stronger, responsible learners like Diana, but it was the community and group spirit that kept learners together and made gestures like the above possible.

Transcending boundaries

The majority of learners wanted to do more courses online. Esther, however, felt more secure and comfortable with print-based study as it was more predictable for her (interview, 23/06/2001). Learners succeeded in transcending the subject field and course content. The boundaries of the course expanded through learner discussions, contributions, and assignments. Making their own contribution and making friends assured the sharing of knowledge. Neville (interview, 23/06/2001) valued the opportunity to add his own experience. In addition, the activities and discussions led to deep exploration of topics and ideas. Vanessa (interview, 28/06/2001) was of the opinion that the collaborative and learner-centred nature of the course allowed her to go beyond the ideas contained in the content by doing independent research and integrating her own viewpoints. Mary (interview, 15/11/2001) reported that she had gone beyond the content by making contact with other human-resource professionals through the Internet. She was building a network through which she could support her professional ideals in the same way as the group was supporting one another in the course.

Workload and writing skills

As this online course contained many more activities and responsibilities than the standard print-based course at UNISA, a course schedule was provided to assist learners with their time management and planning. Along with a number of other learners, Alex mentioned that the schedule was conducive to time management (interview, 19/11/2001). Jolene appreci-
ated the exercise in style and layout for academic writing as learners were able to exercise their writing skills for the academic environment (interview, 28/06/2001). The opportunity to master this skill was added in the second delivery and learners were given the opportunity to send in drafts for comments. Diana reported that she was able to improve her assignments right from the very first one as a result of this (interview, 13/11/2001).

**Accommodating African values**

Projects directed at online learning in an African context should take cognizance of African values so as to provide such educational endeavours with a measure of cultural relevance and legitimacy. Such African values are articulated in the following:

*Ubuntu and sharing*

As Ubuntu is the basic philosophy of most of the black students at UNISA and is widely adopted unconsciously by many white South Africans, it informally and intuitively set the ground rules for open and honest participation during the discussion forums of the online courses. Even students from countries away from the African continent could easily live with the implied Ubuntu philosophy, although it was never upheld as a requirement of the course or mentioned as such. Students openly and casually introduced themselves at the beginning of the courses in the Student Café and eagerly shared not only necessary and interesting background information about themselves, but also at times volunteered information of a more personal nature.

*Consensus*

Consensus is comfortably accommodated in the online teaching mode where debate during discussion forums is finally summarised in a consensus synopsis. An online team assignment also stimulates different approaches and perspectives on the final outcome of the product, but allows students to pursue group consensus within the allowable timeframe and boundaries of the assignment. The threads provided by the course facilitator during discussion forums led to extremely lively debates and a sharing of many similar and complementary views. It resulted in feelings expressed by students in post-course interviews such as: “I gained so much more insight through debate with fellow students, that I finally feel I have a balanced view on the topic” or “I have learned much more through debate than studying a textbook for the sole reason to pass the examination.” Students finally came to workable consensus views on the majority of topics up for debate.
Constructive disagreement

The underlying principle of Ubuntu subconsciously prompted students to reveal themselves by openly disagreeing with the group or individual members on a constructive basis. There were opposing views frequently — even within similar ethnic groups. This supports the notion that learning can occur as a result of debate, even though it is sometimes translated in the West as competitiveness (Social Studies 2002).

Within one particular group, two black female students expressed particularly strong opposing views about the current president of South Africa, but the “spirit of mutual support” never played an insignificant role and the online expression of the ideas of each individual served as a challenge for the other one to react even more clearly and originally, thereby bringing a healthy Western competitive drive to the fore. One student was so haunted by expressing her views during the discussion forum, thereby opening herself to prolonged and serious criticism, that even a few months after the online debate she vowed never to reveal herself to that extent again. The following Ubuntu principle (below) fortunately saw her through her initial crises. The two students managed to put their differences aside once they were assigned to teams and functioned optimally as team members, focusing on the task at hand. Their previous difference of opinion was accommodated by both: they could joke about it and it became a point of contact. In general the spirit of constructive disagreement was evident in all the discussion forums and served as a positive means of learning.

A community of interdependent relationships

Ubuntu furthermore visualises a community built upon interdependent relationships. This can be seen in the concept of group work or shosholoza (work as one, or teamwork) (Social Studies 2002). This ideally suits the online teaching mode. Part of one assignment in the course is the online presentation of a well-researched topic. Students were assigned to different teams to perform specific roles in each team, for example coordinator or summariser. Teams generally exceeded expectations as far as academic research and content, Internet layout, and passion were concerned. The enthusiasm generated by working in teams, discussing an assignment in online chat groups, organising research and activities, presenting the assignment online as a unified team, reacting as a team to criticism from other teams, and finally sharing a team mark, contributed to excellent final products.
**A caring environment**

Another aspect of Ubuntu that is part of this philosophy is the aspect of caring about the well-being of one another. It was evident that a strong bond formed among members in both deliveries. Most students expressed sadness when the course finished and felt a great need to maintain contact with one another. This feeling of unity and the caring attitude of students developed soon after the first rounds of introductions and the first course discussion forum. As the groups were relatively small (a maximum of 12 in each delivery) and the students sensed that they were privileged to have been chosen for the first two trial runs of an online-presented course, an atmosphere of expectation and excitement developed.

As part of caring about the well-being of students, an online counsellor was available to help students who were not coping well with the demands of daily active involvement, frequent and sustained high-quality contributions, being challenged and criticised online, and learning how to operate online in a team context. This facility did not finally warrant existence, as students supported one another to such an extent that the online counsellor complained about not being consulted by the students. She felt that she was not part of the online team. From time to time students would pardon their lack of contributions and active involvement in the student café, giving excuses such as “my child was sick,” “I had to go on a business trip and had no access to the Internet,” or “my workload in my job demanded 100 percent attention.” Other group members generally accepted these excuses and often expressed empathy for their circumstances, prompting them to catch up and allowing them to enter the newly debated topic.

**A successful learning environment**

In summary, learners reported that in this asynchronous environment they were able to read contributions, think, and do research before replying. Elaine reported wanting to get up at three a.m. and make a contribution as a thought suddenly struck her (interview, 13/11/2001). There was always a new contribution that she could read. Although one was not there, the conversation continued and nothing was lost. Zeta (interview, 16/11/2001), Gay (interview, 14/11/2001), and Gwen (interview, 23/06/2001) specifically reported that they had made friends with the online learners and continued these friendships outside of course activities. Jolene realised after a couple of weeks that learning was self-directed. She then took control and did a lot of independent research and thinking in order to improve her contributions and assignments (interview, 26/6/2001). Zeta (interview, 16/11/2001) was strengthened by the presence of support staff. They formed the external boundaries of the
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community — she felt protected. Elaine (interview, 13/11/2001) regarded UNISA in general as very distant, but in this course environment she did not feel that distance.

Through Internet communication technologies communication with and access to support staff and fellow learners was improved. Neville (interview, 23/06/2001) said that he was comforted by the fact that help was just ‘a button away.’ Learners got the opportunity to present their work ‘in public’ and receive comments. Almost all learners on this course felt empowered as they were able to present their views and experiences to the group. Through technology learners were able to work in teams. Learners felt that they were more equal in being able to participate online. They could all contribute and share. Many learners struggled with the technology but in the end they all gained new skills in working with the technologies. All learners were upset about the chatroom being down for some time although it was there only as an additional tool.

In terms of the successful online learning community as defined by Kellogg (1999), Lally and Barret (1999), and Lin et al. (1995) this pilot course can be considered successful in terms of the following criteria:

- Participants were united through a common sense of purpose (wanting to master the topic).
- Group identity and cohesiveness developed (identification with the group and formation of strong friendships).
- Learners were able to integrate diverse curricular and co-curricular experiences by working collaboratively (integration of their own experience and negative reaction to those who did not share).
- They did independent research and resource identification (independent Internet research and resources).
- Internet communication technologies were used to discuss information and build knowledge (provided content was not the primary source).
- Learners exposed themselves to continuous feedback and criticism in public forums in order to test their own constructions.
- In order to succeed learners had to take responsibility for their learning (the right attitude was important).

However, the course delivery was not without problems in terms of facilitation (more involvement), technical issues (the chatroom), workload (too many activities scheduled simultaneously), and learner registration problems.

Although the course can be seen as successful in terms of the online learning community, it is apparent from learner feedback that it required a certain type of person in order to be successful. A number of learners
reported feeling overwhelmed or disoriented, but then they later took control and eventually succeeded.

**Characteristics of a successful online learner**

From the trials and tribulations of these learners (in both deliveries) it is evident that certain personal characteristics are vital if a learner is to be successful. As the online learning community is a more learner-centred learning environment, the learner becomes responsible for his or her own success. This responsibility demands certain characteristics:

- high motivation and self-discipline;
- responsibility and adaptability;
- compassion and a positive attitude;
- independence;
- active learning and engagement;
- good organizational and time management skills;
- adaptability;
- patience and tolerance;
- communication skills;
- writing skills;
- good netiquette.

Learners like Gwen (interview, 23/06/2001), Nomsa (interview, 23/06/2001), Elaine (interview, 13/11/2001), and Jolene (interview, 28/06/2001) reported having to apply introspection and to assume responsibility in order to cope in the online learning community. As it is an open and free environment to a certain extent, it is also one that demands strength and self-discipline because learners have to expose their work to criticism and discipline themselves in order to keep up their contributions. Those who felt that they tended to become aggressive in defending themselves or the ones who dominated all the discussions had to take another look at the information on netiquette that was part of the orientation. Writing skills are paramount for this kind of learning environment, as all contributions and activities are text-based and learners must be able to express themselves through this medium.

**Pass and retention rates**

In order to evaluate the success of this online delivery, pass and retention rates of both delivery modes were compared. The following table provides information on the numbers and percentages of learners who registered for and completed the course by the print-based and by the online mode. The final average grades are also provided (Table 6).

For the first delivery, the print equivalent of the course succeeded in retaining only 42 percent of registered learners, while the online version
Table 6

<table>
<thead>
<tr>
<th>Description</th>
<th>Print 1st</th>
<th>Print 2nd</th>
<th>OLC 1st</th>
<th>OLC 2nd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered</td>
<td>94</td>
<td>132</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Completed</td>
<td>40 (42%)</td>
<td>27 (20%)</td>
<td>7 (78%)</td>
<td>7 (78%)</td>
</tr>
<tr>
<td>Final average</td>
<td>46%</td>
<td>40%</td>
<td>63%</td>
<td>69%</td>
</tr>
</tbody>
</table>

secured a 78 percent retention rate. The final mark was also 17 percent higher than that of print-based learners. In view of the fact that there was a significant difference in learner numbers, the group was of the opinion that the way the learning experience was designed and delivered had a tremendous effect on whether learners decided to remain in the course or drop out.

In assessing the success rate of the course over the two deliveries, the retention rates and average final mark are significant. The print equivalent of the course succeeded in retaining only 20 percent of registered learners (which is 22 percent lower than in the previous semester), but the online version secured a 78 percent retention rate (which is constant). The final mark was also 29 percent higher than that of print-based learners. The print-based experience is a cause for concern — it shows an increase in learner numbers but a drastic decline in the completion rate and an average mark that is 10 percent lower than the pass mark of 50 percent. The online group’s average mark improved by 6 percent.

It must be noted that the numbers of registered learners for the print-based deliveries were significantly higher than those for the online delivery. This may influence the legitimacy of this comparison. Retention rates for this online course might have been influenced positively by the procedure followed to inform learners prior to registration regarding workload, commitment, and technical aspects of the online learning community.

Statistics were obtained from the Examinations Section on 30/11/2001.

**Becoming critical of print-based study**

With the exception of one learner who felt more comfortable with print, and two others who had never studied through UNISA before, all learners had a positive learning experience in the online learning community and preferred this mode of study to the print-based studies which they had done before. UNISA’s print-based delivery can be described as problematic for a number of reasons according to learner feedback.

It would seem that the very principles of independence and self-study may have caused a high degree of alienation among learners taking the print-based course. Alex called himself anonymous within
this environment (interview, 19/11/2001). He became an entity with a number in the system. Shane (interview, 15/11/2001) mentioned that he communicated more on this one module than on the 29 others he had completed. Elaine (interview, 13/11/2001) experienced UNISA as distant and not easy to communicate with. For Alex (interview, 23/06/2001), Diana (interview, 13/11/2001), and Shane (15/11/2001) the print-based learning experience was not much more than a textbook, a rush, and an exam. This provides a shallow learning experience. Although they had to work harder and had to contribute regularly in the online course, they gained much more and preferred to study this way. Shane (interview, 15/11/2001) did not see venue-linked written exams as a challenge, and multiple-choice exams were viewed in the same light. He wanted essay assignments to be made compulsory in order to communicate and get feedback. For Diana (interview, 13/11/2001) the varying course quality within one faculty was of concern — learners could take this course and other courses of inferior quality in the same faculty. In this regard there seemed to be inconsistency regarding the commitment to quality. Except for Lea (interview, 28/06/2001), all learners had some suggestions on how to improve facilitation (teaching). In this course they experienced an exceptionally high support and facilitation service compared with what they were used to. Their print-based studies did not allow them to communicate and get feedback to their satisfaction. But Esther (interview, 23/06/2001), a senior and fourth-year learner, felt more comfortable in the print-based learning environment. She was satisfied with her print package and the venue-linked examination. There was not as much pressure on her and it was more predictable. It is possible that senior UNISA learners, trapped in a comfort zone, may have difficulty getting used to a different pedagogy and learning environment.

Learners performed well in the collaborative (and social constructivist) learning environment. In the social environment learners could share ideas and experience and could solve problems cooperatively. In general learners who had experienced print-based study at UNISA preferred the online learning community as a quality learning environment. It must be emphasised that the negative comments, aspects, and suggestions highlighted in this section are not meant to disparage print-based delivery. They should rather be seen as an indication that there is room for improvement and that the possibility of allowing “cross-fertilisation” to improve the standards of current print-based delivery should be investigated. The challenge would be to investigate the ways in which print-based learners could also be provided with some of the benefits experienced in the online learning community. Even some senior learners, like Shane (interview, 15/11/2001)
and Diana (interview, 13/11/2001), went so far as to make suggestions for the improvement of print-based study.

**Conclusion**

The OLC promises a very engaged learning experience enabled by Internet communication technologies. Moore and Kearley (2000, p. 5) are of the opinion that what makes any course good or poor is a consequence of how well it is designed, delivered, and conducted, not whether the learners are face-to-face or at a distance. If an online learning community-based course is designed and delivered on the principles of good distance learning, and it makes proper use of interaction and collaboration to augment the social construction of knowledge, it can be as successful as any other form of delivery.

The statistics regarding learner demographics provided valuable information about the type of person who would enrol for an online course at UNISA. They seem to be mostly working adults whose lifestyles require mobility. In addition, they want quality support and tuition, but do not want to lose the ability to self-pace and to integrate their own experience and ideas. Most learners who enrolled in the online course still had a heavy workload and a number of personal commitments to cope with. These factors require a highly committed, motivated, and responsible learner.

Learner grades and retention rates are significantly better when compared to print-based results. Regarding the qualities of the online learning community, the course was successful in terms of the following aspects:

- **Social support**: learners made friends and felt part of the group.
- **Learner empowerment**: they became confident to voice their opinions in public.
- **Transformative learning**: the learner changed as a person during the course.
- **Critical reflection/self-reflection**: learners reported having to reflect on their actions and contributions.
- **Engaged learning**: they reacted positively to being involved rather than isolated and passive as they were in print-based courses.
- **A preferred learning environment**: learners wanted to do more of their degree requirements via this mode.
- **Self-imposed pressure and commitment**: learners reported feeling the pressure and making the commitment to work in order to be successful.
- **Worthwhile discussions**: learners gained from others’ opinions and could make their own contributions.
- **Independent research**: they reported doing a lot of independent research in order to contribute and do assignments.
• Exercising style and layout for academic writing: learners were able to exercise their writing skills for the academic environment.
• Facilitation and immediate support: the facilitator guided discussion and learners appreciated receiving an almost immediate response to their enquiries.

Johnson and Johnson’s (cited in Stacey 1998, p. 36) claim that “cooperative learning is used to increase student achievement, create more positive relationships among students, and generally improve students’ psychological wellbeing,” can be supported by the results from this sample course delivery. However, in a number of respects this degree of success forms a contrast with the print-based delivery that the learners were used to. They had felt alienated, and the institution seemed distant. The learning experience had not allowed them to become involved and to deepen their understanding. The current examination procedure had not been a true test of their knowledge and capabilities. There were few opportunities to communicate and to receive feedback. Learners found the varying course quality in the same faculty disturbing.

Learners were not always satisfied and made suggestions towards the improvement of online teaching practice. The degree of success that was achieved with this pilot course did not, however, come without a different commitment from support and teaching staff. Online delivery should be seen against the background of the UNISA print-based delivery system, which may not easily be able to accommodate this innovation. The introduction of the OLC in a conservative correspondence DE environment did indeed challenge the practices and systems underlying this primary delivery mode. For it to be successful, it demands a different level and quality of intervention, which has to be supported by infrastructure and systems.

If South African universities, and institutions of higher education in Africa in general, therefore, want to adopt information and communication technologies to enhance education, they will have to be wary of the constraints and limitations posed by current teaching practice and delivery systems. The digital divide will be a tremendous concern, but the real challenge will be to engage in quality learning opportunities rather than to jump on a bandwagon set into motion by the developed world. There cannot be any doubt in our minds that the Internet and the World Wide Web provide facilities that, if structured and employed properly, can create suitable learning experiences for the African context. The online learning community, being able to accommodate most of the traditional African values of sharing and learning in a group, can be implemented with enormous benefits to our learners. But this implies that we use these technologies in a unique way in our own context — there would be
no purpose in copying examples of online learning environments from Western commercial and higher education environments without revisiting our commitment to our own unique needs. The African Renaissance cannot be built on such foundations.

Should connectivity in South Africa and Africa at large be improved to provide wider access to learners from diverse and previously disadvantaged backgrounds, this research will support at least one distance-learning environment. This justifies consideration for all distance-learning-appropriate contexts worldwide that have to account for the implementation of new ICTs. At the same time this learning environment accommodates the requirements for community, diversity, and traditional values needed in the African context without ignoring the learning outcomes appropriate for the global workplace.

References

ALTHAUS, S.L.

ANSTENDIG, L., J. MEYER & M. DRIVER

ATAMIAN, R. & W. DEMOVILLE
1998 Office hours B none: An e-mail experiment. College Teaching 46, pp. 31-35.

BATES, A.W.


BATES, A.W. & J.R. MINGLE

BEDNAR, A.K., D. CUNNINGHAM, T.M. DUFFY & J.D. PERRY

1995 Into the future: Report in a visit to the Open University, UK. Pretoria: University of South Africa.

BOSHIER, R., M. WILSON & A. QAYYUM

BRANDON, D.P. & A.B. HOLLINGSHEAD

BULACH, C., C. BROWN & L. POTTER

BULLEN, M.

CHAPMAN, G.

COHEN, A.

CRONJÉ, J.C. & P.A. CLARKE

DANIEL, J.S.

DUBRAVKA, C. & C. WEBB

EL, H. & E. AMERLIA
1998 Beyond classroom boundaries: Constructivist teaching with the Internet (Exploring literacy on the Internet). Reading Teacher 51 (8), pp. 694-700.

EVANS, T. & D. NATION

GOLDENBERG, J.

GRAVES, W.H., R.G. HENSHAW, J.L. OBERLIN & A.S. PARKER

GREENING, T.

GUGLIELMO, T.

HACKER, R. & B. SOVA

HARASIM, L.M.

HARASIM, L., S.R. HILTZ, L. TELES & M. TUROFF

HARRIS, D.

HERBERT, J.M.

HERRNECKAR, A.D.

HEWSON, L. & C. HUGHES

HEYDENRYCH, J.F.
2000 A critical appraisal of the implementation of online learning technologies: Society, higher education and business. Progressio 22 (2).

HILTZ, S.R. & B. WELLMAN

HOLMBERG, B.

HORTON, W.

INGLIS, A., P. LING & V. JOOSTEN
KEARSLEY, G.
2000  
*Online education: Learning and teaching in cyberspace.* Stamford: Wadsworth.

KEEGAN, D.J.
2000  
*Distance training: Taking stock at a time of change.* London: Routledge Falmer.

KEEGAN, D.J.
1980  
On defining distance education. *Distance Education* 1 (1), pp. 13-36.

KELLOGG, K.
1999  

KOVEL-JARBOE, P.
1996  

LALLY, V. & E. BARRETT
1999  

Laurillard, D.
1993  

1995  

LIVING VALUES
2002  

LOUW, D.J.
2002  

MBIGI, L. & J. MAREE
1995  
Ubuntu: The spirit of African transformation management, Knowledge Resources (PTY) Ltd.

MOLLER, L.
1998  

MOORE, M.G. & G.T. COZINE (EDS.)
1997  
*Web-based communications, the Internet, and distance education.* University Park: The Pennsylvania State University.

MOORE, M.G. & G. KEARSLEY
1996  

MUDGE, S.M.
1999  

NAIDU, S. & M. OLIVER
1999  
OBANYA, P.

OLIVER, R., A. OMARI & J. HERRINGTON

PALOFF, R.M. & K. PRATT

PEARSON, J.

PETERS, O.


POSTMAN, N.

RICHEY, R.

ROSENLUND, C., B. DAMASK-BEMBENEK, P. HUGIE & G. MATSUMURA

ROWLEY, D.J., H.D. LUJAN & M.G. DOLENCE

RUMBLE, G.

SAVERY, J.R. & T.M. DUFFY

SCHNORR, J.M.

SIKTBERG, L.L. & N.L. DILLARD
1999 Technology in the nursing classroom. *Nursing and Health Care Perspectives* 20 (3), pp. 128-133.

SIMPSON, O.

SOCIAL STUDIES

STACEY, E.A.
2001 Study of the enhancement of learning through group interaction by com-
puter mediated communication, PhD thesis, Monash University, Melbourne, Victoria.

**TREADWELL, T.W., E.A. LEACH, H. KELLAR, R. LEWIS & B.V. MITTAN**

**TSUI, A.B.M.**

**VICK, R.M.**

**Wah, R.**
2000 “To be or not to be: Technological change in the University of the South Pacific,” in T. Evans and D. Nation (eds.), *Changing university teaching: Reflections on creating educational technologies* (pp. 121-132). London: Kogan Page.

**Ward, M. & D. Newlwands**

**Warren, K. & R. Rada**

**White, K.W. & B.H. Weight (EDS.)**

**Wilson, T. & D. White洛克**
Pedagogical Issues and Gender in Cyberspace Education: Distance Education in South Africa

CHIKA TREVOR SEHOOLE * AND TEBOHOO MOJA**

ABSTRACT

The purpose of this paper is to analyse the pedagogical and gender issues embedded in distance and cyberspace education. Pedagogical issues to be addressed relate to access, teaching and learning, quality, and research within distance and cyberspace education. The paper will further analyse the gender dimension in cyberspace education in South Africa. Our paper limits itself to cyberspace teaching and learning as a process that takes place using the Internet or the World Wide Web, or uses some digital information and communications technology (ICT). We understand ICT to be a broad concept that includes all forms of electronic communications in both digital and analogue forms. Pedagogical issues in this paper are covered in a broader context, but our analyses of gender issues is limited to cyberspace education. Some literature refers to latter modes of learning as “e-learning” (Bates 2001). Different people have defined the concept, and the more common definition is that cyberspace is the total interconnectedness of human beings through computers and telecommunications without regard to

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physical geography. William Gibson is credited with inventing or popularising the concept in his novel.

**Introduction**

Cyberspace education can take different forms, including educational packages delivered as Web-based lessons or online courses with lectures uploaded to the Website at given intervals for students to access when and where the student is able and relatively inexpensive CD-ROMs containing courses or years of coursework. We would like to acknowledge that sometimes cyberspace education is supplemented by face-to-face instruction, real time chats, and discussions.

We argue that the use of ICT and cyberspace in distance education needs to focus on pedagogical issues of access, teaching and learning, quality, and research; in particular it must be sensitive to gender issues. It is not enough to celebrate access opportunities that are provided by these modes of provision; one must ask about the impact these modes have on pedagogy and about the gender dimensions embedded in distance education provision.

**Global developments in the use of ICT in distance education**

Countries of the world face challenges that have arisen due to the globalisation phenomenon that finds expression in different forms, predominantly in economic terms. According to Castells, the new economy is characterised by three interrelated features: (a) it is an economy in which productivity and competition are based on knowledge and information; (b) it is global in that it has the capacity to work as a unit in real time on a planetary scale; (c) it is technological, organisational, and institutional (Castells 2001). The new economy is knowledge driven and requires skilled human resources to grow and be sustained. This in turn has increased the demand for access to the knowledge and high-level skills offered by higher education. The challenge for the supply of these skills is confined not only to industrialized countries because developing countries are part of the globalising economy and are under increasing pressure to provide skilled human resources to participate in the global economy. This in turn has posed a challenge for higher education institutions and governments to provide the required skilled human resources in greater numbers to develop and support their economies.

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Information and communication technology is a central feature of globalisation and has become crucial for accessing knowledge and information as well as for providing access to education. Addo (2003: 18) also points out that ICT is central to global socioeconomic advancement. Countries on the vanguard of the world economy today have shifted emphasis from production of resources to production of knowledge. Such countries have adopted technologies to enhance their education systems, thus enabling them to increase the generation of wealth and boost the slow-growing economies of the developing nations (World Development Report 1999: 16).

The information age has made the use of technology indispensable to most new developments and innovations that are currently taking place. Computer technology today spans all realms of social and economic activity, making significant impacts on the lives of people (Hawkridge, Jawuski, and McMah 1990: 3). Addo (2003: 18) points out that ICT is central to global socioeconomic advancement.

ICT has been used by governments and education institutions in training and as a resource for accessing knowledge in distance education programmes. The Chinese education policy, for example, states that if the country was to develop into a first-rank industrialised nation, it must first have computers in its schools. Similar reasons are given for incorporating computers into the education systems of many other developing countries (Beauchamp 1995: 197).

The Department of Education (DOE) in South Africa adopted an ICT strategy that was in line with the policies of other government agencies working in the ICT area. The strategy was informed by the experience derived from a report of the Technology Enhanced Learning Initiative (TELI) in 1997 as a strategy to improve teaching and learning in South Africa. Though addressing the school sector, the Minister’s foreword in the “Strategy for Information and Communication Technology in Education” (November 2001) states that ICT will expand access to education and improve quality. As a result the Department committed itself to introducing computers in schools throughout the country. When the report was produced in 1997, only 13 percent of the schools had computers, but there were major ongoing projects to ensure that schools are provided with computers. For example, the Gauteng “Blue IQ,” a development project for the province, includes an aspect aimed at providing all schools in the province with computers within four years; and there are other large scale computer projects in five other provinces (Ibid., p. 15).

South Africa’s ICT industry has had tremendous expansion in the last five years, and the government in its attempt to overcome the digital divide has appointed a high-level international advisory task force that
was announced in the presidential state of the nation address in February 2001. Castells, one of the advisors appointed to the task force, argues that for development to take place a country needs, *inter alia*, a technology infrastructure and strong institutions (Muller, J. et al. 2001).

Based on the current developments in South Africa we conclude that ICT has become a critical component of South Africa’s education systems. Its long-term impact on education has been assessed by SAIDE (2000), and their report notes some of the emerging trends. In particular, the report mentions that ICT is expanding the range of options available to education planners in terms of the teaching and learning strategies they use, providing an often bewildering array of choices in terms of systems design options, teaching and learning combinations, and strategies for administering and managing education. However, the report also cautions about the possibility of ICT accentuating social disparities between the rich and the poor. We address the same issue with respect to gender issues in using ICT for education, particularly cyberspace education. It is important to note a point raised by Castells (Muller et al.) that the technology is not to be blamed, but rather policies in using them lead to the disparities and the digital divide.

The SAIDE report further asserts that:

- if investments in educational technologies are to make meaningful and sustainable impact, they will have to be made as part of a broader process of shifting patterns of expenditure on education; and
- there is a need for investments in flexible and sustainable infrastructures that will support educational applications in a variety of contexts.

It is not the intention of this paper to assess whether the South African Department of Education strategy in using ICT to improve access and quality takes into consideration the above mentioned points.

The South African DOE has not only focused on the acquisition of technology for education in the schooling sector but has also prioritised the merger of distance higher education institutions, namely the University of South Africa and the Technikon Southern Africa, to establish a mega open-learning institution in South Africa. Through a merged institution the government hopes to provide higher education to the people that were previously excluded, such as blacks, women, rural communities, and those who cannot access higher education through conventional means (DOE Higher Education Plan).

Whilst the above discussion has painted a picture from which one could infer that ICT seems to have the potential to provide solutions particularly for increasing participation rates and access to higher education, this paper advocates for the problematisation of the use of technology in
education in general and also as it affects women in particular. The perspectives of the use of technology generally assume that the use and application of technology are neutral phenomena that can be effectively used for the benefit of those who need it. On the contrary, there are barriers of access to effective education through technology or access to quality technology, since acquisition depends on availability of resources to purchase technology. This paper further adopts the view that ICT in itself has no intrinsic capacity for action and hence cannot impact on anything. Rather, people all around the world can and do apply ICT to perform a wide and growing range of tasks. These applications are, however, only as effective and creative as the people who implement them. So, negative and positive outcomes of ICT use are intrinsically linked to how people use them. ICT may create opportunities for doing things in new and different ways, but only people can actually harness these possibilities (SAIDE 2000: ii). Castells supports this view in relation to Internet connectivity by arguing that connectivity is only as good as the people being connected (Castells 2001: 196).

The point of the incapacity of ICT to initiate change and hence the centrality of human agency in the effective use of technology, is a useful contribution to studies of the impact of ICT in education. Technologies can only be as good and effective as the people who use them and the ways in which they use them. It is therefore critical to point out that studies focusing on the effectiveness of ICT should include both the technology and the human aspects.

In a country such as South Africa with a history of stark racial and gender inequities, a study of a phenomenon such as ICT that has revolutionised many sectors of society will be incomplete and serve no social justice purposes if it fails to incorporate these elements. Neither the study by SAIDE nor the one conducted by Addo addresses these issues. Gender issues need to be addressed in discussing the use of ICT for education and the design of instruction. Burge (1998) raises the issues of women’s exclusion in the design of technology courses, even in situations where women have come up with the underlying concept, and states that if women do get involved there is a tendency to involve them in the early stages only and to exclude them as the design develops further. It is imperative that women be involved in designing courses that will be potentially used by women so that the designs would incorporate the way women communicate and the aspects that would make the learning environment more productive for women as well. For example, a form of communication that needs to be taken into consideration when designing instruction for use in cyberspace education and that should be built into the design of courses relying on new communications technologies is the
way men and women communicate differently. A related issue is raised by Spender when she mentions that distance-education courses using ICT need to consider the fact that communication on line takes place without the paralinguistic cues of conversation and the tendency experienced in group discussions where males tend to speak more often than females and females are interrupted more often than males (Dale Spender 1980, as quoted in Kramarae 2001).

**ICT in distance education and some pedagogical issues**

Reform processes that started in the 1990s in South Africa have helped to expand access for the marginalized groups and institutions, and governments are paying attention to the potential of distance education to continue to address the issues of expanding education opportunities and to provide access to learning opportunities for more citizens. Higher education has expanded tremendously worldwide, but the figures in developing countries remain relatively low. In South Africa participation rates in higher education actually dropped in the period after 1994 — a time when the system was officially being transformed to increase access to higher education and new policies were being adopted to massify the system. It came as a surprise to observe that the figures dropped more at distance-education institutions than at contact institutions. In other countries, like Zimbabwe and Nigeria, distance education institutions were opened and the Africa Virtual University, an initiative of the World Bank, was established. Proposals for expanding the system took into account the fact that there was no money to sponsor growth, whilst higher education as a sector was competing with other sectors for limited funds in many countries, including South Africa. The slogan became “doing more with less,” as a message that growth and expansion had to happen within the context of the allocated budgets. The availability of technology to deliver education at a distance is seen by many as an opportunity to increase access. There is inconclusive research on the cost-effectiveness of this mode of delivery as many factors determine the ultimate costs of delivering quality education at a distance.

**ICT and access to education**

Increasing access to higher education is a top priority for governments and higher-education institutions worldwide in response to the need to provide high-levels skills for an emerging global economy. Developing countries face the challenge of finding strategies that would help to expand their systems without having to invest in infrastructure development at a time when, in many developing countries, the budgets for higher education
have been reduced. For South Africa the challenge to government and institutions is to provide access to higher education for the majority of people who, under the former apartheid government, could not easily access higher education for various reasons and to address the imbalances in race and gender participation rates. It is important to understand that with regard to gender participation rates, to date South Africa is the only country on the continent that has a balanced participation rate of men and women. The problem is in the representation in different programmes, different institution types, and levels of study such as graduate and undergraduate level studies.

In South Africa the attempt to expand access to higher education has led to the development of different access models, programmes, and an increased use of ICT. Distance education is becoming a real, permanent feature of the system of higher education. More systematic data and research need to be collected to document the size of distance higher education in South Africa and the percentage of institutions providing it. There is also need for segregated data on levels and courses, modes of instruction, kinds of technologies used, types of qualifications, and fees charged. There is acknowledgement that the number of nontraditional students is on the rise worldwide. The main reasons for this rise in industrialized countries are older students changing careers, married or divorced students (often with children to take care of), and students working at full-time jobs in addition whilst going to school. In developing countries the main reasons are new opportunities for adults who have never had the opportunity to pursue higher education, the limited number of higher education places in higher education institutions that compel students to take employment for a number of years whilst waiting for an opportunity to enrol, and financial constraints that interrupt a study career by going in and out of the system to raise funds and continue with education. Distance education has become an attractive option for some of the people whose higher-education careers had been interrupted and who now have other constraints that make full-time study impossible. Distance education has become attractive due to its flexibility in scheduling and financial costs, especially if it does not entail using expensive technologies.

Many governments and institutions are turning to ICT as a solution for meeting the demand for increased access to education. It is important to underscore the proverbial saying that technology cannot be the panacea for all education ills. To date ICT has been used to increase access to higher education by expanding options available for students to acquire higher education. Through the use of technology, different institutions have been able to reach out to learners even in remote rural areas. Students do no longer have to be geographically nearer to the institution in order to
further their studies; nor do they have to be based on campus full time. Through the use of flexible modes of delivery and assessments methods, students can still hold full-time jobs and improve their qualifications.

There are however, inherent barriers to access in some of the delivery modes used in distance education programmes. For example, enrolling in a Web-based programme requires students first to have computer skills and literacy, and second to have access to a computer on a regular basis. A survey of communication and information resources in Africa conducted by the World Bank in 1999 indicates that in 1997 about 37.7 people out of 1000 people had access to personal computers. Zeleza (2003: 89) points out that the challenges for the exploitation of the use of ICT were at both the national and university level. He observes that for most African universities, ICT was simply one more item on the long queue for desperate needs. A 1998 survey by the Association of African Universities, found that only 52 of the 232 academic and research institutions that responded had full Internet access, while the rest had only limited access. Internet access was generally limited to faculty and graduate students. There have been some improvements since then: In 2000, all 54 African countries were finally brought on line when Eritrea obtained a local internet connection. Neither of these studies reveal the gender and racial breakdown of the people having this access. Given the racial and gender disparities that characterise South African society, it is most probable that black and female people constitute a minority of those with Internet access. People without these computer resources and skills would hence be excluded from such distance-education programmes.

Furthermore, the more expensive the technology is required in the delivery of the programme, the more expensive the programme is likely to be, and the fewer the people who will be able to access it. For example, a Web-based masters degree, LLM (Taxation) and M. Com. (Taxation), offered by the University of Pretoria attracted mainly practicing lawyers and chartered accountants who are primarily white and male. Because of the exclusive nature of the course in terms its specialisation and the use of cyberspace education, there would be a smaller pool of students to recruit from compared to programmes in social science disciplines.

On the other hand, distance education programmes in the field of nursing and education at the University of Pretoria have attracted thousands of students in the target demographic. These programmes use off-campus tuition through learning centres, satellite broadcasts, and block contact. This mode of delivery is cheap, has wide coverage of students throughout the country, and is therefore more accessible to the underrepresented groups in higher education. The racial composition in these programmes is predominantly black and mostly women. This reflects both the apartheid
stereotypes of channelling black people and women into education and health professions and the cheapness of this delivery mode. What has not been explored is the quality and success of the teaching and learning of these technology-based programmes.

**ICT in teaching and learning**

The past decade has seen a proliferation of a number of distance-education programmes in higher education in South Africa. Even though many started with a paper-based mode of delivery, some have over a period of time incorporated the use of sophisticated technology in their delivery modes. This has led to a proliferation of terminology to describe the types of programme and delivery mode used. Terms such as “off-campus activities,” “telematic education,” “telematic learning,” “distance education,” and “lifelong learning” are some that can be found on the menu (SAIDE 2000).

The use of technology in the delivery modes of these programmes has led to the bridging of geographical distance in some of these programmes. This has led to some institutions and analysts beginning to question the distinction made between distance and contact. In its submission of institutional plans to the Department of Education, Rhodes University stated that in its projections for enrolment all students are classified as contact students, “although it does not mean that students are on-campus for the full duration of the coursework” (Rhodes 2000-2002: 2.4). It argued that the classification of students as contact and distance would not reflect the realities of the twenty-first century. The research of the overview of distance education programmes in traditional contact higher-education institutions conducted by SAIDE suggests that the introduction of new educational technologies and teaching approaches have rendered the distinction between contact and distance education artificial.

Four delivery modes associated with the use of different technologies have been identified in higher education in South Africa. These are paper-based distance education; mixed mode delivery; Web-based distance education; and satellite broadcasts offered at learning centres and supported through block tutorials. This paper focuses on the last two modes of delivery that form part of the cyberspace mode of education.

*Web-based programmes*

Web-based programmes often require that students have access to computer technology, and enrolments in these programmes therefore tend to be much lower than in paper-based programmes. It is possible for students to access this technology through learning centres equipped with computers, but that impinges on the flexibility of access through this mode of
delivery. Programmes offered in this mode are generally targeted at niche markets and/or offered at the postgraduate level. In addition to content delivery, however, many of the programmes offered through this mode provide learner support and administrative services using Web-based software packages such as Web CT and Embanet.

Two problems arise from the use of this mode of provision: who has access to it and the quality use of this mode of education. With regard to the issue of access, the majority of the people, such as women, blacks, and residents of rural communities, who traditionally have not had access to higher education, remain marginalized. In addition the majority of that population group do not have the basic degree which is a requirement for enrolment into a master’s programme and therefore cannot access a master’s-level programme even if they had access to the technology.

For higher-education institutions offering such programmes there is a need to ensure that issues relating to gender interactions are taken into consideration to make cyberspace learning effective.

Satellite broadcasts

Satellite broadcasts, in contrast to the Web-based mode of delivery, are offered mainly through learning centres. The delivery model for many of the distance-education programmes is primarily selected to bridge the spatial divide between learners and teacher. This is achieved by supplementing satellite broadcasting with face-to-face lectures at satellite and learning centres and compacting the period over which face-to-face tuition takes place. In essence, these programmes are traditional contact programmes that employ innovative strategies and ICT to make them more accessible to learners who work full-time or who are spatially removed from the institution.

Despite their distance from the institution, this mode of operation provides more support for the students at a distance. There are, however, other challenges that arise from the support provided, and the challenges might be different between males and females participating in this mode of learning. Identified challenges relate mainly to logistics in attending tutorials offered at a distance away from home, particularly in developing countries where students must consider transport problems, additional costs for travel, boarding, and lodging, and the ability to spend time away from the home base (Sujatha 2002: 144; Burge 1998: 27).

The satellite broadcast sessions that are provided also require learners who do not have access to Digital Satellite Television (DSTV), which have dedicated channels for such broadcasts, to travel to viewing centres. These are often not easily accessible to learners, and some must travel long distances to these centres. Reliance on technology for support has its own
challenges. For example, there is always supposed to be a technician at all viewing centres to ensure that the broadcasts run according to plan. Problems such as breaks in transmission, power failures, and technicians arriving late are not uncommon. Furthermore, the broadcasts are supposed to be interactive, since they are covered live. The author, who is based at the University of Pretoria, notes, however, that learners seldom raise matters of pedagogical concern. Most questions that are raised are of an administrative nature, such as receipt of submission dates for assignments or when they will receive them back. Thus the intended interaction is in most cases not realised.

**ICT support for teaching and learning**

ICT can be used to support teaching in different ways and at different levels. It can be done at the planning level as well as at the programme delivery level in terms of facilitating communication. ICT is an important tool in facilitating communication, as the establishment and maintenance of such a good communication system is important in educational planning. The use of ICT in support of the development of better quality management information systems is an important prerequisite for and element of how these technologies can be used to deliver education to learners. Effective use of ICT in the domain of teaching and learning flows much more easily when systems have already integrated effective use of ICT into their management and internal communication systems. Without this base, use of ICT to support delivery of education to learners will always be unsustainable.

At the programme-delivery level, ICT can also be used to facilitate communication between educator and learner and amongst learners or educators, especially in a context where cell phones are easier to acquire than textbooks such as in South Africa. For example, in January 2003, a programme coordinator at the University of Pretoria managed to deliver an urgent message to over five hundred distance education students using short message system (sms) to advise them about the change of venue for the scheduled contact sessions for distance education. Even though this communication was made at the last minute, students were able to turn up at the new venue the following day. As the programme coordinator noted, this was a cheap, efficient, and fast mode of communication.

**Distance education and gender issues in cyberspace**

Distance education has increased opportunity for women to acquire higher education but has also given rise to new challenges for those offering distance education using technologies. The previous section focussed mainly
on the potential use of technology for distance education (and the current use of it in the South African context). In this section we would like to focus on some of the issues at stake with the use of technology for distance education with regard to access and quality education for women. We will also briefly address the issue of research in cyberspace education. These issues will be addressed in general but taking more of a gender perspective into consideration.

There is a great challenge in addressing gender issues in cyberspace education because when statistics are provided in education they are often not gender segregated to assist in studying the impact of education on women in particular. The absence of gender-segregated data is a universal problem, particularly in Africa (Mlama 2001; Moja 2001). Cooper and Subotzky (2001) give figures that indicate that the majority of students at the distance education University of South Africa are women and that their numbers in the distance education Technikon have increased tremendously in the last decade. There is no data on cyberspace students in developing countries or their gender breakdown. Where data is available the pattern is that women are the majority of distance-education learners. This could be attributed to earlier cited challenges women face such as having to interrupt their education during childbearing and childrearing years. There is gendering in course choices that leads to underrepresentation of women in some of the programmes (Burge 1998). For example, participation rates of women are as high as 60 to 70 percent in Canada (Normand 1995 as quoted by Burge 1998) and 50 percent at the British Open University (Ibid., p. 28). At the University of Pretoria in South Africa, of the 28,856 students who were registered for distance education, 17,560 (61 percent) were women (UP Strategic Plan 2002-2005: 28). We could not find data to analyse programme and level of representation in cyberspace programmes.

There is an emerging body of literature on gender relations in cyberspace by feminist theorists (Troung 1993; Kramarae 1997; Blum 1999; Evans 1995) and challenges that need to be addressed in cyberspace education. Blum’s study suggests, “that there are gender differences between male and female distance education students which contribute towards inequitable gender differences which are both similar and different from the traditional learning environment” (p. 46). Other conclusions have been drawn to show that men and women relate differently to technology and that their interactions with each other reflect the day-to-day dynamics of interaction in these relationships (Ebben 1995). Also covered in research is the harassment of women on the Internet to an extent that women feel that cyberspace is not safe or hospitable (Stephanie Brail as quoted in Kramarae 2001; Troung 1993). In the past, education institutions have been reported to be inhospitable to women in their employment and as
unsafe learning environments for female students. These patterns seem to carry over into cyberspace teaching and learning with women reported to be receiving “messages of a sexually explicit nature in real time ‘chats’ or via email” (Troung 1993: 4). Other writers like Ferganchick-Neufang (1997) have even gone further to show that the harassment is not limited to women students but it is often extended to women instructors too.

There are persuasive arguments that cyberspace needs to be made accessible and hospitable to women and girls. This argument needs to be made in cases where higher education is provided via cyberspace to improve women’s opportunities to access higher education particularly online. The numbers of women studying through distance education or online is reported to have increased and the majority are reported to be over the age of 25 years and are pursuing degrees as well as intellectual challenge offered by traditional institutions (Kramarae 2001).

Access

Access to higher education for the majority of South Africans, particularly those who had been disadvantaged in the past, remains a concern to government and institutions (White Paper 1997; National Plan for Higher Education 2001). Some of the reasons for providing or increasing access opportunities are the need to address past injustice of discrimination, the need to address the continuing problem of many students who complete high school but do not have access to higher education, development of human resources with skills to meet the skills need of the national economy. South Africa, like many governments, is under pressure to expand educational opportunities at all levels because of the globalising economy and the link between levels of education and income. The numbers of women participating in higher education in South Africa has increased dramatically in the last ten years (Cloete and Bunting 2000; Subotszky and Cooper 2001; CHE report 1998-1999).

Women who have not accessed higher education in the traditional institutions have opted for distance higher education that includes cyberspace education, traditional modes of distance education, or a combination of both. It has become necessary to look at gender-specific issues with regard to distance education because of the increase in women’s participation rates in this mode of education. In one sense access has been achieved so there is need to look at a closely related issue, namely success.

In analysing the issue of access through distance education it is also important to raise the question of who the participants are and what their success rates are. It has been argued that the use of technology has provided more opportunities for women, particularly those from developing countries where young women’s access has been a problem either for
religious purposes or because of cultural constraints. There is a need for research to analyse the success rates for distance-education learners, particularly marginalised groups. Carnoy (1999: 74) states that distance education using the Internet extends education opportunities to reach communities and working adults at a cheaper rate than conventional methods. There is inconclusive research on the cost effectiveness of distance education. Exploring the cost effectiveness of distance education is beyond the scope of this paper.

Even though distance education has provided access, it has in turn created other problems that need to be addressed. We will now focus on three of those issues facing women in cyberspace education, namely workloads, course choices, and success rates. The first challenge is that of the workload added to a woman’s day. The American Association of University Women (AAUW) published a report titled “The Third Shift,” that indicated that women studying through online courses face more problems than men because a woman’s workday that is usually overloaded with home responsibilities (first shift) before paid employment (second shift) and more home responsibilities after the day’s work. Studying online is almost like a third shift either in the morning, during free time between shifts, or late at night after the other two shifts (Kramarae 2001). Despite the majority of learners being women, there is no evidence that the programmes offered through distance education are geared towards meeting the needs and challenges of women with their double or triple workloads as well as women’s learning styles. One strategy that could be used might be to sensitize instructors about gender issues in cyberspace learning so that they could enhance learning and improve on the quality of teaching and learning.

The second challenge is that of the limitation in the types of courses offered and the choices made by participants. In studying the types of programmes students enroll in at contact institutions in South Africa, Cloete and Bunting (2000) concluded that the majority of women are concentrated in humanities programmes and in undergraduate programmes. Evans (1995) elaborates on some of the barriers for women in accessing education and distance education, in particular in developing countries. It is on these grounds that we assume that the majority of women in distance-education programmes are enrolled in humanities programmes and are taking undergraduate programmes. The UP example of a Web-based Master of Laws (LLM) and Taxation programme is another example or a form of exclusion or access difficulties to space in a humanities programme at a graduate level. The problem with this pattern is that job opportunities with the qualifications in humanities at an undergraduate
level are being saturated and there is an overproduction of graduates in those programmes.

Access is one side of the coin; the other is success. Often it is relatively easier to expand access to education, but access to quality education is not always easy. The third challenge relates to the success rates of students in distance education in general and women students in particular. Recent reports of high dropout rates estimated at about 85 percent of the students enrolling in higher education in South Africa need to be taken seriously (Steyn 2002; Radebe 2002). The question to be raised is that of the failure rate of distance-education students, including those in cyberspace education, and their dropout rates in comparison to conventional students.

**Quality**

In the last two decades quality and quality assurance have become a major issue as higher-education systems expanded to increase access opportunities whilst funding levels declined. There are two issues that are inseparable when addressing quality in education. The first is quality of education as it refers to quality learning and teaching. This includes the use of well-developed quality learning materials, appropriately qualified staff, providing adequate learner support, and using relevant assessment criteria. The second is quality as perceived from outside and has to do with accreditation of the courses, programmes, or institutions offering cyberspace education. With the latter there are further concerns that include: (a) whether the courses offered by mainly foreign distance-education providers are accredited; (b) whether the courses would be recognised by future employers as quality education; and (c) the issue of certification of some of the cyberspace courses offered across borders and recognition of those qualifications. What is of concern to us is the need to explore gender-specific issues regarding quality distance education.

Quality education as a concept is elusive in its definition and we do not intend to try to define it. Nonetheless there is a need to pay attention to strategies that could enhance quality education. There is evidence that usually more attention is paid to strategies for increasing access with little attention being paid to ensuring that it is access to quality education. For example, an assessment of the United Nations Education, Science, and Culture Organization’s (UNESCO) “Education for All by 2000” indicated that even though many countries managed to increase participation rates in education the quality remained poor and the next phase needed to focus on improving quality. There was, however, evidence presented of some qualitative improvement from programmes using technology in distance education for teacher training.
Those concerned with quality education in cyberspace education could draw from theories of learning and learning styles to improve learning and enhance quality. Another body of knowledge to be used in addressing quality issues for cyberspace education is the information provided by instructional designers on some of the issues for considerations in the design of quality online courses. Kearsley (1999) makes the point that even though cyberspace education is convenient for students who are physically remote from the university, to full-time workers who want to upgrade their qualifications, and “home duties” practitioners who are trying to rejoin the paid workforce it poses challenges that cannot be ignored. He further states that their frustration in the quality of instruction is often linked to their inability to find information they are supposed to access through the links provided due to typos in the Uniform Resource Locators (URL) or the fact that information on the Internet is not permanent and sometimes it has been removed by the time they attempt to get it (Ibid.). Instructional designers need to take these concerns into consideration.

Another important issue for consideration in providing quality cyberspace education is the quality use of this mode of education. This mode of teaching and learning is said to amplify the need for high-level skills to make it effective and in addition requires relaxed participation to become more of a productive environment (Burge 1998: 27). One of the skills required for quality education in cyberspace is effective interaction. Kramarae (2001) concluded in her research that the interaction between men and women in cyberspace is often not ideal for women. If women, as Kramarae suggests, feel intimidated and harassed in such situations then the environment is not productive as needed for effective teaching and learning.

The Department of Education in South Africa plans to focus on teacher education as a strategy to improve quality education and to support a plan that requires the use of technology in schools. The majority of the 300 000 teachers in South Africa are women and the plan calls for the use of distance education supported through computers. Pillay and Cloete (2003) mention that there are two ways that higher education institutions can get involved in the school sector to improve quality education. One is by providing training to teachers and the other is to focus on specialized training for teachers in areas of shortage. The majority of programmes to date target teachers to help them upgrade their qualifications with the hope that improving the quality of teachers will contribute to improved quality of education in schools.

The Department of Education acknowledges that providing educator development to so many teachers will require distance education in providing computer skills required for technology enhanced learning in
the schools. The goal is to produce a new generation of teachers from higher-education institutions who have an understanding of how to use ICT in their school teaching (DOE 2001: 25). Such plans in the pipeline for teacher education indicate the potential use of cyberspace education in South Africa. In analyzing the DOE document there was no mention of gender differences in learning styles that might need attention, particularly in technology-based learning for the teachers taking distance-education courses as well as for sensitizing teachers about those issues for their use of technology in their own classes. The old saying that “teachers tend to teach the way they were taught” is likely to happen in this case unless teachers are made more aware of issues that would enhance quality learning and teaching.

Sanchez and Gunwardena (1998: 57-60) argue that distance learning needs to take into consideration diverse learning styles of some learners including strong preference for feedback, participation over avoidance, collaborative learning over competition, and concrete over abstract tasks in instructional design. Using the examples given here they recommend that instructors become aware of such preferences so that they could use comments on assignments, individual letters, fax, or email to give feedback to their learners. To encourage collaborative work where students prefer that, instructors could design group assignments or use computer conferencing to enhance quality learning and teaching. Such recommendations indicate that if attention is paid to these issues, quality education can be provided through cyberspace education.

Research

Knowledge production through research has been affected by the global changes taking place. New modes of knowledge production have been adopted as institutions of higher education lose the monopoly of being the sole knowledge producers and ICT is used for accessing knowledge for reconfiguration and use. New partnerships have been formed for research between institutions and the private sector, and research is conducted in teams. Despite these changes, there is still a place for an individual to conduct research and produce knowledge.

We would like to address the implications of research for students studying in cyberspace and engender the impact of some of those changes. Two issues need to be addressed here with regard to cyberspace research. The one issue is research conducted by students learning through cyberspace and the other is the issue of using cyberspace to conduct scholarly research. We would like to focus on the former first. There are three challenges we wish to raise in our focus on cyberspace education. The first challenge is that of them being a distance away from a research library and the use of
e-books, e-journals, and other material stored in electronic archives whilst conducting research as a cyberspace scholar. There is a difference between flipping through a book as a paper copy and spending hours glued to a screen reading electronic text. The second challenge has to do with the cost of accessing the Internet if the researchers are from the developing countries. Internet access is costly and therefore impacts negatively on an attempt to spend hours searching through research materials in contrast to spending time in the library. The third challenge is that of keeping up with the latest technology to access material available through the Internet and the need for updated equipment to access it. These three challenges need to be taken into consideration when addressing research for cyberspace distance-education students. These are challenges for both men and women in cyberspace distance education, but we also need to keep in mind that the earlier figures pointed out that the majority of distance education students are women and marginalized groups of society.

With regard to the latter issue of conducting scholarly research, there are a number of issues that affect women differently than men. One must take into consideration key issues that affect women researchers. First, the research field is still male dominated, and in countries like South Africa it is white male dominated. This fact raises concerns about the serious underrepresentation of women among senior researchers and among those who have access to resources from funding agencies and organizations. The same factors that have served as obstructions to women producing knowledge come into play even when cyberspace is used for research and therefore need to be addressed. Issues such as lack of access to accredited journals in which to publish work, who sits on the review panels, and who decides what is worth publishing or not all come into play. Women in developing countries have to deal with these issues all the time, and research using cyberspace does not necessarily improve the situation.

The underrepresentation of women in graduate courses in cyberspace distance education will have a negative impact on women’s opportunities to develop research skills and later on their ability to conduct research generally or in even in cyberspace. Finally other issues that come into play and affect men and women the same way are issues of ethics and legal matters in cyberspace research.

Conclusion

This paper has discussed the pedagogical and gender challenges in distance education in general and in cyberspace education in particular. It has cautioned against the celebration of the use of technology in education without taking into consideration the inherent pitfalls of reliance on technology. In this regard, the paper has argued that technology is only
as good as the people using it. Therefore, effective use of technology in teaching and learning requires well-trained and qualified personnel.

With respect to pedagogical issues, the paper has raised the challenges of access and quality in teaching and learning in distance education. Although access is being provided through distance education, there is need to pay attention to the quality of education that is being accessed and the quality of the teaching and learning experience. Learner support strategies and user-friendly, quality materials could help to overcome this problem. In particular, the extent to which online programmes are customised to meet the needs of female students studying through cyberspace education remains a challenge for course developers. Factors such as learner support, quality, and research in cyberspace require serious attention if cyberspace is to make a difference in the improvement of quality education.

Gender issues as they relate to quality and access of female students to cyberspace education have been raised. The use of cyberspace for education has great potential, but the major problem remains their high cost and affordability for the targeted groups, institutions, and governments particularly in developing countries. The costs go beyond the initial costs for acquiring those technologies and include their maintenance, training in their use, and their use itself, in the case of Web-based technology. Another problem relates to the skills required to use the technology as well as the upkeep with changing technologies which can also raise the costs of cyberspace education. If a student is pursuing a degree in this mode, the equipment she starts with might be long outdated before she completes her studies and some of the newer course materials might not be usable on the old equipment. The challenges related to access to quality find expression through harassment of female students and staff on the Internet and the need to consider diverse learning styles of learners such as a strong preference for feedback, participation over avoidance, collaborative learning over competition, and concrete over abstract tasks in instructional design.

References

ADDO, G.H.L.
2003 Utilization of information and communication technology (ICT) for education in South Africa. An examination of the World Links for Development (WorLD) Programme, Ph.D. thesis submitted to the Faculty of Education, University of Pretoria.

COMLEARN
1995 An abridgement of this paper appeared as an article entitled, Distance Education: Help-
ing overcome barriers to women’s technological education, in the November 1995 edition (Vol. 6, No. 2) of COL’s news publication.

BATES, T.

BEAUCHAMP, A.

BIGUM, C.

BLUM, K.D.

BURGE, E.
1998 “Gender in Distance Education,” in C.C. Gibson (ed.), Distance Learners in Higher Education. Madison, Wisconsin: Atwood Publishing.

CARNOT, M.

CASTELLS, M.

CLOE, N. AND I. BUNTING

COUNCIL ON HIGHER EDUCATION ANNUAL REPORT
1998/9 Department of Education, South Africa.

DEPARTMENT OF EDUCATION — NATIONAL PLAN FOR HIGHER EDUCATION IN SOUTH AFRICA

DEPARTMENT OF EDUCATION

DEPARTMENT OF EDUCATION

EBBEN, M.
EVANS, K.  

GBOLAGADE, A.  

HAWKERIDGE, D., J. JAWOWSKI AND MACMAHAN  

FERGANCHICK-NEUFANG, JULIA K.  
1997 “Harassment Online,” Kairos, volume 2, Number 2, at http://english.ttu.edu/kairos/2.2

KEARSLEY, GREG  
1999 Online Education: Learning and Teaching in Cyberspace, Wardsworth, Detroit.

KRAMARAE, C.  


MLAMA, P.  

MOJA T.  

MULLER, J., N. CLOETE AND S. BADAT  
2001 South African Debates with Castells. Cape Town: Maskew Miller Longman and CHET.

RADEBE, HOPEWELL  
2003 “85% of SA students drop out.” Citizen newspaper, February 19.

RHODES UNIVERSITY  

SANCHEZ, I. AND CHARLOTTE N. GUNAWARDENA  

SOUTH AFRICAN INSTITUTE FOR DISTANCE EDUCATION (SAIDE)  
2000 Distance Education at Traditional Contact Higher Education Institutions, Report Prepared for the Council on Higher Education, Braamfontein.

STEYN, P.  
2003 “Those who partially complete degrees or diplomas should be given ‘exit’ points.” Citizen newspaper, February 24, 2003.

SUJATHA, K.  
TROUNG, H.

UNESCO WORLD EDUCATION FORUM

WORLD DEVELOPMENT REPORT

ZELEZA, P.T.
Distance Learning and Virtual Education for Higher Education in Africa: Evaluation of Options and Strategies

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ABSTRACT
This paper briefly reviews the status of distance education and virtual education in the higher-education sector in Africa. The key issues affecting distance education in Sub-Saharan Africa (SSA) are identified and discussed. An analysis of the major issues facing distance education in SSA is made. It is noted that the full range of opportunities offered by information and communication technology (ICT) for higher education in Africa is largely underexploited. Factors responsible for this situation are identified and a range of strategies is recommended for resolving this situation. Finally, a model of distance education that can potentially enhance the use of ICT in higher education in SSA is proposed.

Introduction
Recent advances in information and communication technology (ICT) have produced what is often called the “information age” or “knowledge-based society.” This new age is also sometimes called the “knowledge economy” or “knowledge society.” It is characterised by information superhighways and wireless and satellite technologies that can theoretically make information instantaneously available to almost anyone globally, thus producing a tremendous globalising influence. In spite of such tremendous

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advances in the developing countries, Farrell (1999) asserts that the concept of a true “virtual education” is still mainly rhetorical.

Nevertheless, this new knowledge economy is changing many aspects of people’s lives, such as the ways in which they live, work, relate to each other, and even teach and learn. These changes are occurring globally. As the other regions of the world, Africa finds itself in this new economy. Amidst ever skyrocketing costs of higher education and competing priorities, Africa (particularly SSA) finds itself exploring various options to adapt and prosper through education. The use of ICT for education in the form of distance education holds promise. According to Sherry (1996) distance education involves “situations when the instructor and student are in separate locations or time.” The ICT sector has seen dramatic advances in numerous African countries in recent times. This has largely been the result of huge investments in the telecommunications infrastructure. In many cases the funding has been obtained from donors and has often been accompanied by deregulation and the introduction of regulatory regimes for the ICT sector (UNECA 2000).

Efforts to use distance education successfully in SSA are, however, still being hampered by numerous problems (Jenkins 1989; UNECA 2000), despite the numerous efforts that have been made to solve them.

Globally distance education is transforming the way people teach and learn. The transformation has been relatively significant in the developed world but not as much in the developing world. This has resulted in a disparity that is often referred to as “the digital divide” in the ICT sector. The effects of this divide potentially touch on many aspects of people’s lives. Education is just one area that will be influenced by this disparity. The divide is greatest between Africa and much of the developed world. Sadly, whilst there have been considerable advances in distance education in the rest of the world, the situation in Africa is still largely a cause for concern. Indeed, the continent faces the risk of being marginalised in the new knowledge-based world economy.

Amidst all this, globalisation and the new world order based on knowledge are placing increasing demands on higher-education institutions in general and in Africa in particular. The providers of higher education are being forced to explore new delivery modes that accommodate the needs of the learner in the global village as well as meet the demands of the growing but increasingly impoverished African population.

Whilst creating numerous opportunities, the use of ICT in distance education also offers numerous challenges and questions. These include the following: How will the new ways of delivering course content affect the way we teach and learn? How will the new ways of delivering course content affect content production? How will equity and social justice be
achieved; What mode is ideal for Africa? Will the distance education being offered be cost-effective? What are the socio-cultural implications associated with the education being delivered?

An attempt is made to answer some of these questions in this paper. Furthermore, the paper briefly reviews the situation relating to distance education in Africa with an emphasis on SSA. Reference is made to representative examples of the use of ICT in SSA, for example, the African Virtual University (AVU) model. On the basis of the review of the general situation in SSA and globally, recommendations are then made on how the challenges faced by distance education in SSA can be addressed. It is hoped that the recommendations made in this paper will enrich the debate on how ICT can be used to enhance higher education in Africa.

As the world increasingly becomes a knowledge-based entity, the developing world, and Africa in particular, is experiencing an unprecedented demand for quality higher education. Open and distance education has also become an integral part of the provision of higher education worldwide. The use of ICTs is increasingly becoming a big component of this open- and distance-education component. This has obviously aroused interest in the African countries. Interest in delivering higher education to the developing countries has become widespread. Winthrop (1999) points out that this has created a convergence of interests in higher education from the developed world. This interest and involvement of the developed world has several implications. The implications are:

• ethnocentrism (ethnic/cultural domination);
• lack of relevance;
• dependence;
• hidden agendas (real or perceived);
• lack of consideration of implications;
• lack of accompanying regulatory frameworks; and
• disparities in access.

After introduction of the topic and issues, this paper discusses the current state of distance education in SSA. This is followed by a discussion a discussion of relevant issues for the use of ICT in higher education in Africa. The paper concludes with a series of recommendations that can be used to address the barriers to successful use of ICT for higher education SSA.

**State of Distance Education in SSA**

The concept of using ICTs for higher education has been successfully exploited in many developed countries. In spite of the fact that the concept of distance education has been well established across many countries in SSA for a number of years, this model has been largely underexploited
(Jenkins 1989). Commenting on the failure of one distance education program in SSA, Jenkins (Ibid.) wrote “Why were the programmes not adapted and continued? Was it lack of imagination about how to use the resources created for the original programme? Or was it concern about costs or lack of conviction of the value of distance education?” Jenkins (Ibid.) describes a number of success stories in distance education in Africa, but points out that in spite of these achievements distance education largely remains underdeveloped in Africa mainly because of underfunding. According to Jenkins (Ibid.), this underfunding has led to the production of what are viewed by learners and others as low-class distance education programs. Jenkins (Ibid.) identifies the following as problems hindering distance education in SSA: underfunding; lack of skilled personnel; and a lack of strong commitment by government. The last point is particularly critical since governmental support and commitment is key to the success of any national distance-education program.

There are several distance-education initiatives currently in operation in SSA. Naidoo and Schutte (1999) give a comprehensive review of such initiatives, highlighting their successes and limitations. The African Virtual University (AVU) is one of them. The practices of the AVU are briefly reviewed below. Some of the issues discussed are applicable to single-mode institutions, whilst others apply to dual-mode institutions.

The African Virtual University (AVU)

The African Virtual University (AVU) was launched as a World Bank-funded project whose main aim was the provision of world-class education and professional development to SSA. The AVU is considered as one example of a successful virtual institution in SSA (Naidoo and Schutte 1999).

The AVU project was set to run in three phases. The first phase was the prototype stage whose main objective was the establishment of partnerships with institutions of higher learning in SSA. The second phase aimed at implementation of undergraduate degrees in selected disciplines. The aims of the third phase were the development and offering of science curricula from participating institutions.

The AVU currently has numerous Learning Centres to which programs are beamed. The AVU product line was initially aimed at complementing the curriculum of affiliated African universities in the areas of engineering and science at the undergraduate level. Subsequently, courses were also undertaken in other areas such as business, economics, and journalism. Recently, degree programs have been launched in collaboration with overseas universities.
The AVU model has shown some success as a pioneer of distance education in Africa (Light 1999). It provides the potential for educators to communicate amongst themselves, to share their experiences, and thus learn from each other. Additionally the AVU model offers rich online resources that educators can use in a cost-effective way. These include the provision of numerous relevant manuals that are available online from the AVU Website as well as a digital library that has a very wide collection of full-text journals and a broad range of other academic materials. The AVU links 25 African campuses to classrooms and libraries worldwide; by working with institutions and faculty in developed countries, the AVU aims to reduce the marginalisation that SSA has thus far faced.

The AVU uses a technical infrastructure that integrates satellite and Web-based technologies to transmit video and data resources from anywhere in the world to multiple sites 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 leading universities and other content providers. Students interact with their instructors and other students via phone, e-mail, discussion forums, or fax. The AVU transmits courses and seminars using a satellite whose footprint covers the entire African continent, Western Europe, and the east coast of the United States and Canada.

Relevant issues in the use of ICT in higher education in SSA

ICTs offer Africa numerous prospects for development and full participation in the global economy. Distance-education programs in Africa can be largely considered as being in their infancy mainly because they have been beset by problems that they have largely failed to overcome. It is clear that their full potential has not been fully exploited so far. It is necessary to identity the factors that are hampering the full realisation of this potential. Once this is done, possible strategies can then be proposed to address the problems. Kinyanjui (1996, 1998) identifies the main requirements for distance education as being human, physical, financial, and technological in nature.

Darkwa and Eskow (2000) document the constraints and challenges faced by higher education in SSA. Amongst the constraints they identify are: limitations in access; increasing costs; decreasing quality; limited choice of subjects; and the inflexibility of course selection. Several other factors also contribute to the limited success of distance education programmes in some developing countries. One such factor is the lack of policy guidelines that are based on educational and economic data for administrators to use in decision making (Edirisingh 1999).
The full range of factors that are barriers to the effective use of ICT in higher education — and education in general — in SSA can be described as:

- administrative;
- financial;
- infrastructural;
- pedagogical/content;
- human resource-related;
- policy-related (national/Institutional);
- technical; and
- political.

Some specific issues affecting the use of ICT in SSA are discussed below.

**Leadership**

Effective leadership is critical to the success of distance education. According to Hitt and Hartman (2002) institutional change for success in distance education can only occur when the leadership can articulate a clear vision, are able to provide resources, and encourage widespread collaboration within and amongst educational institutions.

**Role of professional associations**

Professional associations can play an important role in promoting distance education in SSA. An example of one such association is the Association for the Development of Education in Africa (ADEA). Formed in 1988 by international donor agencies, ADEA is a network of partners promoting the development of effective education policies based on African leadership and ownership. The Association works to promote collaboration amongst funding agencies and African education ministries. It also aims to help governments share information and experiences about the most effective ways to use education funds.

**Provision of learner-support systems**

Another important provision required for distance education is the provision of learner-support resources to deal with retention levels. According to Ludwig-Hardman and Dunlap (2003) suitable learner-support programs should be devised in order to deal with the feelings of isolation, lack of self-direction, and management-related problems that distance education students often experience.

**Relevance of distance education**

One aspect of distance education that is important in the African context is the issue of relevance. According to Chung (1990) it is necessary for dis-
tance education to be tailored to address real-world problems. When programs are of foreign origin, questions of relevance and ethno-domination inevitably arise and must be addressed. In this regard, there are some lessons to learn from other developing regions (e.g. Asia). According to Murphy et al. (2003) fears of western-led “content-imperialism” can be allayed if the overseas universities seeking to offer courses in Asia change their way of thinking, for example by embracing collaboration and partnerships with local providers and addressing the concerns of all the stakeholders. Such an approach could also be useful in the African context.

Murphy et al. (2003) point out that many Asian universities have actually been aggressive and now offer cross-border courses at a quality and cost that cannot be met by their western counterparts. African institutions, too, need to look further afield for markets in the global arena. UNISA is one of the African institutions that is already doing this. Other institutions need to do the same.

Following a critical and exhaustive analysis of the literature, Arger (1987) argues that the gulf between the promise and reality of distance education in the Third World is likely to remain. According to Arger (Ibid.) the basis of this discrepancy is the Eurocentric nature of the premises as well as the so called “modernisation paradigm.” The author argues that the difference between the potential of distance education and the actual contribution of distance education in the Third World will remain until the premises are made more appropriate for the Third World.

Rafferty et al. (2000) emphasise the need to consider human perspectives (especially customer expectations) in the development of distance education programmes.

**Role of development initiatives/programmes**

With the launch of recovery initiatives in Africa there is an increased opportunity to chart new courses in distance education. One such promising initiative is the New Partnership for Africa’s Development (NEPAD), although it remains to be seen if it will in fact address African concerns in an African context.

**Teacher training**

One area that needs to be strengthened to help bridge the digital divide is the training of teachers. In regard to this, UNESCO (2001) has produced a set of guidelines on the use of distance education in teacher education. The issue of upgrading existing teachers’ knowledge is of key importance in the context of life-long learning.
Stakeholder involvement

It is important to involve the stakeholders in a participatory, interactive approach. One process that successfully involved stakeholders in such a way was the formulation of the South African new higher education policies at independence (ADEA 2000). According to ADEA (2000) such an approach gave ownership of the program to the stakeholders. This is in contrast to the situation whereby external actors dictate the direction. When there is no ownership of a program, the commitment from the stakeholders may be minimal, resulting in limited the success of the program.

Another important component is faculty support for the program. It is important to build faculty support for the distance-education program. This is because faculty plays an important role in the actual delivery of content as well as in research. The support for faculty needs to be both at the initiation of programs as well during delivery of the programs.

This is a precondition for any significant pedagogical change. Many projects in Africa have run into problems because they were introduced to Africa as ready-made prescriptions from outside the continent. It is important to include as many stakeholders as possible in the whole process of distance-education projects. The importance of input from all African stakeholders was clearly emphasised and put into practice during a forum examining the challenge of globalisation and the information age to Africa (UNECA 2000). The different stakeholder groups, subdivided into focus groups, gave their inputs and clearly articulated their concerns and expectations during the forum.

Conservatism

It is important for educational institutions to adapt to changing situations as far as ICT and distance education are concerned. This is supported by numerous authors (e.g. Darkwa & Eskow 2000). Compared with traditional education models, distance education introduces new technological and pedagogical elements. The implication is that when ICT is used to complement traditional higher-education institutions, there must be some adjustments made to cater to the new issues.

Role of international organisations

Kinyanjui (1996, 1998) argues that international organisations and professional associations can play an important role in promoting distance education in Africa. The author gives instances where an international organisation (The Commonwealth of learning, COL) successfully assisted in materials acquisition and development in several distance education initiatives in SSA. The author also gives examples of collaboration in training of distance educators and in research and evaluation.
Adjusting distance education to socioeconomic and cultural conditions

The need to take prevailing socioeconomic and other factors into account in implementing distance education in Africa has been emphasized before (e.g. Moyo 2001). The recommendations from a forum on the challenges facing Africa in the information age also emphasize the need to create African content to bring an African perspective (UNECA 2000). Often solutions that have been formulated in the developed world are taken and applied without modification. This is one factor that is responsible for the limited success of some of these projects in Africa. If any content is developed outside of SSA institutions, it should be tested for crosscultural effectiveness.

According to Gourova et al. (2001) there is no “one-size-fits-all” solution to the problems of using ICT in developing nations. The authors argue that solutions to the ICT problem must take into account the varying political and economic situations in the developing countries.

The AVU experience

Whilst the AVU project has scored numerous successes, it has also faced some challenges. Muir and Ondari-Okwema (2002) highlight some of the problems faced by the Kenyan site of the AVU. These include: shortage of information technology staff; lack of teamwork; poor management structures and policies; and poor telecommunications infrastructure. According to the authors, if such problems are addressed, the chances of the program achieving its objectives will be increased. Although these problems are given specifically for the Kenyan site of the AVU, other sites are also beset by similar problems. For the University of Zimbabwe site, Moyo (2001) states that some of the major hurdles have been of a regulatory and technological nature. Moyo (Ibid.) further states that due consideration of the prevailing socioeconomic conditions and some pragmatism helped in overcoming the hurdles. Once these were gradually resolved, clients increasingly began to use and benefit from the AVU resources such as the digital library, electronic mail, the Internet, workshops, seminars, and language courses.

Financial constraints

One of the major inhibiting factors for setting up and maintaining a distance-education program is the huge capital cost involved. Additionally, many clients in SSA cannot afford the costs of access (particularly Internet-related costs). The high costs of connectivity and Internet access need to be addressed if distance education is to have a significant impact in SSA. Several authors have attempted to address this issue. In a review of Infodev projects, Knight (2000) recommends the setting up of a trust fund whose
purpose would be to enhance broadband bandwidth access in developing countries. Knight (Ibid.) further suggests that costs of dialup access could be made more affordable by changing the charging regime from “metered” time-based tariffs to a flat-rate tariff system. Lack of access to broadband has been a limiting factor for distance education for a long time in Africa (Jensen 1996).

**Failure to follow up on recommendations**

In addition, in the past recommendations have been made but often not carried out because factors such as the following:
- inadequate funding;
- overburdened staff;
- equipment breakdowns; and
- government policies that work against intelligent ICT use.

**Collaboration**

The South Africa National Working Group (NWG) (2002) acknowledges the need for regional collaboration amongst higher-education institutions as a positive force.

Collaboration leads to resource sharing and increased chances of success (e.g. in improving quality). Teamwork and sharing of resources, both technological and human, can also lead to considerable cost advantages. The distance education model described by Samarrai (2001) for a North American university and two African universities (in South Africa and Mozambique) illustrates the potential that collaboration offers. According to this model, jointly produced distance-education courses are offered to students in the three countries in real time and with interactivity. This collaborative project offers potential in the areas of research, projects, and distance-education programs as well as exchange of faculty. Another important issue that is addressed is that of credits for courses — the distance-education students at all the institutions are able to earn credits. Collaboration amongst higher education institutions in SSA can also bring about the production of quality teaching materials that are relevant to SSA and relate to the socioeconomic and cultural context in SSA.

Collaboration among higher education institutions can lead to resource sharing and combining of strengths. One example is the University of the Arctic. This is a network of academic institutions and programs in the north that include Athabasca University and Yukon College in Canada as well as institutions based in the United States, Iceland, Russia, Finland, Sweden, Norway, Denmark, Greenland, and the Faroe Islands.

Such a virtual suite could be launched in SSA to enhance distance education. Admittedly, at least one such virtual university (the AVU) already
exists, enabling students in numerous African countries to take courses, seminars, and degree programs by distance education. The combined strengths of the AVU and the envisioned new virtual suite would no doubt increase the availability and effectiveness of distance education in SSA. Furthermore, there would be more cost-effective use of resources in SSA. Collaboration must ensure that the output transcends boundaries, time zones, accreditation requirements, and cultural differences. It is important to strengthen collaboration amongst key stakeholders such as governments, development agencies, and higher-education institutions.

Policy for distance education in Africa

Discussions at UNECA workshop (UNECA 2000) highlighted the need for all SSA countries to develop national policies on information technologies (NICIs). It was noted that the process of developing NICIs should involve as many stakeholders as possible in order to be successful.

Production of teaching material

Perraton and Creed (1999) emphasize that quality teaching materials are key to the success of distance education. They suggest that it is through training that quality can be achieved and maintained. According to them it is important to have training as well as to develop sound management structures. The issue of producing materials with high-quality local and regional content was highlighted as one of the urgent issues for ICT in Africa (UNECA 2000).

Changing roles for stakeholders in distance education

Distance education brings new challenges and roles to all the players in the teaching-learning environment (Sherry 1996). This is true not only Africa but throughout the world. The new circumstances demand changes in the roles. It is important for the stakeholders to be given the skills that are required for the new educational approaches. Often, faculty and other key players are left to figure things out themselves. It is more effective to arrange proper training in the form of workshops, conferences, and other fora.

Socioeconomic and political conditions for distance education

Education in its own right is liberating to the mind. One of the preconditions for teaching and learning to occur is a conducive climate. This is hardly the case in much of SSA, where there is continuous strife. The destruction of life and property associated with this is hardly the right condition for anyone to invest money in expensive infrastructure for distance education. There are numerous schools of education in Africa that were
literally destroyed overnight in this way after years of painstaking building. Political stability, democracy, free thought, and respect for human rights is key to the success of distance education efforts in Africa in much the same way it is for economic and social development. Numerous charters, such as the African Union charter, clearly state the conditions that member states strive for. Close analysis clearly shows that a theoretical framework exists for a conducive climate for socioeconomic development. In practice, much of SSA seems to ignore these core principles, resulting in strife that affects distance education and all other areas of progress. Additionally, some external players worsen the situation as they often exploit internal contradictions and weaknesses for their own gain. Sometime such external players even directly sponsor domestic conflicts for their own motives.

**Partnerships among equals**

The trend in higher education nowadays is the formation of innovative partnerships to offer education to wider audiences at reduced costs. According to Graves (2001), a traditional campus that goes it alone in higher education ends up with higher costs than one which relies on virtual operations through contracting or partnering for capital, infrastructure, and services in the Internet economy. Graves (2001) says in partnering, the higher education institutions should clearly delineate the two purposes of higher education, which are education as a social good and education as a market good. The institution should address these aims independently as they are not totally miscible.

Whilst partnering can bring considerable benefits to institutions, it should be noted that there are a number of issues that may arise from them. Katz et al. (2002) lists the following issues that higher education institutions entering into partnerships may face: curriculum control; faculty autonomy; technology expertise; courseware ownership; and revenue ownership. According to the authors, higher education institutions entering into partnerships must make sure that their own objectives are clearly defined and that the partners have complementary objectives.

**Budgetary Considerations**

Eaton (2002), advocates that government spending on education should in general be given priority. One of the recommendations made at a recent UNESCO conference of key stakeholders in Africa recommends that adequate amounts of national funding be reserved for education (UNESCO 2001). It was recognised that catching up with the rest of the world would entail improved budgeting and a commitment to reserve at least 5 percent of GNP and 20 percent of national budgets to education. According to the World Development Report (2001), SSA countries had
a public expenditure of 3.8 percent of GNP in 1997 compared with a world-average of 3.9 percent and a value of 5.4 percent for high-income nations. Any improvements in education will need greater contributions from the GNP than current ones. This is all about priorities. Data on SSA budgets show a skewed allocation of resources (World Bank 1999; UN Human Development Report 2000). Whilst SSA has been spending just 4.1 percent of GNP on education, it has been spending disproportionately much more on defence. The question may be asked, whom has SSA been defending itself against! The threat of ignorance and marginalisation in the information age is greater than any military threat facing SSA. In fact, the greatest threat to African countries is not military — it is the danger of being marginalised in the new knowledge society.

Distance education in Sub-Saharan Africa has been beset by numerous financial problems caused by:

- intensified demand for higher education;
- rising tertiary enrollments;
- reduced government capacity to finance higher education expansion;
- increased competition for public funds; and
- expense of maintaining residential campuses.

Amidst all this, several SSA countries have been devoting limited funds for higher education. Typically, some countries have been devoting small fractions of national income (GDP) or per capita income to higher education.

**Policy issues related to distance education**

The principal policy issues that need to be addressed are at national and institutional levels. The need for national policies on distance education has been stressed (e.g. UNECA 2000). Saint (1998) reported that a large number of SSA countries did not have national distance-education policies in place in spite of the fact that many of them actually have long experience with distance education. The implication is that the lack of clear-cut national policies results in reduced efficacy of distance education in the SSA countries. Policy issues are also important in the actual implementation of distance-education programs. A major policy issue pertaining to distance education in Africa is that of connectivity and bandwidth (Jensen 1996). Costs associated with connectivity and bandwidth can be reduced through efforts at several levels involving ISPs, telephone companies, international gateways, public and private initiatives, and governmental regulatory agencies.

Siaciwena (2000) states that there is still a role for informal radio and correspondence courses to play in filling in the gaps in the education system in Africa. The author notes that these approaches could complement other
efforts in distance education provided policy-makers have the resources and political will to make the appropriate provisions for them.

Research

There is need to conduct more research on distance education in SSA. Edirisingh (1999) identifies deficiencies in the research process as a significant barrier to the success of distance education in SSA. It is necessary to further identify the theoretical-contextual and practical aspects of research that need to be focussed on the developing world in general and on SSA in particular.

Pedagogy

Delivering course content through new means using new technology will require changes in the way teaching and learning is done. Merely superimposing the new technology into the traditional setup will not work. Another issue that needs to be addressed is how the African faculty can adapt the new technology to their instructional needs. This can be achieved through the implementation of shared initiatives, workshops, conferences, and courses specifically designed for the faculty.

The integration of distance education into the existing traditional higher-education system faces many challenges. A lot of conservatism and skepticism exists in some of the traditional SSA universities. Distance education is perceived as a threat both at the administrative level as well as in academic circles. The academic community views it as a threat to their jobs. The truth is that distance education is an ally to the traditional education system and together these approaches can more efficiently achieve the provision of education to the continent of Africa.

Conditions that must be addressed to enhance distance education

Murphy et al. (2002) identify the following as conditions that must be addressed in order to make distance education successful in Africa. These are:

- support for infrastructure;
- effective management;
- availability of skilled human resources;
- effective program design (to include motivation, means for feedback, and provision for peer interaction); and
- cost-effectiveness.

The needs of the targeted groups also need to be addressed. In particular, it is essential to make sure that the needs of those who may not be in a position to express themselves be taken into account. Additionally
stakeholders must be involved in the planning and implementation of distance-education programs.

**Strategic planning**

Strategic planning should be done through an interactive and participatory approach. The steps leading up to the plan must involve all the stakeholders. The input of stakeholders could be gathered through the use of task forces, focus groups, consultations, submissions, and public hearings.

**Critical areas for further reflection and action for the use of ICT in higher education in Africa**

Based on the issues discussed, a range of generic recommendations for improving the use of ICT in higher education in Africa are made. The recommendations aim to stimulate thought and discussion about the path that distance education might take in Africa. They are

**Administrative/Managerial**

- Improved and more effective administration and administration systems must be put into place.
- Adequate management capacity must be developed and put into place.
- Frequent communication and transparency in decision-making is necessary.
- Strategic planning by the higher education institutions is needed. This should be encouraged as a way of addressing institutional difficulties and future goals. The formulation of the strategic plans should include as many stakeholders as possible and must address local needs.
- Leadership should be able to articulate a clear vision, provide resources, and encourage collaboration.

**Financial**

- There is a need for increased budgetary allocations to education. In many SSA countries there is a disproportionate allocation to items such as defence at the expense of education. Adjustments should be made to national budgets to increase their contributions to higher education.
- Cost sharing: The involvement of clients in cost sharing offers part of the solution in meeting the financial needs of higher-education institutions and should be encouraged. The cost-sharing formulae should, however, have provisions to help those who may need assistance.
**Infrastructural**

- There is a need to supply the infrastructure that is required for efficient delivery of distance education.
- There is a need to maintain the infrastructure that already exists and to prevent it from deteriorating and becoming unusable. This is a common problem in many higher-education institutions in SSA.

**Pedagogical/content-related**

- Enhance the teaching/learning process. This can be achieved in many ways, such as by improving interactivity amongst students and instructors and improving opportunities for feedback amongst students and instructors.
- Key players in the provision of distance education should be ready to embrace change in pedagogy that is necessitated by new information and communications technologies.
- Staff should be trained in order to produce content for distance education in SSA in order to address the serious paucity of content. Additionally efforts should be made to adapt relevant content where appropriate or where existing content cannot be used. The value of open courseware in distance education in SSA should also be explored. Another possible avenue is the use of collaborative teams to produce the relevant content.

**Human Resource-related**

- Training and resources to provide African educators with the skills (such as those for content production) must be provided. Continued training and staff-development programs should be put into place. Efforts should also be made to retain the staff through better pay and benefits or to tap into the pool of volunteers from more developed countries (for example, from the Diaspora).
- Efforts should be made to aggressively address relevant human-resource shortages in SSA. Effective human resources should be rewarded through appropriate salaries and conditions. Furthermore, efforts should be made to lure and retain qualified professionals to the higher-education institutions of SSA.

**Policy-related, national and institutional**

- Multiple models for distance education should be used in order to cater to limitations in financial, infrastructural, technological, and human resources.
• All stakeholders should be consulted, including members of government, the donor community, the academic community, the public sector, the private sector, and the learners themselves.
• Nations and institutions should build on existing facilities. Utilising existing facilities and capacity and improving on them rather than duplicating them is one cost-effective way of improving distance education in SSA given its limited economic power.
• Strategic planning should be prepared through a process that involves all stakeholders.
• Stakeholder associations need to be strengthened.
• Initiatives promoting the use of ICT need to be developed and exploited in order to improve equity and access to higher education across Africa.
• Program services and products need to respond to demonstrated demand and local socioeconomic realities.
• National policies on information technology (NICIs) that address distance education issues should be developed by all SSA countries. All relevant stakeholders should be included in the process of developing them.
• Developmental activities related to distance education should be aligned with developing country priorities. One way to do this is to harmonise aid and funding with existing country programs and to develop the programs in close consultation with developing country partner governments.
• Economic considerations should be catered to. Good marketing of the programs is a necessary element of success. Providers of distance education should aim for improvement of global competitiveness, since higher education (particularly ICT mediated) is fast becoming an internationally tradable commodity in the global knowledge-based economy. In some cases it is encroaching on the traditional monopolies of national higher education institutions. SSA countries and institutions need to produce strategies to counter this trend as well as to produce and deliver programs that can compete on the global market.
• Distance education (especially ICT mediated) is a young discipline that still needs to be researched. Distance education in SSA needs to be much more heavily researched in order to learn more about how teachers, learners, policymakers, parents, employers, and other educational stakeholders view distance education and how it can function.
• Efforts at consensus-building should be made in order to improve the understanding of the higher education crisis in SSA and iden-
tify effective responses. Consensus should be built among educational institutions, African governments, development agencies, and other stakeholders regarding priorities for funding higher education. The aim should be to reach consensus through consultation of all stakeholders rather than relying on a top-down approach.

- Remedial responses should be tested through collaborative pilot programs. Regional capacities should be fostered for the sharing of experience and approaches to common problems.

- Issues of accreditation and equivalency should be addressed. Systems should be developed for distance education courses nationally and internationally across SSA countries. It is also important to have academic credit transfer between institutions and to develop multi-institutional curricula, that is, cooperation on curriculum design.

- It is necessary to mobilise international support for distance education in Africa in terms of capacity-building and human resources development.

- Efforts at collaboration should be made at all the relevant levels, for example, collaboration amongst the higher education institution to form a virtual suite of courses for SSA students. It is also necessary to develop and strengthen collaboration amongst African governments, development agencies, and higher-education institutions in order to improve the effectiveness of external aid and to support the revitalization of African universities.

- Promote public- and private-sector collaboration and linkages between relevant distance-education stakeholders.

- It is also necessary to utilise international experience to identify and foster innovative, cost-effective methods of provision of distance education to Africa especially because of the low levels of funding that are common in SSA institutions.

- Partnerships for distance education in Africa should be developed. It is also necessary to enhance coordination amongst initiatives by major organisations involved in distance education in Africa. African governments and African universities could forge new partnerships to meet the challenges facing higher education. Jointly, the governments and higher education institutions can address issues such as global competition, mobilization of resources, enhancing relevance of distance education, and redefining the role of higher education in bringing about change and development in the region.

- Support services for students should be provided. Distance-education students are often isolated; thus adequate provision needs to be made for counselling and support.
Quality-assurance (QA) and quality-control mechanisms must be developed and applied in order to set and maintain standards.

It is necessary to develop appropriate models for SSA. The SSA countries are generally at different levels as far as distance education is concerned. This means that it is not possible to develop a “one size fits all” solution for distance education in these countries. Instead, the models developed as solutions should be tailor-made for each local situation and meet the development needs of those countries.

**Technical**

- Appropriate technology should be leveraged in order to improve distance education in SSA.
- Improved bandwidth management will allow increased use of the Internet.

**Political**

- Efforts must be made to bolster the democratisation process, whose deficiencies are chiefly responsible for the strife and instability in many SSA countries. Distance education cannot function in a vacuum within Africa and in the global system. A stable sociopolitical environment is required to achieve optimal results. Care should be taken to ensure that external stabilisation of the continent is prevented. The agenda should be an African one.

**A Recommended Model of Distance Education**

Finally, on the basis of this study, a model is recommended for an “All Africa Virtual University” that has the following features:

- The “All Africa Virtual University” should be built of partnerships of African Universities (The Virtual Partnership of African Universities) that will be working together to offer qualifications such as degrees, certificates, and diplomas.
- The Partnerships should use cost-effective technologies to offer its programs to the students.
- It should be possible to transfer credits amongst African partner institutions as well as international institutions.
- There must be development of software to harmonise communication and relevant processes amongst the partner institutions.
- Uniform quality control, quality assurance, and assessment tools must be established.
- There must be collaboration in all spheres, such as market area and the like.
• There must be constant dialogue, communication, and discussion amongst stakeholders in order to solve any problems that arise.

• Capacity-building programs must be put in place. The African countries should focus on building capacity in distance education in close collaboration with each other. This can be done in many way, such as organizing training courses for representatives from regional stakeholders.

• The SSA higher-education institutions should embark on the production of quality teaching materials that are relevant to SSA and that relate to the socioeconomic and cultural context in the SSA.

• There must be provision of cheap connectivity across the SSA countries.

• There must be creation of regulatory institutions that produce realistic and progressive regulations that promote development of the ICT sector. Usually in the absence of such factors there is development of “grey markets” that allow people to evade any stringent regulations.

• There must be greater coordination in the creation of uniform standards. Often there are numerous different systems in use in Africa. The challenge is to find out how to connect these different systems with robust but reasonably priced software. Coordination of efforts can lead to the production of systems that can deliver high levels of stability and low maintenance costs.

• Support should be given to the creation of digital content from Africa that already exists and then making it accessible on the Internet. This can be enhanced by shared initiatives, workshops, and courses for those involved in instruction.

• There must be continued efforts within the higher-education institutions themselves. New means of delivering course content through new technologies means that the ways in which teaching and learning are done will inevitably change.

• There must be sharing of programs amongst institutions and/or organisations. This could be in the form of the development of sustainable and progressive linkages within and amongst universities and other institutions. Already there are a number of bodies that do this to some extent. The organisations could share in areas such as existing content.

• Economies of scale should be exploited. that is, the SSA countries should better coordinate their curricula, content, and resources. The African Union (AU) might offer a platform that could be easily used
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• to achieve this. Other organs that could be used to accomplish this include the AAU (African Association of Universities).
• There must be creation of centres of excellence.
• There must be greater provision of funding to improve the situation at underresourced higher-education institutions.
• There must be increased training of staff and faculty as well as the provision of required resources.
• There must be continued dialogue involving the various stakeholders to identify issues relevant to distance education in Africa.
• There must be continued research on distance education in SSA.
• Task forces must be established to identify relevant issues and seek solutions on a continued basis.
• There must be improvements to the infrastructure that supports distance education.
• The educational institutions should aim to capitalise on emerging market opportunities.

Conclusion: Summary of Recommendations

The paper’s intent was to consider briefly the state of the art of distance education in Africa and to promote discussion of issues to be researched in order to enhance distance education in Africa. Most of the countries in SSA are developing countries with limited resources for education, especially higher education. Even with the best of effort, traditional channels of education are not able to meet the demand for education in these countries. It is hoped that debate on some of the thoughts advanced here will advance the cause of distance education in Africa in general. A concerted effort needs to be made by all the stakeholders to produce pragmatic solutions to the problems facing distance education in Africa. Such solutions need the involvement of all stakeholders and must take into account the prevailing socioeconomic and cultural factors as well as the increasingly competitive global distance-education environment.

References

ADEA (ASSOCIATION FOR THE DEVELOPMENT OF EDUCATION IN AFRICA)

ARGER, G.
1987 Promise and Reality: A Critical Analysis of Distance Education in the Third World. Journal of Distance Education 12.
CHUNG, F.  
1990  “Strategies for Developing Distance Education,” Keynote address in Marian Croft, Ian Mugridge, John S. Daniel, and Allan Hershfield, eds., Distance Education: Development and Access. Papers in English prepared for the Fifteenth World Conference of the International Council for Distance Education, Caracas, Venezuela, November 4-10, pp. 61-66.

DARKWA, O. AND S. ESKOW  

EATON, J.S.  

EDIRISINGH, P.  
1999  Open and distance learning for basic and non-formal education in developing countries, in Proceedings of the Pan-Commonwealth Forum on Open Learning, 1-5 Brunei.

FARRELL, G.  

GRAVES, W.H.  

Gourova, E., C. Hermann, J. Leijten, AND B. Clements  

IDE (USM)  
1997  Three Models of Distance Education. Institute for Distance Education, University System of Maryland (USM).

HITT, J.C. AND J.L. HARTMAN  

JENKINS, J.  

JENSEN, M.  

KAMAU, J.W. & O.P. PHINYANE  
1998  Integration of Distance Education Institutions of other Southern Africa Development Community (SADC) Member Countries into the Distance Education Association for Southern Africa (DEASA). Paper

KATZ, R.N., E.M. FERRERA, AND I.S. NAPIER

KHAN, A.W.
2001 The Future of Learning — Learning for the Future: Shaping the Transition. Keynote address at 20th ICDE World Conference Open Learning and Distance Education. Düsseldorf, Germany, 01-05 April, 2001.

KINYANJUI, P.


KNIGHT, P.T.

LIGHT, D.

LUDWIG-HARDMAN, S. AND J.C. DUNLAP
2003 Learner support services for online students: scaffolding for success. In International Review of Research in Open and Distance Learning. Vol. 4, no. 1, April, 2003.

MOYO, S.M.
2001 Experiences of running the African Virtual University (AVU) in Zimbabwe, Africa 20th ICDE World Conference on Open Learning and Distance Education, Dusselford, Germany, 01-05 April, 2001.

MUIR, A. & E. ONDARI-OKEISHWA

MURPHY, P., S. ANZALONE, A. ANZALONE, AND J. MOULTON
MURPHY, D., Z. WEI-YUAN, AND K. PERRIS
2003 Online learning in Asian open Universities: resisting ‘content imperialism’

NAIDOO, V. AND SCHUTTE, C.
1999 “Virtual Institutions on the African Continent” in Farrell, G., ed., The Develop-
ment of Virtual Education: A Global Perspective. A study of current trends in the
virtual delivery of education, conducted with funding by the Department for

NATIONAL WORKING GROUP (NWG)

PENALVAR, L.M.
1990 “Distance Education: A strategy for Development” in M. Croft and others,
eds., Distance Education: Development and Access. Caracas: International Council
for Distance Education, pp. 22-24.

PERRATON, H. AND C. CRED
1999 “Distance Education Practice: Training and Rewarding Authors.” Education
Research Serial #33, Education Division, UK Department for International
Development.

RAFFERTY, C., ?? MCCURDY AND G. FOSTER
2000 Social Considerations in Distance and Virtual Education. Proceedings of the
NACCQ 2000 Wellington, New Zealand. www.naccq.ac.nz

RUTH, S. AND M. SHI
2001 Distance Learning in Developing Countries: Is Anyone Measuring Cost-

SAINT, W.
2000 Implementation of Tertiary Distance Education: Choices and Deci-

1998 Tertiary Distance Learning in Africa in International Higher Education

SAMARRAI, F.
2001 U.Va. Distance Learning goes all the way to South Africa. Inside

SHERRY, L.
1996 Issues in distance learning (in press) International Journal of Distance Edu-

SIACIWENA, R.
2000 Case Studies of non-formal education by distance and open learning. The
Commonwealth of Learning, Vancouver, Canada.

IDE (USM)
1997 Three Models of Distance Education. Institute for Distance Education,
University System of Maryland (USM).
Distance Learning and Virtual Education • 191

United Nations Economic Commission for Africa (UNECA)

UNESCO

Winthrop, C.

The World Bank
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The Chances for Success of the Francophone Centers for Distance Education of the GDLN Network: The Case of the Centre d’Éducation à Distance de Côte d’Ivoire

KOUASSI YAO, Ph.D.*

ABSTRACT

The Centers of Distance Education of francophone Africa in Benin, Côte d’Ivoire, and Senegal were set up under a financial and educational agreement with the World Bank. They were inaugurated on June 21, 2000, at the same time as four other centers in English-speaking Africa and eight others on other continents (Appendix 1). Since September 2003, Mauritania has had its own center, thus increasing the number of centers in French-speaking African countries to four. As of November 2003, more than 60 centers were affiliated with the Global Development Learning Network (GDLN). It has known start-up difficulties because of the socioeconomic environment caused the sociopolitical crisis from December 1999 to the civil war in September 2002. It needs a re-adaptation of its missions by public authorities in order to realize its first mission, which is to improve the capabilities of a large number of government executives and decision-makers at a minimal cost. The strategies and educational approach used at the Center are new methods and tools, precursors of what will be used in the education of tomorrow. In this article, we will briefly present the history of the creation of the Global Development Learning Network.

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Network (GDLN), and then I will draw up a diagnostic account of the two years’ functioning of the CED-CI. Finally, I will give an outline for its future growth.

Introduction

Three French-speaking and four English-speaking African countries, as well as eight other countries working together, have started a pilot program to establish a center of distance education under the initiative of the World Bank. These countries are living a unique and enriching experience in the way of using NTICs in the dissemination and sharing of knowledge. They live in an area where the digital gap between the North (advanced countries) and the South (developing countries) is in the process of being abridged. However, not everyone is aware of the opportunity we have in possessing tools like the Center for Distance Education. I will describe this experience by quizzing myself about the chances of success of these structures, after observing the daily operation of the Center for Distance Education in Côte d’Ivoire (CED-CI). The Ivorian experiment is certainly not comparable to that of the other countries, given the sociopolitical and economic environment in which it has evolved since June 2000, the date of its official inauguration. This is precisely why its case is so interesting: If the CED-CI manages to survive in this environment, why would not the others, who seem to enjoy more favorable conditions for operating?

In this article, we will briefly present the history of the creation of the Global Development Learning Network (GDLN), and then I will draw up a diagnostic account of the two years’ functioning of the CED-CI. Finally, I will give an outline for its future growth.

Given the experimental nature of this project, the focus in this paper is more a description of the process than a critical analysis of its substance and philosophical foundation. The main contribution that this paper aims to make is to provide information on this distance learning program and to also highlight the complex needs at the level of tertiary education that this type of program can help to meet. As this program focuses on the training needs of an on-the-job target population, issues that can be raised include the nature of the linkages, if any, between this program and existing institutions of higher learning, be they universities or other types of higher-education institutions and which provide initial education and also supplementary training.

The paper is structured in three sections. The first section provides a history of the creation of the GDLN. The second section is an account of the two years of existence of the CED-CI. The third section discusses some of the challenges and prospects for future growth. Relevant issues to
be addressed include the program’s long-term survival and development possibilities.

**History**

The Centers of Distance Education of francophone Africa in Benin, Côte d’Ivoire, and Senegal were set up under a financial and educational agreement with the World Bank. They were inaugurated on June 21, 2000, at the same time as four other centers in English-speaking Africa and eight others on other continents (Appendix 1). Since September 2003, Mauritania has had its own center, thus increasing the number of centers in French-speaking African countries to four. As of November 2003, more than 60 centers were affiliated with the Global Development Learning Network (GDLN), whose Website is: www.gdln.org. Before discussing specific operational issues, it is important to first define the GDLN.

**Background of the GDLN**

The GDLN arose from the transformation of the training network of the World Bank, the World Bank Learning Network (WBLN), from 1997. It received an assignment to establish a network of organizational partners from the private and public sectors as well as academic institutions to widen the radius of the activities of the GDLN and to form the foundation for a global community of virtual training. By linking cutting-edge communication technologies and the Internet, the members of the GDLN form part of a global network for the exchange of educational activities, including classes, seminars, and discussions on key development problems. These technologies enable individuals from all over the world to share expertise and experiences at the snap of their fingers, transcending time differences, geographical distance, and problems of national borders.

**Objectives and mission of the Center of Distance Education in Côte d’Ivoire**

The Ivorian government saw the project of creating experimental centers of Distance Education, initiated by the World Bank, as an inestimable opportunity for the application of its national policy of strengthening capabilities that was developed and defended in front of the Consultative Group of Financiers in 1998. The Center for Distance Education Côte d’Ivoire (CED-CI) obtained an assignment to conceive, develop, and coordinate services of modern and good-quality education by using tools of new technologies such as videoconferencing, interactive virtual classes, and e-learning. Its final goal is to increase the capability of decision-makers to conceive, plan, and manage policies of economic and social development.

The project, which is financed by an International Development Association (IDA) credit granted to the Côte d’Ivoire, has a life span of five years
During its execution phase, financing is assured on the one hand by the IDA credit, with decreasing contributions over the years, and on the other hand by appropriate resources generated by activities initiated by the CED-CI.

The resources of the Center can also originate from donations, subsidies from public or private organizations, and national or international bodies — mainly to cover the expenses of civil servants and state agency participants at the seminars organized by the Center.

As financing from the World Bank decreases, the earnings of the Center will have to increase to insure its autonomy by 2004. The rate of margin for its operational services will increase in the following manner:

- 1st Year: 19%
- 2nd Year: 38%
- 3rd Year: 57%
- 4th Year: 100%.

The CED-CI was created by a governmental decree. It is a public establishment with an industrial and commercial status which is called in French “EPIC.”

It is administratively linked up to the office the Prime Minister but has the advantage of being granted the autonomy to facilitate public accounting procedures, which reduces delays in the center’s ability to respond to the market.

However, to enable future public administrative decision-makers and managers to accommodate new communication and technology systems and to participate in different discussions concerning issues related to countries’ development, the government decided to house the CED-CI in a higher-education institution, the National Administration School (École Nationale, ENA), where most government officials are trained. At the ENA, the center has three training rooms:

- a videoconference room equipped with 20 network connection points, capable of handling 20 PCs;
- Multimedia Room I, equipped with 11 work stations, expandable to 20 PCs;
- Multimedia Room II, equipped with 19 workstations, expandable to 30 PCs.

**Statement of CED-CI Activities**

After two years of operation, the CED-CI’s activities can be grouped into four main categories:

1. Educational Activities;
2. Promotional Activities;
3. Equipment Rental Activities;
4. The Cyber Café.

**Educational activities**

Education is the principal reason for the existence of the CED-CI. This is carried out through several channels, which are:

- videoconferencing;
- e-learning; and
- face-to-face sessions.

This last option is currently run essentially only for NTIC training.

The videoconference educational seminars divide into two groups:

*Long-cycle seminars* (long sessions or course). Generally, there are at least five sessions of this type of seminar, organized once or twice per week for two to four hours each.

There are training sessions conducted by an expert according to one of the connected sites. These sessions combine lectures and interactive discussions in synchronous situations. Sometimes, exchanges between the organizer and participants can continue online either through a discussion forum or a Website related to the training. The target audience is composed with all development actors coming from different types of activity sectors.

*Short-term seminars* or discussions (or global dialogue). These generally deal with current events (e.g. the EURO, NEPAD, AIDS, and the like). The initiator of the conference (public/private institution, bi- or multi-lateral institution) invites the participants to these sessions.

The classes often use a combination of video conference and the written media of Internet and CD-ROM. E-learning uses the principle of teaching individuals by means of a distant tutor. The Center is running two programs in this mode: a course with a French training institution on “Introduction to Financial Affairs” with (ICUS) and another with a Canadian institution from New Brunswick, the International Center of Higher Applied Studies (CIESA, Centre International d’Études Supérieures Appliquées) on a degree program.

As for the introductory courses, this is currently a matter of introducing and improving NTICs. To exploit the technologies of the Center to the full, training sessions were organized in the aid of employees of private companies and public entities in the field of NTICs (UNDP officers in Abidjan, Radio Télévision Ivoirienne, and Côte d’Ivoire postal agents).
The Results

At the educational level

As of December 31, 2002, after five semesters of operation, the CED-CI had 1,348 participants in its training sessions and delivered more than 1,225 hours of education by either videoconference or e-learning.

The CED-CI helped in the introduction and improving of NTICs in certain socioprofessional groups. It is worth noting the participation of UNDP officers in Abidjan, Radio Télévision Ivoirienne, and Côte d’Ivoire postal agents.

The effective total of people educated after five semesters for all of the activities of the educational programs, taking into account the NTIC training sessions, is 1,517 with a little more than 1,666 hours of service in 577 organized sessions (CED-CI Annual Report 2002). After two-and-a-half years of actual functioning of the center, the outcome of the second year was not achieved in comparison to the performance indicators reported during the evaluation phase of the project. There was a gap of 983 persons (1,517 as opposed to 2,500).

However, the rate of use of the videoconference room was 159 sessions against a projection of 114 sessions for the first year, a 110 percent realization of the goal. By contrast, in the second year, there were only 142 video conference sessions as against 288 projected, which is 49 percent of the goal. These results are due to the sociopolitical situation and the limited number of courses proposed and the low number of course suppliers. Fortunately other activities such as e-learning and the face-to-face courses have compensated for this decline in activities at the videoconference level.

In fact, during 2000-2002, the main indicators were namely:

- the effective training by semester;
- the number of sessions organized by semester;
- the number of hours dispensed by semester; and
- the rate of completion by session per semester.

After reaching some peaks in 2001, these indicators show a gradual decline. The Figures 1, 2, and 3 below reflect the observed trends. The erratic movements are the consequences of incidents that have peppered the progress of the CED-CI, notably the suspension of advances by the World Bank because of nonpayment of the country’s debt, the successive elections, and the sociopolitical disturbances that Côte d’Ivoire has known since the military transition between December 1999 and October 2000.

The CED-CI has a biannual operation. The events of September 2002 coincided with the start of the activities of the second semester. The fall in the values of the principal indicators highlights this effect.
Progress of the Rate of Completion

The rate of occupancy for the videoconference room with a capacity of 30 places increased from an average of 18.4 participants per session during the first semester of 2001 to 22.8 in the second semester of the same year. Then it fell to 12 during the first semester of 2002, and then increased slightly to an average of 15.2 participants during the second semester of 2002.

The noted fragility or volatility of participation raises a problem about the durability of demand and highlights the need for creating traditions of financing of education by the administrations and the donors. The education of government agents remains critical but with unpredictable possibilities, since renewal of their contract is unpredictable. Thus, it is difficult for the CED-CI to prepare reliable recruitment forecasts for over one year. The challenge is to convince the administration to agree to budget for the annual cost of education and training of civil servants in the face of unpredictable conditions.

It is important to note the gender distribution of the participants. The analysis by gender according to the data from the second semester of 2001 indicates that a large proportion of the participants in the various courses were men (81 percent) with women representing only 19 percent. However,
Figure 2. Progress of the Session.

N.B.: The increase in the number of sessions during the first semester of 2002 was caused by the inclusion of seminars organized for D.E.S.S. (Diplôme d’Études Supérieures Spécialisées) in Micro-enterprise management with the Centre International d’Études Supérieures Appliquées (CIESA) Canada (by e-learning). The second semester of 2002, which should have started in September, did not take place.

Table 1
Rate of Usage

<table>
<thead>
<tr>
<th>Period</th>
<th>No. of participants/No. of classes</th>
<th>Total</th>
<th>Rate of Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total participation 1st semester 2001</td>
<td>166/9</td>
<td>166/270</td>
<td>61%</td>
</tr>
<tr>
<td>Average participation 1st semester 2001</td>
<td>18.44</td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>Total participation 2nd semester 2001</td>
<td>160/7</td>
<td>160/210</td>
<td>76%</td>
</tr>
<tr>
<td>Average participation 2nd semester 2001</td>
<td>22.8</td>
<td></td>
<td>76%</td>
</tr>
<tr>
<td>Total participation 1st semester 2002</td>
<td>121/10</td>
<td>121/300</td>
<td>40%</td>
</tr>
<tr>
<td>Average participation 1st semester 2002</td>
<td>12</td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>Total participation 2nd semester 2002</td>
<td>76/5</td>
<td>76/150</td>
<td>51%</td>
</tr>
<tr>
<td>Average participation 2nd semester 2002</td>
<td>15.2</td>
<td></td>
<td>51%</td>
</tr>
</tbody>
</table>
we note a slight increase of the women’s percentage in the first semester of 2002, to 30 percent (see Table 2).

With regard to 2001, we note an increase in the size of training classes from the private sector, from 10 percent at the end of 2001.
This portion increased to 24 percent by the first semester of 2002. From September 2001 to July 2002, the proportion of men and women were 77 percent and 23 percent respectively. The low percentage of women reflects their underrepresentation in Côte d’Ivoire’s administrative managers and decision makers.

The distribution by sector of activity gives 78 percent for the public sector, 16 percent for the private sector, and 6 percent for associations and NGOs. It seems that the last category has not yet found a solution to the problem of financing their participation.

The promotional activities of the Center

Practically all means of communication have been used, including:

- standard mail or e-mail;
- open-houses to present the services of the Center to companies and national and international institutions;
- reduction in the cost of participation to fee-free education;
- participation in fairs and public conferences;
- ceremonies for the presentation of certificates; and
- print and audio media, limits of the Center’s resources.

The approach which gave the best results in terms of feedback were the print media, including. To be realistic, the promotional strategy places more emphasis on the promotion of the products related to our funding capacity, than on the image of the Center.

Equipment Rental Activities

The CED-CI has a handicap linked to the internal procedures of connection even though it has the best of infrastructures in the country at the moment. In effect, with the bottom line being managed from Washington, all requests for satellite connections must be first approved by the GDLN administration which evaluates the pertinence and compatibility of the turnout with the primary missions of the DLC. Improvement of the situation was caused by the possibility of DLC establishing site-to-site connection through an IP address were reduce some few minutes.

The Cyber café

The partial financial reports indicate that the monthly revenue from this activity was about 220,000 FCFA in the CED-CI for the first six months of 2002. This can be considered as insignificant compared to earnings announced by the CED Benin, which reached 150,000 FCFA per day during certain periods of 2001. The weak yield of the CED-CI is due to insufficient advertisement about the Center and its geographic location (in a residential area and housed by a public tertiary institution).
It is worth noting that monthly performance has doubled since March 2003, following the replacement of the leading team with the adoption of a remuneration mode indexed on the results. All the activities presented above are possible thanks to excellent technical facilities and cutting-edge technological equipment of the Center.

The Technical Plan

The connection between the World Bank and the GDLN centers, as well as the centers themselves, and with their other partners, is done by satellite. This connection at the moment allows 384 Kbytes for Internet data and for videoconferencing. During these first two years, the videoconferencing equipment worked normally without a significant breakdown. On the other hand, the CED-CI recorded inexplicable computer breakdowns that required the replacement of more than 40 hard disks, which is more than 80 percent of the disks of the machines received.

Let us now examine the performance carried out by the CED-CI in terms of its financial results, since ultimately this will determine its viability.

Financial statement

The comparative receipts and payments statement for the three financial years is as follows:

<table>
<thead>
<tr>
<th>Designation</th>
<th>2000</th>
<th>2001</th>
<th>11/2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Education</td>
<td>5,175,000</td>
<td>41,903,151</td>
<td>23,107,500</td>
</tr>
<tr>
<td>Rental of Rooms</td>
<td>4,700,000</td>
<td>24,227,358</td>
<td>29,808,158</td>
</tr>
<tr>
<td>Cyber</td>
<td>156,800</td>
<td>931,463</td>
<td>1,032,580</td>
</tr>
<tr>
<td>IDA Grant</td>
<td>68,375,636</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Training (NTIC)</td>
<td>4,677,750</td>
<td>8,362,500</td>
<td>20,052,772</td>
</tr>
<tr>
<td>E-learning</td>
<td></td>
<td></td>
<td>29,925,000</td>
</tr>
<tr>
<td>TOTAL EARNINGS</td>
<td>83,085,186</td>
<td>75,424,472</td>
<td>103,092,262</td>
</tr>
<tr>
<td>PAYMENTS</td>
<td>(159,644,000)</td>
<td>(263,450,122)</td>
<td>(190,387,111)</td>
</tr>
<tr>
<td>MARGIN</td>
<td>−76,558,814</td>
<td>−188,025,650</td>
<td>−87,294,849</td>
</tr>
<tr>
<td>DEBT SERVICE</td>
<td>(56,918,939)</td>
<td>(113,837,878)</td>
<td>(113,837,878)</td>
</tr>
<tr>
<td>RESULTS</td>
<td>−133,477,753</td>
<td>−321,863,528</td>
<td>−201,132,727</td>
</tr>
</tbody>
</table>

According to the comparative statement at November 30, 2002, the Center could not cover all of its payables with its own revenue. However, if one considers that the first year of the Center was 2001, there are grounds to be less pessimistic. In the course of 2000, the training activities did not begin until October, barely three months of actual operation in the year.

During the course of 2001 until about August 31, 2002, the CED-CI was not given any subsidy following the World Bank’s measure to stop
disbursements because of the suspension debt payments. This situation without any doubt had an influence on the revenue generated. Beyond the fact that the sponsorship of activities was not realized, the socioeconomic environment was not conducive to the educational activities.

### The profitability of the CED-CI

Profitability is examined here in the light of the revenue generated by the Center and its operational expenditures in order to determine the Center’s ability to cover its expenses by the due date of 2004. The turnover realized during the fiscal year of 2001 is about 75,424,472 FCFA. The operational expense for 2001 was increased to 263,450,122 FCFA. Table 3 below summarizes the situation.

The profitability ratio at the end of 2001 was 28.63 percent, and 54.58 percent by November 30, 2002. These rates are higher than the rate of coverage of expenses for the first operational year, which was set at 19 percent for the first year and 38 percent for the second year, as defined in the evaluation manual.

The turnover realized by November 30, 2002 (103,092,262 FCFA) was stimulated by the revenue from DESS in Micro-enterprise management, which is training for a diploma and for which the registration fees are more expensive than the usual charges. The part that the receipts obtained from these activities play is minimal for the Center. It represents barely 13 percent of the total amount collected.

### Major challenges to be overcome

The challenges that need to be overcome in order to allow the CED-CI to be viable and ensure its perpetuity are numerous.

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### Table 3: Summary of the Actual Resources

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Education by Video</td>
<td>5,175,000</td>
<td>41,903,151</td>
<td>23,107,500</td>
</tr>
<tr>
<td>Education in NTICs</td>
<td>4,677,750</td>
<td>8,362,500</td>
<td>20,052,772</td>
</tr>
<tr>
<td>E-learning</td>
<td></td>
<td></td>
<td>29,925,000</td>
</tr>
<tr>
<td>Rental of Rooms</td>
<td>4,700,000</td>
<td>24,227,358</td>
<td>29,808,158</td>
</tr>
<tr>
<td>Cyber</td>
<td>156,800</td>
<td>931,463</td>
<td>1,032,580</td>
</tr>
<tr>
<td>CA without subsidy</td>
<td>14,709,550</td>
<td>75,424,472</td>
<td>103,926,010</td>
</tr>
<tr>
<td>IDA subsidy</td>
<td>68,375,636</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subsidy Budget CI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>83,085,186</td>
<td>75,424,472</td>
<td>103,926,010</td>
</tr>
<tr>
<td>Operational Expenses</td>
<td>(159,232,517)</td>
<td>263,450,122</td>
<td>(190,387,111)</td>
</tr>
<tr>
<td>Ratio CA/Operational Expenses (%)</td>
<td>(9.24%)</td>
<td>(28.63%)</td>
<td>(54.58%)</td>
</tr>
</tbody>
</table>
Visibility and market penetration. The geographic location of the Centers within public educational institutions in charge of training of decision makers — École Nationale d’Administration (ENA) in Côte d’Ivoire, École Nationale d’Administration et de Magistrature (ENAM) in Senegal, or Institut National d’Economie (INE) in Benin — which was a strategic vision of the governments, has not been fully exploited. When the host institutions and the DLCs are not ignoring each other, they are generally in conflict.

As regards Côte d’Ivoire, the partnership contract has a very timorous application. Rather than adding value to the CED-CI, the Center’s establishment within the ENA seems to constitute an obstacle to its penetration into the private sector. This is because it is perceived as institution for the training of state agents.

The absence of an outside sign indicating the existence of the Center adds to its invisibility and the non-assertion of its own identity. The political transition period and the rapid changes within the public administration from 2000 to 2002 did not permit the Center to anchor itself in the state’s services. In addition to these factors were the financial difficulties that did not permit the CED-CI to drive a real promotional campaign.

The instability of the market and volatility of receipts. For now, the practical costs of the educational sessions can be considered as promotional costs, because they do not reflect the real costs of production of the classes. Certain courses are provided to us free of charge. However, the influx has been weak when there is no hold over the responsibility of the employer or international institution. Besides when the classes were reorganized for a second time, there were few participants, as if the need no longer existed. Nevertheless, people in government administration who want to improve themselves are numerous. Hence there is a need to find a mechanism of financing for public sector participants, thus enabling a recruitment budget for every seminar to be drawn up.

The solvency of the clientele. The delays in payments, the difficulties of collection, and the withdrawals before the beginning of sessions are common. This is proof that the applicants are not successful in putting together enough resources to finance their education. Some administrations take six months to a year to pay the Center. This situation is not unique. Rather it is a reflection of the global economic conditions and negative habits.

Difficulty in applying collection procedures. Our procedures require that the customer pay before the startup of activity. We had to break this requirement; otherwise, we would not have been able to enroll the minimum number to accommodate a session. This procedure is moreover in contradiction
with public accountability procedures with which state services comply and which consist of paying for services rendered.

The availability of functional premises. The classes foresee more and more periods of grouping participants without a satellite connection. During these periods, participants are called to form work groups to engage in discussions at the local level before the videoconference session. Our room with its huge tables lends itself very badly to this type of activity. We therefore have to resort to more suitable rooms of the ENA which are not always available and for which we will be charged more and more. This further increases the price charged to the participants. In the short run, the CED-CI should be able to have at its disposal at least one multipurpose room, adjustable according to its needs.

The lack of suitable material in French. This situation is experienced by all the francophone centers. Until there are content suppliers at the local level there will be limited possibilities to introduce varied and diversified subjects. The translation of English content to French does not seem to have been chosen as an approach by the GDLN Service.

Insufficiency of financial resources. For the CED-CI, the suspension of debt payment and the non-signing of the credit agreement constituted a heavy handicap throughout the two years of operation. The center accumulated arrears in payments, which will necessarily have to be handled with specific measures. Promotional activities have been limited to the current financial means of the Center. The recruitment of participants was inadequate at the time because only those who knew of the existence of the Center enrolled in its training programs.

Resistance to innovation. The use of the videoconference as an educational tool still raises some apprehension as to its effectiveness. Educators as a group sometimes slip enthusiastically into skepticism. Some participants hesitate to cross the virtual gap to live in a real learning situation. Resistance to change even by the population that is expected to benefit from it has been observed in many other social contexts. Reluctance is increased further by the technological foundation of the program.

The educational environment within the administrations and the practices acquired. It is very rare for the state services to include a budget a line for the improvement of the skills of their agents. Even when this budget item exists, the procedure of payment is complex and discourages the initiative. State projects, on the other hand, have educational budgets; but the current practice is to organize the seminars in residential areas, with payment of traveling costs, accommodations, and per diem allowances to participants. Naturally, such an organization will arouse a lot of excitement. From this point of view, the practices of the CED-CI that demand
payment of expenses from the participants will barely attract an audience of government employees. However, we note with satisfaction that these customs are changing and the principle of paying for one’s education seems to have been easily accepted by many among the target audience. The only handicap remains their modest incomes.

Financial arrears and taxes. Taxes and payroll expenses in December 2002 exceeded 117,812,845 francs FCFA. The actual resources generated by services are not sufficient to mop up this debt in the short and middle term. Besides, if the resources are used to this end, the financial stability of the Center will be disrupted for a long time and will slant the results of future budget years. Fortunately, this situation was partly corrected by the budgetary subsidy granted by the Government in 2003.

Security of electric supply. The principal difficulty encountered at the level of electricity resides in the untimely cuts for the late payment of bills. The shutdown in March 2002 caused enormous damage to the computer reserved for the administration. Since the activities of the Center are based on sophisticated electronic equipment, we wish that emphasis would be placed on the provision of uninterrupted sources of current. We propose for this a negotiation with the CIE to introduce the CED-CI into the group of state companies so that it could benefit from the delay in payments typical of companies.

Problems linked to the maintenance of equipment. Note that until April 2003 we did not have a maintenance contract for some essential equipment at the Center. The proposed contract costs and the non-signing of the credit agreement dissuaded the team from incurring costs which will further increase the debt of the Center. With the finalization of the credit agreement, we proceeded and:

- signed a contract for the maintenance of the UPS System and generator;
- signed a contract for the maintenance of the microcomputers; and
- signed a contract for the maintenance of the network and videoconference equipment.

We continue to look for a group solution with all the African DLCs, which are now associated in a network.

The Future Growth of CED-CI

The future growth of CED-CI will depend primarily on strengthening its establishment by using to the full, the resources released by signing of the Credit Agreement for the Support of the Center, which took place on April 26, 2002.
At the governmental level

Government action that would help to ensure the future of the Center could include:

- increased sensitization to the necessity for every administration to develop an annual plan for the education and improvement of its personnel;
- the necessity of the search for financing for the inclusion of training activities in the budget;
- the signing of framework agreements with the Secrétariat National à la Gouvernance et au Renforcement des Capacités; and
- the recognition of the CED-CI as a privilege, instrumental in the realization of educational goals and the exchange of experiences for the public sector and civil society.

At the private-sector level

So far, the privae sector is interested only in a single aspect of the Center’s ability to respond to its needs. This concerns the possibility of holding meetings and other gatherings punctually with their headquarters or partners outside Côte d’Ivoire with the view to:

- reducing the cost of traveling and accommodations;
- solving the problem of availability of experts; and
- saving time and increasing convenience.

This currently comes out of the normal framework of duties of the DLCs.

To modify the perception of the possibilities of the Centers, which are regarded as too restrictive, and to allow the private sector to discover its other potentialities, the GDLN should authorize new procedures or make current procedures more flexible so that the Centers can offer rental services for some of its activities to the private sector during this initial phase of the project. The objective is to entice the private sector entities to the Center and then to allow them to discover the other services offered.

In the medium term, the introduction of e-learning and the training of diplomats would allow the CED-CI to be a real distance-training center for the public outside Abidjan.

The organization of face-to-face courses will have to be strengthened. These seminars will be organized either by the CED-CI alone or in partnership with other state services or with educational institutions. Indeed, some training institutions and universities offer degree programs which could be enriched by modules run by experts from international institutions. In the same way, some modules of degree programs could be proposed in ongoing training with workers who are interested in skill improvement without seeking a degree. These actions could result in the development of modules to be disseminated on the network.
Conclusion

GDLN Centers were created in several countries of the world, and particularly in Africa, for the following reasons. They aim to:

- offer to these countries the possibility to follow up seminars of high quality at lower cost;
- offer possibilities for exchange of experiences between countries;
- reduce the digital gap between North and South; and
- test the reliability and the viability of a training system and division based on the use of NTIC.

These African centers, except for the one in Mauritania, have been functional since June 2000. They have reached different results due to the differences in sociopolitical and environnement contexts and the dynamism of their management teams. Some of them have reached a level of a total cost recovery, while others are still far from this objective. On the whole, the following conditions will have to be simultaneously considered to ensure their sustainability:

- control of the expenses for hiring of the satellite band;
- faith in the GDLN and in the common destiny of the Centers;
- political will and commitment in each country;
- dynamism of the leadership team of each Center;
- commitment of donors in each country;
- participation of the private sector in each country; and
- control of cost factors (e.g. staff wages, tuition fees, electricity costs, and equipment maintenance).

For this purpose, leaders of the African Centers met at Benin, from December 1 through 4, 2003 to create an association in order to mutually support and defend the interests and financial viability of the Centers.

The CED-CI is a project in evolution. It has known start-up difficulties because of the socioeconomic environment caused the sociopolitical crisis from December 1999 to the civil war in September 2002. It needs a re-adaptation of its missions by public authorities in order to realize its first mission, which is to improve the capabilities of a large number of government executives and decision-makers at a minimal cost. The strategies and educational approach used at the Center are new methods and tools, precursors of what will be used in the education of tomorrow.

Important investments were made by creating the center; it is important to make it profitable by fully using the services that it offers. Our ambition is to ensure that those for whom the Centre was created — decision makers and managers of the public and private sectors and the civil society — can benefit from it.
References

RAPPORTS D’ACTIVITÉS DU CED-CI 2000-2002

ICUS eLEARNING

CENTRE INTERNATIONAL D’ÉTUDES SUPÉRIEURES APPLIQUÉES (CIESA)
53 Chemin Canada. Place Centre Ville, Suite 202, Edmundston, Nouveau-Brunswick, Canada, E3V 1V1, Tél.: 506-737-1562, Fax: 506-737-1887, Site Web : <http://enviromatics.nb.ca

SPECIALIZED WEB SITES
http://www.gdln.org; Website: www.cedci.org; e-mail: cedci@softhome.net; http://thot.cursus.edu/rubrique.asp?no=1726; http://www.education.fr/ (education in general); http://www.formation.adistance.umontreal.ca/production/avant.html; http://www.media-awareness.ca/ire/; http://www.educasource.education.fr/; (Des milliers de références de ressources et de notices documentaires, pour les enseignants)
http://www.cndp.fr/.

Appendix 1
Distance Learning Centers Operating in June 2000

<table>
<thead>
<tr>
<th>Region</th>
<th>Country</th>
<th>DLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFRICA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. BENIN</td>
<td>CED</td>
</tr>
<tr>
<td></td>
<td>2. CTE D’IVOIRE</td>
<td>CED</td>
</tr>
<tr>
<td></td>
<td>3. SENEGAL</td>
<td>CED</td>
</tr>
<tr>
<td></td>
<td>4. ETHIOPIA</td>
<td>DLC</td>
</tr>
<tr>
<td></td>
<td>5. GHANA</td>
<td>DLC</td>
</tr>
<tr>
<td></td>
<td>6. UGANDA</td>
<td>DLC</td>
</tr>
<tr>
<td></td>
<td>7. TANZANIA</td>
<td>DLC</td>
</tr>
<tr>
<td>EUROPE</td>
<td>8. FRANCE</td>
<td>WBI</td>
</tr>
<tr>
<td></td>
<td>9. UKRAINE</td>
<td>DLC</td>
</tr>
<tr>
<td></td>
<td>10. SPAIN</td>
<td>DLC</td>
</tr>
<tr>
<td>ASIA</td>
<td>11. SINGAPORE</td>
<td>DLC</td>
</tr>
<tr>
<td></td>
<td>12. THAILAND</td>
<td>DLC</td>
</tr>
<tr>
<td></td>
<td>13. VIETNAM</td>
<td>DLC</td>
</tr>
<tr>
<td>LATIN AMERICA</td>
<td>14. BOLIVIA</td>
<td>DLC</td>
</tr>
<tr>
<td></td>
<td>15. DOMINICAN REPUBLIC</td>
<td>DLC</td>
</tr>
</tbody>
</table>
## Appendix 2

Rate of Completion September 2000 to December 2001

<table>
<thead>
<tr>
<th>Seminars 2000-2001</th>
<th>Dates/Service</th>
<th>Number of Participants</th>
<th>Total Held</th>
<th>Rate of Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strategic Communication</td>
<td>4 Oct - 8 Nov.00</td>
<td>29</td>
<td>29/30</td>
<td>97%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 29</td>
<td></td>
</tr>
<tr>
<td>2. Macroeconomic Management in Sub-Saharan Africa</td>
<td>5 Oct - 5 Dec 00</td>
<td>15</td>
<td>44/60</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 22</td>
<td></td>
</tr>
<tr>
<td>3. Economic and Business Journalism</td>
<td>7 Feb - 4 April 01</td>
<td>16</td>
<td>60/90</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 20</td>
<td></td>
</tr>
<tr>
<td>4. Political and Institutional Reform for Durable Rural Development in West Africa</td>
<td>5 April - 17 May 01</td>
<td>12</td>
<td>72/120</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 18</td>
<td></td>
</tr>
<tr>
<td>5. Gender, Health and Poverty</td>
<td>23 April - 11 June 01</td>
<td>30</td>
<td>102/150</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 20</td>
<td></td>
</tr>
<tr>
<td>6. Globalization and new Commercial Priorities</td>
<td>25 April - 27 June 01</td>
<td>10</td>
<td>112/180</td>
<td>62%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 19</td>
<td></td>
</tr>
<tr>
<td>7. Protection of social groups: Conception and Implementation of Mechanisms for Social Welfare</td>
<td>3 April - 30 May 01</td>
<td>07</td>
<td>119/210</td>
<td>57%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 17</td>
<td></td>
</tr>
<tr>
<td>8. Seminar on Strategy “Faire-Faire” in Adult Education</td>
<td>5 May - 13 Jun 01</td>
<td>26</td>
<td>145/240</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 18</td>
<td></td>
</tr>
<tr>
<td>9. Public-Private Partnership in the infrastructure</td>
<td>17 May - 5 Jun 01</td>
<td>21</td>
<td>166/270</td>
<td>61%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>m = 18</td>
<td></td>
</tr>
<tr>
<td>Total participation</td>
<td></td>
<td>166/9</td>
<td>166/270</td>
<td></td>
</tr>
<tr>
<td>Average Participation 2000-1st semester 2001</td>
<td></td>
<td>18.44</td>
<td>18.44</td>
<td>61%</td>
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</tbody>
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### Appendix 2
(Continued)

<table>
<thead>
<tr>
<th>Seminars 2(^{nd}) semester 2001</th>
<th>Dates/Service</th>
<th>Number of Participants</th>
<th>Total Held</th>
<th>Rate of Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Introduction to the evaluation of development programs</td>
<td>4/09/01 to 27/09/01</td>
<td>31</td>
<td>31/30</td>
<td>103%</td>
</tr>
<tr>
<td>11. Investigative Journalism</td>
<td>11/09/01 to 13/11/01</td>
<td>10</td>
<td>41/60</td>
<td>68%</td>
</tr>
<tr>
<td>12. Bond Markets</td>
<td>18/09/01 to 25/09/01</td>
<td>08</td>
<td>49/90</td>
<td>54%</td>
</tr>
<tr>
<td>13. New approaches to the reduction of poverty: integrating the gender dimension into the health question</td>
<td>9/10/01 to 6/11/01</td>
<td>14</td>
<td>63/120</td>
<td>52.5%</td>
</tr>
<tr>
<td>14. Combating Poverty by Durable Development</td>
<td>25/10 to 29/11/01</td>
<td>34</td>
<td>97/150</td>
<td>65%</td>
</tr>
<tr>
<td>15. Public Markets</td>
<td>9/11/01 to 25/01/02</td>
<td>34</td>
<td>131/180</td>
<td>73%</td>
</tr>
<tr>
<td>16. Politics of Micro-finance</td>
<td>19/11/01 to 05/12/01</td>
<td>29</td>
<td>160/210</td>
<td>76%</td>
</tr>
<tr>
<td>Total participation</td>
<td>160/7</td>
<td>160/210</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Average participation 2\(^{nd}\) semester 2001* 22.8 76% 76%

*Average participation 2000-2001* 326/16 326/480 68%

m = 20.4 68%
## Appendix 3

Rate of Completion, First Semester 2002

<table>
<thead>
<tr>
<th>Training Seminars, 1st semester 2002</th>
<th>Dates</th>
<th>Number of participants</th>
<th>Total Held</th>
<th>Rate of Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESS Gestion de la micro enterprise (e-learning)</td>
<td>14 Feb 02 to Jan 2003</td>
<td>11</td>
<td>11/30 m = 11</td>
<td>37%</td>
</tr>
<tr>
<td>Economic and Business Journalism</td>
<td>7 Mar to 28 April</td>
<td>15</td>
<td>26/60 m = 13</td>
<td>43%</td>
</tr>
<tr>
<td>Macroeconomic Management and Strategies to Reduce Poverty in Sub-Saharan Africa</td>
<td>3 April to 29 May 2002</td>
<td>17</td>
<td>43/90 m = 14.3</td>
<td>48%</td>
</tr>
<tr>
<td>Evaluation of Agricultural Projects</td>
<td>17, 24, 30 April, 15, 22, 29 May 02</td>
<td>04</td>
<td>47/120 m = 11.75</td>
<td>39%</td>
</tr>
<tr>
<td>The Poor and Public-Private Partnerships in Matters of Infrastructure</td>
<td>5 to 28 May 2002</td>
<td>17</td>
<td>64/150 m = 12.8</td>
<td>43%</td>
</tr>
<tr>
<td>Microfinance for Non-Specialists</td>
<td>16 to 28 May 2002</td>
<td>10</td>
<td>74/180 m = 12.3</td>
<td>41%</td>
</tr>
<tr>
<td>Reduction of Poverty through Food Security and Growth in Agriculture</td>
<td>23 May to 27 June 2002</td>
<td>08</td>
<td>94/240 m = 11.7</td>
<td>39%</td>
</tr>
<tr>
<td>5 Seminars on the Fight against Bleaching</td>
<td>3, 10, 12, 18 and 24 June 2002</td>
<td>14</td>
<td>108/270 m = 12</td>
<td>40%</td>
</tr>
<tr>
<td>Social Risk Management</td>
<td>25, 26, 27 March 02</td>
<td>00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic Communication for Better Implementation of School Health Activities</td>
<td>6 May to 20 June 2002</td>
<td>13</td>
<td>121/300 m = 12.2</td>
<td>40%</td>
</tr>
</tbody>
</table>

Total participation = 121/10  
Average Participation = 12/40% = m = 12.2
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Higher Education Reform: Challenges towards a Knowledge Society in Malaysia

AKIKO KAMOGAWA *

ABSTRACT

The Malaysian government regards highly skilled human capital as the nucleus of a knowledge-based economy and has been attempting to reform higher-educational policies in both the public and private sectors since the mid-1990s. The research reported here seeks to evaluate higher-educational policy reform as it relates to the development of human resources in an era of information and communication technologies (ICT).

This research has three goals: first, to determine how Malaysian higher-educational policies have changed by looking at socioeconomic backgrounds; second, to examine case studies of the Malaysia Multimedia University (MMU), Malaysia National University (UKM), and University Malaysia Sarawak (Unimas); and third, to discuss whether ICT is affecting access and course selection in higher education in terms of gender equality.

The analysis reported here concludes that the new challenges facing Malaysia offer possibilities not only for bridging the digital divide, in some aspects, nationally, but also for Malaysia to emerge as fundamental to a South-South Corporation and as a Center of Excellence internationally. It will be pointed out how, and to what extent, the government of Malaysia should reconceptualize the Malaysia Super Corridor project (MSC)

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in order to become a fully developed nation, equipped as a knowledge society.

Introduction

The Second Global Knowledge Conference, hosted by the Malaysian government and the Global Knowledge Partnership, was held in Kuala Lumpur, Malaysia, from 7 to 10 March 2000. At this conference, Prime Minister Mahathir Mohamed made it clear that less-developed countries should not expect aid from developed countries, and he reported that Malaysia was going to move towards a knowledge-based economy by means of Malaysia’s Strategic Initiative One (SI1). In addition, Azzman Shariffadeen, serving as Secretary of the National Information Technology Council (NITC), noted at the forum that the government intended to upgrade the educational system in Malaysia in order to create a Malaysian workforce that will be better educated than their foreign, skilled knowledge-worker counterparts.

The Malaysian nation’s Vision 2020 (Wawasan 2020) promotes a paradigm shift from an economy based on labor-intensive and lower-end manufactured products to an economy based on knowledge as part of the process of becoming a fully developed nation. Prime Minister Mahathir Mohamed first referred to the Malaysia Super Corridor (MSC) on presenting a bill in Parliament; he announced the MSC concept publicly in August 1996 after launching the National IT Agenda (NITA). The MSC begins at Kuala Lumpur City Center (KLCC), in the world’s tallest twin towers, and ends at Kuala Lumpur International Airport. Between the two landmark towers are Putrajaya, the new Malaysian administrative capital, and Cyberjaya, the headquarters of the Multimedia Development Corporation (MDC), which constitutes the administrative body of the MSC.

Smart Schools (Sekolah Bestari)

Seven flagship applications are expected to constitute the main operations of the MSC: Electronic Government (E-Government), Smart Schools, Telemedicine/Telehealth, Electronic Commerce (E-Commerce), R&D Cluster, E-business, and Technopreneur Development. Several pieces of legislation have been amended and enacted, including the Digital Signature Act of 1997, the Computer Crimes Act of 1997, the Telemedicine Act of 1997, the Copyright (Amendment) Act of 1997, and the Communications and Multimedia Act of 1998, to facilitate this development.

As for education, the Ministry of Education conceptualized the Smart School (Sekolah Bestari) Project in 1997, when it revealed “The Malaysian
The four objectives of the Smart School Project are:

(a) emphasis on maturity of thought, application of information technology, and assimilation of high-minded values;
(b) proficiency in science and mathematics;
(c) enhancement of performance according to individual capabilities; and
(d) contribution to the development of knowledge.

The Ministry of Education and Telekom Smart School Sdn. (TSS) lead the Smart School projects, which involve government (national) schools and government-aided (national-type) schools at the secondary level. There are three pilot projects being implemented under the Smart School initiative: Teaching-Learning Materials, Assessment Systems and Management Systems, and Smart School Integrated Solutions (SSIS). After the implementation of the pilot project during the Seventh Malaysia Plan 1996-2000, the Smart School project involved a total of 90 schools, including nine newly constructed schools. These schools were equipped with state-of-the-art multimedia/computing equipment and were provided with comprehensive teaching and learning materials in four subject areas, Bahasa Malaysia, English, science, and mathematics (Malaysia 2000: 373).

Furthermore, the Malaysian government has presented the Smart School Project with some new challenges. For example, in 2002, it was stated that mathematics and science classes must be taught in English from primary schools. The Prime Minister-cum-Finance Minister, Mahathir Mohamad, announced a RM5 billion allocation to implement the teaching of Science and Mathematics in English in schools for a period of seven years from 2002 to 2008 to Parliament in his 2003 budget presentation on 20 September. For 2002 and in 2003, a sum of RM978.7 million would be spent from this RM5 billion programme.

The Malaysian language (Bahasa Malaysia) or Malay language (Bahasa Melayu) has previously been used as an instruction medium in schools. Since independence in 1957, the Malay language has been a compulsory subject for primary and secondary school and then in 1970 the Malay language was introduced as the medium language to standard 1 students. Finally, Malay became the language of instruction at all school levels and universities in 1983. It is significant for educational development to teach science and mathematics in English because it will create the human resources to meet IT market needs locally. It is also important that there be Malaysian human resources with English proficiency to face the era of globalization. However, there is still a considerable argument over educational policy related to language policy. The Malaysian government
Akiko Kamogawa

has to preserve the mother tongue and culture of the Malay, the Chinese, the Indian, and the other indigenous peoples. Nevertheless, standard 1 students need to learn Malay language as the medium of instruction, English as second language, and the other languages, including Chinese and Tamil, as a third language at primary schools.

**Historical background of higher education**

Ever since the Federation of Malaya gained independence in 1957, the Malaysian education system has been developing so as to unify the nation-state and to promote economic growth. The Education Act of 1961, which followed educational reform efforts such as the Razak Statement of 1956 and the Rahman Talib Report of 1960, has governed the modern education system in Malaysia. These educational reforms correlated with socioeconomic conditions. In the early 1970s, the New Economic Policy (NEP 1971), or Bumiputera Policy, was implemented. The NEP aimed to bring about a better balance in enrollment among the different ethnic groups in Malaysia.\(^1\) It resulted in a steady increase in the number of Bumiputera students in Malaysian universities. Furthermore, since the early 1970s, the Malaysian government has sought to make more effective use of the nation’s Malay human resources in the process of economic development, and the percentage of Malay students at every educational level has increased steadily.

Basically, the Malaysian education system follows a 6-3-2 structure, with six years of primary school, three years of lower secondary school, and two years of upper secondary school (see Appendix 1). Eleven years of basic education are provided to all citizens. However, the higher-education system has been limited to the elite citizens of the country. Performance in the public examination, known as the SPM (Sijil Pelajaran Malaysia/Malaysia Certificate of Education), which is taken after the eleventh year of school, determines whether five Form students can enter post-secondary education (matriculation, or six Form). Until the mid-1990s, the Malaysian government encouraged students to study overseas in the U.K., the U.S., Australia, or Japan.

The first phase of the establishment of public universities started in 1969 under the Universities and University Colleges Act. During this time, Universiti Sains Malaysia (USM 1969), Universiti Kebangsaan Malaysia (UKM 1970), Universiti Pertanian Malaysia (UPM 1971), and Universiti Teknologi Malaysia (UTM 1975) were established (see Table 1). Moreover, four public universities were established during the second phase (from

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\(^1\) *Bumiputera* literally means “the sons of the soil” in Malay. It includes the Malay and other indigenous peoples in Malaysia.
Higher Education Reform

Table 1
Public Universities in Malaysia

<table>
<thead>
<tr>
<th>Establishment</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>Universiti Malaya (UM)</td>
</tr>
<tr>
<td>1969</td>
<td>Universiti Sains Malaysia (USM)</td>
</tr>
<tr>
<td>1970</td>
<td>Universiti Kebangsaan Malaysia (UKM)</td>
</tr>
<tr>
<td>1971</td>
<td>Universiti Pertanian Putra Malaysia (UPM)</td>
</tr>
<tr>
<td>1975</td>
<td>Universiti Teknologi Malaysia (UTM)</td>
</tr>
<tr>
<td>1983</td>
<td>International Islamic University Malaysia (IIUM)</td>
</tr>
<tr>
<td>1984</td>
<td>Universiti Utara Malaysia (UUM)</td>
</tr>
<tr>
<td>1992</td>
<td>Universiti Malaysia Sarawak (Unimas)</td>
</tr>
<tr>
<td>1994</td>
<td>Universiti Malaysia Sabah (UMS)</td>
</tr>
<tr>
<td>1997</td>
<td>Universiti Pendidikan Sultan Idris (UPSI)</td>
</tr>
<tr>
<td>1999</td>
<td>Universiti Institut Teknologi Mara (UiTM)</td>
</tr>
<tr>
<td>1993</td>
<td>Kolej Universiti Teknologi Tun Hussein Onn (KUiTTTHO)</td>
</tr>
<tr>
<td>1999</td>
<td>Kolej Universiti Sains dan Teknologi Malaysia (Kustom)</td>
</tr>
<tr>
<td>2000</td>
<td>Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM)</td>
</tr>
</tbody>
</table>


It can be found that the number of universities had been limited for four decades. However, the Malaysian government regards highly skilled human capital as the nucleus of a knowledge-based economy and has been attempting to reform higher-educational policies in both the public and private sectors since the mid-1990s. The research reported here seeks to evaluate higher-educational policy reform as it relates to the development of human resources in an era of information and communication technologies (ICT).

This research has three goals: first, to determine how Malaysian higher educational policies have changed by looking at socioeconomic backgrounds; second, to examine case studies of the Malaysia Multimedia University (MMU), Malaysia National University (UKM), and University Malaysia Sarawak (Unimas); and third, to discuss whether ICT is affecting access and course selection in higher education in terms of gender equality nationwide. In conclusion, the future direction of the Malaysian case, including some of the challenges it faces, will be shown.

Socioeconomic Impacts on Higher Education in the Era of ICT

The Sixth Malaysia Plan 1991-1995 (1991) did not refer to information technology in “Progress 1986-90” or in Chapter 5 of “Prospectus 1991-
95,” entitled “Education and Training.” It was not until the Seventh Malaysia Plan 1996-2000 (1996) that information technology in education and training was mentioned, and even then the plan stated only that computer literacy and computer-assisted teaching and learning programs would be extended to all schools and training institutions over the following five years (1996-2000). No further projects were discussed in the Seventh Malaysia Plan. It was noted that the use of computers in educational and training institutions would enhance the teaching and learning processes and help to overcome the shortage of trained teachers and instructors in several subjects, including languages (Malaysia 1996).

The Malaysian population has been estimated as being 22,229,040 (July 2001). The Malaysian government has recognized the necessity of a workforce with first degrees in scientific and technical fields. There have been fewer science-stream students than arts-stream students at the secondary level; science students represented only 25.7 percent of the total number of students in 1998, well below the targeted 60:40 science-to-arts ratio (Malaysia 2000: 124). At present, although the overall level of educational attainment has improved, the percentage of those in the labor force with tertiary education is still small, at 13.9 percent, which is lower than that of many newly industrialized economies (NIEs) (Malaysia 2001).

Higher educational reform and the roles of private universities in the mid-1990s

In the mid-1990s, four educational acts were implemented: the Education Act of 1995, the 1995 Amendments to the University and University Colleges Act of 1971 (1995 Amendments to the UUCA 1971), the Private Higher Education Institutions Act of 1996 (PHEIA 1996), and the National Council on Higher Education Act of 1996 (NCHEA 1996). With the implementation of the Private Higher Education Institutions Act of 1996, the private sector increased its involvement in providing tertiary education (Malaysia 2001). The Act allowed private institutions of higher education and foreign universities to establish franchises and degree courses. In particular, private-sector universities were encouraged to offer science and technology courses in order to increase enrollment at higher-educational institutions and to produce a greater number of highly skilled graduates (Malaysia 1998: 122).

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2 The National Council was expected to play a role as the main governing body of higher-educational institutions, including the public and private sectors, to establish guidelines and rules and to maintain the quality of higher education.

3 There were three branch campuses of foreign universities until 2000: Monash University Malaysia (MUM 1998); Curtin University of Technology, Sarawak (1999); and the University of Nottingham in Malaysia (UNiM 2000).
Higher Education Reform

Table 2
Private Universities in Malaysia

<table>
<thead>
<tr>
<th>Establishment</th>
<th>Name</th>
<th>Main campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Universiti Telekom/Multimedia University (MMU)</td>
<td>Cyberjaya &amp; Malacca</td>
</tr>
<tr>
<td>1997</td>
<td>Universiti Teknologi Petronas (UTP)</td>
<td>Bandar Sri Iklandar, Perak</td>
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<tr>
<td>1997</td>
<td>Universiti Tenaga Nasional (Uniten)</td>
<td>Kajang</td>
</tr>
<tr>
<td>1997</td>
<td>Universiti Tun Abdul Razak (Unitar)</td>
<td>Kelana Jaya</td>
</tr>
<tr>
<td>1999</td>
<td>International Medical University (IMU)</td>
<td>Bukit Jalil &amp; Seremban</td>
</tr>
<tr>
<td>1999</td>
<td>Universiti Industri Selangor (Unisel)</td>
<td>Shah Alam</td>
</tr>
<tr>
<td>2001</td>
<td>Open University of Malaysia (Unitem)</td>
<td>Kuala Lumpur</td>
</tr>
<tr>
<td>2002</td>
<td>Malaysia University of Science and Technology (MUST)</td>
<td>Kelana Jaya</td>
</tr>
<tr>
<td>2002</td>
<td>Universiti Tunku Abdul Rahman (Utar)</td>
<td>Petaling Jaya</td>
</tr>
</tbody>
</table>


Six private universities, Malaysia Multimedia University (MMU), Universiti Tenaga Nasional (Uniten), Universiti Teknologi Petronas (UTP), Universiti Tun Abdul Razak (Unitar), International Medical University (IMU), and Universiti Industri Selangor (Unisel), began offering degree-level courses in engineering, business studies, medicine, and multimedia. Since that time, the number of private universities has increased, as seen in Table 2. IT-focused universities from both public and private sectors, such as Universiti Putra Malaysia (UPM), Universiti Kebangsaan Malaysia (UKM), Multimedia University, and Universiti Tenaga (Uniten), operate in the MSC (see Table 2). Their challenging cases will be examined as follows: the case studies of the Malaysia Multimedia University as the newly established core university of MSC at first; second, the Malaysia National University as the traditional university which might have some difficulties in attempting the new challenges; and third, University Malaysia Sarawak (Unimas) which shows a need for distance learning because of its location on the island of Borneo.

Case Studies

*Malaysia Multimedia University (MMU) as a pioneer*

Malaysia Multimedia University (MMU) was established as the core institution of the MSC in July 1996, and was the first private university to be given accreditation by the government. MMU has two campuses that offer faculty in several fields: technology, IT, creative multimedia, and adminis-
tration at the Cyberjaya Campus in the MSC; and technology, information science technology, business, and law at the Malacca campus. There are 9,000 undergraduate and post-graduate students, including foreign students from 31 countries (e.g., Brunei, Sudan, Bosnia, Malawi, Tanzania, India, Sri Lanka, Bangladesh, Indonesia, Turkey, China, Thailand, and Guinea) enrolled in MMU. MMU uses English as the language of instruction.

The Center for Multimedia Education Development (CMED) began operations in 1997, with the aim of providing a “one-stop solution center” for the entire campus of MMU. An integral component, located in Cyberjaya, it incorporates all the aspects of software engineering, including software development, consultation, and resource training, that are available to its students. The Distance Education Center established its distance learning program in 1998. Students can obtain a Bachelor of Management degree and can take selective subject programs through the distance learning center; 41 online courses (122 credit hours) are offered which comprise university subjects, foundations, core management subjects, management majors, and three elective subjects.

MMU also has an e-learning campus, an online virtual campus. The e-learning campus consists of affordable university credit programs and professional courses, such as a Bachelor’s degree in e-business (first intake December 2002), a Diploma in IT (May 2003), and a Certificate in English Language Proficiency (May 2003). Other programs and courses to be introduced include a Bachelor’s degree in IT and Master’s degrees in Business Administration and Corporate Training (including business communication, image enhancement and professional etiquette, and negotiation skills).

Knowledge-Campus (K-Campus) projects of Universiti Kebangsaan Malaysia

Not only newly established universities, but also the nine historical universities (public universities established before 1994) conduct IT-related projects. All nine public universities have embarked on open- or distance-learning programs (Siowek-Lee and Rinalia 1998). Universiti Kebangsaan Malaysia (UKM, Malaysia National University), one of the most prestigious universities in Malaysia, formed a special ICT committee to implement the blueprint of ICT projects and established the Faculty of Information Science.
Science and Technology in 1994.\textsuperscript{5} In addition, UKM administers the K-Campus projects; K-Campus services are divided into two categories, ICT education services and ICT management services.

There are five main K-Campus projects: e-learning, intellectual knowledge archiving (IKA), global community support services (GCSS), virtual network for research and development resources (VNRDR), and virtual campus communication network (VCCN) (Aziz 2003). Well-established Web pages, called e-
\textit{pelajar} (e-students) and e-UKM, offer e-learning content to students, as well as official materials to staff, administrators, and external clients; some Malay pages are not yet translated into English.

\textit{Distance learning: the case of Unimas, Sarawak}

University Malaysia Sarawak (Unimas), which is not located on the Malay peninsula but on the island of Borneo, established its Faculty of Information Technology in 1993. By July 1994, the faculty offered undergraduate programs in software engineering, information systems, internetworking technologies, computational science, and interactive multimedia. There were 34 students at the undergraduate level and a few at the post-graduate level in 1994; by July 1995, the first Master’s students in IT graduated from Unimas. The computational science program was introduced during the 1995-96 academic year; the joint program in cognitive science, offered by the Faculty of Cognitive Science and Human Development and the Faculty of Information Technology, began in 1996.

Unimas, in collaboration with Kolej Latihan Telekom (Telekom Training College), has begun offering diploma programs in multimedia (business and computing) and in multimedia technology, which have been accredited by the \textit{Lembaga Akreditasi Negara} (National Accreditation Board) (1 March 2000). Moreover, the Network Multimedia Education System (NMES) was launched in October 2002. The e-learning lab (Faculty of Information Technology) in Unimas is connected with Penang, Sabah, Sarawak, Kuantan, and MMU at Cyberjaya, Selangor through video conferencing. Unimas initiated the E-Bario project, which constitutes a government project to promote ICT awareness and usage. The E-Bario project provided computers and Internet access to schools that became community centers for learning (Malaysia 2000: 366).

\textsuperscript{5} UKM provides 12 faculties: Applied Health Sciences, Business Management, Dentistry, Economics, Education, Engineering, Information Science and Technology, Islamic Studies, Law Medicine, Science and Technology, Social Sciences, and Humanities.
Discussion: From the Gender Perspective

Many ICT challenges are being met in both public and private institutions of higher education, and these institutions are offering a variety of ICT-related courses to Malaysian and international students. At the same time, the challenges presented by ICT are having social and cultural implications, as discussed below.

Access and course selections

First, higher education reforms toward a knowledge society are affecting access and social selection with respect to ethnic and gender equality. Educational policy implemented since 1969 has provided educational opportunities to a less privileged population, the Bumiputera. Government policy can have an effect on aspirations and, thus, the demand for higher education. This has clearly been the case in Malaysia, which is both an Islamic and a multicultural country made up of the Malays, Chinese, Indians, and indigenous peoples. The implementation of the New Economic Policy (NEP) in 1971, or Bumiputera Policy, attempts to bring about a better balance in enrolment among the various ethnic groups and has led to a steady increase in Bumiputera students in Malaysian universities.

The government of Malaysia has encouraged Bumiputera students to pursue science courses in particular. According to the National Economic Recovery Plan, in addition to maintaining the Bumiputera/non-Bumiputera ratio of 55:45, the Ministry of Education (MOE) is to ensure that at least 55 percent of Bumiputera students are enrolled in science and technology fields of study at institutions of higher learning (Malaysia 1998:123). This mandate is in response to the growing need for highly skilled human resources, both to encourage economic growth and to unify the nation, following its independence in 1957.

Female Malaysian students earn better grades, in general, than do male Malaysian students. Yet, female Malaysian students have experienced difficulties in obtaining higher education in the past. Structural and attitudinal barriers to the equitable participation of women at the highest educational levels have existed during the last few decades (Aminah 1998:25). Hence, their past underrepresentation was not a result of their inability but rather their cultural backgrounds. As some scholars (Jamilah 1992; Aminah 1994; Fatimah and Aminah 1994; Jamilah 1994; Kamogawa 2003b) have noted, the stereotypical Malaysian way of thinking is that arts and teaching fields are suitable for women and that science and technology fields are suitable for men. Consequently, Malaysian female students have had a tendency to choose art and educational courses.
Nevertheless, the number of female university students has increased steadily since the 1970s. In fact, there were more female students than male students at the university level in the year 2000 (see Table 3). One of the reasons for this seems to be that the Bumiputera policy has, thus, enhanced educational opportunities for female Bumiputera students to enter higher education. Since the early 1970s, the implementation of the NEP has resulted in a steady increase in the numbers of both male and female Bumiputera students. In other words, the Bumiputera policy has contributed to the advancement of Malaysian women by giving them enhanced educational opportunities.

Equally important, the Bumiputera policy has thus enhanced educational opportunities for female Bumiputera students to enter courses of study in the sciences. Many female students have obtained (or have been granted) opportunities to study in the science fields as a result of the Malaysian government’s emphasis on meritocracy recently, as part of its effort to push Malaysia into becoming a fully developed country by the year 2020. In fact, the percentages of female university students (first-degree course) in various areas of study in 1998 were: arts, 68.2 percent; economics, business, and administration, 64.0 percent; civil law, 54.5 percent; science, 56.1 percent; arts education, 66.9 percent; science education, 66.9 percent; agriculture, 43.7 percent; and engineering, 26.6 percent. Female students with high educational achievements will meet the government’s needs in the near future.

With regard to ICT fields, Malaysian male students are more likely to choose ICT courses in tertiary education than are female students. There are no specific data covering the whole country of Malaysia that show the ratios between male and female students in ICT fields; however, the figures in Table 4, for example, indicate that male students have a greater interest in ICT fields than do female students at UPM. The Institute for Distance Education (IDEAL) at UPM, which was established in 1995, offers a technology degree course leading to a Bachelor of Computer Science via distance learning. IDEAL is the first program in Malaysia to

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6 In the Prime Minister’s speech on Women’s Day 2002, it was mentioned that there were more female students in local universities than male students. (Utusan Malaysia “M: Wanita mungkin tentukan hala tuju negara” 2002/8/26, The Star “Women may set pace” 2002/8/26).

7 Apart from higher educational institutions, it is reported that the provision of dormitories for women and the increase in the number of technical and vocational educational institutions generated greater access of these institutions to women (Aminah 1998:27).

Table 3
Number and Percentage of Female Students 1970-2000

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<tbody>
<tr>
<td>Primary</td>
<td>6 to 11</td>
<td>672,898 (47.3)</td>
<td>975,419 (48.6)</td>
<td>1,190,411 (48.6)</td>
</tr>
<tr>
<td>Lower secondary</td>
<td>12 to 14</td>
<td>155,641 (41.1)</td>
<td>386,865 (47.8)</td>
<td>468,802 (49.7)</td>
</tr>
<tr>
<td>Upper secondary</td>
<td>15 to 16</td>
<td>35,298 (39.5)</td>
<td>115,562 (46.7)</td>
<td>184,931 (51.2)</td>
</tr>
<tr>
<td>Post secondary</td>
<td>17 to 18</td>
<td>6,363 (33.8)</td>
<td>26,606 (45.5)</td>
<td>41,962 (58.2)</td>
</tr>
<tr>
<td>Colleges</td>
<td></td>
<td>30,582 (46.2)</td>
<td></td>
<td>39,688 (47.0)</td>
</tr>
<tr>
<td>Universities</td>
<td>19+</td>
<td>2,513 (29.1)</td>
<td>9,363 (35.5)</td>
<td>26,198 (44.9)</td>
</tr>
</tbody>
</table>


Table 4
Student Enrolment by Program and Gender
(Institute for Distance Education: IDEAL, UPM)

<table>
<thead>
<tr>
<th>Programmes</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS (Human Resource Development)</td>
<td>155</td>
<td>63</td>
</tr>
<tr>
<td>Bachelor of Computer Science</td>
<td>211</td>
<td>122</td>
</tr>
<tr>
<td>Bachelor of Education (Guidance &amp; Counseling)</td>
<td>774</td>
<td>539</td>
</tr>
<tr>
<td>Bachelor of Education (Teaching of Malay)</td>
<td>1021</td>
<td>649</td>
</tr>
<tr>
<td>Bachelor of Education</td>
<td>355</td>
<td>756</td>
</tr>
<tr>
<td>Total</td>
<td>2516</td>
<td>2129</td>
</tr>
</tbody>
</table>


be delivered entirely via the Internet. Among the students in the Bachelor of Computer Science program, 37 percent, or 122 out of a total of 333 students, are female (Siowek and Rinalia 1998).

However, other research shows that more and more female upper-secondary students have preferences to choose IT-related universities and fields (Kamogawa 2003a). According to Sugimoto’s interview with MMU (2003), there are as many female students as male students in MMU. It is not necessarily concluded that the ratio of female students in the distance-learning institutions, as opposed to the brick-and-mortar institutions, increased. Apparently, the number of computer and peripheral equipment operators as well as clerical jobs has increased since the 1990s. It is pointed out that female workers have new opportunities in the computer professions, such as system analysts and programmers at the middle level (Cecilia et al. 1992). The new trend on the labour market in 2000s is likely to cause the increase of female students in higher education.
Employment

The changing structure of the Malaysian economy is an important determinant of the demand for higher education which informs students’ access and course selection. Therefore, expanding and upgrading higher education towards generating educated manpower, especially in the fields of science and technology, determines the quantity and orientation of higher education. Furthermore, the Malaysian government has sought to make more effective use of the nation’s female human resources in the process of economic development since the early 1970s. The percentage of female students at every level has increased steadily, and Malaysian female students have better opportunities to work in management or the professions. The participation of women in the formal sector of the labor force increased from 38.9 percent in 1970 to 62.9 percent in 1990, with the majority of women being concentrated in low-salaried and semi-skilled jobs in the manufacturing sector and in “feminine-related fields” such as clerical, teaching, and nursing services, amongst others (Fatimah and Aminah 1994:40-41).

Employment in the clerical group more than doubled between 1975 and 1987. There has also been dramatic growth in occupations associated with computerization, including programmers, during this period. The creation of new jobs has opened up new opportunities for women in mid-level computer professions, which has prompted female students, in turn, to seek higher education. However, these changes have also created gaps between the more highly skilled and less-skilled female workers. Male workers, generally, have received more benefits from computerization (Cecilia et al. 1992).

In the Eighth Malaysia Plan 2001-2005 (2001), it is clear that the government of Malaysia regards female human resources, as well as the country’s youth, as important contributors to the nation’s development objectives (Malaysia 2001:16). It is projected that the demand for workers in core ICT occupations, such as hardware engineers, software engineers, systems analysts, computer programmers, and technical support personnel, will increase from 108,000 in 2000 to 181,600 in 2005 (Malaysia 2001:382). These projections are part of the impetus to encourage more women to pursue nontraditional fields of study, such as science, engineering, and vocational and technical education, at higher levels; however, higher education in technological and engineering fields is still male dominated. One of the quickest ways for the government of Malaysia to meet the demands for human resources and move toward a knowledge society is to make better use of more Malaysian women as highly skilled and as multiskilled workers.
Conclusion

Malaysian higher education reform is progressing rapidly because the government needs to develop highly skilled human resources locally to enable the nation to move toward a knowledge society, in the era of ICT. Malaysian public universities had been traditionally restricted to the elite; however, they began to be corporatized in the mid-1990s. Private universities have taken on more important roles in expanding enrollment and maintaining the quality of higher education in science and technology related to ICT. According to the Eighth Malaysia Plan 2001-2005, more ICT and related engineering courses will also be introduced at both public and private institutions of higher learning. It is said that a total of 122,910 students will be enrolled in these institutions by 2004, mainly at the diploma and bachelor’s degree levels; the private sector’s involvement in the provision of ICT education will continue to be significant, as 71 percent of total student enrollment is in private institutions (Malaysia 2001:383). Multimedia University remains one of the pioneering universities in the ICT-centered fields (see Appendix 2).

Additionally, the MSC should be more substantively contextualized, both nationally and internationally, by way of preparation for the analysis of higher education reform and conversion. Nationally, the demands for computer and Internet access are still increasing among women. Internationally, the experiences of Malaysia will be useful, from a gender perspective, to other developing nations, especially Islamic countries where traditional attitudes and values that militate against higher education for women still exist (although the number of female students in Islamic countries has been increasing). The analysis reported here concludes that the new challenges facing Malaysia offer possibilities not only for bridging the digital divide in aspects of gender and ethnicity, nationally, but also for being a strong move towards gender parity in higher education, internationally.

As compared with the IT strategies of other nations in the ASEAN (Association of South East Asian Nations), such as IT2010 of Thailand, the ICT policy Framework of Indonesia, and IT21 of the Philippines, it seems clear that the MSC of Malaysia is emerging as a successful strategy. In spite of that, there remain some serious challenges to higher education with respect to this success, in that the MSC has not been expanded throughout Malaysia, as has been noted by Mohamad Ariff Nun (Senior Vice-President, Multimedia Development Corporation of Malaysia). According to Mohamad Ariff Nun, the government of Malaysia has been experimenting with the MSC as a development plan in just one area, rather implementing it nationwide. He has emphatically noted that the enrollment rate in higher education has increased, and that this
necessitates a greater effort on the part of the Malaysian government to continue to upgrade university education in order to train more human resources.\(^9\) The existing policy has the potential to create a digital divide between rural areas and urban areas, in that some schools would be equipped with computer networks and some schools would not.

Once the MSC has been expanded to a nationwide project, the government of Malaysia will be poised to become an educational center of excellence (pusat kecemerlangan pendidikan), according to Najib Tun Razak, the Minister of Education (Dewan Masyarakat, 1998). Moreover, the Government of Malaysia is expected to provide the basis for south-south cooperation in the era of information and communication technologies. Therefore, Malaysian institutions of higher education, both public and private, will need to play important roles in developing such vital projects as distance learning and e-learning.

### References

**AHMAD, AMINAH**  

**ARIFFIN, JAMILAH**  

1994  *Reviewing Malaysian Women’s Status*, Kuala Lumpur: Population Studies Unit, Faculty of Economics and Administration, University of Malaya.

**ASIA NETWORK RESEARCH**  

**DERAMAN, AZIZ B.**  

**DEWAN MASYARAKAT**  

**HAMID DON, FATIMAH AND AMINAH AHMAD**  

**KAMOGAWA, AKIKO**  
2003  “Gender Roles and Career Choices of Upper Secondary Students: Field Study

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\(^9\)Furthermore, he implied that MSC should develop globally, including into the Middle East, the U.S., Japan, Australia, Africa, and Europe. International Conference “IT and International Corporation,” Japanese government, UNDP and World Bank, 3-4 July in Tokyo.


LEE, MOLLY N.N.

MALAYSIA
1997b *The Malaysian Smart School — A Conceptual Blueprint*.
2000 *The Third Outline Perspective Plan 2001-2010*.

CECILIA NG CHOON SIM AND JAMILAH OTHMANL

SIDIN, ROBIAH

SUGIMOTO, HITOSHI

SIOWEK-LEE GAN AND RINAILA ABDUL RAHIM

TAN AI MEI
Web Sites

Department of Statistics
   http://www.statistics.gov.my/
Loo Seng Piew
   The Smart School MSC Flagship Application of Malaysia: Possibilities For
   Commercialisation By MSC Status Companies
   http://el.usm.my/academic/sploo/smart.htm
Malaysia Super Corridor
Multimedia University
   http://www.mmu.edu.my/
Multimedia University Center for Multimedia Education Development
   http://www.mmu.edu.my/~cmel/
Multimedia University Distance Education Center
   http://www.mmu.edu.my/~cirde/
Multimedia University E-learning Campus
   http://e-univ.mmu.edu.my/
Prime Minister’s Office of Malaysia
   http://www.smpke.jpm.my/website/webdb.nsf/?Opendatabase
University Malaysia Sarawak
   http://www.unimas.my/en/
Unit Pemodenan Tadbiran dan Perancangan Pengurusan Malaysia
   http://www.mampu.gov.my/
## Appendix 1
### Educational System in Malaysia

<table>
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<tr>
<th>Age</th>
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<tr>
<td>Lower Secondary</td>
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<td>Upper Secondary</td>
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<td>Post Secondary</td>
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R: Remove Class  ▼: Level 1 Assessment (PTS)  □: Primary School Achievement Test (UPSR)
■: Lower Secondary Assessment (PMR)  ●: Malaysia Certificate of Education (SPM)
□: Malaysia Certificate of Education (Vocational) (SPMV)  ▲: Malaysia Higher School Certificate (STP)

Appendix 2

Information and Communications Technology Prospects, 2001-2005

Towards becoming a developed nation with a knowledge-based society, the strategic thrusts for the development of ICT will include:

- Positioning Malaysia as a major global ICT and multimedia hub;
- Upgrading and expanding the communications infrastructure to increase accessibility throughout the country as a means of bridging the digital divide;
- Enhancing human resource development in ICT to increase the supply of highly skilled and knowledge manpower;
- Promoting e-commerce and enhancing its use to enable Malaysia to compete more effectively in the global market;
- Fostering local capabilities in creative content development;
- Rolling out the MSC flagship applications to further provide the momentum for the development of the MSC;
- Nurturing a critical mass of ICT-based SMEs; and
- Promoting R&D activities on soft factors of ICT and Information Age developments that affect individuals, organizations and societies.

Source: Malaysia 2000:379-80
Strategies for Promoting Virtual Higher Education: General Considerations on Africa and Asia

KAZUO KURODA* AND HOSSAIN MD. SHANAWEZ*

ABSTRACT

Education in general, and specifically higher education, plays an important role in the development process of all nations. Institutions of higher education have an important responsibility to support knowledge-driven economic growth strategies. This paper investigates the strategies of how by applying technologies on a large scale — with close attention to quality — virtual education can help higher education to find a way through the crisis of access, prohibitive cost, and lack of flexibility that we find all over the developing world. By addressing various issues related to planning, implementation, and quality with proper strategies, virtual education can provide immense opportunity to reduce the North-South knowledge gap and also to promote the development of the developing world. This paper reviews various issues related to promotion and quality control in virtual higher education and addresses possible strategies with general considerations of Africa and Asia.

Introduction

Exponential growth in information and communication technologies (ICTs) has created an opportunity to have a variety of educational media. Virtual

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education, by the use of cyberspace, eliminates the spatial limitations and time constraints of more conventional education methods, removing the need for the learner to be present at an instructional site at a designated time.

By eliminating the time and space gap, cyberspace creates new opportunities for the promotion of virtual education. Virtual education has been defined by Perraton (1986) as quoted in Visser (1994, no page no.) as “an educational process in which a significant proportion of the teaching is conducted by someone removed in space and time from the learner.” Thus virtual education has created a new opportunity of extension of education to people who hitherto could not have access to traditional education because of personal, “geographical,” social, “organizational, or infrastructural” constraints (Ibid.).

This unique characteristic of information and communication technology has the potential to make higher education and training more effective, affordable and flexible if used properly, especially for the developing countries.

Higher education, as well as primary and secondary education, nurtures and develops educated human resources while functioning as a center for creating and transferring knowledge. It offers knowledge in professional fields, such as law, medicine, and engineering. Higher education also nurtures policy makers and business managers. Thus, higher education plays an important role in the development process of all nations. But despite the clear importance of higher education for economic growth and social development, the sector is in crisis throughout the world, and this is most acute in the developing world (World Bank 1994). Many studies have found a significantly higher cost for higher education than for primary and secondary education. Wolff (1984, p. 702) found that the average unit costs were more than 50 times higher than the average primary costs in Eastern Africa. The reasons for this high unit cost are varied, and some of the reasons he pointed out are: (1) the student/teacher ratio in higher education is much lower than that in primary and secondary education; (2) the share of the nonteaching cost for higher education is more than 50 percent of the total cost, while most of the cost of primary education is teacher’s salaries; (3) the teaching time of the staff in higher education is significantly less than that in primary and secondary education; and (4) the physical equipment in higher education is costly and significantly underutilized (Ibid.).

These access and cost constraints of traditional higher education created many opportunities for providing virtual higher education, especially in the developing countries of Africa and Asia. The 1980s and 1990s have seen numerous studies which were highly supportive of the use of virtual
education to support development in the Third World. However, virtual higher education has had, and still has, to overcome numerous obstacles and problems, especially in its quality and cost, in the process of its recent expansion in developed countries.

Considering this general picture of prospects and problems, this paper tries to uncover some strategies for promoting virtual higher education in developing countries with general considerations of Africa and Asia. Although this paper is brief, it is included here because it raises important issues, poses key questions, and points to possible strategies to address and respond to these issues and questions. It is written from the perspective of policy concerns that pertain to policy formulation and implementation. Furthermore, it offers general grounds for reflection on development-policy issues that are common to some of the developing countries from different regions of the world, specifically in Africa and Asia.

There are still considerable disagreements and debates on the relevance and appropriateness of the use of ICTs in the distance-education space. Given the purpose of this paper, however, these debates are not engaged. Indeed, the concern is, given the fact that expansion of distance learning based on ICTs is a reality that cannot be ignored, what guideline for possible strategies addressing policy matters can be considered for the effective use of ICTs?

This paper reviews various issues involved and strategies to address the aforementioned issues under two broad headings: issues related to promoting virtual education and issues related to reducing costs without diminishing quality.

**Strategies for Promoting Virtual Higher Education**

The promotion of virtual education in developing countries requires specific technological, legal, and policy strategies in order to reduce the digital gap and ensure wider and more cost-effective access to essential resources for more people. Especially, due to the lag in technology and human resources, quality assurance is the most challenging step in virtual higher education development in developing countries.

The following strategies may be helpful to promote virtual higher education in developing countries:

- ensuring supportive legal and policy foundations;
- providing faculty incentives and ensuring faculty support and development;
- applying proper system design approach; and
- ensuring proper monitoring and evaluation.
Providing supportive legal and policy foundations

Proper legal and policy foundations will provide sound organizational infrastructure and binding responsibility of the different actors involved in virtual education, both of which are required to ensure quality and sustainable support to the learner. Daniel (1996, p. 129) pointed out that, “Governance and accountability based on legal and policy foundations are important considerations and can produce a substantial pay-off in tertiary virtual education.” In this case, Farrell (1999) proposed the introduction of policy, legislative, and regulatory incentives to guarantee the use of a portion of telecommunication capacity for educational purposes. Again, as a part of the greater educational system, distance-educational institutions must depend on other institutions for various purposes and this linkage should also be ensured by specific legal and policy foundations.

Therefore, for promoting virtual education, it is necessary to ensure supportive policies both at the national and institutional levels. At the national level, where possible, the establishment of virtual institutions within conventional educational institutions should be permitted to reduce the establishment costs and also to ensure the maximum use of existing facilities. The issue of equivalence and recognition of degree and diploma is crucial and requires serious and practical considerations. It should be ensured by law that degrees granted by distance-education and virtual institutions have the same value as degrees granted by the traditional institutions. Institutional barriers should be removed by appropriate supportive policy measures such as flexible credit transfer systems for the learners or provision of initial key money for the institutions. In the legal and policy foundation, “greater administrative flexibility” of the learners should be ensured by providing facilities to register and enroll throughout the year; exit programs at many different points; postpone studies for any length of time; or provide study facilities at sites that are convenient and accessible (William 1999). Again, study time should be fixed at times of the day or week that fit the learners’ lifestyle, and assessment and payment methods should have flexible and accommodating schedules (Ibid.).

Providing proper faculty incentives and ensuring faculty support and development

Establishing virtual education requires much work from the faculty members, especially in the beginning of the program when they first prepare the educational content. In this period, the workload can be much heavier than in the classroom-type educational program. Therefore, it is necessary to provide some incentives for faculty members who are involved in virtual education. These incentives can be economic incentives, but can also include flexible working hours and flexible workplaces, which become
possible because of the nature of virtual education. Additional training for faculty members can also be an incentive (Robertshaw 1999).

In developing countries the problem of qualified faculty is acute, as they are suffering both from lack of proper technology and human resource. But, qualified faculty development is a must for quality assurance in higher virtual education. Therefore, it is necessary to establish appropriate support systems to provide continuous development and technical assistance to the academic staff. Such support systems will allow faculty and all other concerned parties to discuss problems and find solutions in the process of virtual education program design and implementation. This process of identifying and solving problems can be supplemented with input from computer engineers, programmers, instructional designers, and online instructors. The combined effort of all concerned will ensure the faculty quality needed to keep up with change in virtual education.

**Applying proper system design**

Considering various physical and psychological barriers caused by the distance between faculty and learners in virtual education, system design and specific system approaches should be adopted that take into account the needs and capacity of the students. Appropriate and flexible technologies should be used to keep students actively engaged and enable them to interact with each other and with course instructors. Therefore, proper virtual education system design should consider not only the learners and their circumstances and learning objectives but also the specific evaluation systems to ensure that intended learning objectives are met (Visser 1994, no page no.).

Instructional systems design (ISD) models (Dick & Carey 1996) can guide virtual educators through step-by-step development and implementation of effective virtual education programs. ISD is, “the science of creating detailed specifications for the development, implementation, evaluation, and maintenance of situations that facilitate the learning of both large and small units of subject matter at all levels of complexity” (Berger & Kam no date, no page no.). Thus, ISD consists of analyzing what is to be learned, planning an intervention that establishes the conditions for learning, and producing and refining instructional or noninstructional interventions until the specified performance objectives are met.

**Ensuring proper monitoring and evaluation systems**

In promoting quality virtual education, continuous monitoring and evaluation are important for quality control throughout the design, development, delivery, and assessment processes. It provides ways in which the distant learner can communicate with the distant teacher. This allows the stu-
dent/learner to play an active role in her/his own learning, an essential requirement for learning to be effective. Furthermore, it helps to overcome the sense of isolation the student naturally feels in a distance-education environment. Gentry (1994, p. 218) refers to evaluation as “a means of detecting discrepancies between what exists and what is desired.” Thus it allows the student to receive corrective feedback and the center to monitor his or her progress.

Institutions that employ a regular system of monitoring and evaluation are able to identify the strengths and weaknesses of virtual programs and revise programs and policies accordingly as evaluation looks at the effectiveness, efficiency, and benefits of the instruction (Seels & Glasgow 1998). Monitoring and evaluation help institutions to take corrective measures by assisting in determining what changes are needed to the program, to improve the performance of the program, and to determine if learners have met the intended goals of the instruction (Hannum & Hansen 1989). But many studies show that although virtual education is catching up in almost all countries of the world, it is still little known and less studied and distance systems are usually ignored (Reddy 1993). Therefore, when selecting proper monitoring and evaluation tools, it is essential to conduct research to consider technical, educational, and market-related factors such as consumer demand, competing alternatives, and the regulatory environment. To ensure accountability of all stakeholders involved in virtual education, planning evaluation and research are important to improve access, enhance quality, increase efficiency, and meet revenue needs (Farrel 2001). The major points of research to be carried out may include conducting a formative evaluation during the design and development process, monitoring the electronic logs of network use and teaching-learning processes, and assessing the direct and indirect effects of virtual programs on individual learners, faculty members or trainers, and teaching organizations.

**Strategies for Reducing Costs in Virtual Higher Education**

The development cost of virtual education is very high due to its complex nature, requiring highly developed skills and considerable investments at the outset; but such high costs can be spread over many users so that the unit cost per learner still comes out favorably (Visser 1994). For developing countries, cost-reduction strategies are more important due to their asset constraints. The following strategies may be helpful in this respect:

- adoption of proper ICT pricing policies;
- network integration and proper national planning for using shared resources;
- database- and resource-sharing to share costs; and
- building partnerships, collaboration, and alliances.
Adoption of proper ICT pricing policy to support virtual education

Declining ICT costs have made computer-aided and online instruction increasingly feasible, and these cost savings are even greater now than in the past (Wolff 1999). William (1999, p. 18) found that “by allowing worldwide access to large amounts of relevant information, the Internet diminishes research costs and compensates for the shortage of books and scientific journals that often plagues university libraries.” Taking into account the fact that the cost of telecommunications is falling dramatically and will soon cease to vary with distance (Cairncross 1995), the gradual incorporation of new technologies into the delivery of virtual education could further increase its cost-efficiency. But still, for developing countries, some special measures are needed to reduce the digital divide. Governments should provide incentives (such as reduced taxes, exemptions for educational investment, and establishing national ICT initiatives in education) for telecommunications companies to develop special pricing for the educational application of ICT and online virtual teaching. Special reduced rates may be applied to the educational use of network communications in higher-educational institutions. In light of the rapid growth of virtual education, it is necessary to review national information and telecommunication policies and regulations to ensure that they support the effective and flexible use of ICT in higher education and training.

Network integration and appropriate national planning

In today’s world, limitations in access to information and communications infrastructure have a direct negative impact on citizens’ abilities to acquire information and skills, and technology infrastructure indicators show great disparities both between countries and in different parts of the same country (World Bank 1999). Therefore, for low-cost quality virtual education, developing countries have a strong need for an integrated network system that links the educational computer network to the national information superhighway. Initially this integration may be done at the regional level and gradually increased to the national and international level. It will provide learning environments in classrooms, homes, and workplaces and will minimize the exclusion of learners who cannot access in educational facilities because of various barriers. Such integration will increase the capacity of all the institutions and will allow learners to enjoy the facility of a broader national information superhighway and expanded network connections without additional investments. Again, sharing information with international institutions will increase the capacity of the local institutions. Before building an infrastructure, countries should develop a comprehensive and strategic plan for that infrastructure’s educational applications.
Database and resource sharing

Since the cost of developing a database is high, most higher-education institutions have experienced financial difficulties in establishing a large database for their students and staff. Virtual universities in a number of countries, particularly the United States, have “unbundled” many educational functions, including virtual course development, distribution, tutoring, assessment, general administrative affairs, and learner supports (Farrell 1999), which are increasingly shared among specialized institutions. Databases can be linked through computer networks, shared globally, revised by users, and transformed into meaningful knowledge. With the Internet, a comprehensive intranet can be developed to share educational resources created by each instructor, students can interact collaboratively with other students and have direct access to instructors as well as library resources; and instructors can update their courses as needed. One example is the World Bank sponsored African Virtual University (AVU), a satellite-based education system targeting post-secondary students throughout Sub-Saharan Africa. At present, 22 anglophone and francophone universities in 16 African countries are AVU participants. Participants can access the AVU digital library and download information at no charge during an initial trial period and at an annual flat rate in the future, thus sharing data and costs (Milton 1997).

Building partnership, collaboration and alliances

Partnerships are a particularly good way to build local capacities in virtual education. Partnerships reduce the burden to single providers by distributing costs among several partners. Again, partnerships can be built with the business organizations, which will reduce the capital constraints of the institutions. Governments should encourage such partnerships by instituting policies that provide incentives for private-sector participation and investment in virtual-education programs. Collaboration with training centers can also be mutually advantageous by permitting the exchange of technology and human resources and the sharing of courses. Partnerships can also be formed with universities or companies in foreign countries. These partnerships and alliances will allow the participating institutions to disperse costs and draw on each other’s strengths. Content and technical standards need to be adopted that will optimize interoperability with other institutions and organizations in areas such as the creation of learning-materials databases, information databases such as libraries, and administrative systems, as well as the creation and facilitation of learner support strategies. In developing countries the collaboration opportunities can also be extended to areas such as professional continuing education, teacher training, and science and technology programs (Farrell 2001).
Conclusion

In the context of changes that are likely to come into higher education in developing countries as a result of the convergence of information technologies, this paper discussed various issues and possible strategies for promoting virtual higher education. Virtual higher education will, in the future, formulate a global consortium of academia and higher learning in cyberspace as a mega-university, above or beyond the existing universities. Change will come slowly on campus but will accelerate in cyberspace. Both conventional campuses and distance education will continue to exist side by side as they create this global consortium (Rossman 1999).

The rapid development of virtual education has brought different challenges to the provision of higher education. However, this growth and projected increased demand has been, and is likely to be, uneven with the developed world being able to fully exploit the advantages of virtual education. The developing world, with its difficulties in education systems, education processes and practices, infrastructure, lack of ICT infrastructure, and the like will constantly find itself at the lower end of usage of virtual education. Just as one should not assume that virtual education is appropriate for all regions and institutions, neither should one assume that this phenomenon can be ignored. The opportunities for “adding value” to one or more of the goals of improving access, enhancing quality, or improving efficiency through the use of some aspect of virtual education are very real. These opportunities will be enhanced by the macro-developments described in this paper.

The challenges are immense, and managers and policy-makers themselves should attempt to engage in a constant learning process so as to better understand and evaluate the many choices offered by online technologies to enhance distance learning. The planning process will be more effective it is comprehensive. All aspects of an education system should be examined to determine whether there are aspects of virtual education that could add value to current practices and processes. No vision for virtual education can be successfully implemented without an enabling infrastructure in place. Teachers and learners must have access to the necessary technical appliances, connectivity, software, and appropriate learning venues. Planning will help institutions better conceive of the shape of this infrastructure, the timelines for its implementation, and the fiscal plan for carrying it out.

Thus, virtual higher-education development requires that a set of carefully thought out conditions be met if it is to be successful in developing countries. In addition to the size of the financial investment, there are other hard choices that involve teacher/faculty roles, ownership of intellectual property, quality assurance, active participation of learners in the production of knowledge, interinstitutional collaboration, and potential for
private-amd public-sector partnerships and joint ventures, to name a few. These and other major issues require further systematic and thorough investigation and analysis.

In order to keep pace with this rapidly changing feature of knowledge society, developing countries will have to put much effort into making their higher education in cyberspace — as well on conventional campuses — competitive in an information-based and technology-driven world.

Governments can do much to encourage an appropriate environment for virtual higher education. The poorer the country, the more focused its efforts to support virtual education should be. Governments can work develop and commit to policies that reduce Internet-access costs as part of a general investment strategy for the development of virtual education. South-South cooperation, partnerships with more developed countries, and more collaboration between countries generally will help to develop capacity and skills in virtual education not as an end in itself, but as a newly possible choice and deliberate strategy of using technology to achieve carefully-thought-out development goals.

**References**

**BERGER & KAM**

**CAIRNGROSS, F.**

**DANIEL, J.**

**DICK, W. & L. CAREY**

**FARRELL, G.M.**

**GENTRY, C.G.**

**HANNUM, W. & C. HANSEN**
Milton, E.P.

Perraton, H., ed.

Reddy, G.R.
1993 “Perspectives on distance education.” Indian Express, 8 December.

Rossman, P.

Robertshaw, M.

Seels, B. & Z. Glasgow

Sewart, D., D. Keegan & B. Holmberg (Eds.)
1983 Distance Education: International Perspectives. London: Croom Helm.

Thompson, M.M.
1994 “Speaking Personally with Alan Chute.” American Journal of Distance Education, 8(1), 72-77.

Visser, J.

William, S.

Wolff, L.


World Bank
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