



On-line education in Africa: promises and pitfalls

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1. Introduction

The promises and pitfalls of information and communications technology (ICT) are tied to two quintessential motifs of our times: globalization and the learning society. Both ideas have a rather different purpose in Africa than they do in Europe, North America and Australasia. So, too, do the promises of information technology.

Globalization may be described as the process by which societies are connected through rapid, large-scale networks of political, social and economic interaction. Such temporal and spatial processes, James Bohman (1998) suggests, would not be possible without multiple networks of coordination and interaction, and a proper supporting communicative infrastructure. In other words, the international communications network is both a feature of globalization and the very condition of possibility for the process of globalization.

The learning society is a predominant contemporary myth (Hughes and Tight 1995). Current political, social, economic and educational problems, so the myth goes, may all be addressed through the development of a learning society. Four other interconnected myths sustain the myth of the learning society: the productivity myth; the change myth; the life-long learning myth; and the learning organization myth (Hughes and Tight 1995). Information technology is a common theme in all these myths. To call these ideas 'myths' is not to dismiss them out of hand. Rather it is to recognize both their power and the ways in which they either distort or obscure our understanding. The myth of the learning society, together with its sustaining myths, can at best offer only a partial basis for understanding the complex relations between life, learning and work, and for planning related educational policy and practice (see Hughes and Tight 1995). The very notion of learning is under-theorized, indeed taken for granted, in several of these myths and some of their pivotal concepts such as the recognition of prior learning. Yet, as a myth, the idea of a learning society may have a powerful role in enabling

governments and industry, as well as communities and individuals, to take education and training seriously in developing alternative visions of a well-functioning society and in leading people through change. Part of the vision, we suggest, is to provide open access to educational goods and so to include those who have previously been excluded. On the face of it, information and communications technology has a crucial role in realizing this vision.

Whereas the nature and likely consequences of globalization are hotly debated (as are the nature and possibility of a learning society), the prevailing view is that the African continent, along with the rest of the developing world, needs wide access to information and communications technology (ICT) if it is to compete in a global economy (Djamen 1995). This view is echoed, perhaps more cautiously, in South Africa's White Paper on Science and Technology (Republic of South Africa 1996), as the following extracts show:

'Social and economic systems "globalised" by world market forces, the information revolution and new communications technologies require constant innovative planning and monitoring in order to function optimally...

'The ability to maximise the use of information is now considered to be the single most important factor in deciding the competitiveness of countries as well as their ability to empower their citizens through enhanced access to information' (p.5).

While the South African White Paper on Science and Technology stresses the economic benefits of information technology, visionaries such as Judith Chapman emphasize benefits for democracy, social justice and education:

'The vision of a networked society with equal access to knowledge and information, made up of communities and individuals, themselves in charge of their own learning environments, and governments, educators and the private sector working in partnership, is fundamental to the evolution and achievement of a democratic, free, economically stable and just society in the 21st century' (Chapman 1996: p.52).

Although Chapman cautions that educational and social change should not be driven solely by technology, she is remarkably enthusiastic about the democratic and educational prospects of technology and about its cost benefits. Modern technologies are not only cost effective, she argues, but also offer possibilities for new approaches to learning in new kinds of learning organizations. Seductive though it may be, Chapman's interpretation of the political and educational significance and desirability of ICT assumes the perspective of the developed world. A gung-ho application of this argument, apt though it may be to the developed world, is inappropriate in the developing world, as are assumptions about the effective maintenance and utilization of information.

In Africa and the rest of the developing world, patterns of inclusion and exclusion, empowerment and disempowerment have differed from those of Europe and North America. So, too, have patterns of educational provision and styles of teaching and learning. Colonialism was a form of forced but only partial inclusion, accompanied by some particularly destructive forms of exclusion. Despite nascent democracy in parts of Africa and pockets of economic development under conditions of relative peace and prosperity, the African continent can hardly be described as a stable post-industrial context. Much of the African continent remains under-developed and poverty stricken, civil war and famine are rife and universal basic education a dream yet to be fulfilled. What place has ICT under conditions such as these? Or, to put the question in more graphic terms and from a woman's perspective:

'...how can a woman be interested in Information and Communication Technologies (ICTs)

on a hungry stomach with a child crying on her back for food and another she is carrying in her arms dying because of lack of medical care?' (AFR-FEM Listserv, quoted in Ochieng and Radloff 1998:63).

In this article we explore an unavoidable dilemma concerning ICT in Africa – a dilemma from which, we argue, there is no escape. Without access to ICT, societies like those in Africa are in danger of exclusion from global development, although not immune from the effects of globalization. According to Butcher (2000, in press), unless developing countries respond effectively to how ICTs are used by global players, they will impact on the underdeveloped countries anyway, and not always in a positive way. But access to ICT brings new forms of exclusion and new risks. It also makes stern demands on distributive justice, for any money spent on developing ICT and its necessary systems of support will be money not spent on food, shelter, health care and basic education.

First, we provide a brief overview of current patterns of access and relative costs. Secondly, we question the prevalent touting of ICT as a means of education and argue that it cannot succeed unless there is already a basic level of education – a condition that, in most of Africa, has not been met. In other words, physical access is far from sufficient for epistemological access (Morrow 1993/4). More seriously, enthrallment to ICT may subvert the task of achieving universal basic education in countries that are still well short of this mark. Even where basic education is present, the advantages of ICT are not straightforward. Access to knowledge and understanding is inevitably both constrained and enabled by learning time and space. These are radically reconfigured in ICT and in notions of the learning society, as they are in the very process of globalization.

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2. Technology on the line in Africa

A recent example of how ICT has been used successfully in Africa is the application of Geographical Information Systems (GIS) in the 1999 elections in South Africa. GIS is a newly emerging technology which consists of a geographical management and planning tool. It allowed the South African Independent Electoral Commission (IEC) to establish a spatial database for the entire country. Such a database enabled voting districts to be set up on the basis of previously collected census information (Nel 1999). The IEC states that, without this technological tool, it is unlikely that the elections would have been able to be held in the successful manner they were. Another recent development in the use of ICT at a systems level is the project being developed by the Gauteng Institute of Curriculum Development, whereby curriculum materials will be stored on a database, and available for educators to access remotely.

However, of all African countries, South Africa is the most technologically advanced. Jensen (2000) has produced a comprehensive summary of the networking constraints in the African continent. There is an extremely limited telecommunications infrastructure consisting of less than one phone line per 100 people in southern Africa. Further, it is estimated that Internet users in Africa number approximately 2 million. Of these, 1 million are in South Africa, leaving the remaining 500 000 among the 734 million people on the continent. This equates to one Internet user for every 750 people compared to a world average of one user for every 35 people, and a North American average of one in every three. Despite this limited connectivity overall, there are only two countries in Africa, Somalia and Liberia, which do not have any Internet access. Somalia was due to open its first Internet service provider in 1999. The installation fee was to be the equivalent of the monthly income of many Somali families.

Connectivity within African countries is minimal and is usually confined to the capital cities although 16 countries now have POPs (Points of Protocol) in secondary cities and towns. Direct connectivity between countries within the continent is almost non-existent. This means that for African countries to link with each other via the Internet, they have to connect through a European or American 'hub', sometimes provided as part of an aid package.

Generally in Africa, international bandwidth is insufficient due to high cost and lack of digital circuits. This results in slow connections throughout the continent when compared with developed countries.

Access to the Internet is also reliant on service providers (hosts), who provide connections for their clients. In Africa, there is only one service provider for every 30 000 people. The total number of African hosts is approximately the same as that of Latvia, which has a population of only 2.5 million compared to the African population of approximately 780 million. African service providers consist of 0.06% of the world's 43 million hosts. However, the African host growth rate is 36% per six months (measured to December 1998), which is double the world average.

In Africa, the cost of access to the Internet is high: five hours per month cost approximately \$50. Comparative costs in USA and Britain are \$6 and \$16 respectively. It is important to stress that the cost in Africa is ten times that of the USA, while per capita income is at least ten times less.

As would be expected, usage of the Internet is relatively limited. Jensen (2000) summarizes users and usage as follows:

The average use is one incoming and one outgoing e-mail message per day, most often with people outside the continent rather than between African countries. The World-Wide Web, which is now almost synonymous with the Internet in developed countries, is still a relatively under-utilized resource in Africa. Relatively few institutions use the Web to deliver significant quantities of information and very few use it for their activities, other than to provide descriptive and contact information. While many government ministries have access to e-mail, very few have a Web site. With the exception of national (as opposed to provincial) government in South Africa, there is little government use of the Internet for administrative purposes.

The majority of Internet users belong to non-government organisations (NGOs), private companies and universities. Most users are well-educated males and, in South Africa, belong to the previously advantaged sector of the population. Universities initially pioneered the development of Internet usage across the continent. However, even now, full access is usually restricted to staff. Early in 1999, only 20 countries had universities with full Internet access. Schools have even less access than universities and most access is restricted to private schools.

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3. Education on the line

Chapman (1996:51) rightly suggests that the question to be asked about ICT is 'how society can exploit technology in order to provide the most effective education for a democratic, socially inclusive and economically advanced community'. The betterment of society, then, becomes the criterion for whether, when and how to use technology in education. As we have indicated, with some risk of generalization, Africa is in dire need of societal betterment. With a few exceptions, the countries of Africa are undemocratic, economically unstable and

both excluded and excluding. Within countries, the practices of social exclusion run along the lines of class, ethnicity, gender, religion, language and location.

Not to put too fine a point on it, education in Africa is in a mess. A selection of facts and figures from a recent needs assessment study of countries in eastern and southern Africa serves to illustrate the point (Chisholm *et al.* 1998). Angola, probably the worst off of these countries, spent 10% of its national budget on education in 1990 and only 4% in 1997. Over the past decade enrolments have fallen sharply. In 1993 school enrolment was estimated to be about 53% of children in the age-range 5 to 14, with average dropout and failure rates estimated at 50%. Tanzania has the lowest rate of secondary school enrolment in eastern and southern Africa – only 5% of the relevant age group. The Musoma Resolution of 1974 committed the Tanzanian government to achieving universal primary education for all children between the ages of 7 and 13 by 1997. By the early 1980s the goal was well within reach with a 90% enrolment but since then there has been a sharp decline both in primary enrolments and in educational quality. HIV/AIDS has been a significant factor in primary and secondary enrolment patterns, as well as in the dwindling pool of qualified teachers. In Botswana, one of the more prosperous and stable countries in Africa, 90% of primary school aged children were enrolled at school in 1993 and in 1994 there was an 80% progression from primary to junior secondary school. However, only about 10% of those who complete primary school gain university entry. Despite its economic prosperity, wealth is unevenly distributed in Botswana, with nearly 47% of the population living below the poverty line in 1994.

The language of educational policy in these and other African countries reflects the new global scripts of social justice and economic efficiency, partly as a result of the power of western democracies and partly as a consequence of dependency (Chisholm *et al.* 1998). It is a language ‘that speaks universally to local problems’ through its commitment to access and equity, to social justice and the right to education and, simultaneously, to quality and efficiency. Chisholm and her co-authors warn that despite its power to address educational problems, this language also ‘hides the enormous difficulties of providing and assessing access, equity, quality and efficiency’ (Chisholm *et al.* 1998:19). In particular, they worry about how such language, and the policies that use it, either deny or obliterate the complex and differentiated meaning of local needs and experiences. One of the effects of globalization is that African countries that were alive with educational experimentation in the 1960s ‘now search for the eldorado of western innovation’ (Chisholm *et al.* 1998:19).

Many of the promises of ICT, like those of life-long learning, come couched in the language of access and equity, appealing both to social justice and to efficiency. On its own, this gives us no reason for rejecting the promises as false or misleading. Information technology clearly does have the capacity under appropriate circumstances, to reach large numbers of learners through a few well-qualified teachers using materials developed by specialists. In places where both books and qualified teachers are scarce, ICT may indeed have the capacity to provide learning resources where there are none. Its capacities are especially alluring in curriculum areas like mathematics and the natural sciences which are widely valued for their contribution to a stable economy, yet notoriously ill catered for in schools throughout Africa.

Nonetheless, in many respects, the promises are both false and misleading. They are false because the prerequisites for an educationally sound and inclusive access to ICT can be met by very few African countries at present. They are misleading because they may divert attention from other more pressing concerns and other more viable solutions. The gung-ho version of ICT in education shares some of the features that Hughes and Tight (1995) ascribe to myth. It offers a simplistic ‘truth’ that ‘captures the imagination in a populist and transmittable form’, yet in practice its claims are neither self-evident nor strong. Gung-ho promises for ICT, like those underpinning the myth of the learning society, proffer a

superficially simple solution to complex economic, educational, political and social issues. Whatever their mobilizing powers – and they are no doubt considerable – myths can also block solutions to problems. Once a ‘consensual idealisation’ is seen as the solution it may serve to deny the possibility of other or better solutions (Hughes and Tight 1995:300).

Consider, first, the prerequisites for educationally sound and inclusive access to and use of ICT. Baldly stated, inclusive access requires that every educable person have access to ICT regardless of gender, class, language, locale or age (with the obvious exception of the very young and, possibly, the very old). More is involved than access to hardware. As Chapman argues, inclusive education requires new information technologies to open up and increase access to educational establishments and agencies for open learning and dual mode instruction. Obviously this does not mean a computer for every household. What it does require is a properly equipped learning centre within walking or cycling distance from every household, no matter how remote. The ‘telecottages’ piloted in parts of Africa as well as Asia provide a model (Mansell and Wehn 1998). This is still a long way from Chapman’s ideal in which educational pathways and institutions are not rooted in space and time but could be accessible electronically ‘from anywhere and available at any time’ (Chapman 1996:53). While institutions constituted by a mix of physical and remote access points could indeed meet the needs of groups previously constrained from furthering their education, this is much more likely in developed countries than in war-torn, economically unstable countries in Africa.

As we have indicated, physical and institutional access are important prerequisites for inclusion in the educational use of ICT. We will not consider here the many obstacles to meeting these prerequisites. Instead let us assume that the provision of physical access is feasible if not now then some time in the foreseeable future and if not in all African countries then at least in those that are relatively stable. The point is that physical access is not sufficient for epistemological access (Morrow 1993/4). Taylor’s (1979) well-known argument against negative liberty is pertinent here. Where people lack the capacities to exercise an opportunity, the opportunity is ‘empty’. At the very least, epistemological access to the educational goods of ICT requires students (and their teachers) to become electronically literate (Warschauer 1999) as well as conventionally literate and numerate. They should be able to handle information technology at a level appropriate to different fields of study and be equipped to employ it appropriately to further their cognitive development in the future. In any case, information on its own is not the same as education (Marshall 1998).

Epistemological access is enabled or impeded by the placement and organization of learning activities in space and time (Pendlebury 1998). Educational practices, like other social practices, are conducted within spatio-temporal settings that are partly constitutive of the actions and interactions that occur within them. ICT radically reconfigures space and time, creating an extended present which softens the boundaries between public and private, between local, national and international. It delineates a new and much more open kind of pedagogical space in which learners and learning, teachers and teaching, all take on new identities. For instance, Chapman (1996:52) speaks of ‘new possibilities offered by the emphasis on student-centred and self-directed modes of progression’. She also suggests that time delayed exchanges by electronic mail and computer conferencing will enhance access because many types of students seem to participate more fully in learning opportunities offered in this medium. This construes learners as responsible, self-directed individuals who have already acquired habits of critical judgement. It is not clear how educational programmes that use ICT will deal with longstanding habits of learning bred under the authoritarian and narrowly didactic approaches that are characteristic of schooling in many parts of Africa. Little attention seems to have been given to the question of how best to prepare teachers in Africa for the educationally sound use of ICT. Mark Warschauer provides

some useful case studies of ESL classes in Hawaii, which show how this might be done (Warschauer 1999)

As a form of mass communication, ICT involves the institutionalised production and diffusion of symbolic goods. While extending the availability of such goods in space and time, it also constitutes a fundamental break between their production and reception (Thompson 1990). We think this break has quite profound implications for the educational deployment of ICT, especially where the context of reception differs radically from the context of production, as is the case of most African countries using ICT. Much of the content and style of the materials produced in developed countries is unsuited to social and cultural traditions in the least developed countries and may have the effect of excluding people who are already severely disadvantaged. Mansell and Wehn (1998) acknowledge the usefulness of ICT in overcoming such obstacles as geographic remoteness and scarcity of teachers, but warn of major difficulties associated with ICT use in the least developed countries. These include conflicting agendas in curriculum content and about the cultural and linguistic dominance of the western English-speaking world. To date, ICT applications for education in developing countries have had three serious weaknesses: they have been unsuited to the technological and organizational infrastructure of the countries concerned; they have been over-specified in terms of their technological sophistication; and they have been insufficiently focused on the problem-solving environment (Mansell and Wehn 1998). The educational possibilities of ICT are constrained or enabled both by the technology and the curriculum it transmits and by the context in which it is received. One of the challenges is to ensure that the 'world's stocks of information' are combined effectively with local knowledge (Mansell and Wehn 1998). Another is to transcend mere information and to transform it into a range of learning activities that meet educational ends. There is also the challenge of institutional change in places where schools and other institutions are only minimally, if at all, functional. In the absence of institutional change, ICTs are likely to be used within traditional educational programmes by traditional and often poorly qualified teachers. Under such circumstances, ICTs are unlikely to make a huge difference to the educational opportunities of marginalized people.

In considering the possibility, viability and desirability of ICT as a means of education in Africa, it is crucial to examine how political, social and individual interests are differently served by different patterns of deploying technology in schools and other institutions concerned with education and training. As we have suggested, debates about ICT in education pivot on much more than technical and financial capacity. Writing about the use of computers in schools, Olson (1987:83) notes that 'the computer as a tool does fundamentally reorganise material relationships and organisations of production and our thoughts about what production is'. Over a decade later his arguments, we think, are pertinent to the wider set of debates about ICT in Africa, especially his claims about the relationship between new technology, new social forms and older patterns of success and failure:

'With the retooling for a new technological season, some social forms are sure to change too. But the newness can be overdone. The patterns of older players often stay the same and the strong are better equipped to play than the weak. The societal track record should give us clues as to who will maneuver what and how they will fare' (Olsen 1987:185).

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4. Concluding remarks

In conclusion, we turn once more to Chapman's vision of a learning society which is both just and economically stable. Since we quoted her in full early in the article, we need no more than a reminder here: 'The vision of a networked society with equal access to

knowledge and information ... is fundamental to the evolution and achievement of a democratic, free, economically just society in the 21st century' (Chapman 1996:52). We do not doubt the necessity of education for democracy nor do we doubt the importance of ICT in shaping the global economy. We agree that there is a need for a vision, at both national and institutional level, of how the strengths of ICTs should be harnessed and that such a vision must be located in a concrete understanding of the core functions of education (Butcher 2000, in press). We accept that ICT, effectively deployed, can contribute to economic development in Africa's least developed countries. But we worry that idealistic uptake of the idea of a networked society obscures the very real challenges involved in accomplishing inclusive education and a sustainable civil society in most African countries. It also obscures the dilemmas of justice that must be addressed by nation states with severely limited resources and populations living below the poverty line. ICT can only contribute to education and democratisation in Africa if social capacity is developed to a sufficient level on the continent. The context of reception needs to become a context of production that is responsive to local requirements and accountable to citizens. This in turn calls for lecturers, teachers and citizens who have the skills, understanding and confidence to engage with national policy and strategy deliberation and implementation. In the absence of these conditions, the educational and democratic goods of ICT are a chimera.

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Note:

A previous version of this paper was published in the *Journal of Philosophy of Education Special Issue: Enquiries at the Interface: Philosophical Problems of On-line Education*. 34/2000.

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ISSN 1560-683X

Published by [InterWord Communications](#) for the Centre for Research in Web-based Applications,
Rand Afrikaans University