Being Digital by Default: A User-Centric View of OnLine Knowledge Resources at an African University

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I would want to address three key issues. First, what are the major implications of new Information and Communication Technologies for the mission and means of the university in general and universities in Africa’s condition in particular. Second, how is the University of Ghana, at Legon, negotiating new academic technology for learning? Lastly, I would want to consider the significance of the foregoing for the prospect of knowledge-led national development, what we are beginning to call the “blue revolution”, in Ghana. I would argue that although the new technologies for learning must and would fundamentally change universities, including in Africa, too much faith has been placed in technology as such. I present simple, practical considerations from sustained and intensive use of computer technologies, especially the internet, in Ghana to point up the case that we are in danger of constructing these technologies as magical panacea.

In terms of general orientation, one must note that issues of Higher Education have again become very topical in Africa. The programme of a recent African Studies Association Conference underscores this point. CODESRIA has geared itself for critical response to this renewed interest, as pointed up by the emphases of its 10th General Assembly in Kampala and the issue of the CODESRIA Bulletin produced just before that meeting. The Association Of African Universities has, understandably, always had Higher
Education as its central concern. It is however important to recall that its tenth General Conference, on the theme “African Universities and the Challenge of Knowledge Creation and Application in the New Century”, focused on our central concern of the implications of new information and communication technologies. The unduly powerful World Bank has now taken Higher Education in Africa more seriously and has inserted influential advocacy for increased attention to tertiary education in its ongoing reinvention of itself as a knowledge institute which recognizes knowledge as perhaps the most important factor of production.

Universities regularly negotiate their place in society. Definition of university missions is a craft which travels well and often leads to epistemic communities which may link countries at different stages of development. Africa’s turbulent socio-economic record has made negotiation of university missions regular and difficult. For my current purpose, my fundamental orientation would seek to continue my contribution to an effort to assert and localize the Kampala Declaration on Academic Freedom in Ghana. I borrowed a Performing Arts outlook:

The process through which universities have to negotiate their place in society by engaging agents outside their cloisters must have certain characteristics of a performance in the creative arts. In my view, a performing university is one which through continuous and animated freedom, as it largely determines it, and its relevance, as largely determined by its applicable standards, the African condition which results” in the university in Africa working in a manner that is intrinsically mysterious to he rest of society” may make this negotiation difficult although the difficulty may be attenuated by the big, almost magical value that is put on higher education in Africa.
Historically, universities in Ghana appear to have been able to craft sustainable public roles. Ghanaian universities are, in point of fact, quite used to the “performance challenge”. The formation of our first university was the result of a sophisticated and extensive public debate. Kwame Nkrumah’s bravura and obduracy ensured a dramatic relationship between Nkrumah, the government and the university at Legon which has ingrained firm views of proper relationships between university and government in Ghana.

The challenge of new information and communication technologies on University missions and means in Ghana cannot be exaggerated but, fundamentally, it merely represents a more recent statement of the continuing need to redefine relevance and connectedness, within a recognition of the autonomy and freedom, of universities. We may talk of a new revolution in academic affairs as a convenient shorthand for complicated technology processes but this may need to be made to respect the traditional view of the university, especially as a specific community of scholars. The application of new technologies does not only affect narrow practical issues it is immediately directed at solving. It also affects very fundamental aspects of the university. Thus, in the background study for the AAU conference, Reddy is right in pointing to the revolution in academic affairs leading to a new type of university whilst at the same time alerting us to the danger of excessive faith in the power of computing:

Relentless changes in the external environment of higher education –mass higher education, growth of knowledge, reduced public funding, increased emphasis on employment skills, pressure for more accountability and inter-university competition points to the crucial role of leadership and management in
maintaining morale, enhancing productivity and helping staff cope with momentous change.

Three basic types of universities are emerging: brick universities – the traditional residential universities, click universities – new commercial virtual universities and brick and click universities. …

There is the blind belief that somehow a computer in itself help students to learn when Clinton called for a web-linked computer in every classroom no one asked him why. Questions such as what role would machines play in a strategically guided pedagogical revolution, what kinds of teachers were needed to maximize the academic value of the students being able to retrieve information quickly, what kind of learning environment management changes would have to be made to capitalize upon the value of the machines would bring to the classroom, what would be the pedagogical or cognitive benefits of giving students hyperspeed access to every book, video article - these are the crucial questions that have to be asked and answered in the context of knowledge and technological driven change.

The “click university” is considered very positively in almost all current attempts to develop analytical models for explaining the changing place of universities in academic knowledge production. These models include the Association of Commonwealth Universities associated argument for “new knowledge production”, more clearly market driven arguments for “entrepreneurial science” and the new growth theory, World-Bank powered arguments for new “Knowledge Societies”. Whether libraries “need books” has arrived as a meaningful question. However, at the real level of institutional change, fundamental aspects of the university as an institution sets it in conflict with the ideas conveyed by the new information infrastructure. It can be agreed that:

The university has a reputation for conservatism. Information technology is supposed to be a force for revolution. And so the reshaping of the university by means of information technology has the makings of a great drama. Great dramas stir up myths; they reopen ancient controversies and liberate forgotten energies. This is a fine thing, and it is also dangerous. Information technology enables us to reconsider the fundamental values of the university, but it also enables us to destroy the university if that is what we want.
A clear implication of the foregoing is that ideally deployment of systems of new information technology in universities must be crafted within a view of the total mission and strategy of universities. In point of fact, as our brief outline of the highlights of the roll out of these technologies at the University of Ghana in the next section would show, for example, it has not been possible to implement such an iterated approach to technology adoption in the typical African condition. We have become digital by default rather than considered intention. It is not unfair to say that, on the whole, these technology goods have come to us as discrete, and often entrepreneurially, fought for, well-intended gifts. The episodic character of acquisition has often made it difficult to adopt broad, long-term stances, and, thus, the required iteration is lost. The conditions for the reported relative success of the University of Botswana at organically incorporating its response to the revolution in academic affairs in the fundamental mission development of the university as a whole in much more than rhetorical manner would seem to suggest that a fundamental challenge for other African universities is inadequate arms-length, assured fiscal endowment.

The Digital Revolution at Legon

There has been a rapid deployment of new information technologies for learning at Legon although, as is often the case, the actual adoption of these technologies lags considerably. Over the last two years the quality of connectivity has improved in many ways including the underlying capacity of the University’s connection, suitability of carrier technology and points of access. There has been an even more important improvement in terms of the availability of online content including expensive, subscription-based content. Indeed, in theory, faculty and staff at Legon now have access
to online information comparable to a major research university in the United States and better than possibilities in many universities abroad. Immense policy and management challenges remain to make the investment in content efficient.

Legon has become an important internet service provider in its own right. It is the hub of the Ghana Research and Academic Network, a computer network for providing internet connectivity primarily at this point in time. The network has been designed to provide other, value-added services between its internal parts. The basic architecture of the network is depicted below:

**RE Net: Structure & Technical Solutions**

Source: Reza Tadzoni, Technology Assessment Project, Technical University of Denmark.
In essence, a VSAT has been placed at Legon which connects to a service in Denmark for an always-on connection to the global internet. There are various networks within Ghana, centred on the University of Ghana but also including all university institutions in Ghana and some institutes of the Council for Scientific and Industrial Research constituting the Research and Education Network, which enable included machines to share the connection provided into the Global Information Infrastructure by the VSAT at Legon. The metrics indicated in the figure above have changed. For instance, the capacity of the connection of the VSAT in both directions has, at least, been doubled within the last three months. The typical connection within Accra by wireless to the hub at Legon is now about 10mbs.

As mentioned above, a variety of carrier technologies have been deployed on the Research and Education network. At the main campus of the University of Ghana there is a major deployment of fibre-optic connection and even Digital Subscriber Lines. The more popular technology deployed is wireless, as the information in the figure below shows.
LOCAL AREA NETWORKS

- MEDICAL SCHOOL  Radio Lan
- CENTRAL ADMIN  Radio Lan
- POLITICAL SCIENCE  Radio Lan
- SCS  fibre
- IAS  DSL
- Arts Faculty  Radio Lan
- CSIR  Radio Lan

Source:

The wireless radio connections cover a range of capacities ranging from true broadband to the limitations of high frequency radio.

Some indication of traffic, or flow of bits of information up and down these connections, within the Research and Education Network is provided in the graphic below:
As indicated above, the capacity of the system as a whole has been expanded since June 2002 when these measures were taken. The absolutes have risen but informed opinion is that the ratios observed broadly hold.

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