

Overview

Introduction

In October 2006, the Partnership for Higher Education in Africa (PHEA), comprising at that time the Carnegie Corporation of New York, the Ford Foundation, the William and Flora Hewlett Foundation, the John D. and Catherine T. MacArthur Foundation, the Andrew W. Mellon Foundation and the Rockefeller Foundation convened an Educational Technology Think Tank for Africa. Hosted by the Centre for Educational Technology (CET) at the University of Cape Town, the think tank played an advisory role to the partnership. Comprising experts from the African continent, the think tank's mandate was to help to guide the partnership's educational technology initiative by providing intellectual input regarding possible strategies for supporting the innovative application of technology for the improvement of teaching and learning in the nine countries within which the partnership works. These countries are Egypt, Ghana, Kenya, Madagascar, Mozambique, Nigeria, South Africa, Tanzania and Uganda. The think tank held its first meeting in November 2006 and concluded its work in November 2007.

In order to support the work of the think tank, CET commissioned documentation on the status of information and communication technology (ICT) and higher education within the PHEA countries. This documentation comprised, amongst other data, country profiles of eight of the nine PHEA countries. The country profiles covered Egypt, Kenya, Mozambique, Nigeria, South Africa, Tanzania and Uganda, while data in the form of references was gathered on

Madagascar. Although the reports considered the status of ICT across various sectors within each country, the focus was on the status of ICTs in higher education. These status reports are presented in full in this publication.

This overview reviews existing national and institutional policies with regard to the use of ICT to enhance teaching and learning within institutions of tertiary education. Common areas of strength and of weakness with regard to educational technology readiness in the PHEA countries are explored. The challenges to the deployment of ICT in tertiary education within the PHEA countries are outlined. Finally, lessons learned and possibilities for collaboration are highlighted.

In reviewing the country profiles, which constitute the bulk of this report, we found it useful to cluster challenges to the proliferation of educational technology on the continent around particular rubrics. At both a national and an institutional level, challenges (and, indeed, opportunities) tend to arise around the development and implementation of the following:

- policy frameworks;
- pedagogy;
- capacity enhancement and training;
- technology infrastructure and connectivity;
- research;
- awareness; and
- collaboration.

Policy frameworks

The table below provides an overview of the status of existing national ICT policy frameworks or supporting legislation within the PHEA countries.

Generally, it appears that the national impetus behind these legislative efforts has been the need to better govern the burgeoning telecommunications sector. What is immediately apparent with regard to tertiary education, however, is that the deployment of technology in support of teaching and learning is governed by myriad documents ranging from White Papers to draft policy documents, and in this context of 'technology for development', the use of ICTs in support of education tends to emerge as an afterthought.

In some instances, as is the case in Kenya, a national ICT framework has been drafted, but has yet to be passed into law. In South Africa, on the other hand, it has been argued that in the absence of a specific national policy governing educational technology, a space for innovation and creativity has been opened up in institutions of tertiary education. However, in South Africa and other countries where such innovation has occurred, this has often been the result of individuals or groups working without the core national or

institutional support needed to integrate their efforts fully into the educational system.

With regard to access to technological equipment, the enactment of national ICT policies has impacted positively on the liberalisation of the market in some cases, and has lowered tariffs for ICT hardware and software in others. Nonetheless, it is frequently the case that the absence of an overall technology plan, coupled with short-term funding models and the lack of a clear acquisition and replacement plan, has resulted in an inconsistent and unproductive approach to IT implementation.

The research contained within the country profiles begs at least two questions:

- Is a strong policy framework at both national and institutional level essential in leveraging the potential of e-learning to increase access to tertiary education in Africa?
- Do existing policy frameworks acknowledge the issues of quality assurance, staff involvement and workloads, resource allocation, ICT and/or ODeL (open, distance and e-learning) strategies?

ICT policy frameworks and legislation

Country	National ICT policy	Related national policies/implementing agencies
Egypt	National ICT Plan	
Ghana	ICT for Advanced Development	
Kenya	Kenya ICT Strategy	Kenya ICT4D Strategy (awaiting parliamentary enactment)
Madagascar	National ICT Infrastructure Policy	
Mozambique	National ICT Policy	National ICT implementation policy
Nigeria	National Policy for Information Technology	National information technology development agency (implementation agency)
South Africa		White paper on e-education Report of national commission on higher education White paper on higher education National plan for higher education
Tanzania	National Policy on ICT	
Uganda	National ICT Policy Framework	

Pedagogy

With specific regard to the think tank's mandate concerning the use of ICT in support of teaching and learning, although a closer look at national ICT frameworks reveals the existence of national – or even institutional – ICT frameworks, this does not of itself constitute an enabling environment in which educational technology can thrive. In short, even where national ICT policies have been approved by governments and where implementing bodies have been sanctioned to execute these policies, the reports reflect a dearth of policy governing either distance education or the use of ICT in tertiary education. Therefore, implementation is hampered by the absence of an overall technology plan, the lack of a clear acquisition and replacement plan and a dependence on short-term funding models.

When it comes to pedagogy models that incorporate the use of ICTs, many of the countries and their higher education institutions (HEIs) are struggling with the issue of recognised and accepted paradigms of e-learning that are not only pedagogically sound but also appropriate to their context. This struggle is often linked to the absence of e-learning strategies for organising the educational process, including defining the objectives, components and mechanisms necessary for implementation. A case in point is Egypt, where a 'backbone' is provided through the Egyptian Universities Network (EUN), which connects 17 of the country's universities. While the intention was to facilitate the development of local content, appropriate research material, library catalogues and learning media are not yet readily available through the EUN. Where materials are available, there is little evidence of quality-assurance mechanisms to evaluate teaching. Nonetheless, the EUN has facilitated a focus on Web-based teaching material, primarily using English as the medium of instruction, a common feature across the continent.

The relevance (or otherwise) of content also received attention from the writers of the country profiles. They found that government-supported e-learning programmes tend to be focused on teacher education or within primary and secondary schools. Given that most tertiary education institutions on the continent are dependent on government subsidies, it also emerged that some senior education officials (often the decision-makers) are technologically shy (or 'technophobic'), making it difficult to implement e-learning. Sometimes, a lack of government support is compounded by a commonly held perception of distance education – and, by extension, any form of electronic learning – as being 'second best'.

Of course, there are exceptions to this general rule, with many of the countries offering some e-learning content on university web sites; in a few cases, fully online degree or diploma courses are available. South Africa provides an excellent example of this through its large distance education university UNISA, while other South African universities have achieved a minimum online presence for all their courses. Yet, across the continent, the country profiles revealed similar challenges to the use of innovative teaching and learning strategies. Commonly, these included: large numbers of students per lecturer; high staff workloads, resulting in limited time for teaching; limited acquaintance with new teaching technologies and resultant low-level administrative acceptance of these strategies as appropriate for learning; limited financial resources available to acquire the relevant teaching aids; and limited space and facilities for accomplishing the intended changes.

Capacity enhancement and training

Given the challenges discussed above, it seemed prudent to ask ourselves what might constitute an enabling environment. In consideration of the objectives of the PHEA in commissioning this research, the country profiles reveal that it is worth considering both what capacity for educational technology already exists in universities and how this capacity might be enhanced. The studies reveal widespread computer illiteracy amongst teachers, which underlies the absence of accreditation and evaluation criteria to ensure the success of electronically mediated programmes. Consequently, universities face challenges in designing educational courses and identifying personnel responsible for the maintenance and improvement of these 'new' programmes. The need for specialised skills is apparent, and the adoption of educational technology could be significantly enhanced by improving the capacity of teachers in adapting learning materials to the electronic media, and by properly acknowledging their new roles of teacher, facilitator and mentor. Indeed, the need for instructors who have the special skills and talents required for electronic teaching and learning implies the need for somewhat radical changes to the entire tertiary education system.

The writers noted that in many of the countries, universities offer professional courses in ICT, ranging from computer science degrees to more technological courses such as engineering. However, training in basic computer skills is mainly the preserve of private institutions. In both Uganda

and Kenya, a plethora of private institutions offer a range of ICT skills training, but such courses vary widely in terms of duration and content, making it impossible to judge the competence of graduates. A few of these institutes offer certified courses (e.g. Microsoft certificates). The costs are prohibitive and are usually paid for by employers such as the big service providers.

Technology infrastructure and connectivity

The stark discrepancies between African countries and the rest of the world are noted in all the country reports. The extent of these differences is highlighted in the recent figures in the table below.

The country reports all examined the infrastructures that support faculty and students in the appropriate or innovative use of technology in the service of teaching and learning. Many note the dearth of technical support as a barrier to sustainable access to computer equipment. While there is every appearance that attention is being given to improving ICT infrastructure within higher education institutions across the continent, a recurrent problem for the writers was the paucity of documentation on the existing infrastructure within higher education institutions. The presence of satellite, videoconferencing or virtual classrooms has been observed in several countries; however, the technologies are not used widely. In many African countries, all ICT facilities are imported, which makes servicing them and providing training difficult. Clearly, this hinders effective use of these facilities in education.

The implementation of ICT in the service of education is generally hampered by low initial capital investment, inadequate budgets for development and recurrent expenditure, and a weak ICT infrastructure, especially in

rural areas. Indeed, the main users of the Internet tend to be multinational corporations, international organisations and NGOs. The skewed use of ICT in urban areas may have been influenced positively by the use of the English language, an official language in several of the PHEA countries and the one on which most ICT services are based. However, in Kenya alone, there are at least 40 national languages. Sometimes, this multiplicity has been seen as a barrier to the diffusion of ICT.

Despite the historical discrepancies that continue to plague South Africa's institutions of higher education, all South African universities appear to have some form of dedicated information technology department. These range from centres that provide basic ICT training for lecturers to those that offer sophisticated research operations integrated with systematic support programmes for lecturers in the development of e-learning. One source notes, however, that despite the apparent sophistication, 'a supportive champion is an important element in the power play of legitimacy and growth'; it is suggested that such a champion may make the difference between the integration of ICTs into teaching and learning and the relegation of ICTs to a mere support function. Access to computers appears skewed along the lines of the older inequalities within South African higher education institutions. Generally, the historically disadvantaged institutions tend to have less robust ICT infrastructures in place than do their more advantaged counterparts.

Research

Another issue of great relevance to the creation of an enabling environment for educational technology is that of research. In general, the writers found that internationally cited quality research work from the continent is relatively sparse. Indeed, both the quality and quantity of research is hampered by limited funding, a shortage of up-to-date ICT for teaching, libraries and research and, in some

Internet usage and population statistics for Africa and the world, 2007

	Population (est.)	% world population	Internet users	Penetration (% pop.)	% users worldwide	Use growth (2000–07)
Africa	933 448 292	14.2 %	43 995 700	4.7 %	3.5 %	874.6 %
Rest of world	5 641 218 125	85.8 %	1 200 453 901	21.3 %	96.5 %	236.8 %
World total	6 574 666 417	100.0 %	1 244 449 601	18.9 %	100.0 %	244.7 %

Source: Miniwatts Marketing Group (2007)

cases, limited exposure (where university professors are civil servants who must have authority to travel from the relevant ministry). Although many of the country profile writers struggled to find any evidence of ongoing research in the field of e-learning, they generally concluded that this did not preclude its existence, but merely reflected its unavailability in the public domain. The case of South Africa revealed that only very recently has research in the field of ICTs begun to focus on the primacy of pedagogy. The focus of the government White Paper is on supplementing distance education, rather than on teaching and learning.

Awareness

Sensitisation is another key component in the development of an enabling environment for ICTs in teaching and learning. A lack of awareness of copyright issues is noted in some of the country profiles. Given the perceptions of distance learning being second best, and the common conflation between distance learning and electronic learning, a case can be made for increasing awareness about the possibilities, as well as the challenges, of e-learning as a medium through which to increase access to tertiary education – what Kenyan documentation describes as ‘e-readiness’. Efforts towards using technology for learning have frequently proved ineffective because its proponents have underestimated not only the complexities inherent in introducing this new form of teaching and learning, but also just how difficult it is to change people’s attitudes. For example, many writers on Uganda have noted prevalent

beliefs about technology and women not being compatible. Technology is often mystified; in relation to higher education, this is even more the case.

Collaboration

A final point for consideration is that of collaboration. In reviewing the profiles, think-tank members questioned whether it is indeed important for practitioners of educational technology to not work in isolation, but to be enabled to share their experiences and expertise with others. While there is clear merit to collaborative endeavours such as the sharing of enabling policy frameworks or the sharing of e-learning materials and curricula that are pedagogically sound and aptly managed, the profiles revealed that despite efforts by many ministries of education to integrate technology into the education system, poor results can be attributed, in part, to a lack of co-ordination between universities and the different departments within each university.

Many of the country profiles revealed that efforts of instructors and/or university students are often individual ones that may fail to impact on the university and, far less, on the tertiary education system as a whole. Given that so many of the national ICT policies emphasise the positioning of their countries in the global economy, there is a clear need to recognise the intellectual assets that the continent does possess, and to build and collaborate on the strengths that already exist.

