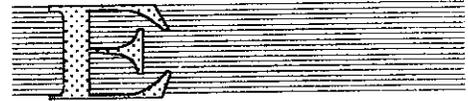


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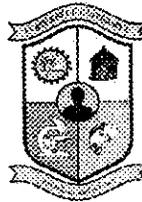


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THE COPPERBELT UNIVERSITY
P.O. BOX 21692
KITWE, ZAMBIA

**THE USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGIES (ICTs) IN
ZAMBIA'S EDUCATION AND HEALTH SECTORS: THE LEADING ROLE OF THE
UNIVERSITY OF ZAMBIA (UNZA) AND THE COPPERBELT UNIVERSITY (CBU)**

By

Godfrey L. Mbewe
Acting University Librarian (CBU)
e-mail: mbeweg@cbu.ac.zm

and

Bonny Khunga
Computer Centre Manager (CBU)
e-mail: khungab@cbu.ac.zm

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Abstract

This presentation is not a country report on the use and development of ICTs in Zambia. The paper only seeks to highlight some of the pioneering efforts still going on in the country in the use of ICTs in education and health sectors. Highlighted in this paper are efforts being made by the two highest institutions of learning in the country, the Copperbelt University (CBU) and the University of Zambia (UNZA). The authors strongly feel that there are many benefits to be derived from proper utilization of ICTs, if only there was good infrastructural support and funding, through government and the donor agencies to institutions promoting the use of ICTs in Zambia.

Introduction

At the beginning of the 1990s, Zambia was among the first countries in Southern Africa to achieve full Internet connectivity (Oshikoya and Hussain, 1998). Since then, the country has made valuable use of the Internet service in education and health sectors, with its two institutions of higher learning (UNZA & CBU) taking a leading role in promoting the use of ICTs as a tool of development. Since the early 1990s Zambia has followed and recognized the importance of ICTs as a modern tool for national development. At first, the country observed the unfolding ICT revolution from a distance, but as we approached the 21st century it became very clear that ICTs had come to stay and had significantly changed the way of life in the whole world. There is now an acknowledged dire need for Zambia and other African countries in general, to harness information and knowledge using ICTs to meet development challenges facing their countries.

Today, computers and other related technologies are used in the country for various operations and applications. It was observed by one participant at a recent national symposium on ICTs development in Zambia that the country still had very low computer penetration (Mwanza, 2001) and that whatever was going on was spontaneous and uncoordinated. It was also acknowledged that demand for the use of ICTs was likely to grow in education and research institutions, health, finance, risk market, hospitality and entertainment industry, transport industry, regulatory and law enforcement institutions and government. This presentation is not a country report on the use and development of ICTs in Zambia. The paper only seeks to highlight some of the pioneering efforts still going on in the country in the use of ICTs in education and health sectors. Highlighted in this paper are efforts being made by the two highest institutions of learning in the country, the Copperbelt University (CBU) and the University of Zambia (UNZA).

DEVELOPMENT OF ICTS IN EDUCATION AND HEALTH SECTORS IN ZAMBIA

Education and health sectors expanded rapidly after independence in 1964 up to mid-80s when the economy stagnated. Since then, there has been a number developments taking place in ICTs sector, mainly in the following sub sectors:

- Radio and Television broadcasting
- Computer and electronic communications
- Policy development in ICT sector
- General ICT applications

Since the beginning of the last decade, higher institutions of learning and research institutions became the first to take the lead in the use of ICTs in education and health sectors. These institutions quickly recognized their pioneering role in using opportunities presented by ICTs to accelerate development in education and health sectors for training (e.g. distance education), exchange of information, networking with individuals, firms, institutions and other countries electronically. The University of Zambia took the lead at the beginning of the last decade by establishing a number of electronic services in education and health sectors through its Computer Centre and library services at the Medical Library housed at the University Teaching Hospital (UTH) in Lusaka. More recently, the sister institution, the Copperbelt University (established 1987) is increasingly determined to participate in championing the use of ICTs in education and other sectors of Zambia's development through the Computer Centre and library services.

The two institutions took up the pioneering role in championing the use of ICTs in education and health services, because they were the only institutions with high concentration of personnel with IT training and skills. They quickly realized that there was an ever-widening gap between the Zambian society and the knowledge-based socio-economic structures and information societies in developed countries.

Benefits of ICTs in Education and Health Sectors

Access to information, especially scientific information is crucial to continued human development in all sectors. The advent of ICTs has tremendously accelerated advancements in education and health services globally and opportunities are abound through:

- Easy and fast communication of ideas, research work, etc.
- Easy information transfer for development
- Easy access to information by scientists, researchers, academics, students, etc.
- Networking of scientific, development information, and many other services
- Various electronic services in education and health services
- Teleconferences among interest groups
- Access to the Internet and e-mail services, they offer an opportunity to provide world-class services

The University of Zambia and ICTs in Education and Health

During the past decade UNZA took a leading in promoting the use of ICTs in education and health sectors in the country. They were the first to introduce:

- ICTs in health education and services
- ICTs in distance education
- E-mail and Internet services

ICTs in Health education and services

In an effort to provide quality health education and information, in 1991 UNZA Medical Library established e-mail connectivity with the University of Florida Medical Library. That was the beginning of HealthNet project in Zambia, a networking initiative in support of health workers and services specifically for rural communities. A ground station was installed at UNZA Medical Library, it transmitted and received messages from a low-earth-orbit satellite that passed over Lusaka four times in a day. By 1993, a national terrestrial electronic mail network was established in the country that became the basis for HealthNet in Zambia (Kanyengo, 2001). Since then, ICT based services have expanded to include, dissemination of literature (health indexes, online databases, internet directories), a network of health personnel throughout the country using an e-mail services (Health-L listserve) and a network of major health institutions in Zambia. It is now easier for Zambian health practitioners to communicate and collaborate in their work than ever before.

ICTs in Education

The University of Zambia Computer Centre has played a cardinal role in Zambia's education sector for many decades now. Examinations are processed at UNZA Computer Centre country-wide. UNZA library is computerised and its database is accessible on the Internet, and faculty and students can access education databases anywhere in the world through the Internet.

The best potential of ICTs in education for UNZA is in its long distance education programme, which has been well established since 1967. Plans are underway at the Directorate of Distance Education of the University of Zambia to turn to ICTs for effective management of its programmes. Already the programme is on Internet on the UNZA website, and it is hoped that education materials would soon be accessed by students through the computers based at regional centres.

Internet services and E-mail

The University of Zambia was among the first institutions to establish Internet service in the country. ZAMNET Communication Systems Ltd. Initiated at UNZA became the first fully featured Internet service provider in Zambia. This was a landmark step towards the provision of quality education through improved accessibility to relatively low cost research information and publications from vast and richly endowed databases in developed countries. For the first time connectivity to the Internet opened doors to: research collaboration between Zambian and outside researcher, publications locally unavailable, communication with various institutions, consultancy, networking, individual contacts, etc. E-mail has been the most commonly used Internet facility in a number of learning institutions in Zambia. At the two universities in the country, e-mail service is widely used for person-to-person academic interaction among the faculty, students, and researchers within and outside their immediate environment. The demand for Internet and e-mail services for education and the delivery of health services is increasing at faster rate than the available ICT facilities

UNZA has clearly shown the nation that ICTs are essential tools for providing quality and efficient education and health services. The universities have the greatest potential in Zambia to revolutionize the country into information age. It is encouraging to note that a number of other institutions and organizations in the country have now started to turn to ICTs in the provision of education and health services.

The Copperbelt University and ICTs in Education

In 1995 CBU introduced the first Computer Science Degree programme in the country. The significance of this is in the recognition that Zambia needed to locally produce her own professionals with IT skills. Previously this was done outside the country, because most local training programmes in ICTs applications used to be very basic, mostly at computer appreciation level. CBU is therefore, a new institution in the country with the potential to accelerate the training IT professionals. In addition, the institution is set to transforming the Zambian society through various short computer courses set to meet the challenges of creating an information society in Zambia.

Currently, the Copperbelt University has the following plans in the area of enhancing the use of ICTs in education:

- Transforming the Computer Centre into the focal point of ICTs development
- Development of Internet services for education and research purposes
- The upgrading of the library management software
- There are plans to start ICTs based long distance education programme

Transforming the CBU Computer Centre into the focal point of ICTs development

The realisation that ICTs plays a major role in the University has been there for the past decades. But this was limited to administrative areas. However it is now apparent that the new challenges faced by Higher Education Institutions (HEI) encroach the existing traditional mode of knowledge transfer and research. The force behind this is globalisation, which is driven by Information Technology.

It is now realised that HEI's can provide academic excellence through the strategic use and application of ICTs.

“The moves toward global knowledge society require a fundamental shift in thinking about the methodology of education. ICTs have already begun to exert massive transformation of education systems in developing countries – distance education universities are now quoted on the stock exchange, the best teachers in the world are becoming available anywhere at the click of a button while ‘Lifelong Just In Time Learning’ has become the order of the day” (Ajayi, 2001).

Access to “Virtual Libraries” will become a big source of information, especially in developing countries where physical literature is not only scarce, but unaffordable to most students and researchers.

At CBU, a deliberate policy on ICTs has been made, which among other things include:

Creating a Computer Center whose role will be to develop, implement and manage all Information and Communication Technologies (ICTs) to support teaching and learning, research outreach, and professional services as well as enhance internal administrative efficiency within the University.

This will include:

- (i) Formulation of ICTs Policy strategies and plans
- (ii) Spearhead the strategic use and development of ICTs on all programmes of the University
- (iii) Provide support and maintenance of ICTs Infrastructure at the University.

The CBU has already embarked on a plan that will enable the use of ICT's by setting up a Computer Centre. A summary of the plan is outlined below:

1. Summary of Action Plan

1.1. Immediate – (1 to 5 months)

- i) Install Gigabit Network backbone
- ii) Extend the Optic Fibre link to include the networking of the School of Business and the School of Technology.
- iii) Networking the Academic Office, using the Wireless Communication link.
- iv) Extend the network to all other departments
- v) Route all external gateways through Wireless Communication link to CopperNet (apply for 128Kbps bandwidth). Currently the gateway link to the local ISP is 32Kbps.
- vi) Network the Student Lab.
- vii) Source for additional Points of Access (POA) . The current PC:Student/Users ratio is 1:200. This needs to be brought up to least 1:20

1.2. Short Term – (6 to 12 months)

- i) Source for an Integrated Business Application Package
- ii) Source for Appropriate Business and Mail Servers
- iii) Source for Application-Specific Software for Academic units and Library.
- iv) Source for additional POA Increase ratio of PC:Students/Users to 1:10
- v) Extend bandwidth to external gateway to 1Gbps

1.3. Long Term – (1 to 3 years)

- i) Apply to be ISP
- ii) Source for Satellite Communication Equipment
- iii) Upgrade Mail server and Internet gateway
- iv) Implement Tele-Centers
- v) Provide base for e-business, e-learning/training
- vi) Source for POA increase ration of PC:Student/Users to 1:5

- vii) Include students hostels on the Network using Wireless Communications

The outlined plan can only come to reality with funding and appropriate technical skills. The University has so far completed building the infrastructure to house the Network backbone and Servers and extension of the university-wide network to the schools.

The role of CBU Library services in education

A university library is the lifeblood of higher education, CBU Library is not an exception. The desire and realisation to transform the library into a modern information services centre through the use of ICTs set CBU Library on a computerization path about ten years ago when plans to automate operations were put in place.

The computerization project started in November 1993, and it was meant to address the following:

- Automation would result in the overall improvement in the operation of the Library, especially in the areas of electronic acquisitions and serials control, on-line cataloguing, electronic storage and retrieval (OPAC), and the provision of internet and CD-ROM services to users in general.
- Automated systems would generate up-to-date reports essential to management's decision-making processes, leading to optimal provision of library services.
- Library staff performance would be enhanced; professional staff would be relieved from labour intensive, time consuming and repetitive chores.
- Automation would enable the Library to have access to various information materials available on major electronic databases worldwide.
- Automation would facilitate cooperation with the ever-growing number of information networks, through networking and internet connectivity at local, national, regional and international levels.

Currently, CBU Library database is automated, residing on a Server, however access to the database is limited to the confines of the Library, due to inadequate network infrastructure, which the University is trying to address through the Computer Centre. Furthermore, CBU Library is determined to replace the current software with one that can interface with other Library Management Systems in the world in a bid to deliver a wide range of information services in education. Plans are already underway to install such a system.

EXISTING CONSTRAINTS IN USING ICTS IN ZAMBIA

- i) Lack of ICTs infrastructure, mainly poor telecommunications, legal barriers, and to some extent lack of coordinated directives from government in the development strategies and policy of ICTs.
- ii) High prices and tariffs in telecommunication services and Internet access
- iii) Lack of coordinated efforts at national and institutional levels in the establishment of information gateways.
- iv) CBU and UNZA are very poorly funded, in spite of the two highest education institutions' pioneering and championing efforts in developing the use of ICTs for national development.
- v) The country has not yet put a national policy and a national coordinating centre to promote the application of ICTs in development efforts.
- vi) Very low computer penetration due to illiteracy and poverty
- vii) Obsolete copyright laws
- viii) Rural-urban dichotomy

Conclusion and Recommendations

Comparatively, Zambia is in her early stages of harnessing and promoting the use of ICTs in all sectors of development, education and health sectors inclusive. All stakeholders in the country need a lot of concerted effort to make the use of ICTs central to development. The Zambian people are aware that the current revolution in information and communication technologies has significantly changed the way of life in the whole world, and that any inability to acquire and strategically utilise ICTs in all aspects of socio-economic sectors will further undermine all development efforts. With these concerns in mind, the country hosted two workshops at the beginning of this year. The workshop on National Information and Communication Infrastructure (NICI) Policy in Zambia was held in March 2001, in Lusaka, sponsored by UNECA and Government and the following month, a National Symposium on Information Communication Technologies (ICTs) and Information Gateways for Zambia was held in Kitwe, sponsored by the World Bank, USAID/Leland Initiative, UNECA and UNESCO.

We would therefore like to conclude this paper with the following recommendations:

1. Stakeholders must influence Government to expedite the drafting of the National Information Policy Bill. The application of ICTs for development in the country needs to be supported by a policy document.
2. Institutions of higher learning, like the two universities in the country with the capacity and expertise to promote the use of ICTs, need all the financial and technical support from government and cooperating partners.
3. Implement programs in high education institutions (HEIs) that will support teaching, learning, and research outreach through the use of ICTs.
4. Implement mandatory basic ICT literacy programs for both staff and students at the Universities.
5. There is an urgent need for a National Coordinating Centre to revolutionize the application of ICTs in all socio-economic sectors of the country.
6. ICTs should be introduced in all libraries at the Universities and in education institutions and should be networked throughout the country.

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