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SUCCESSFUL DISTANCE EDUCATION PROGRAMS IN SUB-SAHARAN AFRICA

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ABSTRACT

This paper explains the purposes, delivery methods, and program characteristics of successful distance education (DE) in sub-Saharan Africa (SSA). This paper investigates the design and delivery systems of these programs and identifies ways the DE programs are working to improve. There are about 150 formidable distance education programs working in SSA. They aim to increase and improve a variety of existing programs, including primary and high school education, college-level and graduate programs, language training, teacher training, and continuing education for adults. The primary delivery system used by most institutions consists of printed manuals and texts that are distributed to all students. Despite the continued development of information and communication technology (ICT), including videos, online training modules, and web-based training (WBT) systems, traditional DE delivery methods continue to prove as the most reliable, most sustainable, and most widely used.

Keywords: **Information and communication technology (ICT); distance education (DE); in sub-Saharan Africa (SSA); web-based training (WBT) systems.**

INTRODUCTION

The strength of a country's distance education system is directly related to the country's economic stature; it is therefore no surprise that sub-Saharan Africa (SSA) currently trails the rest of the world in DE development. Perhaps because select institutions in Africa have recognized early on that it is difficult for a single group to overcome the social, financial, political, and technical barriers alone, Africa now demonstrates a number of successful DE programs whose strength comes from the cooperation of universities, international donors, governmental developmental organizations, and local institutions.

In sub-Saharan Africa, DE has been used primarily "to widen access to basic education and to improve quality in the conventional school system through in-service training of teachers" (Moore & Kearsley, 2005). Even so, programs are being created to provide college-level and vocational training to a young population that is desperately seeking to find opportunities for work and economic development in what is currently an intellectually and economically starved region.

Unlike much of the rest of the world, the demographics of Africa - due to AIDS, environmental challenges, and a variety of political and historical complications - show that approximately half of the entire population of Africa is less than 20 years old and that population growth continues at an alarming rate. The result of this is that governments are unable to build school systems fast enough to absorb the increasing numbers of primary, secondary, and college-level students.

These youth are eager to find educational opportunities that will better equip them to compete in the increasingly globalized world, a need that is being addressed by successful distance programs throughout the region.

The high level of inter-institutional cooperation that is necessary for successful DE in SSA demands a common national strategy for the institutions organizing the DE programs and the governments and organizations that help shape them. Radio, communication, postal services, telecommunication, and schools must all be orchestrated in a fluid system. As DE programs become further dependent on ICT, both bandwidth and connectivity shift from a question of business to a question of politics. Recent efforts, such as the 2004 All-Africa Ministers' Conference on Open Learning and Distance Education show a common goal among educational leaders in many African countries, particularly of Burkina Faso, Ghana, Kenya, Tanzania, and Zimbabwe, to support the development of DE programs.

The characteristics listed in the next section of this paper that describe a successful DE program in SSA demonstrate that there must be national strategy that aligns political, academic, and private resources. Developing African infrastructure is a question of funding and political leadership. Ministries of education must urge policies that encourage DE, and funding must be available to make it happen (Darkwa 2000).

CHARACTERISTICS OF A SUCCESSFUL PROGRAM

There are approximately 150 distance education programs working in SSA. Most tend to be led by in-country universities whose DE programs began in the 1990's, though some began as early as the 1950's. The best DE programs in Africa are large in scope, often spanning several countries and even multiple continents. They have developed over the course of several years, often decades, and they depend on the economies of scale to become financially sustainable. Distance education in Africa tends to work best on a large scale through which massive numbers of people can be reached. Programs with low numbers of students and high levels of investment per student struggle to be financially viable without major donor aid.

The most successful programs partner with universities in the United States, Europe, or Asia - especially those universities that have campuses in SSA. This allows the sharing of resources and making courses available for students. As examples, students at the AVU in Kenya take online classes at Massachusetts Institute for Technology (MIT); the FORST program in Benin permits students to take classes at McGill University in Canada; and the RESAFAD program in Djibouti connects teachers to training at French universities (Darkwa 2000). The most successful programs also take advantage of resources offered by the international donor and development community, mainly the World Bank and UNESCO. At the same time they network with numerous partnering associations (see Appendix 1) that are supporting DE programs in SSA. Successful DE programs utilize a blended learning system that:

- **Has a primary emphasis on print material, some correspondences by mail (this varies by country depending on the reliability of postal systems), and additional communication by radio, text, and email.**
- **Has a relatively low dependence on elearning delivery systems.**

Despite this emphasis on print and other forms of delivery, the leading DE programs in SSA are constantly finding ways to integrate more ICT into their programs without abandoning traditional delivery systems. They often establish their own digital libraries or partner with an institution that already maintains one. They also often utilize a network of tutor-led learning centers or cybercafés throughout the country or region. These learning centers serve as a:

- **Study area**
- **Library facility, with both a paper and digital library resources**
- **Place to view videos and listen to audio recordings**
- **Guidance center**
- **Place for students to meet and work together**
- **Center to access computers and other technology**
- **Place for assessments (Cornille 2004)**

Strong DE programs also often use radio, more specifically, interactive radio instruction (IRI). Over the past 30 years, IRI has proved to be one of the strongest and most appropriate forms of communication and teaching for DE in SSA.

Despite barriers of initial cost, leadership, governmental support, and sustained interest, countries such as Guinea, Lesotho, and South Africa now have national radio delivery systems supporting DE programs (Anzalone 2002).

As seen above, the most successful DE programs take advantage of as many of the external resources as possible, often meaning that the ultimate key to their success is that they are able to overcome cost barriers by serving such a large population. Small DE programs, especially those that are ICT-intensive, struggle to succeed because of the existing barriers, especially those concerning cost and connectivity.

EXISTING DELIVERY SYSTEMS AND AREAS FOR IMPROVEMENT

A variety of delivery systems have worked best for different audiences. Teachers, primary schools and secondary schools, college-level, and continuing education all require different approaches to DE in SSA.

Table: 1
Percentage of African College Institutions & Programs Using Various Types of Media

Type of media	Anglophone Countries %	Francophone Countries %	Lusophone Countries %
a. Print	96	88	90
b. Telephone	8	2	0
c. Audio Cassettes	17	15	20
d. Video Cassettes	13	31	0
e. Radio	2	12	70
f. Audio conferencing	3	3	40
g. Satellite	2	18	0
h. Internet/CD-ROM	5	34	0
i. Video conferencing	0	0	0
j. Fax	0	0	0
k. No info provided	5	5	10
# of Institutions	66	67	10

DE delivery began decades ago by using print, audio, and video. Then radio and some television began to be used. New information and communication technologies, involving video conferencing, Internet, and other multimedia are now being integrated into DE programs to varying degrees. Regardless of academics' and training designers' passion for new learning technologies, SSA has simply not yet abandoned print texts and manuals as the most appropriate information delivery method (See Table: 1).

Table: 1 Despite advances in connectivity and increased access to new ICTs, print continues to be a primary delivery method for distance education in sub-Saharan Africa (ADEA 2002).

Despite the continued hegemony of printed materials, elearning projects in Sub-Saharan Africa have grown significantly since 2001, largely with the help of international development organizations. Nearly all countries in Africa are rapidly increasing the adoption and utilization rates of computers and the Internet. Senegal, Ghana, Uganda, Cameroon, Kenya, Tanzania, Malawi, Zambia, Botswana, Gabon, and Zimbabwe, among others, all contain populations with growing dependence in the Internet and pose great potential in using WBT.

Africa has seen remarkable growth in information technology in recent years. In 1996, only 11 African countries had Internet access. Four years later, all of Africa's 53 countries had become connected to the World Wide Web (Adomi 2005). Despite the slow start in the 1990's due to an overall lack of facilities and resources, DE in SSA is making a major shift toward greater utilization of elearning technologies. The major emphasis continues to be on print and radio, but the surge of interest in new technologies is causing an eager population to become further connected, though still to varying degrees.

Current efforts and research aim at identifying appropriate ways to integrate ICT into traditional DE programs in order to benefit from the advantages new technology offers. This must be done without jeopardizing the integrity of programs that are being successfully delivered in spite of Africa's challenging infrastructure. As an example, a current project in Mali is establishing learning centers throughout rural areas; though the hardware and technology is installed, the constant lack of electricity makes the new technology useless.

New technologies are used to supplement information and facilitate communication. Costs and access remain major challenges, but program designers continue to work to integrate them into SSA's programs.

Primary and Secondary Schools

For programs in primary schools, radio continues to be identified as the strongest method of DE delivery. DE in primary and secondary schools is mainly used to support math and language classes. By nature, primary schools in SSA tend to be smaller and scattered throughout urban and rural areas. Middle schools and high schools tend to be in larger towns; students from rural areas often must migrate to larger towns in order to continue their education. Radio continues to be the best mode for communicating with teachers and students in rural areas due to the lack of electricity and Internet connectivity, much less the lack of electricity, ultimately making IRI the most appropriate area of (L. Baldé, personal communication, April 9, 2006).

Besides delivering instruction to students, IRI for primary and secondary schools is often actually targeted at the teachers (see Teacher Training below for more information). It is used to support and give advanced training to teachers, especially those who are in isolated, rural areas.

Africa has wide experience of using radio to support teaching. Interactive Radio Instruction (IRI) is used to support English teaching in Ethiopia, Kenya, Lesotho and South Africa, Portuguese in Cape Verde, and French, Mathematics and Sciences in Guinea. Burkina Faso and Zimbabwe are using radio for primary school teaching though not in the interactive mode (AAMCOLDE 2004).

Because of the limited number of schools and large number of youth throughout SSA, DE has been used to increase access to high school. Similar to colleges, high schools throughout Africa have been continually increasing the availability and access to the Internet for students. With that, many more schools are establishing computer rooms, reduced-rate Internet connections, and computer classes. The World Bank reports that at least ten countries in SSA are now using DE technologies for high school classes to teach an additional 145,000 students. These countries include Ethiopia, Malawi, Zambia, Zimbabwe, Botswana, Namibia, Burkina Faso, Guinea, and Nigeria, the first four of which have utilized DE for over 20 years (AAMCOLDE 2004). All of these programs, similar to the findings in Table 1, utilize a combination of print, radio, cassettes, and occasionally video and television.

College Level & Graduate Programs

Twenty percent of the 150 institutions offering DE programs in Africa are universities (AAMCOLDE 2004). SSA universities with DE programs tend to deliver their own courses and content, though some are integrated into universities in North America and Europe. This integration adds quality, accreditation, as well as financial, informational, and technological resources to the programs. Additionally, this integration with universities in other countries allow African students to take classes that would otherwise not be available at their own institution, often including courses in art, management, IT, law, and environmental and computers sciences. Blended learning programs, using both synchronous and asynchronous delivery systems, are most popular among universities. These can be found in major universities in at least 13 countries in East, West and Southern Africa. Fully asynchronous programs, of which Anzalone et al. list 5, are almost all located in completely different countries than those listed as having blended distance education systems. Perhaps this is because of country-specific national programs or limitations in infrastructure.

By far, the use of computers to improve DE programs is the primary way in which educators are improving course delivery. As universities gain better access to equipment, hardware, Internet connectivity, and bandwidth, African universities are now catching up from their early lag in joining the global information technology boom. The primary barrier dampening the advancement of web-based learning, communication, and delivery systems is the lack of access to Internet.

Where computer and Internet access are available, there is a lack of bandwidth, ultimately limiting the utility and effectiveness of the connection. To address these barriers, a consortium of American foundations, including Carnegie Corporation of New York,

The Ford Foundation, the John D. and Catherine T. MacArthur Foundation, and the Rockefeller Foundation, are now investing 350 million dollars in an effort with 11 African universities (in Mozambique, Tanzania, Ghana, Nigeria, Uganda and 2 education organizations) to significantly increase the Internet bandwidth capacity. Because bandwidth restricts the speed at which information can be downloaded or sent via the Internet, the partnership with Intelsat will nearly octuple the universities bandwidth from 12,000 kilobytes per second to 93,000 Kbps. The cost per Kbps will also drop from $7.30 to $2.33 (Bandwidth 2006). This is a single project that will significantly increase numerous universities' capacity to further develop and integrate web-based training modules into their DE programs.

Teacher Training

Twenty five percent of SSA's 150 institutions offering DE programs are institutions that specialize in teacher training. Of these, half of DE programs in Anglophone Africa and three-quarters of DE programs in francophone Africa are teacher training programs (AAMCOLDE 2004). SSA has numerous successful teacher training programs. Many of these are conducted with print and radio delivery systems, and this is proving to be a much more cost-effective way to provide training to teachers than conventional classroom methods.

Irele (1999) explains the delivery mechanisms of distance teacher training programs in 14 SSA countries. Those in east Africa all consisted of combinations of print, audio, and video, as well as face-to-face methods during vacations and/or weekends. Those in southern Africa were similar though showed a greater prevalence in use of computers and Internet.

Benin, Ghana, Ivory Coast, and Senegal in West Africa were all participating in projects at the time of Irele's report (primarily the WorLD Programme), and those projects used satellites and computers for in-service and pre-service training. The WorLD programme, though informative, was a temporary project that did not develop into a sustainable DE program.

Language Training

Traditional DE methods, including print, cassettes, radio, and video, are utilized in language training programs throughout SSA. As explained in the Primary and Secondary Schools section above, radio has proven very effective with language training for teachers and students. There are just a few strong examples of language training being conducted via ICT.

Cybercafé managers in Bamako, Mali, report that the only distance education students are involved with via Internet is language training, such as online tutorials that prepare students to take the TOEFL exam. One of the strongest examples of technology-driven language training is The Crossroads Café, an English language training program designed by the African Virtual University. The Crossroads Café is a series of satellite delivered videos that coincide with a manual and help students to improve their English and increase vocabulary through context clues in videos in addition to workbook exercises.

PREMIER DE PROGRAMS IN SSA–THE TOP TWO

As of April 2006, the African Virtual University (AVU) is a technology-based DE network of 55 learning centers in 27 African countries. Unlike most other DE programs in Africa, the AVU has a primary emphasis on satellite transmission; it is characterized by video broadcasts to well equipped learning centers. AVU began as a project by the World Bank in 1997, and since then it has developed into pan-African university that is based in Nairobi, Kenya.
AVU aims to:

- **increase access to college-level and continuing education**
- **make the best educational resources accessible to all students through a common network**
- **increase the information and communication technology capabilities of all participating learning sites to ensure sustainable growth of the sites and the program**
- **supply skills training to Africa's growing population of professionals.**

AVU offers a variety of programs, certificates, degrees, and short courses. It offers bachelor degrees in business administration and computer science in both French and English. It offers diplomas in the same programs, as well as a variety of certificates in journalism, information technology, network management, web site design, and English language. Courses tend to be delivered by a series of asynchronous videotaped classes and synchronous satellite video feeds during which students can pose questions via telephone. Communication at other times are facilitated with email or fax.

The level of ICT integration in AVU's DE courses is much more advanced than most other DE programs on the continent. It is made possible by equipping each of the participating sites with hardware needed to receive digital satellite transmissions. Each of the 55 sites has an antenna for receiving transmissions and the accompanying hardware and cables. Inside the learning centers, the centers have video receiver decoders, television monitors, VCRs, a couple computers, a printer, a fax, and a push-to-talk telephone (Juma 2002).While the financial and planning support of the World Bank was instrumental in initiating the AVU, strong leadership and collaboration with global resources has allowed it to grow into the successful effort that it is today. RMIT and Curtin Universities in Australia assist AVU's computer science and business programs by delivering video courses in English, while Laval University in Quebec delivers computer science courses in French. AVU students have also successfully taken computer classes delivered by the Massachusetts Institute of Technology (MIT) (Fleck 2002) and The University of Wisconsin – Madison which is assisting with masters and doctoral programs for ICT in education.

The network of partnering institutions across the continent of Africa adds to the strength of the program by the sharing of IT and informational resources. AVU, through efforts like its online digital library, is able to unite educational resources from around Africa and throughout the world. AVU sends content from professors and courses from top universities in North America to African universities. Though this video transmission is only one way, they have been able to establish bilateral lines of communication with phones and other methods.

At the same time, AVU continues to build the ICT capacity of its many learning centers so that they can begin to work independently.

AVU is not yet working intensively in South Africa or Botswana, two countries who have themselves developed formidable DE programs. But AVU has begun to develop partnerships in just about every other country in SSA.

AVU is not currently working in northern Africa. It is also not working in the countries of Liberia, Sierra Leone, Cote d'Ivoire, and Chad, possibly due to current political instability and a lack of IT infrastructure; conditions that often coincide.

A second major distance education program in SSA is based in the University of South Africa (UNISA). On its website it claims to be the "largest university in South Africa and one of the largest distance education institutions in the world." Unlike AVU, UNISA is not heavily invested in information and communication technologies. Most of UNISA's courses, similar to many of DE programs throughout Africa, are conducted via print manuals and postal correspondences. Students are expected to submit assignments by due dates and sit for an exam at the University; one of the few times students are expected to come to campus.

While AVU has educated nearly 30,000 students with degree and diploma programs and short courses since its debut in 2000, UNISA enrolls as many as 50,000 students in any given year, graduating 13,000 in 2006 alone.

The shear size of this mega-university, with a massive enrollment of 200,000 students (130,000 of which are in degree programs) combined with its long history of providing distance education throughout southern Africa and the world, make it one of the premier distance education programs internationally.

The major difference between the programs at AVU and UNISA is that AVU is using technology to teach technology, and UNISA is using traditional methods to teach traditional fields, in addition to some IT and engineering.

UNISA's traditional approach is the best fit for DE programs that have been forced to adapt its delivery mechanisms to the infrastructure in Africa. AVU has become a successful endeavor because of the financial support of international donors and its strong efforts to meet most of the characteristics of a successful program outlined earlier in this paper.

CONCLUSIONS

Any organization or individual looking to become involved in distance education in Africa should find a way to partner with a current DE program. This type networking and collaboration has helped successful DE programs in SSA to overcome the many barriers present in Africa; the same barriers that present challenges in all developing countries. While traditional distance education programs in Africa will continue to grow, the gradual advancement of ICT, WBT, and elearning will also be seen.

It is critically important for training designers to understand that even though all people tend to have a desire for technology and to integrate the newest technologies into DE programs, standard methods of using printed material with a combination of correspondences, audio and video cassettes, and radio have proven effective for many years in Africa. New technologies often bring new problems and complications to an already challenging working environment.

While working in Mali, besides interviewing cybercafé managers, the author of this paper also visited a Centre Local d'Information et de Communication (CLIC), a type of rural information and communication center that intends to expand Internet access and computer technology to rural areas.

Despite the presence of such impressive technology, the generator had broken and the center had lain dormant for weeks. While it is necessary to continue working to expand ICT throughout Africa, for the purpose of implementing successful DE programs, traditional delivery methods will likely be the best choice for the near future.

Mobile learning, also known as mlearning, was not investigated in this paper. It also did not surface in any of the materials or interviews. Africa, similar to many of developing regions, has experienced a cell phone boom over the last ten years, allowing communities to bypass the installation of telephone lines and skip directly to the use of portable devices.

This phenomenon may demonstrate potential for mlearning capabilities in Africa as an alternative to the difficulties associated with learning centers, satellite-fed videos, and Internet access with regard to future distance education delivery.

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APPENDIX: 1
List of Partnering Associations for Distance education in Sub-Saharan Africa

- **National Association of Distance Education Organizations of South Africa (NADEOSA)**
- **South African Institute for Distance Education (SAIDE)**
- **Partnership on Higher Education in Africa**
- **Ghana Computer Literacy and Distance education (GhaCLAD)**
- **African Distance Learning Association**
- **The Association for the Development of Education in Africa (ADEA)**
- **Working Group on Higher Education (WGHE)**
- **African Association of Universities (AAU)**
- **West African Distance Learning Association**
- **Acacia Initiative**
- **African Information Society Initiative (AISI)**
- **WorldLinks**
- **Technisa**
- **Distance Education Association of Southern Africa**
- **and dozens of others in Europe, Australia, and North America that support efforts in Africa such as International Centre for Distance Learning (ICDL) and the Commonwealth of Learning (COL)**

Abbreviations

AAU	**African Association of Universities**
ADEA	**The Association for the Development of Education in Africa**
ADLA	**African Distance Learning Association**
AISI	**African Information Society Initiative**
AVU	**African Virtual University (AVU)**
BBT	**Web-based Training**
COL	**Commonwealth of Learning**
DE	**Distance Education**
DEASA	**Distance Education Association of Southern Africa**
GhaCLAD	**Ghana Computer Literacy and Distance Education**
ICDL	**International Centre for Distance Learning**
ICT	**Information and Communication Technologies**
IRI	**Interactive Radio Instruction**
IT	**Information Technology**
NADEOSA	**National Association of Distance Education Organizations of AAfrica**
SAIDE	**South African Institute for Distance Education**
SSA	**Sub-Saharan Africa**
TOEFL	**Test of English as a Foreign Language**
UNISA	**University of South Africa (UNISA)**
WADLA	**West African Distance Learning Association**
WGHE	**Working Group on Higher Education**