Building ICT4D capacity in and by African universities

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ABSTRACT

Universities and community telecenters have somewhat parallel missions in society. These include the generation, storage and diffusion of knowledge and information. Yet, in most developing countries where telecenters strive to be demand-driven, universities are seldom perceived as relevant to telecenters sustainability. Focusing especially on Africa and using the nomenclature of the New Partnership for African Development, this paper examines the mutual benefits that universities and telecenters could gain from a stronger relationship, and lays out the kinds of steps that might be taken to build a partnership. The paper challenges the perception that "universities are irrelevant" and describes a comprehensive ICT development initiative that includes teaching, research and outreach.

Keywords: *Telecenters; universities; Africa; ICT Development (ICTD); ICT for Development (ICT4D).*

INTRODUCTION

A report released at the World Summit on the Information Society in 2003 identified a significant role for information and communication technologies (ICT) in strategies for African development (Okapaku 2003). The report notes that the New Partnership for African Development (NEPAD) includes a strong focus on the dual strategies of *ICT Development* (ICTD) and *ICT for Development* (ICT4D*).* In this paper we argue that universities in developing nations are potentially important players in both of these NEPAD strategies, and that the *eReadiness* of African universities is a vital issue in African development. The eReadiness of African universities is clearly relevant to the global creation and distribution of knowledge ─ which, in turn, is a core challenge in the world's thrust toward the Millennium Development Goals (World Bank 2004a).

First a clarification. We apply the NEPAD terms to universities in the following way:
- *ICT Development* in the university context refers to building media and digital facilities to support university internal functions, along with an academic and research programs that prepare students to function effectively in an information society ─ in both the public and the private sectors;
- *ICT for Development* refers to the university applying ICT in programs outside its walls in the service of communities and the nation.

Central to creating a digital resources and academic infrastructure is the question of universities' relevance to the world around them, and especially to the challenge of being an active player ─ "an anchor of a broad-based poverty alleviation strategy" in an increasingly knowledge-based economy (Nwuke 2003 p.19).

Recently we raised this relevance issue on another continent when the National Alliance for Information and Communication Technologies for Basic Human Needs came into being in India and immediately set a goal of bringing all of the nation's 600,000 villages into the modern

"information society" by 2007, the 60th anniversary of the nation's Independence. When we proposed that the agricultural universities in India be explicitly included in the National Alliance, we received this terse email response:

> *The universities have failed miserably in many respects. Most university faculty*
> *have no clue to life outside the campus nor have they any social concerns. Sorry*
> *for being very forthright or even blunt.*

Is the situation different in Africa? Recently published documents provide a mixed picture (Beebe et al 2003; Okpaku 2003). For example, we do not find a clear statement of an explicit institutionalized role for universities in the vision of the African Information Society Initiative's framers (Soltane 2003).

TELECENTERS: A ROLE FOR UNIVERSITIES

Universities can become practically involved in ICT by incubating telecenters, which are part of the worldwide ICT4D movement. A telecenter is a public facility in the community that affords people the opportunity to use computers, networks, copiers, scanners, telephone, community, printed materials, and audio and video resources for information searching, communication, training, and entertainment. The services are free or available at an affordable cost. The primary mission of a telecenter is community service as compared to a cybercafé whose primary mission is profit. A telecenter has staff who actively assist the public in solving information and communication problems. The telecenter management also collaborates with other institutions such as those in agriculture, health, government, and education to mobilize information, training and distance learning resources.

Universities and telecenters have a logical affinity. Telecenters can function in at least three ways for universities:
1. A means for reaching beyond their "ivory tower" to extend their knowledge and learning resources to the surrounding communities and to other populations in the region. This includes translating, adapting, localizing and re-packaging information from external sources to fit the agronomic and cultural characteristics of those local communities. This function is especially vital to the worldwide priorities identified in the Millennium Development Goals.
2. A laboratory for faculty and researchers to carry out ICT and extension-related research and development (R&D) projects especially involving issues ranging from HIV/AIDS to small business enterprises and poverty alleviation, and to universities' involvement with these issues.
3. A learning environment for students, as telecenter volunteers, to gain practical experience in helping people in the community — including grade school and out-of-school youth — apply information and communication technologies to challenges in their daily living. Students' assignments and semester-long or summer internships can be attached to courses in adult education, non-formal education, extension, communication and media, rural sociology, computer science and information technology, etc.

UNIVERSITY-TELECENTER MODELS

Higher education institutions can experiment with at least three models of university-and-telecenter structures. (This is largely unexplored territory in university-telecenter research and is worthy of further study.) The models include:
1. University-based telecenters where the telecenter is physically housed in a university facility, and where the ICT resources can be shared under suitable arrangements with people outside

the university. This model has been successfully in association with lower level schools World Bank projects (World Bank 2004b).

2. A university-administered community-based telecenter where the telecenter becomes an outreach or extension center apart from the institution's main campus. This model was used as a telecenter *incubation* strategy in south India but has not otherwise been widely exploited (Colle & Roman 2003).

3. A university-*supported* arrangement where the university provides continuous services and help to a telecenter that is owned and operated by a community entity such a local governmental body, or a non-governmental body such as a cooperative. (A university-supported commercial *cybercafé* that takes on a public service mission is an application of this model yet to be tested.)

We went beyond the rather general indictment of academia as depicted by my email correspondent and looked at five dimensions of what we called *eReadiness* in the university context. These included:

• ICT facilities and network access;
• Personnel available to support the design and production of digital materials such as CDs, web pages, and distance learning (training) packages;
• Academic programs including field experience opportunities that prepare students for applying ICT to communication and development;
• University policies that encourage faculty participation in community outreach programs;
• A faculty ICT posture — for example, a positive disposition toward the use and efficacy of ICT in education, teaching and learning.

To explore some of these dimensions, we drew on three studies, two in African countries and one that included respondents in Africa, Asia and Latin America. Our research consisted of surveying approximately 400 respondents from universities in the two African nations, Senegal and Ghana (which became two Master's theses); and more than 1000 faculty and researcher respondents across Africa, Asia and Latin America who have experience with The Essential Electronic Agricultural Library.[1] The data were collected in early 2004 and focused on the readiness issues as they were perceived by academics and researchers.

From the TEEAL data collected at ten institutions in eight African countries (Botswana, Ghana, Kenya, Malawi, Mozambique, Nigeria, Tanzania and Zimbabwe), we got a sample of 497 respondents who reported devoting part of their working time to outreach activities. It is important to underline that:

• 35% of African respondents involved in outreach work have used ICT at least once in their outreach activities;
• Over 75% of the respondents are beyond 7 in a 10-point scale where 10 means "very interested" in applying ICT in outreach activities;
• Over 80% of the respondents agree (at 7 or higher in a 10-point scale) with the statement that "integrating computers and the Internet in outreach programs would be useful";
• About 40% of the respondents agree (at 7 or higher in a 10-point scale) that "integrating computers and the Internet in outreach programs would be difficult".

And finally, more than 80% of the respondents agree (at a similar level as indicated in the above results) with the statement "if I had the opportunity to integrate computers and the Internet in outreach programs, I think I would do it".

We noted that respondents with more years of experience in Internet use were significantly more interested in applying ICT in their outreach activities than their less experienced counterparts. In other words, contact with ICT seems to be an important factor in motivating individuals to try ICT

applications for development. In the same way, the people who have had less contact with the Internet do not seem as interested in using ICT in their outreach work.

While our data require more refined analysis, we can say, in summary, that a relative minority of respondents use ICT in outreach, yet a majority see the potential — but they perceive difficulty in applying ICT in their outreach work. Because our questions were not a main part of the TEEAL evaluation study, we did not have an opportunity to explore the "whys" of some of these responses.

In one of the African studies mentioned earlier, our associates collected survey data from faculty and research staff at five universities in Senegal to assess their perceptions about the ICT-enabled outreach activities supported by their educational institutions. Slightly more than 50% (97/172) are involved in outreach activities. Approximately 35% of these reported using websites at least "occasionally" in their outreach activities. More than 40% use email for this purpose. Almost 60% of university people engaged in outreach in Senegalese universities report a strong interest in applying ICT in their outreach work.[2] Almost 45% of the faculty involved in outreach agree or strongly agree that "using computers and the Internet in outreach programs would be useful", while approximately 50% agree or strongly agree with the statement: "If I had the opportunity to use computers and the Internet in outreach programs, I think I would do it".[3]

In contrast, 50% of the Senegalese sample considers that "using computers and the Internet in outreach programs would be difficult" and only 8% of the respondents *agreed* with the statement: "I think my university can afford to invest in computers and the Internet for outreach programs". These data show that although there is considerable interest among Senegalese faculty to apply ICT in university-supported outreach programs, there is concern about the current feasibility of such programs. As in the TEEAL study, our preliminary assessment suggests that there is a core of faculty members who see the potential of ICT but have doubts about their university's readiness to support such initiatives.

In Ghana, a nation that has made significant strides in ICT development and which has created an ICT center named in honor of UN Secretary General Kofi Annan, the survey results were similar. Of those who do outreach at a sample of agricultural and technical universities and institutes, more than 75% do not use ICT (CDs, computers, web pages); but a very large majority (almost 90%) have a strong interest in using them. Almost 50% of those who do outreach perceive that the university cannot afford to use ICT. Approximately 80% of those doing outreach score at least a 7 on the 10-point "strongly disagree-strongly agree" scale indicating a predisposition to use ICT if they are available. Once again, a strong interest in ICT exists, but there also exists a doubt about their institutions' readiness to move forward.

MOVING FORWARD

A design to build ICT4D capacity

What might be done to promote greater involvement of African universities in ICTD and ICT4D institution-building initiatives? Based on our research and observing ICT and development initiatives around the world, we have proposed a design to build the ICT4D capacity in a *regional group* of African universities. Its characteristics include:
• Applying information and communication technology for rural development;
• Training students in the application of information technologies to national development priorities, including those linked to economic development and the Millennium Development Goals;

- Developing cost effective ICT mechanisms to enable the free flow of information within and among universities;
- Developing locally relevant multi-disciplinary content for rural populations using multi-media dissemination channels;
- Developing a range of ICT applications that strengthen the participating universities' outreach and extension programs to marginalized populations such as women, older people, and the poor;
- Engaging in research and development initiatives related to the role of universities as incubators of telecenters and other outreach implementations.

Outputs

What might the realistic output targets be for a multi-year involvement by universities and funders? After a three year initiative, in a well planned and organized initiative, observers could expect to see the following outputs.

- An operating regional ICT resource center for supporting the universities' ICTD and ICT4D activities. The support would include practical training of key personnel, production of educational and training materials useful across the participating universities, collaborative research, and systematic exchanges of information, knowledge and experience;
- A regional network of ICT-enhanced universities officially cooperating in ICT initiatives;
- A model curriculum and learning materials for ICT-for-rural development academic and training programs;
- A cadre of trained ICTD/ICT4D "champions" on the staffs of the participating universities promitng routine interaction to advance applications of ICT for development;
- An explicit policy and program at each participating university for recruiting students and in-service training candidates into ICT4D courses and workshops;
- A plan of action for establishing communication linkages among ICT policy makers in government, faculty members in universities, scientists in research institutes, agricultural and business enterprises, farmer groups and rural communities.

THE TELECENTER CHALLENGE

Universities that take on a mission to employ ICT in development programs can look at the emergence of telecenters as a potential partners. There is a strong interest and a great deal of activity in Asia, Africa and Latin America in using telecenters as a means of providing ICT resources for people who do not have their own computers and network connections. Many of these telecenters are struggling to survive. What they need are resources that universities might provide. For example:

- **Research** — Telecenters need to find out what kinds of information and communication resources their communities want and need. This is what helps telecenters become demand-driven − a vital issue in their sustainability. Telecenters need research also to evaluate continuously how well they are serving the needs of their communities. Many universities have research capabilities that could be applied to these telecenter research needs. And, as indicate earlier, universities could use telecenters as social research labs for their faculty and students.
- **Local and relevant content** — Too much content on the web is not relevant to farmers and other rural people. It is a common problem around the world, where external information dominates locally-tailored material. This is where credible, useful and user-friendly information needs to be crafted. The UNDP has suggested that the most important reason for the failure of telecenters is their lack of suitable content. Universities such as agricultural universities have access to science-based information that could be tailored to regional,

provincial and local agronomic, social, linguistic, and cultural characteristics, and could be matched with many of the Millennium Development Goals.

- **Training and Learning resources** − People in telecenters need to be trained in how information can contribute to development. We have found telecenter managers who know a lot about computers but don't know how to link telecenter potential to health clinics, schools, agricultural extension, or local government. Likewise, telecenters need to make their communities aware of the value of information, such as peanut marketing information and technology transfer in silkworm enterprises, or the chances for more education through distance learning. Awareness of the value of information will help the communities realize the value of the telecenter. Naturally, universities have the capacity to teach and train, but equally important, they have the cultural credentials to give credibility to their knowledge resources and training initiatives.

- **Human resources**. − Telecenters need volunteers who can help make telecenters good places to visit − volunteers who can help people search and understand the basic rewards of a digital experience. And who can welcome special groups such as women and the elderly who are frequently shutout by culture. Universities have human resources such as students who could serve as telecenter interns, and faculty members who could serve as content and development advisors. One of our researchers has devised a plan to incorporate telecenter internships as part of one African nation's post graduation service requirement (in Ghana). For some places perhaps service in a telecenter for young men and women could become an alternative to military service.

CONCLUSION

Our research in south India and Africa focuses on public access telecenters and especially on issues related to public demand for their services and to their sustainability. We believe that telecenters constitute an important force in efforts to build an Information Society and to join the march to the Millennium Development Goals. Our experience in India suggests that universities can be valuable actors in providing some of the resources telecenters need for their survival. This is important because colleges and universities are enduring entities in most nations, and the social role of the university historically has been to create, store and diffuse knowledge, a collection of activities that partially parallels some telecenter operations. Yet, few major programs link universities to telecenters as an institutionalized source of information, knowledge and training - the basic commodities of a telecenter. University eReadiness is a good place to start.

Endnotes:

[1] With Rockefeller Foundation support, Cornell's Mann Library has produced The Essential Electronic Agricultural Library, a collection of more than 300 CDs. TEEAL contains a comprehensive compilation of current journals, and provides a complex bibliographic search engine. TEEAL has been called a "Library in a Box" because its CDs arrive to the purchaser in a box.

[2] This percentage corresponds to the number of survey participants that checked from 7 to 10 in a 10 point scale where '10' means "very interested".

[3] These percentages correspond to the number of survey participants that checked from 7 to 10 in a 10 point Likert-scale where '10' means "strongly agree." The following data in this paragraph presents percentages based on the same scale.

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