Schools-Based Community Networking in Uganda

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INTRODUCTION

Our NGO, Uconnect[1], is distributing hundreds of refurbished computers to dozens of mostly rural primary and secondary schools in Uganda, training teachers and students to set up their own computer labs, assisting them in getting connected to the Internet and guiding them to open their schools' labs to the parents and local community after hours on a fee-paying basis. We have attempted to develop each aspect of the project's operations in such a way that it is sustainable, scalable and reproducible. This article will describe strategies we have used in our quest to make the Internet available to the widest number of people, and point out bottlenecks that challenge us to overcome.

The article is aimed at NGO directors and project managers in Uganda and other developing situations who intend to set up a project that is largely based upon using Information and Communications Technologies (ICT) for enhancing development. It is based upon several years experience in running such a project in Uganda, and the lessons learned, many of them by trial and error. I hope that by writing about these experiences, others might avoid making some of the mistakes made here. However, it is important to understand that there is no "right way" and other approaches may be just as successful.

BACKGROUND

When the Uganda Connect team visited their computer lab in March of 1997, Mengo Senior Secondary had a dozen computers, mostly 486s running Windows 95, with some 386s on Windows 3.1-equipment they had received through the World Links[2] programme. The team urged the teachers and students to get connected to the Internet, and invited them to visit their demonstration lab at the Education Ministry Headquarters where one of the computers was connected by "dialup." Visiting ministry officials and their secretaries, proud to have mastered their electric typewriters, did not seem so interested in the new technology, but school leavers who heard about it by "word of mouth" came flocking in and queued on benches in the hall to get some hands-on experience.

During that period, there was a flurry of visits to our ICT training workshops by international aid agency experts, from USAID's Leland Initiative[3], AED[4], UNESCO[5] and IDRC's Acacia[6] project. "Telecentre" was the buzzword then, and we were invited by UNESCO to provide the training component for the Nakaseke Multipurpose Community Telecentre[7] (MCT) that would be set up in the heart of Uganda's Luweero Triangle. Our team would teach a group of 25 trainees in their mother tongue, Luganda, how to use ICT, with an emphasis on "hands-on" experience. The group included representatives from many backgrounds including teachers, nurses, agricultural research workers and farmers, businessmen and local leaders.

The Nakaseke MCT was an expensive experiment[8]. In this case, we wanted to try something similar yet less costly and more reproducible at the local level across Uganda. The Unimogs carrying the six refurbished computers and printer for the new telecentre drove in convoy the 200 kilometres to Hoima where the Bunyoro-Kitara Community Telecentre was opened on World Telecommunications Day in 1999. This happened at the local district's Teachers Resource Centre and the event was covered on national television. However, we'd made the mistake of donating the equipment for the telecentre. As a result, the telecentre manager struggled to come to terms with the idea that he would need to charge a fee to visitors for the use of services, ICT training, printing, etc. The telecentre operation and potential users could not pay their contribution for the electricity bill, much less pay for their dial-up access. The project was therefore not sustainable. A year later, in collaboration with the World Food Programme (WFP)[9], we set up another centre in the remote rural trading town of Kihihi near the border of the DRC, starting with a solar-powered laptop and portable printer, connected to Internet by HF radio modem[10]. We later provided five desktop computers to the centre, after it was connected to the Kihihi Hospital diesel plant-on condition that the manager agreed to charge a fee for services, and that he would eventually pay $150 for each of the workstations. He did not charge fees consistently, never paid for the computers or Internet services we provided, and the centre eventually ceased to function.

The main focus of early telecentre pilot projects seemed to be finding out how ICT would benefit developing country communities. Sustainability issues could be dealt with later. Now an increasing number of evaluative studies[11] marked out sustainability as a vital component to success. Third parties were assessing our own work in this area[12] and case studies were being presented[13] at international conferences. A concept of how to develop telecentre "cookbooks" would soon follow[14].

By late-1998 Mengo's lab was connected by dial-up access to the Internet, and *telnet* was the rage. Groups of students, wide-eyed with excitement, gathered around the one computer connected to the Internet. It would be another six months before our demonstration lab at the Ministry was connected by spread spectrum microwave, and another two years before our team would network officials at Ministry headquarters and connect them to the Internet. We could then begin our quest to bring the information revolution to the widest number of people in Uganda through its schools[15].

SCHOOLS-BASED COMMUNITY INTERNET LEARNING CENTRES: A GOOD PLACE TO BEGIN

The comprehensive list of strategies for bridging the digital divide presented in the DOT Force Genoa Plan of Action[16] begs the question, "Where to begin?" The plethora of expert opinion contained in the action plan seems to underline yet another divide: "the disconnect between on-the-ground efforts and policy-making processes" (Bridges, 2003)[17]. Uconnect has consistently taken a "bottom-up" approach[18], with its "on-the-ground" initiatives, such as our schools project. Yet as the report suggests, both policy reform and the associated initiatives in the field will be more effective through better interaction between the two. Our NGO has striven to implement policy, working in close collaboration with policy makers, education ministry officials, aid agency experts[19] and business partners, to find out from experience in the field what works and what does not.

In the first year of the project Uconnect distributed hundreds of computers to sixty mostly rural schools. The fees received by schools for the computers were paying for the expansion of the project, purchase and shipping of several more containers of equipment and staff stipends. Relatively poor rural primary and secondary schools were queuing up to purchase computers. The proliferation of computer labs at rural schools was a good first step, but making that technology a tool for socio-economic development required a more comprehensive approach[20].

A report[21] by the United Nations telecommunications agency lauds the efforts of NGOs for providing computers and Internet connectivity to 70 schools[22] in Uganda. Yet the promise to bring the information age to remote rural schools in this sub-Saharan country remains largely unfulfilled. Connecting rural schools to the Internet-and through those schools to the people in the surrounding communities-was still the bottleneck, and cost is the main issue[23].

AFSAT's I-Way VSAT[24], an adaptation of the Hughes Network Systems (HNS) DirectPC satellite solution connects a handful of select rural schools to the Internet. But with a U.S.$2,500 installation fee, such an approach is not widely reproducible. We needed to find a more affordable[25] solution that facilitated an easy entry for a significantly larger number of schools.

Uconnect helped to pioneer a variety of connectivity solutions in Uganda. In collaboration with local partners, Uconnect tested a hybrid low-cost connectivity solution using receive-only DVB satellite, with an uplink provided by an appropriate technology, such as GSM or CDMA data.

In the meantime, Uconnect started to distribute remotely managed servers to those select schools whose labs were already permanently connected to the Internet. The project also began to guide teachers and policy makers at those schools towards creating schools-based community Internet training centres by opening their computer labs to the parents and public after school hours, offering services for a modest fee.

Uconnect, in its attempts to make the Internet available to the widest number of people in Uganda, has had to address a number of issues to do with sustainability, scalability and reproducibility. Social entrepreneurship, training local managers and trainers, supervision and project management by e-mail and selecting appropriate technical solutions are among the strategies that are outlined in the points listed below:

1. Demonstration of ICT for education at the Ministry headquarters;
2. The provision of refurbished low maintenance workstations with the schools providing transport for taking delivery;
3. The installation to their own Local Area Networks (LANs) by students and teachers after receiving training at Uconnect workshops;
4. The involvement of partners to provide low-cost Internet connectivity;
5. The provision of low-cost, professional, no-maintenance remotely managed servers for schools;
6. The training of staff for management of schools-based, community Internet training centres; and
7. The management of projects by Internet.