The African Virtual University:
The Challenge of Higher Education Development in Sub-Saharan Africa

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Potential Role of ICTs

Higher education institutions in Sub-Saharan African (SSA) countries are looking to the possibilities offered by information and communications technologies (ICTs) to improve their higher education systems. The potential uses of ICTs in SSA, as in the rest of the world, include:

- Quality improvement through connections to the world for professors and for students, including development of virtual libraries. Internet access is fundamental for any research center that wishes to stay at the cutting edge, but is equally as important for professors, who, while they may not primarily be researchers, need to impart to their students the most up-to-date knowledge. Both students and professors need Internet access to undertake research or even to keep up with current research. With the Internet there is a decreased need for building bricks and mortar libraries with print materials. This is particularly important in regions, such as SSA, where traditional libraries have deteriorated. In addition, conventional instruction can be enhanced through internal communication, student to student communication, and partial on-line teaching. In-person classes can be technology-enhanced, including simulations, Power Point, and direct Internet connections.

- Reaching new clienteles through technology-based distance learning, including secondary school graduates who cannot find places in traditional universities and working adults seeking to upgrade their skills. New short courses can provide two-year post secondary training as well as training services to the private sector. Current distance education programs, most of which rely on print and face to face instruction, are expected to increasingly use electronic media and communication. Distance education, whether print or technology-based, when properly managed and planned, can be less expensive than residential higher education, and, if properly structured, can improve quality.

- Computer-based management information systems that can be a tool for overall higher education reform.

While the use of ICT could increase access to current knowledge, ICT by itself will not resolve the problems of higher education in SSA. Within the region, the state continues to fund most of the costs of higher education, but, with shortages of funding brought about by economic downturns, public institutions have been increasing enrollments with no commensurate funding increases. As a result, teachers are underpaid and demoralized and facilities are decaying. There are few post secondary non-university programs linked with the productive sector. Private institutions are growing rapidly, especially in Anglophone countries, but still constitute only 5% of enrolment, and are poorly regulated. Students continue to flock to higher education institutions because, no matter how low the quality, a degree will at least give them a better chance in the "lottery" of job opportunities.

In addition, SSA is far from being a digitized continent. While South Africa has about 650,000 Internet users, there are probably a total of 150,000 regular Internet users in the rest of the region (Jensen). Hardware, software, and communication cost more in SSA than in the rest of the world because of shipping distances and lack of a business infrastructure. For example, the cost of a local dial up Internet account (five hours per month) is about $50 per month (usage fees, telephone time included, but not telephone line rental). Internet Service Provider (ISP) charges vary from $50 to $100 per month, depending on country policies and levels of monopoly and competition (Jensen). This compares with per capita income in 1999 of $490. SSA spends about $1000 per higher education student, compared to ten or more times that figure in developed countries. An investment of, say, $500 per student in ICT in SSA would therefore increase unit costs by 50%, compared to 10% in a developed country; and university graduates earn far less than their counterparts in the rest of the world. Therefore, ICT programs that are cost-effective in the rest of the world could well be inappropriate in SSA. Finally research throughout the world has shown that how technology is used, rather than technology itself, determines success in improving learning. Using ICT in higher education requires levels of management and training that are not readily available in Africa.

Nonetheless there is a base upon which ICT can have an impact in the region. In the first place, the desire for Internet access is powerful among students and increasingly in urban areas of politically stable countries. For example, 2000 out

of 8000 students at the University of Lome are paying for Internet access (RESAFAD, Bulletin no. 6, http://www.lid.jussieu.fr/resafad). This desire for Internet access could well be harnessed as a tool for higher education reform. There are, however, exceptions; students at Kenyatta University went on strike when they were asked to pay for Internet access (Amutabi).

In addition, the estimated 143 distance higher education programs in SSA offer a base upon which to build. Most are recent, of small size, and usually provide skills upgrading for practicing primary and secondary school teachers. The University of South Africa (UNISA) is one of the ten largest distance education institutions in the world, and currently enrolls 117,000 students. Up to now these institutions have been mainly print-and classroom-based (Saint, Roberts). An increasing number of them are moving into ICT based distance learning, a notable example being the University of Pretoria. With the increased international trade in higher education, the numbers of private entrepreneurial groups offering on-line distance education in the region is sure to grow as it has elsewhere.

The African Virtual University (AVU)

Start-up Phase

The African Virtual University (AVU), (www.avu.org) established in 1997, with funding from the World Bank, was envisioned as a means of using ICT to improve the quality of higher education, especially in science and engineering, and business education, and of providing increased opportunity to secondary school leavers for whom spaces were not available in public institutions. In its initial plan, AVU was to become a degree granting institution, utilizing the best multimedia teaching materials available in the world. Eventually, AVU was to transition from a World Bank project to a free-standing, self-financing, virtual education institution. It hoped to "leap-frog" over the debilitating problems of declining quality and inadequate higher education access in the region.

The AVU has had a number of successes. A total of 31 learning centers (LCs) have been established in 17 countries. The AVU teaching-learning model, during the pilot phase, consisted of a mixture of videotaped and live lectures delivered by one-way video, 2-way audio digital satellite broadcast (MPEG-2 DVB) and e-mail interaction between students and instructors, supplemented by textbooks, course notes, and learner support in the classroom by local facilitators. Through 2001, AVU had delivered over 3,500 hours of courses and seminars in both English and French to about 18,000 students and seminar participants. Typical subjects taught included C++, export development, business administration, and foreign language. AVU also offered a digital library with 1,000 full-text journals and a catalogue of subject related Web links.

In spite of these successes, in retrospect it is clear that AVU did not recognize the full extent of the complexity, cost and human resources required to becoming a degree granting international distance learning institution in Africa. The initial enthusiasm may well have been a by-product of the stock market's "dot.com" boom when huge investments were made in start-ups with dubious business prospects. For a comparison, the British Open University had thirty years of experience and British government support and is only now expanding internationally. The Technological Institute of Monterey, Mexico (ITESM) also had many years of successful conventional instruction and very close relationships with industry before it began to establish its distance learning facilities, which it was initially able to subsidize with tuition from conventional students. Furthermore, the Open University and other developed country virtual programs depend on an existing digital infrastructure in homes, businesses, and institutions that does not yet exist in Africa.

AVU's choice of technology -- satellite based broadcast TV -- while perhaps justifiable in 1997, has been relatively expensive and inflexible. Asynchronous on-line learning is now considered the technology of choice for virtual distance learning. The costs of wide band satellite-based Internet connections are decreasing rapidly, and it is also possible to use "proxy" servers and CD's to mimic much of the interactivity of the Internet. AVU also decided to start with courses from elite US and other developed country universities to broadcast to Africa. This resulted, rightly or wrongly, in an impression of "colonization" from the north. AVU centers were inadequately integrated into universities where they were located. Not enough attention was paid to governance, training and maintenance, and many of the centers have had technical and management problems.

New Goals and Missions

By early 2001, it was clear that AVU needed to rethink its vision, content, delivery modes and business plan. A strategic review was completed in mid 2001 and is now being implemented. AVU will no longer aspire to be a freestanding university, but rather will become a technology and content broker and advisor for participating institutions, serving as a technical resource and catalyst for ICT investments. AVU's services will include: assisting partner African institutions in upgrading their access to high-speed Internet connectivity and in other technology improvements; building the capacity of partner universities to develop and deliver ICT-enhanced distance education programs; facilitating delivery of on-line accredited programs; developing a web-based portal for the African educational community to share information and find new distance learning products; and providing expanded digital library services. The main technology to be used will be asynchronous Internet connectivity rather than satellite television.

AVU has already begun to implement this new mission. By mid 2002, it will complete its transference from Washington, DC to Nairobi and its establishment as an NGO fully independent of the World Bank. A new Chief Executive has been identified and will begin work shortly. With funds recently secured from the Australian Government's "Virtual Colombo Plan," (see TechKnowNews in *TechKnowLogia,* November/December 2001) Australian higher education institutions will assist a small number of African institutions to strengthen capacity for instructional design of technology-enhanced distance learning, with an initial focus on business education. Discussions are underway with other bilateral agencies to assist in upgrading francophone universities' capacity for technology enhanced distance learning, beginning with computer science. With grant funds from the World Bank, associated Learning Centers are receiving a new set of computers and networking equipment. Connectivity will be upgraded in two stages. In Stage 1, high-speed downlinks will be provided directly via satellite but the uplinks will be through local providers. In Stage 2, VSAT technology will be gradually introduced, starting with institutions with the potential to be content providers for the AVU network.

The digital library will be strengthened to include access to more full text journals and e-books in areas covered by AVU educational programs. During a trial period of one year, AVU will access learning material from Elsevier, an international publisher of scientific books and journals. Finally, AVU is planning to establish an educational portal that provides an avenue for African institutions to identify global educational resources, as well as to offer courses to the broader international community.

AVU has also become more realistic with regard to financing. It now expects to take ten years before reaching a break-even point in its financing. During the next ten years it expects to get most of its finances from international and bilateral funding agencies, and only gradually to build up recovery of costs from beneficiaries.

In short the new vision of the AVU has a far greater emphasis on local institution building, and is more grounded in the reality of the financial and human resources in SSA. With strong management, over the next five to ten years, the AVU could well have a significant impact in the difficult task of setting the region on the path of increased higher level human resource development.

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National Technological University www.ntu.edu

On-line Computer Library Center www.oclc.org

Phoenix University www.phoenix.com

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World Links www.world-links.org

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[*] Laurence Wolff is an educational consultant with the Inter-American Development Bank. The opinions expressed in this paper are the author's only and do not necessarily reflect official policies of the IDB or the AVU.