

DISTANCE EDUCATION AND THE NEW INFORMATION AND COMMUNICATIONS TECHNOLOGIES: AN ANALYSIS OF PROBLEMS FACING A DEVELOPING COUNTRY

Mr. Ayoku A. Ojedokun

Subject Librarian

University of Botswana Library,

Gaborone, Botswana.

Ojedokun@noka.ub.bw

Introduction

Distance education, sometimes synonymous with distance learning, started in a more organised form with the print-based correspondence study in the 1800s (Erdos, 1967). Distance education is the instructional delivery that allows the student to be in a separate geographical location from the instructor (Steiner, 1996). Its acceptance by many DCs, particularly Africa, for solving educational problems is attributed to reasons of geographical and socio-economic circumstances, educational imbalances, the emergence of adult education units and departments in African Universities, the development of improved communication systems, the diffusion of colonial practices, and the dogged tenacity of many of the protagonists of the system of instruction (Adekanmbi, 1997). However, colonial influence and the rapid technological changes especially in information and communications technologies in the past decade seem to be the driving force for its acceptance. Aikat (1998), identified seven groups served by distance education. They include:

- those who are geographically isolated
- professionals who cannot attend classes on traditional campuses
- students who cannot attend on-campus classes due to family, job or other commitments
- non-traditional students such as house wives
- physically handicapped individuals
- people affected by socio-economic factors that make distance education not an alternative but rather the only access that they will have to quality education
- students in developing countries whose information infrastructures, supported by recent technology, will provide a quantum leap forward in educating their people.

Distance education in its earliest form, meant study by correspondence. However, as new technologies were developed, distance education was delivered electronically through such media as audiotape, videotape, radio and television broadcasting, and satellite transmission. Today, microcomputers, the Internet, and the World Wide Web (WWW) are shaping the current generation of distance learning (Kerka, 1997). Virtual reality is gradually taking over and artificial intelligence, and knowledge systems may be next. These delivery systems provide real time, interactive and dynamic instruction. They create flexibility regarding the time, place and pace of study and provide a highly interactive learner-centred environment.

Telecommunications infrastructure remains the backbone of the application of this wide range of communications and multimedia services. Effective delivery of distance education using information and communications technologies requires ready availability of telephone lines, adequate (optimum) bandwidth, technical expertise, reliable power supply and quality telecommunications loop/network. However, there are regions of the world that have no access to telecommunications, and others where access is extremely limited. According to Hudson (1997), the vast majority of telecommunication facilities are located in the industrialised world. This limits the adoption of the new information and communications technologies for distance education in developing countries. Its adoption is also limited by the socio-economic and cultural conditions of many developing countries. For example, in most parts of Africa, in South and south-east Asia and in Central and Latin America, the peoples main concern, according to Navaro et al, (1996), is getting some food and water, fighting diseases, poverty, wars, and political pressure. These people cannot therefore for the time being think about using information and communications technologies for distance education delivery as long as they have concerns about providing the basic needs for their citizenry.

In view of the foregoing, this paper analyses the problems facing Botswana in the use of modern information and communications technologies for the delivery of distance education as an example of what may be happening in the developing countries. But first, it is important that justification for the analyses be examined.

Botswana has a small population scattered over a wide expanse of land of about 282,000 sq. km., over 80% of which is arid (Akinpelu, 1995). Based on the 1991 census, rural population figure is 720,557 (54.3%) while the figure for the urban population is 606,239 (45.7%). Of these figures, the capital Gaborone expectedly, because of rural migration, has a population of 133,791 (22%), followed by Francistown with a population of 65,026 (11%) (Stanbic bank, 1997). According to Akinpelu (1995), the average density is 5.2 persons per sq. km., with the highest density of 31.0 persons per sq. km. clustered along the south-eastern, eastern and north-eastern semi-circle.

Justification for the Analysis

When compared with many other African Countries, Botswana has a significantly improved telecommunications infrastructure, operating a completely digital network with a teledensity of one line per thirty-two subscribers (Stanbic bank, 1997). It also has a packet-switched data and paging networks. The Botswana Telecommunications Corporations (BTC) is government owned but managed by a company, Cable and Wireless. BTC maintains a high quality of service, with 80% of faults repaired by the next working day (Hudson, 1997). Botswana therefore has in place, an important requirement for the application of ICTs.

Interestingly however, distance education in Botswana is still print-based. Courses of instruction are divided into modules and are prepared as instructional booklets. These are then supplemented with periodic residential sessions where students meet with tutors on a face-to-face basis to discuss problems being faced by students in the course of studying the modules (Adekanmbi and Kamau, 1997). This defeats a very important objective of distance education, that of creating flexibility regarding time, place and pace of study. The distance learner has little time and any medium that will allow flexibility in learning will be most appreciated. Even though there continues to be propositions for the application of the new ICTs for distance education delivery (Kamau and Selepeng-Tau, 1998), nothing significant has happened in this direction. Obviously there are problems. It is only appropriate that these problems impeding the application of ICTs to distance education delivery in Botswana be brought to light so that it can be appreciated and solutions sought.

Distance education in Botswana

Correspondence studies started in Botswana in the early sixties. It was provided by private correspondence institutions in South Africa, Zimbabwe and Britain. This was borne out of the need to upgrade the untrained teachers in schools. However, Botswana's first involvement in the provision of distance education was launched in 1968 with the Francistown project, which ran from 1968 to 1973 (Mphinyane and Selepeng-Tau, 1998). Through this project, some 700 untrained teachers were upgraded. The success of this project then led to the establishment in 1973 of the Botswana Extension College (BEC). In 1977, the first National Commission on Education, according to Mphinyane and Selepeng-Tau (1998), observed that too few opportunities existed for people to continue their learning outside the formal education system. It noted that there were large numbers of people who needed such opportunities. In a white paper which followed the commission's report, the government then promised to give high priority to developing opportunities for people to learn out of school and that there should not be a sharp dividing line between studying in school and continuing learning out of school. So in 1978, the Ministry of education established the Department of Non-Formal Education (DNFE) which took over the activities of BEC. This distance education unit of DNFE has now transformed into Botswana College of Open and Distance Learning (BOCODOL). The College, at the moment, receives administrative support from DNFE. Thus Botswana moved from a mere consumer to provider of distance education programmes.

In 1971 through 1979, University of Botswana offered distance education through radio programming becoming the second institution to offer distance education (Mphinyane and Selepeng-Tau, 1998). The radio programmes were supported with print materials in the form of study guides and report forms. These programmes were offered via the Department of Extra Mural Service, which later became the Institute of Adult Education. This has however, since 1991, been divided into the Centre for Continuing Education

(CCE) (where Distance Education Unit, DEU is based) and the Department of Adult Education, which is under the Faculty of Education (Kamau and Selepeng-Tau, 1998).

Today, major providers of distance education in Botswana are: the Distance Education Unit of DNFE (now BOCODOL), the Distance Education Unit (DEU) of the Centre for Continuing Education (CCE) of the University of Botswana and the Institute of Health Sciences (HIS) in Serowe.

The DNFE provides pre-tertiary programmes by offering Junior Certificate and Senior Certificate courses at a distance while the University of Botswana, through its DEU of the CCE provides tertiary level programmes by offering programmes leading to the award of the Certificate in Adult Education (CAE). The CAE was launched in 1983 as a result of a request from the Ministry of Education's DNFE for the professional preparation and training of a cadre of literacy assistants involved in the implementation of adult literacy at the grassroots (Kamau and Selepeng-Tau, 1998). The Centre for Continuing Education is currently developing a Diploma in primary education programme meant for upgrading primary school teachers and improving the quality of primary education. A Master of Education programme is expected to follow sometimes later (Mphinyane and Selepeng-Tau, 1998). DNFE and CCE complement one another as CCE takes over from where DNFE leaves off. The Institute of Health Sciences, which operates under the umbrella of the Ministry of Health, provides distance education programmes for nurses. The programme, started in 1994, was meant to upgrade 'enrolled nursing' cadre into 'registered nursing' (Moesi and Mmolawa, 1998).

The various distance education programmes use self-instructional materials and face-to-face tutorials at residential sessions. However the Department of Non-Formal Education supplements its programme delivery with radio teaching and audiotapes (Molefi and Mphinyane, 1998). The Institute of Health Sciences uses two approaches in its upgrading programme, one-year residential (full-time) programme and a two-year part-time (distance education) programme. It also supplements self-instructional materials and face-to-face sessions with videotapes (Moesi and Mmolawa, 1998). The Centre for Continuing Education is still exploring the use of other media such as audiotapes. It is not expecting to use teletutoring for now because of high telephone charges in the country. The Centre is however, hoping to introduce teleconferencing equipment in the not-so-distant future at the main campus and later at regional centres. This is expected to be in phases (Kamau and Selepeng-Tau, 1998).

Distance education provision in Botswana indeed faced and continues to face a number of problems. Learners face such problems as:

- isolation, caused by the nature of the distance teaching mode
- losses and delays when materials are sent to and from the department through postal services
- shortage of personnel at all levels of the programme
- delayed feedback on assignments and on problems learners experience in their studies
- inadequate facilities such as transport and office spaces
- loss of assignment records

These are however being addressed through the provision of learner support services (Molefi and Mphinyane, 1998; Kamau and Selepeng-Tau, 1998).

Problems in the use of ICTs for Distance Education in Botswana

The problems of application of ICTs to the delivery of distance education in Botswana is not that of lack of a virile telecommunications system as the country ranks high among other nations of Africa in this regard (Hudson, 1998). As revealed above, the problems are more of economic, socio-cultural and human resources.

Botswana experiences a yearly inflation through the devaluation of the national currency, the Pula (P), in relation to major currencies. In June 1998, the inflation rate was 6.1% but was expected to follow an upward trend during the second half of 1998 as the effect of the weaker South African currency, the Rand (R), come into play (Bank of Botswana, 1998). This was and still is reflected in the rising cost of living. Two examples will be examined.

The telephone service charge is high, thus hindering for now, the use of teletutoring and teleconferencing (Kamau and Selepeng-Tau, 1998). Telephone remains a major requirement in the application of the new information and communication technologies. And while telephone is readily available, it is only

affordable by the elites who constitute a small percentage of the population. A first visitor, particularly to Gaborone, might find quite a number of houses with telephones installed and a number of people with cell phones, giving the impression that it is affordable by the majority. However, travelling to the hinter-lands will however present the real picture of the situation.

The rising cost of living also has its effect on the cost of equipment. The costs of radio, computer hardware and software continue to rise on a daily basis and is therefore not affordable by the ordinary citizens, for whom distance education is meant to serve. Computer systems for example can only be found in government offices and institutions and in the houses of elites in Botswana. If the country desires to apply the modern information and communications technologies to distance education delivery, then every learner is expected to have access to these technologies otherwise whatever effort is made may not be worthwhile.

Power (electricity) supply is another problem that can hinder application of information and communications technologies to distance education delivery. In Botswana, power supply is constant, reliable but not available to every citizen. It is only available to the elites. Many villages, even around Gaborone (the capital city) are not being served with electricity. It will therefore be difficult for learners living in these villages to establish connection without power supply even when they can afford the technologies for the delivery of distance education.

- Application of ICTs requires highly skilled personnel. It is the one important ingredient in the proper and effective exploitation of technologies. Compressed video, which has evolved to become a fairly reliable technology in the delivery of distance education, for example, is technically complex to set up and therefore requires a high level technical expertise to get the link established. Botswana, with an improved telecommunications system does not have such technical experts. A foreign firm, Cable and Wireless Company, for example, is still managing BTC. Cable and Wireless is made up of foreign experts. Even in other government offices using ICTs, in-house technical experts are not available to service and maintain hardware and software. In most cases, maintenance contracts are signed with foreign firms. Most government ministries, corporations, parastatals and institutions currently engage in outsourcing even for repairs and maintenance of ICTs in their offices. In other words, outsourcing of ICTs maintenance seems to be the norm in Botswana at the moment. It is high time government moved away from this culture of outsourcing. The best ICT system cannot execute better than its operators, so Botswana needs to have manpower with requisite expertise, background and experience in the new ICTs otherwise their application to distance education may be a failure rather than a success. The government must build its own core of technical experts to effectively apply the new ICTs to distance education delivery.

Cross-cultural diversity is becoming an important issue and cross-cultural education via technology-based learning is becoming problematic, as national philosophy and character are different between cultures. Technology-based learning is aimed at preparing individuals to know how to learn rather than how to do (Bird and Nicholson, 1998). In other words, the designs rely on self-motivation and culturally developed sense of independence. Distance education through the application of ICTs is expected to be learner-centred. This culture is absent in many DCs. In Botswana, for example, distance learners are demanding a curriculum and teaching approaches that are a replica of the formal school systems because it is what they are used to. They feel they can only learn when a teacher is teaching them (Molefi and Mphinyane, 1998). To these learners, learning is also seen as a one-time process, to learn how to do things in order to participate in the society. Botswana's experience also shows learners as feeling physically and emotionally isolated because of the nature of the distance teaching mode. They are less convinced that what they learn through distance education is as good as learning through the formal school system. These have given rise to the abandonment of courses being pursued by a number of learners. Introduction of the new ICTs to distance education, without resolving these cultural problems, may therefore not be appropriate for effective delivery. However people could be encouraged to use them while emphasising the benefits of their use. There is the need as it is presently being done, to continue to assure learners that what they learn through distance education delivery using ICTs is as good as what they will learn through the formal school system. It is also important that the problem of technophobia that is likely to arise on the part of learners be addressed with caution.

Despite these problems however, distance education seems to have been widely accepted as enrolment continues to increase every year (Molefi and Mphinyane, 1998).

Conclusion

From the above analysis, it can be concluded that the problems facing the use of the new ICTs in the successful delivery of distance education are:

- inadequate basic telecommunications infrastructure
- poor economic empowerment of the people
- high service charges (especially for telephone)
- high cost of equipment
- lack of skilled manpower (technical experts) and
- poor cultural orientation of the learners.

These highlighted problem areas are hindering and continue to hinder the adoption of the new ICTs for the delivery of distance education in Botswana. The keys to effective use of ICTs in developing country like Botswana are contingent on the ICTs being made to fit into the organisational, socio-cultural and economic environment and realities in developing countries.

Submissions and Recommendations

There is no doubt that application of the new ICTs hold great promise to the socio-economic development of DCs. However, it is becoming more and more evident that it is not economically, socially and culturally neutral. Its application, especially for the delivery of distance education must therefore be adapted to its environment to be useful. To address the problems that hinders the application of the new ICTs to distance education delivery in Botswana, the following are recommended:

- Since it appears learners are already familiar with, and have accepted the use of radio, audio and video in the delivery of distance education, it is recommended that their use be continued.
- Because of the rising cost of electronics due to rise in inflation, it is recommended that distance education providers, through government assistance, procure such electronics as radio, audiotapes and videotapes in large quantities to be sold at a much-reduced cost to learners.
- Provision of social amenities is the responsibility of every government. And since it is the policy of government to provide opportunities to citizens through formal and non-formal education (Mphinyane and Selepeng-Tau, 1998), government should endeavour to supply all towns and villages with electricity. It should also reduce service charges, particularly for the learners.
- Apart from its use in such technological innovations as electronic mail, teleconferencing, videoconferencing, Internet and the World Wide Web (WWW), telephones also offer an opportunity for two-way communication between the learner and the tutor. Learners benefit a lot from this two-way communication. It is therefore recommended that government reduce the service charge on telephone used for educational purposes.
- Provision of 'telecentres' could also be means of solving some of the problems. Each 'telecentre' should contain an office, a classroom for video conferencing and an audiovisual room with computers and other multimedia. Staff of the various distance education providers will be expected to run the 'telecentres'.
- It is recommended that government offer special incentives to students studying computer science and electronic and communications engineering. Government should particularly encourage students whose research area deal with practical problem solving and addresses problems associated with current ICT applications in the country. Such incentives can come in form of sponsorship of the programme of study and/or research of such students.
- Since cultural habits are difficult to change, it is recommended that adoption of new ICTs, particularly for the delivery of distance education be gradual and be introduced with caution.
- It is recommended that the benefits of using the new ICTs in the delivery of distance education be constantly stressed. Such benefits as flexibility in time, place and pace of study may interest learners.

These measures must be addressed if the application of ICTs to distance education in Botswana is to have the desired impact. However, there may be other problems, which are not apparent to the writer. Therefore, the conclusion and recommendations given may not be exhaustive.

Bibliography

Adekanmbi, G. (1997) 'Development orientation of distance education programmes in Africa: a preliminary submission', Paper presented at the 18th ICDE world conference held at the Pennsylvania State University, State college, Pennsylvania, USA, 2-6 June 1997, 14p.

- Adekanmbi, G. and J. W. Kamau (1997) Student's information and assignment booklet 1997-1998. University of Botswana, Centre for continuing Education, Distance Education Unit. 1997, 21p.
- Akinpelu, Jones A. (1995) 'Upgrading secondary school teachers in Botswana by distance education: the challenge of quality', *Journal of African Association for Literacy and Adult Education (AALAE)*, 9, 2: 1-14.
- Aikat, Deb (1998) 'Potential for online learning in journalism and mass communication', University of North Carolina, Chapel Hill, The Digital Research Initiative, http://www.unc.edu/course/jomc191/aejmc/dist_ed.html
- Bank of Botswana (1998) 'Inflation may go up', *Mmegi-the reporter (Botswana)*, 15, 28: B1.
- Bird, David and Brian Nicholson (1998) 'A critique of the drive towards the globalisation of higher education', *Association for Learning Technology Journal*, 6, 1: 6-12.
- Erdos, R. F. (1967) *Teaching by Correspondence*. Paris, UNESCO.
- Hudson, Heather E. (1997) *Global connections: International telecommunications infrastructure and policy*. New York, Van Nostrand Reinhold.
- Kerka, S (1997) 'Distance learning, the Internet, and the World Wide Web', CASO's Internet University, <http://www.caso.com/iu/articles/kerka01.html>
- Kamau, J. W. and O. S. Selepeng-Tau (1998) 'The University of Botswana', In: *Learner support services: case studies of DEASA member institutions*, Nonyongo, E.P., and Ngengebule, A. T. (ed.). Pretoria, UNISA Press, 33-51.
- Moesi, A. G. and O. G. Mmolawa (1998) 'Institute of health sciences', In: *Learner support services: case studies of DEASA member institutions*, Nonyongo, E.P., and Ngengebule, A. T. (ed.). Pretoria, UNISA Press, 24-32.
- Molefi, F. and O. Mphinyane (1998) 'The distance education division of the department of non-formal education (DNFE)', In: *Learner support services: case studies of DEASA member institutions*, Nonyongo, E.P., and Ngengebule, A. T. (ed.). Pretoria, UNISA Press, 11-23.
- Mphinyane, O. and O. S. Selepeng-Tau (1998) 'Overview of distance education development and programmes in Botswana', In: *Learner support services: case studies of DEASA member institutions*, Nonyongo, E.P., and Ngengebule, A. T. (ed.). Pretoria, UNISA Press, 3-10.
- Navaro, Erez (et.al) (1996) 'Internet access in the world', http://pubweb.acns.nwu.edu/~ena246/group_paper.html
- Steiner, Virginia (1996) 'What is distance education?', <http://www.wested.org/hyper-discussions/dlfaq/0001.html>