

PAN GLOBAL NETWORKING  
INTERNATIONAL DEVELOPMENT RESEARCH  
CENTRE (IDRC)

# **TELECENTRE EVALUATION**

## **A GLOBAL PERSPECTIVE**

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**Report of an International Meeting on Telecentre  
Evaluation**

**Edited by Ricardo Gómez and Patrik Hunt, IDRC**

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**FAR HILLS INN, QUÉBEC, CANADA**

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# PREFACE

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The contributions in this volume are the result of an international working meeting on telecentre evaluation, held at Far Hills, Quebec from September 28-30, 1999.

At IDRC, we have a strong interest in learning about the introduction and use of information and communication technologies for development. Among the various approaches to increase access to information and communication technologies (ICTs), telecentre experiences are mushrooming around the world. Despite important differences in location, ownership, funding, operation, technology, and services, common telecentre experiences and lessons are emerging. We do not attempt here to provide a unique model for telecentres. Instead, the idea is to foster the creation and dissemination of knowledge relevant to the design, operation and evaluation of telecentres.

IDRC supports a variety of telecentre experiences in Asia, Africa and Latin America; some represent collaborations with ITU, UNESCO, and other partners. A number of commissioned studies and papers have been prepared, and efforts toward systematic and useful evaluation frameworks and methodologies are currently being developed in Africa and Latin America. This global working session on telecentre evaluation has helped to create awareness about and strengthen these local, national and regional initiatives, while providing our partners in the South with an opportunity to exchange experiences and initial results with each other.

The objectives of this meeting were the following:

- To explore in depth the challenges and opportunities of telecentre evaluation in Latin America, Asia and Africa;
- To understand and compare emerging evaluation frameworks and methodologies;
- To assess the needs and resources available for telecentre baseline evaluation, monitoring, impact assessment, and to identify salient issues affecting telecentre performance;
- To provide an opportunity for telecentre operators, project leaders, and researchers to exchange experiences and lessons across regions.

These objectives may seem to be too simple for some. However, recognizing the emergent nature of telecentre issues, we preferred to start with humble expectations and work through a process of collective exploration and dialogue.

One of the major results of this meeting has been the creation of a dynamic network of committed telecentre practitioners and researchers. We have now developed a common language and understanding of the key issues surrounding telecentre evaluation, as well as some practical tools. Our sincere thanks go out to the meeting participants who have contributed their rich collection of telecentre knowledge, as represented here.

Ricardo Gomez, IDRC  
Ottawa, October 1999

## **The Output/Outcome/Downstream Impact Blues**

*by Terry Smutylo*

Let us tell you 'bout a word  
Getting too much use  
In development research  
It's prone to abuse  
It's become an obsession  
Now we're all in the act  
'Cause survival depends  
On the elusive... "impact".

### **Chorus:**

**Impact any place  
Impact anytime  
You may find it 'round the corner  
Or much farther down the line  
It may happen in a way  
That you did not choose,  
We got them output/outcome/  
Downstream impact blues.**

When donors look for impact  
They really want to see  
A pretty little picture  
Of their fantasy  
They've done with impact  
What donors often do  
Jump on a bandwagon  
Without thinking it through.

Now the donors say  
(And this is a fact)  
Get out there and show us  
Your impact  
You must change peoples' lives  
And help us take the credit  
Or next time you want funding  
You just might not get it.

### **Chorus**

Impact, they find,  
When it does occur,  
Comes from many factors  
And we're not always sure  
Which ones  
Came from who  
'Cause impact is the product  
Of what many people do

Hey donor wake up  
From your impossible dream  
You drop in your funding  
A long way upstream  
These waters they flow,  
They mingle and blend  
So who can take credit  
What comes out in the end?

# REPORT ON THE MEETING

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## **Guiding Principles of Telecentre Evaluation**

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The following synopsis is based on a brainstorming session involving all meeting participants, held at the conclusion of the gathering. It represents the group's collective determination of basic principles to guide our work in telecentre evaluation. Ideas were generated in response to this query:

***What basic, guiding principles will ensure that telecentre evaluation:***

- (a) is useful;***
- (b) is financially responsible;***
- (c) builds local capacity; and***
- (d) enables shared learning.***

### **Guiding Principles:**

#### **People-focused, participatory evaluation design, sensitive to gender and the local context**

(Focus on people, Participatory, Horizontal participation, Users and non-users, Contextually sensitive, Involve stakeholders early in the process, Build up from local cultural paradigms, Identify target groups, Enhance women's participation)

#### **Design the evaluation process to ensure quality and sustainability**

(Dynamic costing arrangements, Viable business, Constant quality of service with diminishing external support, Ensure that cost vs. resources are realistic)

#### **E=L2: (Evaluation = listen and learn)**

(Use available expertise, Listen!)

#### **Both successes and failures will be analyzed through the evaluation process**

(Learn from failure and innovation)

#### **The evaluation result will be disaggregated and used to conduct training workshops**

(Oriented towards strengthening and empowering practitioners and intermediaries, Builds capacity tools)

### **Clarify purpose**

(Make sure all stakeholders share a vision of what questions the evaluation needs to answer and how this information will be used, Focus on critical issues)

### **Use adaptable and replicable methods**

(Replicable research design, Easy to do, Evolving Design for local context and project, Variety of methods, Adaptable, responsive frameworks, Transcend project boundaries)

### **Ensure the process is open and transparent**

(Make it public!)

### **Design an Effective Mechanism to Communicate Results**

(Craft evaluation for intended audiences, Strategic partner impact, Report findings in appropriate multiple formats, Have appropriate learning incentives, Proactive feedback, Participation in regional international telecentre evaluation)

### **Include evaluation from the start and in all stages**

(Build evaluation into project design, Consider accessibility and equity considerations, Start from the objectives of the evaluation)

## **Key issues and concerns ... Synthesis and Direction**

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This section provides a synthesis of five key questions emerging from this meeting, including a collection of outstanding issues for each. This summary is based on the participants' "pre-meeting issues" (see listing further below) and a rich amalgam of dialogue, presentations, and more formal papers. The questions and related issues raised here require careful consideration and commitment in order to move this agenda forward.

The questions are:

### **1) Is a telecentre a good thing?**

*What is a telecentre?*

We acknowledged that there are many terms for a range of activities that generally include a public place offering telecommunications services, in the context of social development. It is important to note that the term 'telecentre' is not necessarily understood by many people aside from practitioners.

*What kind of "development" are we talking about?*

Telecentres may be seen as the vanguard of a new "colonization", extending the power and reach of trans-national corporations and forms of undesirable development.

*What are the intended and unintended consequences? (positive and negative effects)*

Telecentre operators and managers are surprised at some of the interesting and effective ways of using information and resources (e.g. creation of information resources in local languages, influencing the range and accessibility of public domain resources, opportunities to empower women through telecentre training, management, and use) that fall outside the original conceptions. If negative effects are reported (e.g. new divisions in communities where telecentres exist; stratification of users vs. non-users) evaluations should not ignore them. We need to know about failures, as well as success stories.

### **2) How can we improve and strengthen telecentre performance?**

Key areas to focus on:

- management
- training
- networking
- monitoring and feedback
- stakeholder involvement from the design stage.

We did not go into great detail on improving telecentre operations, but one of the primary purposes of evaluating is to do just that. The evaluation is usually pitched to the local participants as part of this improvement scheme. *Training* (identified as one of the most important factors for telecentre success) is critical and currently lacks adequate resources.

### 3) How to learn for the future?

We used the word 'learn' to situate evaluation in a learning, as opposed to a judging, environment.

Key elements:

- evaluation design, including data collection, reporting, and use (i.e. to enable shared learning, build local capacity, and be financially responsible);
- stakeholder involvement;
- clarification of questions;
- appropriate methods;
- interpretation;
- action.

### 4) How to share telecentre experiences and lessons?

- **storytelling** - as a powerful method of describing success and failure, as well as lessons learned;
- **Web-based clearinghouse** – to allow efficient dissemination of telecentre knowledge, experience, and tools; Note: this is a common suggestion and need in many knowledge domains, not just telecentres. However, its success will depend on commitment and resources, and on contributions and use by constituents. Even if a central organization maintains the server and provides a part-time Web editor, a telecentre Web site needs constant care and feeding by others;
- **electronic communication** - problems of e-mail overload, and sporadic participation in mailing lists that worked at the beginning and then became dormant, were reported. Nonetheless, it is generally recognized that these are still the most basic, widely available communication and networking tools;
- **future meetings and workshops** - if they are productive, people do want to meet again. Some expressed hope that a sponsor could help to defray costs, perhaps regionally if not internationally; other meetings (e.g. GKII in Malaysia) are also important for reconvening;
- **dissemination of collective knowledge** - the final copy of “Telecentre Evaluation: A Global Perspective” is to be made widely available in print and electronic formats;
- **collaborative research** – needs to be conducted on crucial issues such as evaluation and training.

### 5) Who are we?

By the very fact that we have now met, spent time together (both professionally and socially), and discussed issues of common interest indicates that we have formed **a network**, that can be sustained through the use of the tools we are promoting in our telecentres and through future face-to-face contact.

Key questions:

- Who evaluates?
- Who participates?
- Who benefits?
- Who decides?

The need for community-based, participatory evaluation was a recurrent theme with telecentre staff directly involved (through community consultation) in the shaping of service, by planning, collecting data, interpreting it, and taking action. All stakeholders need to be addressed through the evaluation. However, there is a trade-off between involving key partners at all stages and getting a project completed; a balance needs to be achieved.

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### **Pre-meeting issues:**

The following is a synthesis of a variety of comments, questions and issues raised by participants in preparation for the Telecentre Evaluation Working Meeting. We have condensed and grouped them into nine broad categories. This listing is not comprehensive; rather, it is meant to stimulate discussion and reflection, and to provide a sample of participants' thinking on telecentres.

### **Telecentres in general**

- What is a telecentre?
- What are its main technological and social features?
- How are telecentres different? (e.g. urban/rural, located in Northern/Southern countries, by cultures)
- Which are the most appropriate choices/options between technologies and social changes?
- What are the cultural adaptations that will be required in order to realise the promise of sustainable human development from telecentres?
- Different social contexts demand different community approaches, in order to secure the success of a telecentre project.

### **Management**

- What types of institutions (private, public, community-based, multi-sectoral groups), should implement telecentres?
- Who should manage the telecentres?
- What role should key groups have?
- What kind of work is necessary to ensure and strengthen community participation in the conception, management and use of telecentres?

- What about telecentre workers?
- What makes for a favourable social, cultural and economic environment for them?
- The programmatic sustainability and economic viability of telecentres.
- How to reconcile the need to run a centre like a business (and survive) and also address equity issues.
- How are telecentres introduced and promoted (e.g. via local print and electronic media, community leaders, government officials, NGOs) in the community?
- Attracting potentially active users; bringing in users who feel they can't benefit much from the MCT services.

### **Information**

- Generating appropriate content useful to community groups (e.g. women, young people, farmers, children).
- How important is local content and languages?; What efforts have been made to tackle this issue?
- How to mitigate the negative influences of information on people's cultures, beliefs, values and religions?
- Targeting both the literate and illiterate population's needs.

### **Policies**

- Do government policies encourage or restrict telecentres? Are there regional differences?
- Have telecentres changed government policies/thinking with regard to access to local and external information sources?
- What is an appropriate regulatory framework for achieving widespread effectiveness of telecentres?
- How should telecentre operations be folded into existing national policies for ICTs?
- What preconditions must exist for telecentres to be effective?
- There is a need for comparative frameworks and up-to-date databases of Government Regulatory Agencies; generic contracts and strategies for negotiating with regulatory agencies and technology service providers.

### **Uses and users**

- Are telecentres "requested" by communities or are they "introduced"?
- In each case, are there differences in use and acceptance?
- What type of information is really of use to, or most wanted by, local communities?
- Who are the main users (young people -- teens and younger, 20s, 30+ etc.), in what proportions, and are there differences between males and females (especially with teen groups)?
- Why are they using the telecentre? (e.g. collect information, contact family, share information with others, conduct business etc.)
- What do users actually do with the information they obtain and are there measurable changes (and how do you measure these)?

- How to determine user information needs?

### **Training**

- What type of training is needed for users and staff? What are the key things that need to be learned? Who can best provide this training?
- Possibilities to exchange telecentre knowledge through on-site visits (might be better and fruitful to work in other Telecentres for certain time of period).

### **Methodology**

- Development of on-line tools (e.g. statistic management) and training materials.
- To develop a methodology on determining of the below mentioned questions as we need for it to frame and define our job results:

Why the people need for Telecentre?

If Telecentre affects to the people's life and assists indirectly/directly for their improvement?

How we will define the indicators for it and how will measure this kind of factors?  
etc.

- Dealing with technology (the strongest component of these type of projects) needs a particular attention to cultural issues in the training, promotion and use of the telecentres.

### **Impact**

- What examples are there of telecentres that have been unsuccessful?
- Why where they considered to be less than a success, and what factors lead to their poor performance?
- What evidence is there of local changes (in knowledge, attitudes, practices) due to telecentres and the information that is made available.
- Do telecentres lend themselves to marketing and selling/purchasing of goods and services between rural and urban areas?
- An appropriate role for appropriate evaluation guidelines, strategies and practices vis-à-vis planning and implementation: not too much, but less so too little too late. Need for continuing evaluation as a daily learning and improvement set of tools; thus, all the capacity-building and conducive conditions implicated.
- How successful are telecentres in connecting communities with access to new communication technologies.
- What constitutes the successful functioning of a telecentre from a gender and development perspective?
- Do telecentres provide democratic and equitable access for women to information relevant to their lives; can they improve the quality of women's lives.

## **Sharing experiences**

- To create a special web-site on Telecentre issues; establish an integrated communication channel and basic rules for the sharing of experience.
- Organise co-operative work toward the production of a standard package for preparing business plans, management control, monitoring and evaluation with a view to allow for the collection of a minimum set of comparable data.
- Organise co-operative work toward the production of a telecentre primer for leaders of grassroots organizations in order to help them effectively participate in the design, management, monitoring and evaluation of these facilities.
- Outline initiatives with a view to facilitate doctoral students participation in telecentres design and evaluation (especially for students from developing countries).
- Profiles of emerging technologies.

## **Telecentre Evaluation and Research: a global perspective (R. GÓMEZ, P. HUNT, E. LAMOUREUX)**

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*International Development Research Centre (IDRC), Canada  
September 1999*

*Telecentres are now the focus of much attention in international development discourse. Hailed as the solution to development problems by providing desperately needed access to information and communication technologies (ICTs), telecentres are springing up in Africa, Latin America and Asia. This paper is exploratory in nature, examining the notion of telecentres under a critical light and the diversity of experiences emerging. It calls attention to the need for evaluation of telecentre impact on communities, while examining some of the preliminary assessment efforts underway in Africa, Asia, and Latin America. Finally, avenues for new research are suggested in order to foster greater understanding of the role of ICTs in international “development”.*

### ***The role of ICTs in development***

The effect of the application of information and communication technologies on development efforts is far from clear, according to the United Nations Commission on Science and Technology for Development (UNCSTD), which recently spent three years investigating the benefits and risks of ICTs. The Commission found that “... there are many instances where the use of ICTs is bringing widespread social and economic benefits. However, there are as many instances where ICTs are making no difference to the lives of people in developing countries or are even having harmful effects” (Mansell and Wehn, 1998, 1). Furthermore, emerging studies show that many of the claims being made about the potential of ICTs for development are not supported, and point to possible counter-productive effects (Gómez, 1998; Heeks, 1999; Wilson, 1999).

While it is generally agreed that there exists potential for the use of ICTs to support social development, a major stumbling block — common to both developed and developing countries — is how to assess the impact of ICT applications. A variety of factors account for this problem, including the sheer complexity of the task of measuring the impact of information on development (Stone and Menou, 1994), and “the lack of appropriate indicators of impact, combined with the absence of the financial resources in some developing countries to collect the relevant data” (Mansell and Wehn, 1998, 14). Furthermore, UNCSTD has identified “... a growing literature on performance indicators that seeks to *assess the impact of ICTs from the perspective of specific user communities* rather than attempting to quantify the overall impact of investment in ICTs on the economy” (emphasis added) (ibid., 15). Until relevant methodologies and adequate tools are developed to effectively assess the social impact of the application of ICTs for sustainable development from the user’s perspective, efforts to demonstrate how people are empowered by knowledge will lack credibility.

Given these considerations, the broad issues identified by UNCSTD as ICT opportunities for developing countries, including new types of learning and education, a 'wired' civil society, new forms of commerce and trade (Credé and Mansell, 1998), among others, all provide hints of tremendous potential. However, the discourse surrounding the introduction and use of ICTs often accepts uncritically the euphoric claims that they will finally help to solve persistent development problems, and ultimately bring about a brave new world replete with electronic commerce and online democracy. The promise and power of the "Information Age" are most often and eloquently articulated by proponents such as U.S. Vice President Al Gore:

" ... we have promoted universal service to basic telecommunication services, because the ability to pick up a phone or hook up a computer and have instant access to your village, your nation and your world is one of the most liberating and empowering forces in human history, and it should be available to all people" (ITU News, 1998, 4).

This sort of rhetoric suggests 'technological determinism' (i.e. the inevitability of technological influence on society, rather than the reverse). It is related to an implicit threat to "get wired, or else" based on the conclusion that "Although the costs of using ICTs to build national information infrastructures which can contribute to innovative 'knowledge societies' are high, the costs of not doing so are likely to be much higher" (Mansell & Wehn, 1998, 7).

Critics of this perspective approach the issue from broad historical and cultural perspectives, exploring the extent to which the trend to 'wire' developing countries is simply the latest iteration of neo-modernization theory (Escobar, 1995; Sachs, 1992; Jackson, 1999; Heeks, 1999; Jackson and Mosco, 1999). At issue is not only the appropriateness of ICT application in the development context, and the effect on the political economy of specific cultures. There is also a general lack of recognition of the "development opportunity costs" (i.e. attention, money, and other critical factors that are not applied to secure and develop other resources, such as water, food, land, shelter, skills, other types of media and communication, indigenous knowledge, and ultimately power) of investments in ICTs (Heeks, 1999, 16). Critical perspectives of dominant "development" paradigms are informed by the fact that "the modern world, including the modernized Third World, is built on the suffering and brutalization of millions" (Ashis Nandy, quoted in Escobar, 1995, 213).

These considerations are useful in understanding and placing in context national and international policy pertaining to ICTs, as well to situate the work of telecentre practitioners and researchers within a broad, global perspective. They also serve to bring sober second thought to bare on the assumption that the global "Information Revolution" will be "positive and progressive" (Wilson, 1999, 1). For instance, an historical examination of the introduction and use of earlier technologies such as the telegraph and train demonstrate their roles in colonizing and marginalizing certain societies in a rapidly changing global economy<sup>1</sup>.

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<sup>1</sup> See Peter Benjamin & Mona Dahms, "Socialise the modern of production - The role of telecentres in development", in this volume.

Does nascent telecentre activity, in the context of globalization, represent the latest wave of colonization based on technology?

### ***Telecentres under the spotlight***

In the international development sphere, the promise of information and communication technology is often promoted as a solution to broad, problematic issues such as the lack of universal access to telecommunication services for a majority of the world's people. In practice, this promise has increasingly taken the form of projects to build public-access facilities to provide electronic communication services, especially in marginalized or remote areas where commercial development of ICTs is not prevalent.

IDRC's experience in information and communication is informed by research it has supported in the following areas:

- impact of information on development (Menou, 1993; McConnell, 1995);
- evaluations of initiatives which involve ICTs (Graham, 1997; African Information Society Initiative, 1999; Menou, 1999); and
- development of evaluation and assessment methodology (Lanfranco, 1997; Menou, 1993, see especially Chapter 6: Preliminary Framework for Impact Assessment).

This body of work constitutes an important component of the Centre's information policy research, with "... potentially profound implications for increasing awareness and understanding of the role, value, and impact of information on development (and decision-making in general)" (Valentin, 1996, 101).

There are a great variety of telecentre experiences around the world, many of them drawing on earlier efforts to establish 'telecottages' and telecentres in Europe and North America. While these diverse initiatives have been given many names (Cisler, 1998) — including telecentres, telecottages, community technology centers, community communication shops, village knowledge centres, networked learning centers, multipurpose community telecentres, digital clubhouses, *cabinas públicas*, *infocentros*, *telecentros*, *espaces numérisés*, *telestugen*, community access centres, etc. — the word 'telecentre' serves as a generic term to encompass this array of experiences.

While there is no single definition of telecentres to satisfy everyone, a common characteristic is a physical space that provides public access to ICTs for educational, personal, social, and economic development. Based on the premise that not everyone in the world has access to a telephone, much less a computer, fax service, Internet connection, or relevant information resources, telecentres are designed to provide a combination of ICT services. These range from basic e-mail to full Internet/World Wide Web connectivity, with additional services that may include fax and word processing, to specialized information retrieval or applications such as tele-medicine or distance education.

A basic typology of telecentre models — "Basic", "Franchise", "Civic", "Cybercafe", and "Phone Shop" —, drawing on examples from Africa, Asia, and Latin America, was

developed in an earlier version of this paper, in order to begin to understand the range of experiences currently being developed under the generic telecentre label (Gomez, Hunt, Lamoureux, 1999). As that paper was taking shape during the first few months of 1999, a parallel project saw the construction and initial seeding of the IDRC Telecentre Research Web site<sup>2</sup>. This online resource centre is intended as a useful gateway to telecentre projects, tools, research, discussion, and knowledge, focusing in particular on IDRC-related experience in this field.

Telecentres are being introduced as a development tool to bridge knowledge, social and economic gaps, frequently characterized as a widening chasm between the 'information rich' and 'information poor'. To date, there is a growing, yet still limited, body of knowledge on how to plan and implement telecentres (Fuchs, 1998a; International Institute for Communication and Development, 1999), as well as documented case studies (Fuchs, 1998b). However, since the idea of utilizing telecentres to support development efforts represents a novel concept, only now is significant consideration being given to the difficulty of evaluating their impact.

### ***Learning from experience: Africa***

Evaluating the social impact of telecentre experiences in the communities they are intended to serve is no easy task. To date, more resources have been dedicated to setting up pilot telecentres than to understanding their uses and impact on the communities they purport to serve, while few efforts are specifically addressing the problem of evaluation. Perhaps it is more appropriate, to turn the relationship between technology and people upside down, to ask this question: What impacts are communities having on the identification, design, and use of ICTs?

Early tentative steps in the field of telecentre implementation and evaluation are now underway. IDRC's ACACIA program initiative<sup>3</sup> seeks to empower sub-Saharan African communities with the ability to apply information and communication technologies to their own social and economic development. Telecentre projects have been introduced in various African countries. In addition to describing the diverse telecentre experiences being supported by ACACIA in Africa, the ACACIA Telecentre Evaluation Framework (Whyte, 1998) outlines basic guidelines to evaluate this array of experiences. The framework is aimed at addressing fundamental questions about the role of ICTs as catalysts for community development, as well as more specific examination and identification on the ways in which community participation or different management models constitute success factors in the operation of telecentres.

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<sup>2</sup> <http://www.idrc.ca/pan/telecentres.html>

<sup>3</sup> <http://www.idrc.ca/acacia/>

A recent ACACIA publication<sup>4</sup> provides a detailed approach to telecentre evaluation, including development of a research plan, formulation of indicators, and methods for data collection. This study is based on a larger report, *Acacia Research Guidelines for Assessing Community Telecentres* (Whyte, 1999), to be published by IDRC this year.

Linked to this work is the collective effort to devise a framework for the evaluation of Multipurpose Community Telecentre (MCT) pilot projects by a partnership of the International Telecommunications Union's (ITU), the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and the International Development Research Centre (IDRC) (Ernberg, 1998b). This evaluation framework is being implemented and enriched in collaboration with the PACT Institute, through the study of telecentres in Mali, Uganda, and Mozambique.

The goal is to design a common framework for the evaluation of the MCT telecentre experience, including the formulation of indicators and tools<sup>5</sup> appropriate to the evaluation of impact. Taking the evaluation beyond the collection and analysis of data and turning it into a community empowerment tool which serves as an example of Participatory Monitoring and Evaluation (PM&E)<sup>6</sup>, PACT is in the process of establishing a results-oriented learning system for MCT operations as an integral part of the evaluation process (PACT Institute, 1998a)<sup>7</sup>.

In Timbuktu, Mali, a combination of baseline data collection techniques have been employed (e.g. survey questionnaires, interviews, and focus groups) to provide "... a rich snapshot of Timbuktu's current information and communications profile" (PACT Institute, 1999a, ii). Findings include:

- Telephone use is greater than expected;
- Radio, television, and newspapers are the most prominent media used;
- Low satisfaction with the availability, cost, and reliability of basic information;
- Information priorities include education, professional development, religion, health, news, and sports;
- External information is important, but so is local self-expression (i.e. telling Timbuktu's story);
- Lack of concern over external information's effect on local culture;
- Differences in communication use, according to gender, income, education/literacy, and age;

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<sup>4</sup> Anne Whyte's "Understanding the Role of Community Telecentres in Development - A Proposed Approach to Evaluation" in this volume.

<sup>5</sup> see <http://www.idrc.ca/pan/evaluation.html#TOOLS> for an example.

<sup>6</sup> see, for example, Institute of Development Studies (1998, November). "Participatory Monitoring and Evaluation: learning from change". Brighton, University of Sussex. Available: <http://www.ids.ac.uk/ids/publicat/briefs/brief12.html>

<sup>7</sup> see also George Scharffenberger's "Telecentre Evaluation Methods and Instruments: What works and why?", in this volume.

- Community enthusiasm for the MCT; expectation of reduced communications cost, better access to professional information, opportunities for community expression, and links to external partners and markets;
- Community suggestions for MCT success: low-priced, quality services; a welcoming staff; training and support for users; a well-managed Centre. (ibid., ii-iii)

A range of challenges face this project as it becomes operational. The researchers identify in particular “The MCT’s broad economic development, educational, health and equity objectives on the one hand, and its sustainability and replicability imperative on the other, create a difficult marriage” (iii). Other researchers concur with the need to carefully handle these diverse telecentre “experiments” and suggest less emphasis on immediate profitability and more focus on the crucial role of evaluation and monitoring, especially when the telecentre is specifically designed to be accountable to the community it serves<sup>8</sup>.

A similar PACT evaluation exercise is underway in Nakaseke, Uganda and the preliminary objective of conducting a baseline survey of the community has been accomplished (PACT Institute, 1999b). An interesting component is the emphasis on participatory techniques, as exemplified by the training of “core users” and telecentre staff to collect research data on an ongoing basis for evaluation purposes. The result is the development of a three-week data collection methodology and training process which “... incorporates a powerful set of tools to better understand the informational needs of telecentre communities” (ibid., ii). Of interest as well is the emphasis placed on the training of community youth “to serve as ‘informational links’” (xv).

### ***Learning from experience: Asia***

IDRC’s PAN Asia Networking<sup>9</sup> program draws on considerable experience collaborating with local partners on ICT research and development. Infrastructure and content provision are two fundamental program components, with Internet Service Provider (ISP) partnerships and information servers in place in several Asian countries.

Telecentre development and research is a relatively new endeavour. Currently, IDRC is funding a project called Internet Access by Remote Communities in Sarawak: The Smart School as a Demonstrator Application. As in Africa, baseline studies are being used to “... establish yardsticks for key indicators of the community-related variables which we expect to influence. These include; community socio-economic factors, awareness of information technology among the community and among teachers and pupils, and cultural factors

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<sup>8</sup> Peter Benjamin & Mona Dahms, “Socialise the modem of production - The role of telecentres in development”, in this volume.

<sup>9</sup> <http://www.panasia.org.sg>

relating to the world-view of the community as well as its relationship with information” (Harris, 1999)<sup>10</sup>.

Aside from providing an interesting test of the telecentre model in a particular Asian setting, the Sarawak project will shed light on the role of ICTs in national and international development policy. It is also of interest in exploring the political and social implications of Malaysia’s Vision 2020 program, and the influence of the Silicon Valley (California) example on Southern countries (Jackson and Mosco, 1999).

In Southern India, a dynamic, IDRC-supported project is underway to design an ICT-based model to promote sustainable rural development under the guidance of the M.S. Swaminathan Research Foundation. Extensive community consultation has resulted in the establishment of “village knowledge centres”<sup>11</sup>, which focus on content creation and information dissemination (including databases in the Tamil language) pertaining to health, local demographics, transportation, government programs, crop and agricultural input prices, and pest management.

A host of other telecentre projects are now unfolding in Asia, including IDRC-supported activity in the Philippines<sup>12</sup> and Mongolia<sup>13</sup>.

### ***Learning from experience: Latin America and the Caribbean***

IDRC’s PAN Global Networking initiative has recently launched a research program to investigate telecentre activities in Latin America and the Caribbean (LAC). A preliminary inventory shows that certain LAC countries, such as Peru and Mexico, have made some progress in establishing telecentre service. Networks of telecentres have been created (or are underway) in Peru (190 telecentres), Mexico (23 telecentres created in 1995, but only 5 operating now; others are in the planning stages), Paraguay (8 telecentres), and El Salvador (some 100 *Infocentros*, to be created based on the *Conectándonos al Futuro* project). Apart from these networks, a range of diverse telecentre activity is underway in several countries.

### **Latin America Telecentre Survey**

In February of 1999, IDRC conducted a survey of a group of telecentre operators to collect basic data on current experiences of public access to ICTs in Latin America. The results confirmed that telecentre activity in the region is quite new and in an experimental phase.

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<sup>10</sup> For a more recent report, see Roger Harris’s “Evaluating Telecentres within National Policies for ICTs in Developing Countries”, in this volume.

<sup>11</sup> For more details, see Venkataraman Balaji’s “Knowledge System for Sustainable Food Security” in this volume.

<sup>12</sup> See Merlita Opena’s “Multipurpose Community Telecenters in Selected Philippine Barangays”, in this volume.

<sup>13</sup> see Narangerel Dandar “Establishing a Public Internet Centre in Rural Areas of Mongolia”, in this volume.

Although the wide range of telecentres — which includes all typology types, from cybercafes and basic telecentres to franchise models — examined in the study and the relatively small number of respondents (23) make it difficult to draw firm conclusions from the results, certain tendencies can be observed.

- **Funding** - Latin American telecentre pioneers received very little funding from government and international sources. Indeed, the region's first telecentres were funded by the local private sector or by communities and local NGOs.
- **Users** - Students appear to be the main users of telecentres, as 82.6% of respondents indicated that students made use of their facilities. Some of the more recent telecentre projects target marginalized populations and are located in remote and poor areas. These generally offer basic services, often receive international funding and face financial sustainability challenges.
- **Obstacles** - Financial and technical difficulties appear to be the most significant problems facing telecentres. In big cities, telecentres tend to rely on revenue from the sale of computer-related services. In more isolated areas, other funding solutions are found, such as advertising, private sector partnerships, craft sales, payment for Web site services, and production and sale of videos. Technical problems often result from deficiencies in telephone networks.
- **Networking** - 30% of respondents reported no contact with other telecentres. The ten who did have contact were either members of a network of telecentres under a franchise model, or funded by governments or international organizations that supported other telecentres either in the region or internationally.

While the novelty and diversity of telecentre experience in the region may complicate study and evaluation of impact, it also reveals a certain vitality. The respondents probably represent a small proportion of LAC projects involving public access to ICTs. Other experiences — which also need to be considered for research — may not identify their operations as telecentres or may have a vision of the role of ICTs in the development process that goes beyond the concept of a telecentre.

Meanwhile, no systematic evaluation of social impact related to telecentre use has been undertaken in LAC to date. This need is now being addressed with the imminent creation of a Latin American Telecentre Research Network, coordinated by regional participants with the support of IDRC. Over the past several months, an extensive online consultation involving key players in LAC telecentres was conducted by Karin Delgadillo of ChasquiNet<sup>14</sup>. The task was to formulate a strategy to build a telecentre support, research and evaluation network over the next few years.

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<sup>14</sup> Karin Delgadillo and Raúl Borja, "Learning Lessons from Telecentres in Latin America and the Caribbean", in this volume.

The Peruvian Scientific Network (Red Científica Peruana - RCP) is one of the members of this new network, given RCP's experience as a founder of the largest network of telecentres in the world. RCP has developed a comprehensive Universal Access Model<sup>15</sup> based on its first the *Cabina Pública* back in 1996, an approach which challenges the North American conception of a computer per household equipped with Internet access. Instead, RCP offers an alternative franchise model of telecentres based on community access and needs, operating according to market principles to achieve sustainability.

In contrast, the pace of telecentre development in countries such as Colombia<sup>16</sup> and Ecuador is more measured, where the influence of societal upheaval and particular social movements are especially significant. While preliminary, yet important, evaluation efforts have now taken place, much remains to be done in that regard.

### ***Alternative communication in Latin American***

Any initiative regarding communication research in Latin America must build on the long and rich history of community media (e.g. radio) found in the region. For decades, community media activists have been working toward social objectives which telecentre practitioners are now focusing on. Given the general lack of experience in the field of telecentres, the contributions of other community media researchers and activists can enrich this work, especially in the areas of evaluation and creation of relevant local content.

In addition, the border dividing telecentres and community media is porous. Excluding other forms of community media from a regional research effort on telecentres would overlook the fact that the Internet and related 'new' technologies are complements to existing media already active in the region. The task now is to determine the extent to which this technology has a positive role to play in addressing endemic social problems.

IDRC is now funding research to experiment with Internet use to help strengthen community radio stations in Latin America and the Caribbean. The RadioNet project, for instance, headed up by the World Association of Community Radio Broadcasters (AMARC), focuses on training and the exchange of information among community radio stations in LAC. Some thirty regional stations are targeted for Internet access over the next two years. Related research is also underway, concerning the comparative evaluation of telecentres and community radio in Latin America<sup>17</sup>. The idea is to gain a better understanding of the phenomenon of converging media on communication processes and social groups.

The history of Latin America illustrates the importance of a wide range of social movements in forging space for alternative political expression. These movements challenge state

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<sup>15</sup> see Yuri Herrera Burstein's "Universal Access Model" in this volume.

<sup>16</sup> See Luis F. Baron's "Experiments in community access to new communication and information technologies in Bogota", included in this volume.

<sup>17</sup> See Emmanuelle Lamoureux's "RadioNet: Community Radio, Telecentres and Local Development", in this volume.

economic and political models which are seen as responsible for the “reversal of development” underway since the early 1980s in many Latin American countries (Escobar, 1992, 1-2). Social movement strategy includes attempts by marginalized groups to gain social recognition, forge identities, and create political spaces of expression.

The crisis of development in the region, particularly from the late 1960s, is attributable to the failure of the post-World War II development model. This model continues to be based on rapid industrialization, the technological transformation of agriculture, and cultural modernization (“adopting a rational, scientific, and secular approach to social life”), and is characterized by increasing violence and social exclusion<sup>18</sup> (ibid., 1-4; Sachs, 1992).

One example which hints at the potential inherent in alternative communication is a telecentre project located on the fringes of Mexico City, in community and cultural centres, public libraries, and the office of an indigenous group. The project was designed to produce and provide access to local and national information (e.g. online maps indicating municipal boundaries, and private and communal properties, historical and ethnographic information, forestry regulations, and crop prices), as well as open up communication channels (via e-mail and fax) to government officials and businesses. Of particular interest is the social context surrounding this initiative, as well as follow-up telecentre activity being planned based on what is now understood<sup>19</sup>. This effort comes at a time when millions of poor Mexicans are reeling from a programme of economic liberalization amidst stirrings of political challenge to the oppressive, single party state that has ruled for decades. As explained by the project coordinator, Scott Robinson:

... the Mexican telecenter initiative is only partially about computers and Internet connectivity. Its principal focus is on information policy -- the availability and use of public domain information to strengthen participation in public policy debates, improve municipal administration and resource management, and create new opportunities for learning ... (it) is developing in tandem with a broader movement toward democratic reform. (Robinson, 1999, 1)

### **A Research Agenda for Telecentres**

Despite the euphoria surrounding ICTs and development, as yet there is little understanding of the role of telecentres in social development. Many projects are still in an embryonic stage and interest in their evaluation is preliminary. To compound the situation, we still do not possess solid evaluation tools and comparable results to guide us. These considerations will need to be addressed in due course. Concerted effort is required in a number of areas to conduct in-depth research on:

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<sup>18</sup> see, for example, the difficult context which community telecentres in Colombia are attempting to operate under, described in Luis F. Baron's "Experiments in community access to new communication and information technologies in Bogota"; included in this volume.

<sup>19</sup> See Scott Robinson's "On Estimating Telecentre Demand in Mexican Rural Municipios" in this volume.

- the demand by people for telecentre services;
- community involvement, participation and use;
- gender and cultural issues;
- training needs and materials;
- marketing and operation;
- policy, trade and regulatory issues;
- technological choices and developments;
- sustainability;
- the social impact of telecentres, including identification of the conditions “under which ICT contributes to equality or inequality” (Wilson, 1999, 35);
- the role of ICTs in the “development” process itself.

The context for research on the social impact of information and communication technology is extremely important, as indicated by the recommendations offered by Paul Attewell of the City University of New York:

- 1) future research should pursue empirical studies of existing technologies in real settings, as distinct from speculative or purely theoretical exercises;
- 2) care should be taken to include representative organizations/settings, not just cutting-edge or high-tech ones;
- 3) studies of unintended consequences of IT, such as failures and discontinuance, are important for what they tell us about these technologies and about the process of change more generally. Researchers should be interested in the full range of “impacts” – intended and unintended;
- 4) projects aimed at developing prototypes should routinely include a performance assessment of evaluation, and the latter should be conducted at arm’s length from the former;
- 5) contextual variables should be studied rigorously ... ;
- 6) we should reconceptualize what we are doing as social and economic studies of computing and communication technologies rather than technology impact studies, and try to avoid technological determinism. (National Research Council, 1998, 136)

These considerations need to be taken into account when designing telecentre research. The contributions presented in this volume are especially useful in shaping the research context and practice, as they explore and illuminate issues and questions raised by telecentre evaluation. In turn, the participants at this international meeting have advanced the process of fashioning approaches and answers by contributing their knowledge, experience, methodologies, tools, and stories.

Meanwhile, initial results from telecentre evaluation efforts<sup>20</sup> may paint a picture that is perhaps not as bright as we are led to believe by the euphoric discourse surrounding ICTs for development. A variety of initiatives now underway, such as the example from Mexico, aim to change the outlook. However, we should not be surprised if the results of future evaluations are not as positive as many people expect. In the meantime, communities in Latin America, Asia, and Africa provide fertile testing grounds to assess the social impact of information and communication technologies.

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**Ricardo GOMEZ**

Senior Program Officer - Social Impact of Information & Communication Technologies  
International Development Research Centre (IDRC)  
250 Albert St., PO Box 8500, Ottawa, Ontario, K1G 3H9 CANADA  
Phone: +1(613) 236 6163 ext. 2546  
Fax: +1(613) 567 7749  
rgomez@idrc.ca  
<http://www.idrc.ca/pan/telecentres.html>

**Patrik HUNT**

Research Associate  
International Development Research Centre (IDRC)  
250 Albert St., PO Box 8500, Ottawa, Ontario, K1G 3H9 CANADA  
Phone: +1(613) 236 6163 ext. 2208  
Fax: +1(613) 567 7749  
phunt@idrc.ca  
<http://www.idrc.ca/pan/telecentres.html>

**Emmanuelle LAMOUREUX**

Graduate student  
Norman Paterson School of International Affairs, Carleton University  
1125 Colonel By Drive, Ottawa, Ontario CANADA  
Phone: +1(613) 520-6655  
Fax: +1(613) 520-2889  
manouva@hotmail.com

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<sup>20</sup> See, for example, Khumal, 1998, as well as Luis F. Baron's "Experiments in community access to new communication and information technologies in Bogota" (in this volume).

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# **PARTICIPANT CONTRIBUTIONS**

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## **Knowledge System for Sustainable Food Security (V. BALAJI)**

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*M.S. Swaminathan Research Foundation, Chennai, INDIA*

The information villages research programme has now been renamed “Knowledge System for Sustainable Food Security” to reflect the growing international and national interest (e.g. the Systems Review Process in the CGIAR; the NATP in India) in the role modern information and communication technologies can play in promoting sustainable agriculture. Organised as an experiment, the project aims at building a model for the use of ICT in meeting the knowledge and information requirements of rural families taking into account the socio-economic context and the gender dimension. The model would further enable the understanding of the extent to which effort should be made to transform generic knowledge into locale-specific knowledge that can be acted upon. The project has established a hub at Villianur village where value-addition activity is carried out, so that generic knowledge is transformed to become relevant or useful in the local context.

The value-addition centre at Villianur has access to the Internet through two dial-up accounts. This also functions as the hub of a local area network for data and voice transmission covering the project villages. An EPABX, similar to the ones used in offices for providing intercom facility, is the key instrument in this hub. Every location on the network, including the office at Villianur, is a node in this “intercom” network, which functions with VHF radio (full duplex) rather than copper wires as the medium of signal transmission. With the help of regular modems, PCs can be connected to this network.

As of June '99, village knowledge centres (earlier termed “information shops”) have been set up in four places other than Villianur. The locations are Kizhur (21 km west of Pondicherry) Embalam, (19 km southwest), Veerampattinam (13 km south) and Pillayarkuppam (13 km northwest). Prior to setting up these Village Knowledge Centres, participatory rural appraisal was carried out in 14 hamlets.

In each case, the community has identified and provided an accessible place and 2 – 4 volunteers. A gender expert, supported by the Gender Matters Award of IDRC, was invited to participate in the inception stages to ensure that gender sensitivity was built into all the operations. All the identified volunteers and the project staff were also given orientation to the importance of incorporating gender sensitivity, through a workshop. The gender composition of volunteers is as follows: Kizhur – 1M : 1F; Embalam – 4F (all); Veerampattinam – 2F:1M.

During the first phase, the volunteers have been trained in all the basic operations of using a PC running MS WINDOWS 95. They are also familiar with despatch/receipt of messages using MS-EXCHANGE which was found to be the optimal protocol for use on the analog wireless network. In addition, they have been trained in composing documents on MS-WORD 97 (using I-LEAP

Tamil fonts and the keyboard layout developed by C-DAC, Pune). Training in elementary maintenance, such as defragmentation of hard disk, has also been provided. It was found that a period of two weeks is necessary to train a volunteer in all these operations, given that he/she has not seen a PC before and that the level of education is limited to 10 years in school. A small number of volunteers, on their own, have picked up the use of HTML; the techniques of recording voice in \*.WAV format and the compression of \*.WAV files using REALAUDIO for ease of transmission of voice as an e-mail attachment. The trainers were the project staff with occasional help provided by the staff of the Informatics Centre.

Content creation to suit local needs is the key element in this project. Prior to commencing content-building activity, extensive consultations were held with the participating village communities, through small groups. It emerged that provision of dynamic information on prices and availability of inputs for cultivation – seeds, fertiliser or pesticides – was important to all farmers, especially the medium and small farmers. Knowledge of grain sale prices in various markets in and around Pondicherry is critical to farmers during the harvest season. The agricultural labourers, especially women, whose wages are partly in grains, are also anxious to know the sale prices. Detailed surveys revealed that women in rural families are interested in obtaining health-related information, particularly concerning disorders in the reproductive tract, and in child health. The village centres, according to them, should provide such information in a substantial way. Also emphasised by them is the need for information on opportunities to augment income, such as training in new skills in manufacture (e.g. incense sticks). There is near consensus that the village centres should provide all information on public schemes for rural welfare and the government's list of eligible families living below the poverty line.

The value-addition centre in Villianur has generated a number of databases to fulfil at least some of these requirements. These are:

- Entitlements to Rural Families  
This database provides details of about 130 schemes which are operational in Pondicherry UT during the current Plan (up to 2002).
- Families Below Poverty Line  
The details of families in the communes of Ariyankuppam, Villianur and Nettapakkam have been provided in this database which has been compiled from the UT Administration and updated till April '99. Approximately 22,000 families are listed.
- Grain prices in Pondicherry region
- Input prices (quality seeds/fertilisers) in Pondicherry region
- Directory of general and crop insurance schemes
- Integrated Pest Management in rice crop
- Pest management in sugarcane crop
- Directory of hospitals and medical practitioners in Pondicherry–Grouped with specialisations such as orthopaedics, paediatrics etc.
- Bus/train timetables–Covering Pondicherry region and two nearby towns.

These databases in Tamil (except the families below poverty line data, which is an official document in English) are available in all the village centres. Updates are transferred using the wireless network. In addition, interactive CD-ROMs for health-related issues have been developed, where FAQs (frequently asked questions) are posed to medical practitioners, whose replies are videographed and converted to REALVIDEO format for retrieval using a PC. Topics related to general hygiene, dental and oral hygiene, and eye have been covered. (Videography was conducted in health camps organised by the village communities). Veerampattinam is a coastal village with 98% of the families involved in fishing. The information requirements in this village are different and more focused on the safety of fishermen while at sea, on fish/shoal occurrence near shore, and on techniques for post-harvest processing.

In addition to such defined content, daily transactions take place covering important public events and government announcements (of significance to rural families). Cricket information is much sought after through well known Web sites. One important service provided is the announcement of results of 10th and 12th standard examinations during June '99. The results and the marksheets were available on the WEB, and these were made available to a total of 931 students resident in and near the project sites, cutting short the time of waiting by at least one week.

An analysis of users' registers maintained in the village centres reveals that the proportion of women users varies from 34% (Kizhur) to 50% (Embalam). The proportion of users who are below the poverty line is 16% on the average (the average proportion of rural families living below poverty line is about 21%). Just over 60% of the use is for voice telephony, indicating that voice is still the important medium for transactions in rural areas. It is found that there is increasing differentiation in the information sought over a period of six months (e.g. not only input prices but their availability ex-stock in a specific period; the differences between committee-fixed sale prices and those offered by commission agents, etc.).

This programme has benefited by the visits of eminent individuals. Prof. Bruce Alberts, President of the US National Academy of Sciences, and Dr. R.A. Mashelkar, Director General of CSIR, jointly launched the Knowledge System for Food Security programme, while inaugurating the Embalam centre. The Hon. Dr. Maurice Strong inaugurated the centre at Veerampattinam along with Sir John Maddox, editor Emeritus of *Nature* magazine in April '99. On these occasions, the Lt. Governor and the Chief Minister of Pondicherry presided over the events. This project received mention both in India and abroad, in detail in the 136th Presidential Address at the US National Academy of Sciences (April '99) by Prof. Alberts. It has also been noticed in the *Communications of the ACM* (November 98), *On the Internet* (January '99), and in *Science* (11 June '99). The *Human Development Report 1999* of UNDP cites this as an example of a creative project in addressing the global information divide.

Recently, a significant new dimension was added with the commissioning of solar-mains hybrid power systems in all the five centres. MSSRF has seven years experience in operating the Informatics Centre with solar photovoltaic system as the primary source of power. Based on this,

the village knowledge centres were also provided with solar-hybrid system as the primary source of power. This is the first time that such systems have been installed in the country. They have been designed and supplied by the Bharat Electronics Limited (BEL). The BEL and MSSRF are jointly involved in monitoring the performance of these devices which provide backup power for a PC with a wireless transceiver and inkjet printer for up to 5 hours.

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**Venkataraman BALAJI**

M.S. Swaminathan Research Foundation

Third Cross Street, Taramani Institutional Area, Chennai 600 113, INDIA

+91-44-2351698, 2350698

+91-44-2351319

[informatics@mssrf.org](mailto:informatics@mssrf.org), [MDSAAA51@giasmd01.vsnl.net.in](mailto:MDSAAA51@giasmd01.vsnl.net.in)

<http://www.mssrf.org>; <http://www.mssrf.org.sg>

## **Experiments in community access to new communication and information technologies in Bogota<sup>1</sup> (Luis F. BARON)**

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### **ANTICIPATING THE FUTURE TO SEIZE THE PRESENT**

*Researcher, Center for Research and Popular Education [Centro de Investigacion y Educacion Popular], CINEP,  
Bogota, Colombia  
August 1999*

#### ***The context***

For more than a year and a half, working-class districts in Bogota have been the subject of three community experiments with access to new information and communication technologies (ICT). These projects involve the Neighborhood Information Units (UIBs), which represent yet another form of what is known generically as telecenters. These are places where the public can gain access to information and communication technologies: they can function as experiments in rural and urban telephone service, community radio, documentation centers and public libraries, among others<sup>2</sup>.

These UIBs are located in working-class districts in three different zones of Bogota: Suba, Bosa and the Suroccidente ["Southwest"]. These zones are part of the outlying fringes of Bogota, and their links to the city itself are only tenuous. This means that they suffer serious shortcomings in basic public services, and they face severe problems in terms of the coverage and quality of education, health and transport, and low levels of social, cultural and economic integration on the part of their inhabitants.

The UIBs are the result of a project that was developed by two Colombian NGOs, Colnodo and Fedevivienda<sup>3</sup>, and was financed primarily by the International Development Research Center,

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<sup>1</sup>This paper is the result of a review of documents prepared for the presentation and follow-up of the project on Neighbourhood Information Units, a literature review on Telecenters and a series of conversations and semi-structured interviews that were conducted between July and August of this year with people in Colnodo, with the project coordinator, with the directors of the grassroots organizations that are hosting the UIBs, and with their teams. With these tools we prepared an overview and analysis of the results achieved, the outstanding problems and the lessons learned, in light of the objectives proposed for this project.

<sup>2</sup> See: <http://www.idrc.ca/pan/chasquiSP.htm>

<sup>3</sup> Colnodo is working in the area of telematics for democratizing access to new communications technologies, and Fedevivienda is active in the housing area, where it strives to promote the right to a decent home and to strengthen  
*(footnote continued)*

IDRC, of Canada. The objectives proposed by these two organizations for the UIBS can be summarized as follows: to help democratize communications by ensuring that information is converted into knowledge that is useful for communities. The intent here is to strengthen citizen participation and local management. Therefore, the project proposed a participatory approach to (i) producing information on the neighborhoods where the units are located, on organizations that are conducting these activities and on the people engaged in them, and (ii) providing access to information that would be of interest to communities.

Following a process of selection, inter-institutional agreements were negotiated with three grassroots organizations in Bogota. These organizations are active in a variety of issues: low-cost housing and social development, local management, popular education and culture, and the alternative resolution of disputes.

The selection criteria used were these:

- Each participant should be a community organization at the grassroots level in Bogota, legally constituted and recognized by its own community.
- It must have been in continuous operation for at least three years running.
- It must offer active participation for women, both in its management structure and in its activities.

The preponderant weighting in the selection process was given to the candidate organizations' capacity for management and social interaction<sup>4</sup>. The organizations selected were the Fundacion Kerigma - Casa de la Cultura and the Fundacion Pepaso, which have more than 20 years of experience in community work, and the Fundacion AVP, a social development agency that is about to celebrate its 10th anniversary.

### ***Putting together the project***

The UIBs were established in the headquarters of each of these organizations, and were equipped with two computers with access to the Internet and email, as well as a printer and a scanner. The three organizations have libraries that are open to the public, and in two of them (Pepaso and AVP), the UIBs were located in primary and secondary schools that are part of their educational projects.

In the last two years, these three organizations, like many others in Colombia, have gone through a serious internal crisis resulting from the economic situation afflicting the country and from the increasing level of violence. Many of their social activists and community workers have had to abandon their activities or devote less time to them, in order to survive in the midst of the sharp

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interaction and dialogue between grassroots organizations and government agencies (local, district and national) and other international cooperation organizations.

<sup>4</sup> As noted in a preliminary evaluation report by Maria E. Quintero, an external consultant to the UIB project.

economic recession of recent times. Worse still, many social organizations have suffered harassment, persecution or threats from some of the parties engaged in the armed conflict. Many of them have had to close down or suspend their activities because so many of their members have been kidnaped, threatened or assassinated in the midst of the sporadic armed conflict that has spawned violence throughout the country.

Colnodo and Fedevivienda were entrusted with providing definitions and basic guidance on the concept and design of telecenters and offering technical and technological support for their development. In addition, these two institutions have been assisting with work on a Coordination Project, through which they have provided training, advisory services and monitoring. The coordination work has also served as a bridge between the sponsoring organizations and the managers, and they have taken over the tasks of systematizing and evaluating the project.

Each UIB is run by a Coordinating Team, consisting of two persons working part-time who are responsible for providing services to the public and for guiding users both in the handling and use of computers and in gaining access to the Internet. They are also responsible for administration and promotion of the UIBs and for the design and execution of information and training activities, both for members of the organizations and for outside users. In addition to their duties within the units, all the coordinators are busy in other activities (such as secretarial services, courier services, training and accounting among others) within their own organizations.

It is important to note that the UIBs did not all get up and running at the same time, not have they achieved the same degree of development. There have been considerable differences in the intensity and continuity of their work, for many reasons, ranging from technical difficulties and security considerations to the medical problems of some of the coordinators. Nevertheless, the three experiments have all been in operation now for between one and two years.

### ***A bright new initiative***

As happened earlier in the case of other means of communication and information such as radio, video or television, the arrival of the project generated great expectations among organizations and in various sectors of the community. The new equipment, the chance of access to new technologies and the “modernization” they implied for carrying out their activities, and the prospect of improving and upgrading their activities led organizations to jump at this new approach with enthusiasm. One person interviewed declared that in Columbia “these things used to be only for those who have money, for certain social classes in the country, but now our communities can now use them directly, without intermediaries”.

All the members of the grassroots organizations involved in the project are agreed in saying that one of the most important achievements was to take the units into the *barrios* [low-income or working-class neighborhoods] and to break down the “centralism” of the city. Nevertheless, they all recognize that their lack of technical and technological knowledge means that they were not sure of

what they were getting into, or of how these new technologies were going to be able to help them in their work.

To be able to plug into email, to access the Internet and eventually to develop their own Web page was not only an opportunity for these organizations, it was also seen as a kind of reward in recognition of their work, which they could never have achieved, either economically or technologically, without the help and support of other institutions.

With very few exceptions, the low-income segments of Colombian society have [no] access to these technologies, which are to be found only in the country's most important cities, and have not yet penetrated into the medium-sized cities, much less into rural areas.

People were fascinated with the project, and their eyes lit up the way they do when a camera flashes. But this did not leave much time for the organizations to work out just how they were going to mesh the telecenters with the central focus of their activities. For them it was enough just to dream of the possibilities and opportunities that these units could hold for their communities and for their own organizations, by providing access to new technologies and making it possible to communicate and interact with other people and institutions in Colombia and around the world. Nevertheless, they were not very clear what they were going to do with these new opportunities.

In Kerigma, for example, people hoped that the UIB could help them move ahead with building an "observatory" complete with maps of the local district and a database on supply and demand in the local labor market. In Pepaso they thought of the possibilities that it could offer for exchanging information locally and how useful it would be for systematizing their library and strengthening their institutional work. And in the AVP they imagined that the UIB could be used to create a database with information on a wide variety of topics relating to the neighborhood. But little by little, they came to realize that many of these goals would require agreements with other institutions, political support from social players, more sophisticated computer programs and more resources, time and work.

As it turned out, although at the beginning of the project the organizations had high hopes about all the things they could do with computers and with access to the Internet, their management bodies and many of their members and supporters soon began to lose interest in the UIBs. This may have had to do with internal difficulties and with economic and social pressures on the organizations, resistance and fears in the face of these new devices and technologies, or perhaps it reflected the pace of events that are leading to social disintegration in Colombia. In the end, the units were left in the hands of their coordinators, and while this meant that they enjoyed a great degree of autonomy in decision making, it tended to distance them from the mainstream workings of the organizations. The coordinators in several cases began to feel the lack of institutional support in undertaking activities and in positioning the units within their communities.

In recent months, having gone through the first steps of training and having gained some experience and understanding about how telecenters work, the organizations have been giving further thought and deliberation to devising feasible and well-articulated proposals for achieving their goals and

objectives with respect to the UIBs. Little by little they have been discovering what these units can do, and what they cannot do, as part of their social and institutional activities.

Yet this recent soul-searching has revealed a certain amount of confusion in their approach to the UIBs. On one hand, they are seen as public places of access to technology that by themselves can help to improve living conditions within their communities. And on the other hand, they are seen as places that must be integrated into the overall activities of their organizations and help to achieve goals in the areas of social, political, cultural or communications work in which they are engaged. It is not that these perceptions are incompatible or contrary to each other, or that one is better than the other, or that they cannot be combined. What it means is that there is a lack of clarity about the limitations and possibilities of different approaches to these units. The fact is that every approach to these units implies different objectives, technical frameworks, working methodologies and indicators for mapping out the route that social projects are going to take, and the ground they are going to occupy.

### ***Learning to use new information and communication technologies.***

All the coordinating teams have gone through a process of training that is still underway, thanks to the guidance and assistance of the project coordinator. She has been making regular visits of a day to a week, as much to clear up doubts and to demonstrate the new possibilities of the programming tools and equipment as to monitor the mutually agreed commitments and goals of the project.

Several people who received training have in fact not yet joined the unit teams, because they were obliged to find better-paid employment. The coordination budget for the UIBs was not enough to ensure proper working conditions for the people running them. This was one of the major difficulties encountered in pursuing the project. If people are to stay at the task and maintain their motivation and interest, they must not only have a commitment and social and political convictions, but they must also be rewarded with remuneration for their effort and work. This is even more true when we are dealing with organizations that are fighting for changes that will bring about greater equity and social justice.

The personal training and knowledge that the coordinators have acquired can be seen as one of the most important achievements of the project to date. Although there have been some internal confrontations and disputes, and most of them have faced difficulties, this training has opened up new possibilities for personal development and the growth of self-esteem. At the same time, the training process has given them a better positioning within their organizations<sup>5</sup>.

The coordination teams have also praised the attention, understanding and availability of the project coordinator in helping with the training process. This process has required great care and personal attention, and has had to be adapted to the learning pace and skills of the people involved.

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<sup>5</sup> As noted by Maria E. Quintero in her report

Differences with respect to their knowledge and understanding of computers and computer programs as well as other issues of an administrative nature meant that the nature and quantity of training also had to be differentiated and adapted as work proceeded.

It must be recognized that the training process has been slow and difficult, primarily for two reasons. In the first place, because of cultural resistance and fears about trying to use the new equipment and technologies. In most cases the coordinators were working with a computer for the first time in their lives, or they were only beginning to feel comfortable with them on their own. It is not that they did not understand computers or that they had never seen one before, but some of them had only learned to handle a few fairly mechanical programs and for others this was the first time that they had ever booted up by themselves.

One of the subtle manifestations of the power relationships that exist in Colombia is that the use of certain kinds of equipment, apparatus and tools has been restricted to certain people, groups, communities and institutions. For this reason many people are fearful and excessively cautious, and suffer feelings of inferiority when it comes to trying to make use of this equipment. Many people have a prejudice against new equipment and new technologies because they are too expensive, sophisticated, delicate and difficult to handle. Moreover, they believe, only people with a certain degree of background and knowledge can work with them.

We also found difficulties in moving from the logic of perceiving the world based on oral tradition and experience and the physical proximity of objects, places and persons, to a logic in which the world is converted into texts, files and windows that are closer to the idea of virtual reality.

The insecurities and fears of the coordinators of these units with respect to using the computers and programs meant that they tended to discourage use of the services offered by the UIB. There was a tendency to restrict use and limit services, for fear that they would be inundated with a flood of people needing guidance and asking questions that they might not be able to answer.

In the second place, we must say that there were also some shortcomings and limitations in the methodologies and instruments used in the training processes. These methodologies, and the tools and teaching inputs, should perhaps have included perspectives that went beyond technical training and matters related to the use of new technologies themselves. As part of the training process needed to establish the telecenters, it may be necessary to consider some basic tools for planning and organizing work, management, promotion, marketing and information, public relations and other matters that can be key to the process of introducing new users to new technologies. It would also be useful to have methodologies that would help people to develop an independent capacity to build their own knowledge base and resolve their own problems, without becoming so dependent on external agents.

### ***Internal [“inward”] training***

The processes of internal training and orientation have not really got off the ground. Until now, the focus has been on basic learning and instruction that has not gone beyond the immediate or

circumstantial. Only recently has thought been given to systematic and programmed proposals to stimulate and train people from the organizations. The experience of these first months has shown that if we want to promote greater use of these units by their communities, we will have to begin with the people who are closest to them - we must begin with their own organizations.

In the case of Kerigma, they have explored other ways of conducting training activities, both internal and external. They have experimented with special activities for adults and children and with games and more participatory approaches to building knowledge collectively. They have also looked for ways to integrate some of the information collected in the unit in order to inspire discussion and group work on other activities and issues that the organizations are involved in.

***We are now starting to realize what this all means***

The UIBs have been operating on a half-day basis, in the afternoons or in the mornings, and only on week days. Until now, the most frequent users of their services have been students at the secondary school level, as has been the case apparently with most of the telecenters in Latin America and Caribbean<sup>6</sup>. Although there are no records on the number of people visiting these telecenters, we estimate that they are used every day by between 3 and 12 people, depending on the time of year, since during school vacation time the number of users drops significantly.

Students make use of the units' services primarily for their school tasks, homework or university papers, but they also visit the Web pages of popular performers or television programs and series.

It must be recalled that these children and young people come from low income families with other, more pressing needs, and the economic limitations on access to telecenters are quite high. For these people, the Internet is not regarded as a permanent or regular source of access to information of knowledge.

On the other hand it should be noted that, despite the technical and technological possibilities offered by these units, the services that are most in demand in all the UIBs are word processing and printing.

To date, the UIBs have no routine visitors either from within the organization or from outside. It is only the unit coordinators who make regular use of email and the Internet (email more than Internet). But of course, the regularity of use depends to a large extent on the personal initiative or the working or professional interests of each user.

In Kerigma some cultural organizations come in regularly to use the services of the unit. Nevertheless, for them as well, the main interest has been in the word processor and the printer, for

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<sup>6</sup> This is clear from the results of a study conducted by the International Development Research Centre on 23 telecenters in Latin America and the Caribbean, between February and April 1999.

producing programs of their activities and information brochures about their institutions. Several of these organizations have no headquarters of their own, and they find the UIB very useful as a place for writing their letters and handling their correspondence, preparing projects or producing information and publicity materials.

The UIBs have held launchings and presentations of their services in their neighborhoods and yet there are still few people from other organizations or from the community at large who make use of their services. The unit coordinators recognize that one of the overriding problems is the lack of information and promotion about the centers within their communities.

In recent months the coordinators have begun to examine this problem more systematically and to approach people with a potential interest in their services. They have put together information packages and different kinds of promotional materials to stimulate use of the units, and they are using many ways of publicizing them in every area (on buses, on local TV and community channels or by means of fliers, brochures and folders about their services). Another task that the UIBs have set themselves for the coming months is to identify the interests of various sectors of the community more clearly, so as to produce differentiated and targeted packages and proposals for information and Internet access that will appeal to different groups.

Within the organizations the presence of the UIBs has helped to strengthen their relations and communications with other people and networks. In some cases they have made it possible for groups and networks to function by email, and so they can keep contact and exchange documents without running up large expenses. Some of these networks that used to hold more frequent face-to-face meetings and exchanges in the past have had to seek other means of conducting joint activities and supporting their work, through bulletins, journals and festivals, and for them email and the Internet have become very useful.

Through their own Web pages<sup>7</sup>, the three organizations have in different ways produced and posted information on their work, on the communities in which they work, on the services they offer or on the teams coordinating the UIBs. The information varies greatly in quality and quantity, depending on the areas, the interests and the management capacity of each of the organizations.

It would appear that the information posted on the Web pages has not done much to develop relationships with people in other organizations within the country or round world, since such relationships remain few and sporadic. Nevertheless, it has allowed them to position themselves in dialogue with certain governmental and civil society agencies at the local or district level. In any case, it is too early to speak of relationships that have been enabled by the information posted on the Internet, since the institutional pages have only recently been set up

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<sup>7</sup> Kerigma: <http://uib-kerigma.colnodo.apc.org>, Pepaso: <http://uib-pepaso.colnodo.apc.org> and AVP: <http://uib-favp.colnodo.apc.org>.

For producing information and deciding what to post on their web pages, the organizations have had to develop processes both for retrieving and processing information and for discussing and updating their organizational purposes and interests. For the three organizations in question, these processes of retrieving, processing and systematizing data have been converted indirectly into a way of reconstructing their history or at least some portions of it.

The three organizations have retrieved work and products produced in the past but they have had to undertake the task of seeking the best way to present them in a quick and accessible form suitable for a public access forum such as the Internet offers. On their pages can be found information such as a cultural map of one of the zones, matters relating to citizen participation in the neighborhood, and summaries and presentations about grassroots organizations themselves.

On the other hand, there is very little information that the grassroots organizations obtain through the Internet and by email. Most of what they receive through email is related to urgent matters involving human rights, social support and information on events that, with luck, end up being pinned to some institutional notice board.

### ***There is a future...***

For now, Kerigma, Pepaso and AVP, with the support of Colnodo, are thinking and planning for ways to maintain and strengthen these experiments in the future. Although money for the first phase has already run out, they are working to clarify and reorganize the UIBs. Each one in its own way is trying to explore paths for moving ahead towards making these projects self-sustaining. They have in fact begun to conceive them as "social enterprises", and depending on their experience and outlook they feel that they should have good prospects of surviving and of generating both a social and an economic return. Nevertheless, experience has shown them that there is still a need for external economic assistance, over a period of time that will vary between two and three years. By that time they think that they will have UIBs that are clearly defined, well equipped and positioned locally to offer useful services to their communities.

In Kerigma, they are seeking a way to develop a proposal focusing on a "cultural school" project that is to be built on the basis of that institution's accumulated experience in training. In Pepaso, the executive board of the founding partners has decided to strengthen the unit by providing regular support to the people responsible for running it. A draft for a Neighborhood Communication Network has also been prepared and will be presented to local institutions as part of the process of citizen planning. Moreover, they are looking for ways to integrate the unit into the Conciliation Center that will soon begin operating within their organization. For its part, the AVP insists on the need to strike local agreements and contracts to gather and make use of information produced within the area.

For now, there are repeated expressions of the need to endow the units with more equipment so as to ensure a minimal level of revenues that will cover their operating costs. Nevertheless, this need to expand the units in terms of equipment and services once again tends to remove them from the

basic rationale for their existence. That *raison d'être* is still not clear or explicit. There are plans, there are ideas and good intentions. Nevertheless, they still do not appear to have viable objectives and goals that can be effectively monitored and for which their social impact can be evaluated in qualitative and quantitative terms.

On the other hand, we must take into account the precarious social and economic situation of the neighborhoods in which these units are located. These circumstances place severe constraints both on the possibilities for expanding and strengthening the UIBs and on the opportunities for access and use by the community. The frequent communication breakdowns caused by the poor quality of telephone lines and the constant power blackouts (which will not be overcome for many years yet) are a real impediment to their use. A further obstacle is the difficult social and economic conditions of the potential users. These factors should induce some serious thinking about the need to change and adapt or seek alternatives so that these projects can become viable and can be really useful to the communities and localities in which they are located.

The group of coordinators for the units feel that efforts should in future be targeted at youth and children, who besides being their major users are those who have the greatest disposition, ability and capacity to handle the equipment and the tools for these new technologies. In practice, they have shown that they are also the people who have the greatest need for the units, because to a large extent their prospects for work, study or training depend directly or indirectly on their know-how and skills in the use and management of new information and communication technologies. At the same time, the coordinators have also been able to confirm the difficulties facing people and organizations in their localities in gaining access to these technologies. There are schools that have had to wait a couple of years while they raised the money to buy a computer. The question that remains very much in the air is how and when the children and youth of the area are going to enjoy this possibility.

An overview of the UIBs reveals them to be projects that are ahead of their time, and that have been able to grow in the face of very adverse conditions - the fact that they have survived at all seems almost a contradiction of logic. Nevertheless, there they are, and they are likely to grow and prosper, because with a good dose of stubbornness and creativity, and with the great capacity for adaptation of the people involved in this project, they should be able to continue surmounting the obstacles that appear in their path

The telecenters are still a work in progress. But that is no reason to overlook the meaning and usefulness that they could have for many people and organizations in terms of the contribution they can make to building a society that is more just and democratic. For this, it is important to explore and try out various possibilities, and to take responsible advantage of the impacts that they can have on the life of individuals and communities. Similarly, it is important to begin to think about more modest proposals with pretensions that are more in keeping with the context (historical, cultural, political and economic) in which they operate. After all, it is not only organizations and individuals from low-income communities that have been astonished by their presence.

### ***By way of summary***

The achievements, outstanding problems and lessons presented below result both from the notes and perceptions of people involved in the project and from the impressions and thoughts of the author. All the lessons derived from this collective process of evaluation are important in this common effort to strengthen and rebuild the UIBs so that they can contribute to strengthening grassroots organizations and improving the lot of the people of Bogota who are culturally, politically and economically deprived.

### ***Achievements***

The project has been able to:

- Establish and maintain UIBs in peripheral areas of the city.
- Develop a constructive and respectful relationship between NGOs and grassroots organizations.
- Contribute to relations with local institutions and to the internal communications of organizations and their institutional strengthening.
- Provide training to allow the units' teams to master the use of computers and programs. Although the training process was difficult, it gave its recipients greater skills and self-esteem and helped them position themselves proactively within their organizations.
- Retrieve and organize information from their organizations for posting on the Internet.
- Provide a permanent opportunity for grassroots organizations to have access to Internet services and email.
- Prepare Web sites for each of the institutions.
- Enable relationships with other persons and institutions in the zone.

### ***Outstanding problems***

- Resistance and prejudices of a cultural nature against the use of new equipment and new technologies.
- Under-utilization of units by individuals and organizations in the community.
- Technical problems related to the poor quality of telephone lines and constant interruptions in electric power.
- Congestion in the Internet server. In addition to the technical difficulties, there were problems in connecting to the Colnodo server.
- A lack of articulation between the project units and the general activities of the grassroots organizations.
- Budget resources were inadequate to provide an attractive salary to unit coordinators.
- Lack of mechanisms and strategies and inadequate effort to promote and publicize the units.

### ***Lessons learned***

- As pilot experiments that can serve as a point of reference for other places, other groups and other times, it is important to think about the conditions needed for these telecenters to be self-sustaining and viable, both from a technological viewpoint (telephone lines, electricity supply, servers) and from the cultural perspective (social and historical characteristics, pressing needs, cultural outlook, space and timing, levels of education and literacy), economic (income levels and ability to pay on the part of individuals and community organizations), and political (participatory mechanisms, political networking and interaction, power relationships). Addressing these factors is essential to the survival of the telecenters, and to ensuring that they can have a positive impact.
  - Experience should be examined to determine what can be done through these units and what cannot be done.
  - The need to undertake clearly defined projects for telecenters that will fit into the broader objectives of the organization.
  - The need to define the characteristics and profiles of the telecenters, either as places for public access to new technologies or as places devoted to achieving the social, cultural, political and educational objectives of the organizations themselves.
  - The need to think about the congruence of social and technological objectives so as ensure greater clarity about the impacts, dimensions, challenges, methodologies and indicators from these experiments.
  - The need to seek ways to ensure greater autonomy in designing and undertaking projects of this type by grassroots organizations.
  - The need for cooperative relationships with other organizations and institutions (including NGOs and international cooperation agencies), from a perspective that will strengthen the autonomy of the grassroots organizations.
  - Exploring new proposals for training and capacity building for internal and external users. As well, seeking various uses for the information carried over the Internet and by email.
  - The need to establish more clearly the priority groups to be targeted by this work. Similarly, the need to introduce information and promotional packages specifically designed for groups and individuals in each zone.
  - Exploring other ways of performing community work.
  - Recognizing the ability and disposition of youth and children to use the equipment and take advantage of ICT.
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**Luis F. BARON**

Researcher

CINEP, Center for research and Popular Education

Carrera 5 No. 33A-08, Santa Fe de Bogota, COLOMBIA

(57-1) 2456181; at IDRC: (613) 236-6163 X2577

(57-1) 2879089

[lbaron@idrc.ca](mailto:lbaron@idrc.ca); [publica@colomsat.net.co](mailto:publica@colomsat.net.co), [luisferbaron@hotmail.com](mailto:luisferbaron@hotmail.com)

<http://www.cinep.org.co>



# **Socialise the modem of production - The role of telecentres in development (Peter BENJAMIN<sup>1</sup> & Mona DAHMS<sup>2</sup>)**

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## **Abstract**

*This article questions the role of telecentres as a vehicle for development in countries of the South<sup>3</sup> with particular reference to South Africa. The organisation of the emerging Information Age is, in the words of Manuel Castells, 'Global Informational Capitalism'. There are forces that increase the power of a global elite while large numbers of people are excluded. This 'digital divide' puts at further disadvantage many people in poor areas in rich Northern countries and a majority of people living in African countries.*

*The imagery that surrounds the new Information and Communications Technology speaks of unlimited potential that can bring great benefit to development problems. While it is true that the technologies might have this potential, there are strong forces constraining the actual impact that they will have. Historical examples of the telegraph system and the introduction of railways into Africa are cited to show the difference between rhetoric and reality.*

*Technology bears an imprint of the culture that developed it, which often goes unseen. Telecentres are a form of technology transfer, either from Northern countries to countries of the South, or from richer urban to disadvantaged (often rural) areas within a country. As many examples have shown, technologies that have been transferred to new contexts often do not function as expected. The key issue here is the degree to which the local organisation can assimilate and adapt the technology for their own ends at a number of levels.*

*The various possible aims for telecentres are next discussed, concluding that actually they are a weak tool for addressing universal access to telephony, though there are many other objectives they can have. Greater clarity is required in deciding what telecentres projects are aiming to do. If these issues are not thought through, there is a risk that telecentres will either 'fail' and waste money, or will serve to bring the division between the 'information haves' and 'have-nots' into communities - creating a local digital divide. The idea of social capital is discussed in analysing whether the impacts of telecentres will increase or decrease division within a community. The paper ends with some tentative suggestions for telecentres development, putting the focus on experimentation and local participatory ownership.*

## **1. Digital divide**

The logic of the Information Age is one of exclusion while using the language of inclusion. Information and Communication Technologies (ICT) are increasingly important in most fields

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<sup>1</sup> LINK Centre, University of the Witwatersrand and PhD Student, Aalborg University

<sup>2</sup> Assistant Professor, Aalborg University

<sup>3</sup> This paper will use the term 'countries of the South' rather than Developing Countries or Less Developed Countries. The term 'developing' could imply that there is only one route to progress, with the richer Northern countries further along, and that the task of development is to make the countries of the South as like those of the North as fast as possible.

throughout the world, and as Castells (1998) says, "IT and the ability to use it, is the critical factor in generating and accessing wealth, power and knowledge in our time."

Many authors extol the wonderful opportunities the new technologies provide, often referring to a revolution or evolution into an "Information Age" (Tapscott 1993). Toffler (1984) was among the first to popularise these ideas. "Being Digital" by Negroponte (1991) continues the trend by expressing great optimism about the impact of these technologies for humanity and Tapscott (1995) discusses how these technologies are revolutionising business. De Kerckhove (1997) notes how electronic networks create connected intelligence and "webness" in creating a positive future for humanity, and Gates (1996) sees these technologies providing the road ahead.

While new networked technologies do have great potential to disseminate information more freely than ever before and can promote democratic linkages between people throughout the world, the real impact of these technologies can not be seen separately from the social and economic system within which they are used.

Skills to use, and access to, Information and Communication Technologies (especially the Internet) offers great advantage to an individual to seek a good job, education, commercial products and more. There increasingly is a division between those who have access to these systems and the information they contain (the 'information haves') and the many who do not (the 'information have-nots'). This has been referred to as the 'Digital Divide'.

This division is part of 'global information capitalism' in the phrase of Castells (1996). The majority of the world economy is now deeply linked through networks of corporations, capital, trade and people. The logic of this system is driven less by countries than by the leading corporations. In all countries there are divisions between a number of people who benefit and those who do not. In the countries that are dominant in this environment - North America, Western Europe and East Asia - there are many who benefit (especially a small elite who are largely independent of a home country), though even here there are places that are disconnected from the global economy, such as in some inner city areas.

In countries of the South, especially in Africa, the vast majority of the population have no access to new Information and Communications Technologies, or the training to use them. The move to providing information primarily online disempowers those without access. Recently the Group of 77 (which confusingly represents 133 poor countries in UN and other bodies) appealed for UN information primarily to be provided through radio and not the internet which has limited reach (Deen 1999). Ambassador Samuel Insanally of Guyana, the chairman of the Group of 77, says that 'The introduction of modern information technology increasingly has favoured rich nations and is detrimental to the people of the developing world' (ibid). 90% of the hits on the UN website comes from industrial countries.

However, even in the poorest countries, there is a powerful minority who do have access to these systems. These elites usually have more interests in common with the elites from other countries than with the rest of the population from their own country.

As Perelman (1998) says in his provocatively titled book 'Class warfare in the Information Age', the new Information and Communications Technologies are being used to reinforce capitalist power relations. The primary driving force behind the extension of these systems is to allow global corporations to make larger profits, and this process directly excludes a majority of the world from the newly emerging power structures. It is true that communications systems can be used for many purposes, from the noble to the odious, but the global information infrastructure is being built primarily to support the interests of Trans-National Corporations.

Roberto Verzola (1998) gives an interesting analogy for the extension of the internet in the South. A rural community in the Philippines want a road and petition their government to build one, and to their delight the government agrees. After a few months of building, the village is assembled to welcome the first vehicle to visit them. It turns out to be a logging truck to cut down the forest around them. The people who built the infrastructure were not doing it for the community's benefit but for their own agenda, that could turn out to be harmful. This image can be useful when considering the current great enthusiasm for extension of Information and Communications Technologies throughout Africa.

Before considering some implications of this for the development of telecentre projects in Africa, let us look at some examples of previous technologies.

## **2. Two Nineteenth Century Technologies**

The development of the Internet in the last decade has not been the first time a revolutionary electronic communications technology has made claims to alter the way the world works. In the Victorian age of the nineteenth century, the electro-magnetic telegraph system was developed (both in the US by Morse and in the UK by Cooke and Wheatstone). This was the first reliable way of transporting information faster than a person could travel (by horse or ship) and had great impact in the nineteenth century on business, diplomacy and warfare (Standage 1998).

The first trans-Atlantic telegraph cable in 1858 was hailed as a way to unite continents: "Speed, speed the cable, let it run,/ a loving girdle around the earth,/ till all the nations neath the sun / shall be as brothers of one hearth" (Standage 1998, p 79), and many others expressed the view that the telegraph would help to unite a fractious world: "It is impossible that old prejudices and hostilities should longer exist, while such an instrument has been created for the exchange of thought between all the nations of the earth." (Briggs and Maverick quoted in Standage 1998, p 81). Similarly Field stated, "An ocean cable is not an iron chain, lying cold and dead in the icy depths of the Atlantic. It is a living, fleshy bond between severed portions of the human family, along which pulses of love and tenderness will run backward and forward for ever. By such strong ties does it tend to bind the human race in unity, peace and concord." (Standage 1998, p98).

However, the main uses of the telegraph were different from what these sentiments would suggest. It was primarily used to support business (especially in the United States) and to conduct

governmental affairs (especially in Europe). The laying of international telegraph networks was an enabler of centralised control of the British Empire, and played a major role in military conflicts such as the Crimean War and the 'rush for Africa' of the European colonial powers in the late nineteenth century. In short, despite the optimistic rhetoric promising the telegraph would support world peace and unity, the technology was used primarily to support the existing (and developing) capitalist and imperial power structure.

We can also look at the development of railways in Africa in the nineteenth century. The railways were then new technologies that could revolutionise the economy of countries. There was great excitement about introducing railways throughout Africa ('Cape to Cairo' in the expression of Cecil Rhodes), which could bring 'progress' to Africa and integrate the continent more closely into the 'civilised' world.

However, the introduction of railways had marginal benefits for the majority of African people for the first few decades. They were primarily built to link the mines and plantations to the ports (especially in West Africa). Their main purpose was to make the extraction of commodities from Africa to Europe more efficient, and to strengthen the hold of the colonial powers over their African 'possessions'. The railways were financed almost exclusively by European companies and governments, and so we should not be surprised that they were the primary beneficiaries. Later, especially after independence, with the railways under the control of Africans they could be developed primarily to serve the interests of the country and not of colonisers. (Muller 1994)

These two examples illustrate a very simple point: while new technologies can potentially have many different impacts in a society, the primary effects of their introduction is usually to strengthen the power of the organisations investing in the technology.

### **3. The Information Age in Africa**

Africa is the continent with the least access to the new Information and Communication Technologies. There are many projects to bring these technologies to Africa, as illustrated by the Africa Telecom Conference of 1998 in Johannesburg which primarily discussed ways of introducing telecommunications to Africa to support the 'African Renaissance' (ITU 1998).

After examining statistics showing the very small percentage of these technologies in Africa, Castells states that, "The disinformation of Africa at the dawn of the Information Age may be the most lasting wound inflicted on this continent" (Castells 1998). Many African leaders agree with the priority of introducing these technologies, as is shown by the African Information Society Initiative (UNECA 1996, Cogburn and Hafkin 1997) and the 'African Connection' (Department of Communications, 1998). As Benmouffok (1993) says, "It is impossible to have sustainable and equitable development without free access to reliable and accurate information".

Several books have been written stressing the role telecommunications may have in the development of Africa, such as 'Tam Tam to Internet' (Ras-Work 1998) and there is much talk by senior politicians of the need to build these networks. For example, Kofi Annan, Secretary-General of the

United Nations states that, "Communications technologies have a great democratising power waiting to be harnessed to the global struggle for peace and development ... The role and responsibility of the United Nations system in this effort are clear: to ensure that the gains of the information and communications revolutions are placed at the service of all Africans" (Annan 1998).

An example of the high profile being given in Africa to the use of technology for development is the 'African Connection' rally of early 1999. Jay Naidoo, the then South African minister of communications, led a team on a drive from Tunisia down to South Africa, stopping at telecentres (defined in the next section) in all countries they crossed. This was mainly to publicise the role telecentres could have in supporting a range of development projects.

#### **4. Telecentres as technological innovation and technology transfer**

##### ***4.1 Technology and technology transfer***

Telecentres<sup>4</sup> are a form of technological innovation in the areas they are established, but to explore what this entails we need to look more closely at 'technology'. In the words of Olsen (1995: p14) "Technology could be loosely understood as bodies of skills knowledge and devices for making, using and doing useful things". In the sociology of technology there is a great debate between those who primarily look at the impacts of technology on society (technological determinism); those who focus on how society moulds technology, and those who see a dynamic interplay between the two. As Castells (1996) puts it "Technology does not determine society: it embodies it. But neither does society determine technological innovation: it uses it."

A technology, such as modern telecommunication and computing, has been developed in a particular society with its own manners and ways of doing things. The machines will have a 'social and cultural aspect embedded because the actors involved in design and production made it operational under specific social and cultural conditions' (Olsen 1995: p28). Much of the skills and experience required to make them function satisfactorily are based on cultural assumptions that are not easy to translate to different societies. This tacit knowledge is not contained in manuals and is often not consciously known by the original operators. However when the technology is in the new situation the lack of this knowledge and environment can cause frustration and malfunction.

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<sup>4</sup> There is always a problem of definition with telecentres as so many related terms are used with varying meanings. Colle (1999) has counted over 30 different names for these kinds of centres. Terms encountered include telecottages, multipurpose community centres, community technology centres, digital clubhouses, cabinas publicas, infocentros, telestugen, community access centres, electronic village halls, telehaus and televillages. Colle (ibid) suggest that a telecentre is 'a shared facility that provides public access to information and communication technologies'. According to Gaston Zongo of the IDRC's Acacia programme a telecentre "is a place where public access to communication and information for economic, social and cultural development is provided through IT" (Zongo 1999). Steve Cisler proposes that, "A telecentre provides information and communications services needed by the local community". For this paper, a telecentre is an organisation that is influenced by the community it serves which provides telecommunication and information services for a range of developmental aims and usually is supported (by international donor, government or some other organisation outside the community served).

Obvious examples of this are the many rural IT projects where the computers often do not work due to lack of local support, consumables and spares. Also, at times there is a cultural or psychological barrier preventing rural people from 'playing and learning' from the computer, which comes more naturally to people used to having machines perform tasks for them. "Technological change is, in its development and application, fundamentally a social process, not an event, and should be viewed not in static, but in dynamic ways" (OECD, 1992: 15).

Stewart (1981) argues that all technologies have inherent organisational, economical and informational prerequisites that must be in place for the technology to function successfully in the new environment. There is a large body of experience on the difficulties of international technology transfer due to the differences in tacit knowledge and environment, and frequently the failure of projects due to the impossibility of recreating the 'home' environment for the technologies to function (Stewart 1978, Fransman 1986).

Many authors agree that the most crucial aspect for successful technology transfer is local adaptive assimilation and learning (King 1984, Fransman 1986). For example, Bell (1997) concludes that getting access to the technology is less than half the problem - capacity to absorb the knowledge and adapt it are more relevant to success.

Muller (1998) talks of the 5 levels at which technology transfer can take place:

- Research: Transfer of research capacity and scientific knowledge
- Development: 'Know-why': Applied research, new products & processes
- Formation: 'Know-what': Design, prototype testing and engineering
- Application: 'Know-how': Production of goods or services
- Consumption: 'Know-who': Consumer demand & marketing knowledge

Muller suggests that for real capacity to be built through the transfer (without creating failure or dependency) the transfer should be at as high a level as possible. Given the conditions of existing need and capacity in most recipient countries, the transfer should happen at the Formation level, allowing the recipients to develop their own goods and services. Local innovation is seen by many (Dosi 1990, Fransman 1986) as the key to successful technology transfer, allowing changes in the system to adapt it to local needs, so the system is more under the control of local operators. 'Learning-by-doing' (Levin 1993) is one approach recommended.

An alternative approach to technology transfer is when large Trans-National Corporations establish factories in countries in the South and transfer all parts of the technology. However while these examples may provide low cost manufacture for the corporations and some (usually low paid) jobs for locals, they have very limited beneficial impact in developing the ability of the host countries to developing their own capacity.

From this perspective we can look at the establishment of telecentres. In South Africa, most telecentres have been 'turn key' projects, with the design and equipment decided upon in Johannesburg or Pretoria and then set up in the chosen site. Mostly the telecentres can be seen as

technology transfer at the Application level. Training is provided in how to operate and repair the system, but very little in how to design and develop the technology. There usually is little choice of what kind of telecentres to have. In most cases local organisations were not involved in any design of their telecentres - it was a 'box that appeared from the sky'.

From the above arguments, a major point is that for technology transfer to both develop local ability and function successfully, the capacity and strength to negotiate of the recipient organisation are key. In many cases technology transfer has led to either failure (the system not working and money wasted) or to dependency (system working but increased reliance on the donors / suppliers).

Most of those involved in telecentres activity frequently stress that telecentres are tools and not ends in themselves. The needs of the community come first, and the telecentres then should work to meet those. However, in practice only those needs that can be addressed by a telecentres are considered. The 'means' are established before the 'ends' are decided. The author knows of no community that was genuinely given the choice of a telecentres or some other project (such as a housing, water, agriculture, health or small business promotion)<sup>5</sup>. The choice is usually closer to take-it-or-leave-it. One of the reasons for this is that very few agencies or governments are sufficiently integrated to be able to respond genuinely to the priorities that a community decides upon.

#### ***4.2 Muller's Four element model of technology***

Jens Muller (1980) identifies four different elements to technology: Technique, Knowledge, Organisation and Product. A technology can only be understood when all four elements are considered.

*Technique:* This includes the implements, machines, raw materials, energy requirements - and also the human labour required to produce.

*Knowledge:* The experience, tacit knowledge, skills and applied science required.

*Organisation:* This component describes how the technique and knowledge are arranged to be productive, including the division of labour and pattern of specialisation. In another terminology this could be called 'management'.

*Product:* The result of the production process (both the intended and primary ones, as well as 'side effects', both beneficial and otherwise).

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<sup>5</sup> As a thought experiment, consider (somehow) offering US\$40,000 to a community. Everyone comes together to decide on their individual and collective priorities. What would be the chance that there would be consensus to spend all of the money on establishing a telecentre?

When a technology is transferred to a new environment, all four elements must be considered, though usually the focus is only on the technique. Each element is imbued with the values and assumptions of the culture that created it, and these tacit attributes of the technology are often overlooked, which can lead to unforeseen impacts of the technology in a new environment. Never can all elements of the environment be transferred: the machine can move, but not the experienced technician with a workshop around the corner who knows how to fix it. Technology transfer has a greater chance of having a beneficial impact where the environmental support is known and can be adapted to the local environment. Otherwise, the technology is either not likely to work as intended, or it may have the effect of unintentionally importing elements of the originating culture.

Looking at the four elements with regard to telecentres, the technique is almost completely imported. The computers, PABX systems, copiers, modems etc. are not produced locally and usually the telecentres is the first user of this equipment in the community (which forms part of the motivation for the telecentres). Most of the consumables (e.g. paper, cartridges and disks) must be brought in, and the electricity and telephone connections require connections to national grids (though solar power is being used in certain projects). However, the buildings are local, and certainly the staff are from the local area - however having undergone training.

This brings us to the second element of knowledge. The knowledge to run a telecentres is usually learnt at a training course, and then experience built up over time, through trial-and-error, asking questions and more formal support. However it is very important which body of knowledge is seen as significant to the operation of the telecentres. The telecentres can be seen as providing an information system for accessing external knowledge through the Internet and other systems - as a 'window to the world' in the phrase of one telecentres leaflet. This formulation tends to undermine the fact that the community already has an information system - though non-electronic. The formal and informal knowledge that exists in the community can either be supported or undermined by the telecentres.

The organisation of the telecentres is also at issue. For many telecentres, the organisational form comes as 'part of the package' as a franchise. There is little or no attempt to adapt the structure to the local environment, except perhaps through some consumer response mechanism. Alternatively, the telecentres can be based on existing organisations with a high degree of flexibility for local conditions (which can bring its own challenges).

The product that the telecentres produces is open to interpretation. This largely depends on what the aim of the telecentres is considered to be, as mentioned below in section five below. However, provided the telecentre is 'successful' (the meaning of which will be discussed below) the product could include: many phone calls being made; more people having access to these technologies; the telecentres owner getting rich; local people getting training; some local people leaving the area for jobs in urban areas; some people accessing new information; other people being further excluded.

Muller's model shows that the technology of a telecentres is much wider than simply the equipment. The new technology of a telecentres will have a social impact in the areas they are established.

### ***4.3 South African telecentres as intra-national technology transfer***

As mentioned above, in South Africa telecentres can be seen as a form of technology transfer from urban areas to disadvantaged areas (both in townships and rural areas). There definitely is a 'technology push' and not passive 'diffusion' of the idea - the government has a programme of encouraging telecentres, and many agencies, international donors, NGOs and businesses are actively supporting many different telecentres projects. In many cases the investment of starting a telecentres is substantial, of the order of R250,000 (around US\$40,000).

In international aid there is the concept of 'tied aid' where a donor agency from a rich country requires the aid they give to a poor country to be spent on products purchased from the rich country. The new President Thabo Mbeki has referred to South Africa as 'two nations' - a rich and mainly white country and a poor and overwhelming black country. From this perspective, could telecentres be seen as tied aid - a major donation to a disadvantaged area, but requiring almost all of the goods to be purchased from outside the community from richer areas? In some cases, efforts have been made for some of the building work and other crafts to come from local businesses, but still the great majority of the money for the start-up of a telecentres come from outside the community. While this is almost inevitable as the aim of telecentres is to introduce new technologies, in most cases known to the author the telecentres works had little or no involvement in the decision to purchase the technology, increasing their lack of control over the process.

The percentage of the donation that goes back to the donor country can be calculated, and in a few cases it can be over 100% where the net effect is for the 'recipient' to give to the 'donor' (Japan as been accused of this on occasion). It is possible that telecentres might have this property as well over their lifetime - they will require ongoing inputs that need to be bought from outside (including paper, disks, cartridges as well as electricity and possibly training and consultants) while their main income is likely to be from the local community with a large percentage of that being paid on to providing companies (such as to the telephone company for phone charges).

Certainly it is hoped that other money can be raised from outside the community (for example through local government contracts) and the telecentres may support local wealth creation and increased job opportunities. The international aid system of grants and loans has been analysed as being a mechanism for increasing the involvement of poor countries in the global economic system, especially when debt burdens require poor countries to turn their economies towards producing exports to generate hard currency to pay for previous lending (George 1983). While telecentres projects definitely do not have such a sinister motive, they will increase economic linkages and interaction between the telecentres community and the wider national economy (this is sometimes stated explicitly as a goal of telecentres).

## **5. What are telecentres for?**

### ***5.1 Telecentres for universal access to telephony***

What are telecentres for? The answer given by the Universal Service Agency of South Africa is typical of many of the national programmes: telecentres are a means of providing universal access to telephony and other telecommunications and information services. While this is an excellent aim, in at least two ways telecentres are a poor tool for doing this.

Firstly, telecentres are overkill for simple telephony. As mentioned above, standard telecentres in South Africa typically cost around US\$ 40,000 to establish. They often provide between five and 10 phone lines, five computers with internet access, a fax machine, a photocopier and perhaps other related equipment. This is an extremely large and expensive package for meeting basic telephony requirements. For providing reasonable access to a telephone for everyone (referred to as Universal Access), other mechanisms are much cheaper and more effective (see below).

Secondly, as yet there is no mechanism for using telecentres to provide universal access. Due to their relatively large start-up cost (combined with a paucity of evidence of ability to meet ongoing costs), nowhere yet is there a mechanism for setting up the many thousands that would be required to provide universal access to everyone in South Africa or similar countries. A number of countries, including South Africa, have been looking for mechanisms to do this in the last three years. However, in no country are there more than a few telecentres. Many of these projects are impressive, such as at Nakaseke in Uganda and Mamelodi in South Africa. However, these successes have received a very large amount of funding, support and international interest and should be seen as interesting demonstration pilot projects. As yet, they do not represent a reproducible model that can bring benefit to the majority in a country in the next few years.

So telecentres are not good at providing universal access to telephones.

There is a very real momentum to provide basic telephony services to all areas as soon as possible. This goal of universal service can be traced to the Maitland Commission (1984) report entitled 'The Missing Link' which stated that, "We believe that by the early part of the next century virtually the whole of mankind should be brought within easy reach of a telephone and, in due course, the other services telecommunications can provide". Mechanisms other than telecentres can be used for this. Payphones are the obvious example, normally run by the largest telephone company in the country. However in many countries micro businesses offering telephone services have sprung up in the last five years and have been very successful. The International Telecommunication Union refers to these as Public Call Offices. In Indonesia they are known as 'Wartels', in Chile 'taxi-phone' systems have sprung up and in Senegal there are over 5,000 "Telecentres prives" that are heavily used. A particularly interesting example comes from Bangladesh, where Grameen Telecom is working to establish 68,000 Village Pay Phones (VPP) using cellular technology that will provide access to over 100 million poor inhabitants. It will cost US\$450 per VPP that is being financed by the Grameen Bank SMME loans, and is very successful. The Grameen loans are given to women who run the cellular payphone as a small business. These Public Call Offices have grown greatly in several countries with very little or no state or international support - Grameen runs loans and does not give donations. The larger telecentres require much greater infrastructure (equipment, building, facilities), organisation and finances. There are examples of telecentres resenting being undercut by

normal payphones and opposing their introduction in the vicinity (as in the Pescodia telecentre outside Kimberley in South Africa).

In South Africa there is an additional reason to provide universal telephone access as soon as possible. The legacy of apartheid has left a completely distorted pattern of telecommunications, with state-of-the-art services in mainly white urban areas and quite poor to non-existent services in overwhelmingly black rural areas. The latest reliable statistics from 1996 show 89% of white households have a phone while only 11% of black households do. In South Africa this situation is fast improving with the roll-out plans of the different telephone operators. However, it is an unanswerable political point that the majority population should be provided with access to telephony as fast as reasonably possible. However, as stated above, telecentres are not a good tool for this end. The needs of universal access are for a reliable, financially sustainable approach that can be rolled out on a mass scale - such as with payphones and Public Call Offices.

### ***5.2 Telecentres as a multi-factor experiment***

Part of the difficulty of determining the nature of telecentres is that the term has recently been used so frequently with real differences of meaning that are not clarified. It could be said that it has been agreed that 'telecentres' are a 'good thing' without really examining the claim that they represent a way of providing a wide range of (sometimes conflicting) developmental services.

Telecentres are generally agreed to be tools and not ends in themselves. The end is usually stated as the support of services in areas such as education, health care, local democracy and small business support.

This means that there is a primary end and a number of intermediate stages: telecentres are an organisational form that can provide access to Information and Communication Technologies that can offer development services in a number of areas that can assist in the development process.

*Telecentres > Access to ICTs > Provide services > Assist development*

This is a quite complex chain, and each stage is open to question. Also, a problem earlier in the chain (e.g. problems with the organisational form and funding of telecentres) means that elements later in the chain do not really come into question (e.g. can the Internet be of benefit to rural development).

The task of telecentres is made particularly difficult as at the same time they are experiments in many different ways.

- *Services:* What services can telecentres provide that will be of use to the communities they serve;
- *Equipment:* (Technique in Muller's model) What Information and Communications Technologies will work in rural and poor areas (for example trials of Internet radio between the Centre for

Scientific and Industrial Research in Pretoria and a telecentre in the neighbouring Mamelodi township);

- *Organisation:* What ownership and management is appropriate to create a dynamic, socially acceptable and sustainable centre. Experiments include franchises, community cooperatives, privately run small businesses, and government service centres (e.g. attached to a school, post office or library);
- *Financing:* How much is required to establish a viable telecentre, and how can ongoing costs be met.

Colle and Roman (1999) describes the following as different dimensions of telecentre development:

- Public / private sector
- Publicly or privately funded
- Commercial (fee-based) / free
- Urban / rural
- Narrow focus / multi-purpose
- Independent / networked, grouped
- Community-based / establishment
- Stand alone / attached
- Profit / service
- Thematic / universal

With so many variables, it is very difficult to be clear what is being evaluated in a telecentre project. It can be useful to compare the current work on telecentres in countries of the South with the original telecentres.

### ***5.3 Relooking at the relevance of the early telecentres to the South***

The first telecentres were established in the early 1980s in Scandinavia as 'social experiments' in promoting the use of advanced Information and Communications Technology (Cronberg et al 1991). These experiments had usually three years of funding and were extensively studied. After the three years, most of the projects closed down. They were seen largely as learning experiences and were useful for letting people experiment with different ICTs, especially farmers. One of the conclusions from these Danish telecentres was that a precondition for a successful social experiment is that the technical tools involved in the process must be tested in advance - they were social and not technical experiments (ibid). These first telecentres in Scandinavia, other parts of Europe (including the Manchester Host in the UK) and North America did not provide general access to telephones. It is noticeable that the 1980s telecentres were established in countries already with over 90% of households having telephones (the usual definition of universal service) (ITU 1998). At a risk of over-emphasising the point, the first telecentres had nothing to do with universal access to telephony.

The original Scandinavian centres used fairly stable advanced Information and Communications equipment, with the focus of the experiment on developing new social uses. The organisational

model was a lesser part of the experiment. Clearly it was hoped that some of the centres would keep functioning and find a useful role, but the key issue was the generation of interest and new local services. If the centre closed, that was accepted as part of the lesson of the experiment and was not seen as complete failure. In particular, the telecentres rarely were seen as providing long term access to the technologies. (However some centres, for example in Wales, have developed in the 1990s to provide long term access, especially as points for teleworking).

It is interesting to see how the 1980s Scandinavian telecentres have been reinvented in the 1990s as a model for countries of the South. For example, Ernberg (1996) refers to the Scandinavian telecentres "as a means of improving access to telematics in rural and isolated areas" without making clear that telematics here explicitly does not refer to the basic telephony that is most needed in poor countries.

In Africa and other countries of the South, telecentre projects have different aims from those Scandinavian social experiments. It is usually an assumption (often tacit) that the telecentres are for long term infrastructure delivery, which is taken to mean they must be able to generate their own ongoing funding, as no donor or government can supply revenue funding to thousands of centres offering infrastructure. This means there is great pressure on the managers of telecentres: they are effectively in charge of an experiment which is not certain to be successful, they are expected to generate their own funds for at least running costs, while also delivering a social service. How to make the delivery of social services profitable is exactly the problem that states have been attempting to deal with in the last decade of neo-liberalism. Pushing this onto telecentre managers does not solve the problem of governance.

#### **5.4 So what are telecentres for?**

There are a number of useful aims that have been stated for telecentres. The basic point is that a telecentre by itself is of limited use - the services are more important if (and only if) they are relevant to local community.

Telecentres can provide:

- *Universal access to telephony:* As discussed, telecentres are poor at this.
- *Information services:* Developing local information (as information producers) such as local directories and many techniques from development communications (see *The first mile of connectivity* by Don Richardson 1999). Participatory techniques can be adapted from library science to find the information requested, and then use many techniques (public meetings, individual meetings, posters, newsletters and electronic) to disseminate.
- *Other developmental services to meet basic needs:* Telecentres can usefully provide services in education, health care, small business support, agricultural extension, link to government and community projects. The real issue is determining what is of use to people in the area and delivering an appropriate service.

- *Education in 'Information Age' skills:* Telecentres have been seen as a way of providing many people with information literacy skills (such as computer use, web page design, programmers, network engineers and technicians) to develop the economy. Telecentres can partly serve this training role, but not through full individual fees (people will not pay in hope of jobs that do not yet exist). Telecentres will need to be subsidised (by donor, government or potential employer) to do this.
- *Local telephone connections:* Telecentres could become the hubs for local telephone exchanges, possibly run on the cooperative model promoted by the National Telecommunications Cooperative Association of the USA, specially using Wireless Local Loop technology. This would require major training programmes and financial assistance, which could follow the model of the Rural Electrification Authority which supported the wide diffusion of telephony in the USA in the 1950s.

Requiring telecentres to be immediately or quickly profitable without subsidy might be possible, but only through concentrating on those who can pay for services (or getting large contracts, for example from government, which is akin to subsidy). Focusing on those who can pay will mean less attention on providing services to the already disadvantaged, particularly women. However, as many development studies have shown, building the capacity of women is fundamental to overall development.

Telecentres could serve to bring exclusion into a rural community. In the exclusionary effects of Global Informational Capitalism mentioned above, the primary line of division is between rich Northern Countries and poorer countries of the South. However, there is also division between the elites and the poor in most countries, in Africa this is shown in the differences between the urban and rural areas. The risk is that telecentres will be the vehicle for bringing this exclusion into rural and disadvantaged communities. Whereas before the whole community was outside the web of the global electronic economy, now an advantaged few are inside and others (the already disadvantaged) are further excluded.

This brings up the key issue of social cohesion. Many African communities demonstrate much greater support for each other than shown in Western cultures. This is frequently cited as a reason why supporting a few in a village will bring benefit to the majority. For example, the fact that the only 20% of a community might be literate will still allow all to benefit from written information, as the literate ones will read to the others (quoted in the UNECA African Information Society email list, 14 June 1999). Social capital is a term used for the cohesion, trust, and mutual support that a community displays, and is a vital mechanism for coping with adversity (Hyden 1993). The fear would be that a few in a community being involved in global networks might increase their connections globally while reducing their linkage in their community. A key question for research on telecentres will be whether the introduction of advanced information and communication technology increases or reduces local social capital.

For telecentres to be sustainable in the longer term, and be appropriate for mass rollout, methods must be found for their longer term financial security, much of which may come from internally generated revenues. Profit seeking private enterprise may prove to be a useful tool for this, but so

may public provision as well as many other mechanisms. The point is that now is not the time to require profitability – we are still doing the experiments.

The fundamental issue of telecentres is who defines 'the problem' and the means to address it. Is it telecommunication companies who believe the problem is lack of telephone lines and usage; is it equipment suppliers; is it governments serving their citizens, building the economy and wanting to be seen to be effective; is it donors wanting to be part of the next wave of development; or is it people and groups wanting to lead a better life, and exploring whether a telecentre can help?

## **6. Conclusion**

This is not an argument against telecentres or the introduction of Information and Communication Technologies in Africa. These technologies are crucial for the development of Africa. But will development create passive consumers and weaken social relationships, or empower disadvantaged people who can use technology as an tool under their control.

Below is a summary of the arguments in this paper, with tentative suggestions for possible ways to proceed in telecentre projects.

### **SUMMARY**

- There is a risk that telecentre projects will either fail (wasted money and project closed) or act as groundbreakers for exploitative Global Information Capitalism, unless there is an explicit aim of running the telecentres under local social control.
- Telecentres are a form of technology transfer, and we should learn from the experience of other technology transfers that simply introducing new equipment is insufficient. Issues of embedded understand, the wider systems required and building local skills to adapt (and not simply operate) the equipment are crucial. In Muller's model, the Knowledge and Organisation must be considered as well as the Technique to be able to promote a desired Product.
- Telecentres are not good at providing universal access to telephony. Universal access to telephony is an important goal, and is better met by payphones or micro enterprise Public Call Offices. Programmes can assist directly, as Grameen Telecom has done, and through training, awareness and other small business support services.
- We do not yet know how to provide access to advanced Information and Communication Technologies on a large scale in countries of the South. Accepting this means the focus should be on experiments and learning, not on mass rollout. Franchises and other systems of top-down control can efficiently and profitably deliver through stable technology (Technique, Organisation, Knowledge and Product). However, they are completely inappropriate with multi-dimensional experiments where the key is local assimilation and capacity building.

### **SUGGESTIONS FOR FUTURE TELECENTRE DEVELOPMENTS**

- As experiments, many different forms of telecentres should be tried. Where possible they should explicitly be run as community directed structures. The processes (of capacity building, needs identification, ongoing community evaluation, monitoring & control, local decision making and strengthening of social capital) to find ways to deliver needed local services is much more important than the equipment. Also do not expect or require financial profitability immediately. Perhaps it will come (as we hope) but do not kill the wider social experiment immediately if this is not possible. This does mean that fewer telecentres will be established in the short term, each with guaranteed funding for, say, five years.
- Certainly use mechanisms of incentives (such as surplus generated being kept by the operator or local organisations) and penalties (possibly, poor performance as defined by the community meaning management of the telecentre is given to another group in the community) to promote dynamism and moving away from bureaucratic delivery to passive recipients.
- Make the telecentres accountable inside the community, not outside to funders. Ideally, some local steering committee or board will set social targets for the telecentre (such as free access to school children or sessions serving only women - possibly with childcare provided). The community served by the telecentre should control (or at least influence) the running of the centre, and be the ones to say how well the telecentre is performing.

For this system to work, evaluation and monitoring that can discern the real impact of the telecentres is crucial. This evaluation should be primarily run by the community served by the telecentre and become a form of local management (evaluation of problems of the past period becomes the objectives for the next period). This will require developing innovative participatory and qualitative tools. The indicators collected must not just measure financial and immediate outputs of the centre, but wider impacts of the centre. This issue is crucial to the success of telecentres as locally controlled experiments (and could be the subject of a separate paper).

The recent enthusiasm for telecentres offers an excellent opportunity for finding ways to use new technologies to support people-centred development. However we must not be confused between means and ends to ensure that genuine local development is promoted rather than creating passive disempowered consumers in the Information Age. Perhaps we can learn how to socialise the modem of production<sup>6</sup>.

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**Peter BENJAMIN**

University of the Witwatersrand, Johannesburg  
 PO Box 601, Wits 2050, Johannesburg, S Africa  
 + 27 82 829 3353  
 +27 11 488 5910  
 peter@sn.apc.org

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<sup>6</sup> A modem (modulator, demodulator) is a device to connect a computer to a telephone line, which is crucial in electronic networking. This line is a play on the phrase 'mode of production' meaning the organisation of production which can be seen as fundamental to a society.

**Mona DAHMS**

Associate Professor, Department of Communication Technology  
Aalborg University, Division of Telecommunications  
Fredrik Bajers Vej 7-A5, DK - 9220 Aalborg O, DENMARK  
+ 45 96 35 86 77  
+ 45 98 15 67 40  
md@kom.auc.dk

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## **The Universal Access Model – Cabinas Publicas in Peru (Yuri HERRERA BURSTEIN)**

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Red Científica Peruana – Internet Perú

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### **Important Note**

This document presents a summary of the Peruvian Scientific Network's experience in telecentre development and RCP's Universal Access Model. This Spanish version is currently being translated (30/09/99) into English and will soon be available on our Web site: <http://cabinas.rcp.net.pe/>

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### **1) Antecedentes**

En general, cuando hablamos de Internet, influenciados por la prensa especializada, creemos que hay un modelo único basado en los accesos telefónicos, en la información concentrada - en general en inglés- y para gente que tiene computadoras en su casa. Todas las estrategias de desarrollo comercial del Internet abonan este pre-concepto y están orientadas a un público que reúna estas condiciones asimilando el desarrollo de esta industria en la región, a como lo está haciendo Estados Unidos, con un mercado maduro, que después de 20 años de desarrollo, representa el 73 % del total de usuarios de Internet en el mundo.

Este modelo está basado en que 97 de cada 100 hogares tienen teléfono y 43 de cada 100 tienen una computadora instalada en su casa. En general, en la región no se toma en cuenta que la infraestructura que soporta este modelo de negocios cubre territorialmente con fibra óptica todo Estados Unidos y está prácticamente 100% digitalizada. Tampoco toma en cuenta que este desarrollo ha sido y es altamente subvencionado por el gobierno promocionando su difusión y uso para toda la población (acceso universal) y que la desregulación de las telecomunicaciones promueve y protege realmente la libre competencia. Las diferencias saltan a la vista de inmediato cuando pensamos en el desarrollo de estas nuevas tecnologías en América Latina.

El modelo concentrado, basado en acceso telefónico, en computadoras domiciliarias y en el consumo pasivo de información, a pesar de lo que se piensa corrientemente, no es el único posible.

La noción de Cabinas Públicas es la consecuencia de 6 años de experiencia de la Red Científica Peruana construyendo un modelo alternativo de red nacional en un país en vías de desarrollo, que, sin descuidar al público objetivo del modelo comercial, puede rápidamente y con poca inversión, lograr que un alto porcentaje de la población pueda interactuar con el mundo utilizando estas nuevas tecnologías (acceso universal). Este proyecto no está fundamentado exclusivamente en motivaciones "sociales o de desarrollo" sino también en la lógica de los mercados de escala que posibilitan que sea autosostenido. Además se adapta a la realidad económica y de infraestructura disponible en un país en vías de desarrollo como los nuestros.

Cuando iniciamos la implementación de la Red Científica Peruana, a fines de 1991, encontramos diferencias muy grandes y evidentes que impedían un desarrollo similar al registrado en otros países en:

- Infraestructura Básica
- Cantidad de teléfonos por habitante
- Cantidad de computadoras por habitante
- Regulación favorable a los monopolios
- Altas Tarifas
- No-existencia de Subvenciones para Internet

Las Cabinas Públicas son parte de la solución que implementamos pero no deben ser vistos, como tampoco debe ser visto Internet, como un fin en sí mismo. Es más, es necesario detectar cuáles son los problemas reales que enfrentan nuestras poblaciones y encontrar soluciones tecnológicas que aporten a su solución.

## **2) Cabinas Públicas - Resumen**

Creemos que las Cabinas Públicas no sólo cumplen la función de permitir el "acceso" al Internet sino que, por el contrario, deben estar orientados a la producción de información, a lograr intercambio de negocios y conocimiento en el ámbito nacional y a la generación de un canal de distribución de la misma. No será posible pensar en "mercados virtuales" si no creamos una red interna, nacional, de productos orientados a resolver los problemas principales de la población del país, ayudar a resolver los problemas de integración, de consolidación cultural, de idioma, de preparación para la competitividad. En definitiva, de ayudar al desarrollo económico y social de nuestros países generando un mercado nacional.

El concepto de Cabina Pública describe centros donde la población tiene la posibilidad de participar pro-activamente en el uso de las nuevas tecnologías de información posibilitando el acceso a ésta, brindando servicios de comunicación, biblioteca y capacitación; orientado específicamente a posibilitar la promoción de la puesta en línea de información local.

Una Cabina Pública cuenta con una red local de computadoras personales conectadas a un servidor de red de área local que tiene conexión dedicada a Internet y un centro de educación

para 25 personas. Consta de 20 estaciones de trabajo como mínimo, scanner, impresora, proyector, sala de conferencias, teléfonos públicos, cafetería, etc.

### **3) Modelo RCP de Acceso Universal (Cabinas Públicas)**

El modelo integra los siguientes elementos centrales:

- Una organización participativa que permite involucrar a todos los agentes de la sociedad, que sustenta, lidera y orienta el proceso del desarrollo del proyecto.
- Una red de cabinas públicas (Infocentros, Telecentros o Monocabinas), como esquema de acceso universal y, por ende, de reducción de costos del acceso a la información y las nuevas tecnologías.
- Un sistema global de aplicaciones y contenidos relevantes para la población, que dan valor a la red y permiten ofrecer servicios globales..
- Un programa intensivo y masivo de entrenamiento que genera una cultura de uso, alimentación y aprovechamiento del valor de la red.

Otra importante característica del Modelo RCP, que está directamente relacionada con la generación de aplicaciones y contenidos, es su percepción del Mercado de las Redes de Telecentros.

Asimismo la RCP ha desarrollado un modelo de Franquicia que, como componente del Modelo de Cabinas Públicas, permite garantizar la rentabilidad del Proyecto y la de sus participantes (Franquiados). El modelo de Franquicia permite también el desarrollo de servicios globales y el mantenimiento de estándares de calidad (ver Modelo de Franquicia RCP)

#### **a) Organización Participativa**

El modelo RCP busca la generación de redes nacionales de gran impacto en el desarrollo del país. Estas redes sólo tendrán éxito si se generan a partir de las necesidades y requerimientos específicos de la población. En este sentido se debe permitir y garantizar que el desarrollo de estas redes cuente con el aporte de toda la sociedad, la cual deberá verse representada en dicha organización.

#### **b) Cabinas Públicas**

Las cabinas públicas son espacios en los cuales la población tiene la posibilidad de acceder a las nuevas tecnologías de información y recibir servicios de comunicación, educación, capacitación, esparcimiento cultural, apoyo a los negocios, etc. La configuración definitiva de los servicios que ofrece una cabina pública a sus usuarios está en función de las necesidades locales.

El modelo concibe distintos tipos de cabinas a partir de su capacidad tecnológica, administración, ámbito de acción y carácter de la organización que los soporta.

Tipo madre, operado por la organización: Las cabinas tipo madre le pertenecen a la organización y por lo tanto ésta percibe todos los ingresos y cubre todos sus costos. Se ubican principalmente en capitales de departamento y son generadores de mercado y conocimiento para el proyecto y sus herramientas.

Tipo Franquiciado: Estas cabinas son instaladas en empresas o entidades sin fines de lucro bajo un modelo de franquicias. En el caso de las cabinas franquiciadas, la organización administradora del proyecto entrega al franquiciado todo el equipo, software y mobiliario necesario para la puesta en marcha de su cabina. Por su parte el franquiciado debe cubrir los costos del local, conexión a la red, gastos generales y personal. Los ingresos producidos por estas cabinas le pertenecen al franquiciado. Este a su vez deberá pagar a la organización administradora del proyecto un derecho mensual por formar parte de la red. (Ver Modelo de Franquicia)

Monocabinas: concebidas como solución ad hoc para zonas de baja densidad poblacional y para ser instaladas en lugares de tránsito fluido a modo de sistema de comunicación y consulta. (Ver Monocabinas)

### **c) Sistema de Aplicaciones y Contenidos Relevantes**

Mucho se habla últimamente acerca del impacto que pueden tener los Telecentros (Infocentros, Cabinas Públicas, etc.) en la población de los países en desarrollo. Se analizan además las características de los diferentes tipos de Telecentros, pero se olvida que los Telecentros, como cualquier implementación de nuevas tecnologías, deben ser entendidos como un medio o un vehículo, y no como un fin en sí mismos.

En este sentido, el impacto que tiene un Telecentro o una red de Telecentros, no proviene de sí mismo o de sus características, si no de los usos que se le den. Dicho impacto depende entonces del éxito de las aplicaciones que se desarrollen y se “monten” sobre estas redes.

Los profesionales expertos en tecnologías de la información y comunicaciones, así como los expertos en redes y conectividad, que son las personas idóneas para diseñar y montar redes de Telecentros, no son los llamados a identificar las aplicaciones que deben dar valor a esa red, ya que no son necesariamente expertos en la problemática de los diferentes sectores del país a los que se quiere favorecer con el desarrollo de la red de Telecentros. En este sentido, estos profesionales técnicos, deben asumir un papel de facilitadores en el desarrollo de las aplicaciones que la población requiera en cada caso.

Por lo tanto debemos tener en cuenta que las aplicaciones que se monten en la red de Telecentros deberán ser el resultado del diagnóstico, por parte de las instituciones y personas especializadas de los diferentes sectores del país, de los problemas que se presentan en dichos sectores. Este diagnóstico debe dar como resultado la propuesta de Proyectos de toda índole que

den solución a los problemas identificados (como sabemos, la mayoría de nuestras instituciones ya tienen cientos de Proyectos de este tipo que por dificultades económicas, tecnológicas o de otro tipo no han podido implementar).

La construcción física de la red de Cabinas Públicas asegura acceso al universo informativo de la Internet, pero esto no debe entenderse como un fin en sí mismo. De no existir producción de contenidos de información relevantes para la población, el impacto económico y social de la red será muy limitado.

Como metodología para la identificación de la información requerida por los diferentes sectores, y para el desarrollo y puesta en línea del sistema de aplicaciones y contenidos, se propone la creación de grupos de trabajo Temáticos (Círculos de Aprendizaje). En El Salvador, para el Proyecto Infocentros, se han creado once grupos, entre los que figuran los de Educación, Desarrollo Rural, Desarrollo Local, Pequeñas y Medianas Empresas, Migrantes y Organizaciones Emprendedoras (Ver Proyecto Infocentros para El Salvador).

#### **d) Entrenamiento**

Las Cabinas deben estar también orientadas a la diseminación de cultura e información, al estímulo del intercambio comercial y de negocios, al conocimiento en el ámbito nacional e internacional y a la generación de un canal de distribución de la información.

No será posible pensar en "mercados virtuales" si no se consolida una red interna de orden nacional, de que incluya productos específicos orientados a resolver los problemas críticos de la población del país tales como:

- Problemas de integración a nivel nacional.
- Limitaciones para la afirmación cultural.
- Barreras lingüísticas.
- Limitaciones en la preparación individual y colectiva para la competitividad.
- Dificultades en el acceso a los servicios públicos y del gobierno.

En este sentido es indispensable desarrollar un proceso permanente de entrenamiento, capacitación y generación de un conocimiento que permita la real transferencia a la población de las nuevas tecnologías de información y comunicación que ofrece la red.

#### **4) Mercado de las Redes de Cabinas Públicas:**

Cuando se desarrollan Cabinas Públicas de manera aislada, o pequeños proyectos piloto, una de las mayores limitaciones con las que se encuentran los administradores de los centros es el tipo de servicios que están en capacidad de ofrecer. La mayoría se limita a los servicios tradicionales: Internet como navegación, chat, email, video conferencia y, eventualmente, cursos de

capacitación para el uso de estos mismo servicios, convirtiéndose en la práctica en proveedores estándar de Servicios Internet (pero de manera comunitaria).

Lo anterior tiene su origen, entre otras cosas, en una limitada percepción del mercado potencial de las Cabinas Públicas.

El mercado de las Cabinas Públicas es percibido generalmente como el de aquellas personas que tienen necesidad de utilizar Internet pero que no pueden hacerlo porque no cuentan con el equipo necesario en la casa, oficina o centro de estudios.

Este mercado está conformado por personas que conocen Internet , que han usado o se sienten cómodos con la utilización de una computadora, que entienden inglés (deseable), y que no cuentan con acceso en sus instituciones. Por lo tanto es un mercado muy limitado.

Si partimos de la visión de que las Cabinas Públicas, son simples proveedores de servicios Internet, tendremos un pobre impacto económico y social en nuestros países y muy poca rentabilidad para nuestros Inversionistas y Franquiciados.

La visión de la RCP respecto a las Cabinas Públicas dista mucho de la anteriormente expuesta.

La RCP considera que el objetivo de las Cabinas Públicas NO es solamente ofrecer servicios Internet, sino, y más importante, ofrecer servicios que den solución a los problemas de la vida diaria de la población, basados en herramientas Internet. Por ejemplo, la población deberá encontrar en las Cabinas Públicas, un lugar donde poder pagar sus impuestos, obtener sus partidas de nacimiento, ofrecer sus productos, votar en las elecciones, recibir y enviar remesas, tener una consulta médica, recibir un curso, pagar sus servicios generales, comunicarse con sus familiares etc.

En este sentido, si nos planteamos que el mercado de nuestra red de Cabinas Públicas es el universo (y para ésto sólo debemos identificar y desarrollar productos que sean útiles para cada grupo objetivo concreto) entonces tendremos un tremendo impacto en el desarrollo de nuestros países y una gran rentabilidad para nuestros Inversionistas y Franquiciados.

## **5) Modelo de Franquicia RCP:**

Características y ventajas del Modelo de Franquicia:

- Aprovechamiento de Economías de Escala
- Reducción de la Inversión por parte del Franquiciado
- Amplitud de servicios y de mercados
- Protección de los Franquiciados.

### **a) Aprovechamiento de Economías de Escala:**

El Modelo de Franquicias RCP, para los Proyectos Nacionales de desarrollo de Redes de Infocentros y Monocabinas, contempla que todo el equipamiento a ser utilizado en la red y los centros de servicios (incluidos los madre y franquiciados), así como el software correspondiente y el mobiliario respectivo, son adquiridos por la organización administradora de la cadena de Franquicia.

Esto genera volúmenes de comprar elevados que permiten acceder a descuentos muy significativos debido a las economías de escala, además de tener la posibilidad de contar con servicios desarrollados a la medida de sus requerimientos.

**b) Reducción de la Inversión del Franquiciado:**

Como hemos visto ya, el Modelo de Franquicias RCP contempla que todo el equipamiento a ser utilizado en la red y los centros de servicios (incluidos los madre y franquiciados), así como el software correspondiente y el mobiliario respectivo, son adquiridos por la organización administradora de la cadena de Franquicias.

Este equipamiento, software y mobiliario es entregado sin costo al Franquiciado, a fin de que éste lo usufructue en la prestación de sus servicios (Ver condiciones). Por lo tanto, el Franquiciado reduce su inversión inicial en infraestructura (de aproximadamente 60 o 70 mil dólares para un Infocentro estándar - si lo instalara por su cuenta) a solamente el costo de acondicionar su local (entre 5 y 15 mil dólares).

El poder contar con todos los equipos, software y mobiliario provistos por la administración de la Cadena de Franquicias, evita además a los Franquiciados el tener que tomar decisiones técnicas sobre el equipamiento óptimo para sus actividades y le permite concentrarse en la definición de los aspectos relacionados con su actividad.

**c) Amplitud de Mercados y de Servicios:**

El Modelo RCP considera que el mercado de las redes de Cabinas Públicas es el universo, en la medida que logre desarrollar servicios que den solución a los problemas diarios de las personas (ver Mercado de los Telecentros)

En este sentido, el Modelo de Cadena de Franquicia para la administración de las Redes Nacionales de Cabinas Públicas, genera las condiciones necesarias para el desarrollo de servicios nacionales que no pueden desarrollarse a pequeña escala o sin una estrecha coordinación entre los centros de servicios que los proveen.

Entre estos servicios tenemos por ejemplo los ofrecidos por las: Redes de Servicios Municipales, Red de Educación, Red de Salud, Red de Prevención de Desastres, Red de Pago de Tribuciones etc. (ver Desarrollo de Contenidos y Aplicaciones)

**d) Protección de los Franquiciados:**

El éxito de los proyectos de desarrollo de Redes Nacionales de Cabinas Públicas, depende del éxito de cada centro de servicios, sean estos del tipo Madre o Franquiciado, ya que ésta es la única forma de mantener una cobertura adecuada que permita llegar a la mayor parte de la población y generar servicios nacionales (ver tipos de Cabinas Públicas).

En este sentido la organización administradora de la Cadena de Franquicia apoya a sus franquiciados con el fin de proveerles las mejores condiciones de servicio que les permitan tener el éxito necesario.

Este apoyo se traduce en el manejo de campañas de marketing centralizadas y conjuntas, creación de una sólida imagen de marca, soporte técnico permanente, soporte en estrategias comerciales, generación de nuevos servicios, definición de tarifas mínimas para servicios estándares, etc.

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**Yuri HERRERA BURSTEIN**

Manager, RED CIENTIFICA PERUANA - INTERNET PERU

Augusto Tamayo 125 - San Isidro, Lima, PERU

(511) 421-6045; (511) 421-4877

(511) 421-8086

[odi@rcp.net.pe](mailto:odi@rcp.net.pe)

<http://ekeko.rcp.net.pe/>; <http://ekeko.rcp.net.pe/rcp/servicios/cabina/>

## **Computer and Communications Use in Low-Income Communities (Steve CISLER, et al.)**

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### **Models for the Neighborhood Transformation and Family Development Initiative**

#### **Prepared for the Annie E. Casey Foundation by:**

**Laura Breeden**, Laura Breeden and Associates, Inc.

**Steve Cisler**, Community Technology Horizons

**Vivian Guilfooy**, Education Development Center, Inc.

**Michael Roberts**, United Neighborhood Houses of New York

**Antonia Stone**, Community Technology Centers' Network

*With special thanks to the program staff and directors who agreed to be part of these case studies:*

**Toni Williams**, Austin Learning Academy, Austin, TX

**Roxanne Epperson**, New Beginnings Learning Center, Pittsburgh, PA

**Sister Jennie Lechtenberg and Luis Marquez**, PUENTE Learning Centers, Los Angeles, CA

**Rana Halpern and Ethel Long-Scott**, Women's Economic Agenda Project, Oakland, CA

**Bill Callahan**, West Side Community Computer Center, Cleveland, OH

#### **EDC**

Education Development Center, Inc.; Center for Education, Employment, and Community  
55 Chapel Street, Newton, MA 02458; (617) 969-7100  
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### **EXECUTIVE SUMMARY**

This paper reports on a survey of five community programs that offer low-income people opportunities to learn to use computers and on-line communications. Based in five different cities, the programs work with children, youth, and adults who want to explore new technologies and acquire specific skills, such as English literacy, office computer applications, and using the Internet.

The programs were selected to be representative of the types of organizations the [Annie E. Casey Foundation](#) might work with in its *Neighborhood Transformation and Family Development Initiative*. All are firmly grounded in their communities, led by strong, experienced directors, holistic in their approaches to community development, and committed to working with children and families.

The observations and conclusions in this report are based not only on the "snapshots" of these five programs, but also on the experiences of the members of the project team over many years in working with similar programs. The scope of this project is not exhaustive, but we believe our conclusions and recommendations are valid indicators for the Foundation about what is working, and where the gaps are in community technology programs.

The most important of these indicators are:

- *These programs are popular with children, youth and adults.* Demand for them comes from the bottom up. Both the people who come to learn about computers and the staff who run the centers associate computer proficiency with success in school and in the workplace. Mastering this complex, modern tool is a powerful, affirmative experience—one that offers challenge as well as hope.
- *Community computer programs address a wide variety of needs and interests, both community and individual.* These include becoming literate, learning business computer skills, practicing math skills, creating newsletters and brochures, playing games, performing research on-line, assembling a computer, and administering a computer network. Often community members create on-line information systems about their neighborhoods, cultures, or families. They experience the computer as a powerful and versatile tool.
- *At the same time, running technology programs presents new challenges for agency managers.* These include finding and retaining qualified staff, developing appropriate curriculum, obtaining funding, and keeping complex equipment and software up-to-date. These challenges are added to the already large agenda of the nonprofit manager, who must cope with shifts in government funding and policy, elaborate reporting requirements, and the day-to-day demands of life in distressed communities. The rapid pace of change in computing is another factor that places burdens on all organizations, whether for-profit or nonprofit, that depend on computers.

### **How Can the Annie E. Casey Foundation Help?**

- *Support and extend community technology programs by building on what we already know.*  
There is little need for additional, isolated "demonstration" projects. There is great need for thoughtful analysis and extension of what is already working. Particularly when it comes to children and families— where Casey is already a national leader—there are opportunities to make high-impact contributions by building on successful prototypes.
- *Document and distribute effective computer-based curricula and programmatic activities, and support the professional development of community technology leaders.*  
The professional support infrastructure for this field is not well developed, and the Foundation could make a significant contribution by supporting systems for sharing best practices and developing staff.
- *Study what works, and why it works.*  
The Foundation can help deepen our common understanding of what works by looking in more detail at issues such as family computing, teaching methods, and support requirements.
- *Help develop meaningful evaluation questions and instruments.*  
Evaluation efforts to date have been fragmented; the Foundation can help move this work to a new and more penetrating level.

## **Project Goals and Design**

The Annie E. Casey Foundation is embarking on an ambitious program for community revitalization called the *Neighborhood Transformation and Family Development Initiative*. As part of this program the Foundation wishes to identify proven models and strategies for change that can be used in turn-key fashion in partner communities.

Foundation staff realize that modern computer and communications technologies, which are increasingly powerful and pervasive, may be an important element within a broader strategy for community change. Because the use of these technologies is relatively new in the human service sector, the results to date, while encouraging, have not been extensively documented or analyzed. Yet, there is clearly excitement within low-income communities about providing computer training and Internet access to residents (of all ages), as demonstrated, for example, in the rapid growth of the Community Technology Centers' Network (CTCNet), the tremendous number of applications to the Department of Commerce's telecommunications grant program (TIAP), and the technology initiative of the National Urban League.

This project was designed to provide a quick scan of five to six technology-based projects that are relevant to the ambitious goals and scope of the *Neighborhood Transformation and Family Development Initiative*. The project team was composed of national leaders with extensive expertise in the field who could rapidly perform the proposed scan and create useful findings.

The case studies were selected to represent programs that varied in size, objectives, location, audience, and history. All have common characteristics that are important to the Foundation, such as an emphasis on children and families and a deep commitment to their communities. Willingness to participate was also a factor in the selection. The five that were chosen were drawn from a list that included CTCNet affiliate centers and others suggested by the Department of Commerce and the project team.

In keeping with the project's scope, the sample size is small and not designed to be statistically representative of any larger group. However, the project team drew upon its wider experience in analyzing what was observed at the five sites. Thus the conclusions can be understood as broad indicators that point to important issues and trends.

Four of the five sites were visited by either Steve Cisler or Laura Breeden, and a telephone interview was conducted with the director of the fifth site. Each of the programs had several opportunities to review and comment on the information in the final report. Before the site visits and interviews, the same set of questions was sent to each site; the interviewer expanded on those questions based on specific activities that were observed in the different programs.

## **OVERALL IMPRESSIONS**

The programs we chose to study were similar in that all are located in neighborhoods with larger-than-average minority populations and higher-than-average rates of poverty. All were in medium to large urban areas. All work with families, as opposed to just children or just adults.

On the other hand, the programs we looked at ranged greatly in size, as the table below shows.

**Table 1. Program Size and Characteristics**

<b>Name</b>	<b>Ages Served</b>	<b>Numbers Served</b>	<b>Program Budget (Annual)</b>	<b>Number of Staff</b>
<i>Austin Learning Academy (ALA)</i>	6-Adult	600	\$570,000	26 Staff (Full- and Part-Time)
<i>New Beginnings Learning Center (NBLC)</i>	5-Adult	90 (+35 tutees)	\$110,000	2 Full-Time 2 Part-Time
<i>PUENTE Learning Centers</i>	3-80+	2,000/day	\$3,000,000	40 Full-Time 5 Part-Time
<i>Women's Economic Agenda Project (WEAP)</i>	High School-Adult	75-150	\$125,000	N/A
<i>West Side Community Computing Center (WSCCC)</i>	8-Adult	700+ in Year 1	\$40,000	2 Full-Time
<i>Stockyard Computer Ownership for Neighbors</i>	Adult	350 to date	\$27,000	2 Part-Time

All of the programs provide services such as tutoring, language training, economic development, and job skills training in addition to computer access and training. In fact, each program existed to serve some of these other purposes before computer use was incorporated into its activities. While the intensity of the focus on technology varies, each is committed to including technology as a component of its programs.

All of the program directors see a clear link between economic success and the acquisition of computer skills. They express this in a number of ways. In Austin, for example, the local economy has many high-technology employers, such as Samsung, Dell, and Texas Instruments. Toni Williams, director of Austin Learning Academy (ALA), wants residents of East Austin to be able to compete for good jobs in those companies. In Cleveland, where a once-robust manufacturing economy has declined, many low-income people are working at minimum-wage service jobs with few benefits. Bill Callahan of the West Side Community Computer Center sees computer proficiency as a way to even out some of the ups and downs of the job market.

The computer curricula at the five centers varied in some interesting dimensions, including the level and type of skill development promoted in the programs and the attitude toward computer ownership. Common elements across the curricula were:

- Basic computer skills-using the keyboard and the mouse, using the operating system to "navigate" among the computer's programs and storage devices, creating files, printing files, saving files, and so forth
- Advanced computer skills-using various types of software such as spreadsheets, games, word processors, and drawing programs; sharing files among computers on a network
- Basic Internet skills-using e-mail, chatting, and browsing the World Wide Web
- Advanced Internet skills-creating Web pages, searching for information on the Web

In addition, one program, the Women's Economic Agenda Project (WEAP), provides opportunities for advanced technical training through the "Cisco Networking Academy," an industry-sponsored program in which students learn the professional skills needed to configure and manage Internet routers and other network devices. The curriculum for this program was developed by Cisco Systems, an \$8.5 billion company that is the dominant player in the exploding market for Internet connection equipment. Cisco is providing support to WEAP for managing the program in Oakland and surrounding areas.

Two programs, ALA and West Side Community Computer Center (WSCCC), provide opportunities for their users to build or repair computers for purchase. The directors of these programs believe that people need access to computers at home in order to become truly comfortable with them, and they have developed ways of building or recycling computers at low cost for neighborhood residents who want to buy them.

Acquiring English language skills with the aid of computers is a key part of the curricula at PUENTE and ALA. PUENTE also teaches Spanish literacy using computers, and New Beginnings Learning Center (NBLC) is about to join a Pittsburgh program that will work with illiterate adults.

For children and youth, the curricula included (in addition to basic computer skills) using the Internet for research, producing reports, creating neighborhood histories, and getting help with homework.

## **WHY COMPUTERS?**

We asked all of the people we interviewed why they had chosen to integrate computers into their programs, especially given the cost and relative difficulty of acquiring and maintaining computer equipment, the scarcity of trained staff, and the lack of ready funding sources for technology programs. Their responses were quite similar and are summarized in this section.

### **Employment**

As noted above, the directors of all of these programs see a clear link between having computer skills and getting good jobs. At PUENTE this was expressed by one staff member as, "Our students need to know that they can compete, and computers are part of that."

General data about salaries and employment trends appear to support this connection. For instance, the Department of Labor has reported that almost 50 percent of all workers use computers on the job (double the rate of a decade ago), with those who do earning 43 percent more than other workers. By 2000, 60 percent of all new jobs are expected to require technology skills. Some of those jobs will doubtless involve "higher order thinking skills" (the new stock-in-trade of the knowledge

worker) or will require specific technical skills, such as electronic page layout and computer system administration.

Other work is more likely to evoke the "digital sweatshop:" lower paying, routine jobs with few prospects for advancement. Examples include the food service worker who punches icons on a cash register or ordering device; the typists in IRS data entry factories on American Indian reservations; the clerk, receptionist, or grocery checker wearing wrist braces because of repetitious keyboard or laser-scanner use; and the workers who are running semi-automated equipment, waiting for the next generation of machines to displace them.

A complex picture emerges when one considers detailed data on projected employment growth over a ten-year period. In 1996, the U.S. Bureau of Labor and Statistics estimated that the "fastest growing" occupational areas (i.e., as measured by the relative rate of expansion) from 1996-2006 would be in computer science, computer engineering, and systems analysis (the top three categories). These are followed by relatively unskilled (and lower-paying) categories that include personal and home care aides, physical therapy assistants, and home health aides. In absolute numbers, the occupations with the "largest job growth" are projected to be cashiers, systems analysts, managers, nurses, and salespersons. (Complete data can be found in the tables in Appendix D.)

It is reasonable to assume that if residents of low-income communities want to reach for more skilled positions, which tend to be better-paying than less skilled service jobs, they will benefit from having basic computer skills. Anecdotal reports from the experiences of center staff support this conclusion. But local conditions determine what types of jobs are available in the community, and successful job training programs are closely tied to the needs of local employers. Most of the programs we interviewed did not have quantifiable information about placement rates, although some had data about regional employment openings. PUENTE uses an advisory group of local employers to help design its business skills programs. It would be useful to analyze local employment trends, placement rates, and longitudinal effects on individuals, to better understand the impact of these programs.

### **Equity**

A strong theme of equity underlies the linkage between computer skills and better jobs. Center staff said that "people in our community need the same chances that others have." Facility with computers was seen as a great equalizer, and conversely, not being comfortable with computers was viewed as another mark of disadvantage. There was great passion among the program directors about not allowing this disadvantage to persist by writing off people of color and the poor as "not suitable" for the information revolution.

Numerous national studies have confirmed that low-income and minority Americans lag behind other groups in access to and ownership of computers, and in use of on-line services. It is more difficult to document the impact of these inequities, but it seems appropriate to trust the experience of community leaders, who are convinced that lack of computer skills is a handicap in the job market and who want the people they serve to have expanded career choices.

### **Empowerment**

Mastering the computer provided a tremendous sense of individual satisfaction and accomplishment. Often the people who use these community centers have not had good

experiences in school, and having a different kind of learning experience at the center has a dramatic impact on their self-images. Toni Stone calls this the "I can!" phenomenon, and points out that it is self-reinforcing: one success leads to another. "You never know where the first 'I can' will lead, whether you are homeless, illiterate, disenfranchised, or even an otherwise educated person."

In the Community Technology Centers' Network's (CTCNet) recent national survey of center users [Mark 1998], many people commented that their attitudes toward learning had improved and their confidence in themselves had increased. We suspect that the pace of change in our economy favors those individuals, communities, and even nations that can learn continuously and are not afraid of trying new things. Community technology programs are removing barriers for individuals, families, and communities who might not otherwise have the opportunity to participate fully in our technology-based economy.

### **Education**

A fourth reason for including computers in the curriculum was their educational potential. Either computers were prevalent in the local school system (in which case the centers aimed to supplement the instruction and experiences that were available in schools), or, more typically, the local system was felt to have inadequate computer facilities and the centers were filling the gap. Since home ownership of personal computers is relatively rare in low-income communities, the centers serve the need for after-school, informal, or unmetered computer access. (School use tends to be limited to a few periods a week and restricted to a few purposes.) Homework help, on-line research, and neighborhood history projects were cited as important uses of computers with school-age children and youth.

In adult education, computers (in addition to being used to teach office applications) were frequently used to support the acquisition of literacy or English language skills, and to supplement instruction in other subjects (for instance, in connection with obtaining a GED certificate).

We also know of programs (not studied in this project) where youth are operating Web design businesses, creating on-line content for publication, and learning to repair computers.

### **Community Information**

A final reason for using computers was a desire both to create and to take advantage of community information resources on-line. In particular, putting up information about one's own community was felt to have both practical and symbolic value: practical in that community members could share information about education, safety, jobs, and the like; and symbolic in that they could represent their history and identity in a new and powerful medium, by creating Web sites about their communities or their families. The East Austin Neighborhood Network ([www.alaweb.org](http://www.alaweb.org)) is an advanced example of what a community-based organization can do to exhibit student work, create a sense of place for people unfamiliar with a low-income neighborhood, and work with a city organization (the Austin Free-Net) to make this happen.

As the Brazilian educator Paulo Freire has shown, the disenfranchised can strengthen their identity by describing their surroundings-the world as they see it-and using that as a basis for changing and improving it. While Freire worked with peasants who drew pictures in the dust, the groups we interviewed are using GIS systems (computer-based geographic information systems),

Web sites, and community mapping techniques to document their experience and to share it with others.

## **SUCCESS FACTORS FOR COMMUNITY PROGRAMS GENERALLY**

Several success factors emerged clearly for us in our review of these programs. We see these factors as falling into two categories: those that are common to effective programs generally, and those that are specific to technology programs.

In this section, we describe the general factors.

### **Strong Leadership**

All of the programs we looked at have strong leaders. With one exception, they have been in charge more than ten years and have earned their stripes by working on community organizing, literacy, consumer action, social justice, economic development, and education programs. Their original programs have been visible, useful, responsive to the public, and effective. Their track records allow them to serve as change agents. As Toni Stone notes, the strong community leader has "the ability to withstand pressure to transform the community into something someone else wants it to be, a cool head, a business suit and jeans, and a great sense of humor."

### **Grounded in the Community, its Strengths, and its Needs**

In addition, these leaders know their communities well. They have many formal and informal ties to people and organizations in the community, and they are respected and "known" participants in community activities. They perceive their communities as centers of strength, not merely trouble spots, and they build on these strengths.

Their technology programs are successful because they are well integrated into center activities and into the life of the community. The centers are community-based; staff know the people in the neighborhood, and the people know that the centers will be around for them. This legacy of trust and familiarity helps projects get established and succeed.

On the other hand, some technology projects have been dropped into troubled areas like emergency response teams after a natural disaster. For example, one statewide school "NetDay" wiring project began as a rescue effort. Technophiles saw a problem: schools were not turning out the kinds of workers needed by high technology firms. The root of the problem was interpreted as "lack of technology" in schools because of foot-dragging by teachers and administrators, and the response was a massive wiring effort, working directly with students, and avoiding the staff as much as possible. Many of the volunteers helped out during an initial flurry of activity and then stopped. Other NetDays took a more holistic approach and did not see the "bureaucrats" as stumbling blocks.

### **Respectful of the People Served**

Everett Rogers' *Diffusion of Innovations* [Rogers 1995] cites research showing that lower socio-economic groups tend to adopt technology very late. These late adopters may be resistant to change for cultural reasons, may not be able to afford to purchase new technology, or may not even see themselves as potential users. Many outside the community fulfill this prophecy by writing off low-income people from their marketing, education, or policy plans. One can argue that low-income

people are late adopters, in part, because other, more powerful people think of them that way. The community-based organizations we worked with have obviously not written this group off, and their organizational status in the community allows them to introduce technologies that outside groups would not and probably could not integrate successfully. The trust afforded those we interviewed has allowed them to be innovative and effect change, in ways that other groups can replicate.

### **Broadly Inclusive and Diverse**

We observed that successful programs bring differing elements of the community together—different ages, different genders, different abilities, different ethnic groups—and work to develop common bonds and ways of problem solving that capitalize on these differences. Although we agree that there are worthwhile programs that target a particular age, gender, language group, or ethnicity, we believe that broadening outreach is an important goal. Michael Roberts of the United Neighborhood Houses of New York notes that "one of the positive outcomes of bringing different groups together is that they can learn from, and about, each other as well as confront and dispel the many stereotypes and prejudices that unfortunately are still very prevalent in our society."

These programs also bring community representatives together rather than segmenting them. The breadth, depth, and commitment of the board or advisory committee is one place to look for this. The plan for volunteer recruitment, orientation, and retention is another.

### **Contributes to Existing Community Institutions**

Successful programs offer value to other community institutions, such as schools, churches, and civic organizations. They may make their facilities available to other community groups (as WEAP, WSCCC, and PUENTE do), provide programs that complement what is available elsewhere, or offer training or consulting services to nonprofits that need them. Their leaders sit on the boards of other local organizations, and they are involved in community problem-solving efforts.

Technology can be a wedge for breaking down the boundaries between neighborhood organizations. The cost and complexity of using computers make it more likely that these resources will be shared.

## **SUCCESS FACTORS SPECIFIC TO TECHNOLOGY PROGRAMS**

The authors of this study have done extensive work with technology programs over many years, and our comments about success factors draw on both our observations of the five programs in this study and our other experiences. In particular we wish to thank Michael Roberts and Toni Stone for their contributions to this section.

### **Effective Program Planning and Design**

It is critical to spend the time and effort needed to plan the technology program thoroughly. (This should not be confused with, or replaced by, the time spent writing a good technology program grant!) As Toni puts it, "In a successful program, the staff has done its homework. They know what is easy to get (hardware, volunteers, etc.), and they have a plan for acquiring what is harder to get (money)." Center directors we spoke with emphasized that an important reason for their success and lack of wasted effort was careful planning.

CTCNet's *Center Startup Manual* contains a detailed blueprint for community organizations to use during this stage, which includes community needs assessment, site preparation, budgeting, staffing, and other components.

### **Well-Trained Staff and Volunteers**

The quality (skills, attitudes, ability to work with people from a variety of different backgrounds), quantity, and diversity of the staff (whether paid, volunteer, intern, full-time or part-time) are paramount. All program staff—not just the agency director—should be able to articulate the value of the technology program. And programs need a "jack of all trades" program director, who combines strong administrative and management skills, broad-based knowledge of computer hardware and software, teaching skills, and proposal writing skills.

Finding and training the kinds of staff needed to create successful programs is a challenge, one that we observed in the programs that we studied. People with technical skills are much in demand, and nonprofits compete with industry, where salaries and working conditions are usually more attractive for qualified staff. CTCNet is exploring several approaches to professional development in community technology programs, but the scale of the challenge calls for coordinated effort by nonprofit support organizations. Several foundations are exploring a "National Strategy for Non-Profit Technology" with technical assistance as one of its components. In addition, the United Way and IBM Corporation sponsor a national technical assistance program called Team Tech, but it operates in only a handful of cities. The U.S. Department of Education and the U.S. Department of Housing and Urban Development provide technical assistance to schools, community programs, and housing organizations under various grant programs. The need for national coordination and information-sharing across program boundaries is obvious.

### **Thoughtful and Up-to-Date Curriculum**

The curriculum should reflect an understanding of current hardware and software and how people use them. It should offer different strategies for learning how to use computers, both in and outside of a class situation. According to Michael Roberts, "Having a strong curriculum (or at least a well thought-out strategy about what will be covered in a computer class) is extremely important, especially when working with children, to avoid the often aimless and unsupervised computer game playing, Web browsing and chat room activities that occur in too many after-school computer programs."

Toni Stone adds, "The staff must have plans for keeping up with the technology (which is not going to stand still) and should not offer the same type of programming year after year as some community institutions do." At PUENTE, for example, staff discuss what is happening in their classes on a constant basis, and new programs, such as Kaplan test preparation for high school students, are added regularly. Their business skills classes are geared to real-world employer needs through the oversight of an advisory group whose members are managers in local companies. Their English language classes use software designed by PUENTE staff specifically for the local population.

### **Inviting Physical Facilities**

The program should offer an inviting environment—one that is equally friendly, professional, and respectful, clean, organized, open to feedback, and exhibits a seriousness of purpose. Two

organizations that we looked at had recently built or remodeled space to accommodate their programs, and their buildings were a source of tremendous pride and credibility in their communities. In fact, we were surprised by the power of owning your own building, which enhanced the stature of these organizations in their communities and changed the way others saw them. As Steve Cisler notes, "Part of being community-based is having a physical place to meet. Virtual meetings on-line can be an effective way of linking up project leaders around a city or around the world, but the need for a meeting hall or building in the neighborhood was paramount. We emphasize this because of the current infatuation with 'distance learning' in university and K-12 education."

In CTCNet's most recent survey of users of community technology centers, respondents reported that "convenient, close to home" access, low cost, and a friendly, supportive atmosphere were three of the most important factors influencing their satisfaction with the programs.

### **Expert Support**

An invaluable asset is access to individuals (who may serve on an advisory committee) who can provide technical assistance in all areas related to planning, developing, promoting, and implementing the technology program. Creating an advisory board is an excellent way to round out skills that may not be available to the staff, especially in the early stages of a program.

### **Evaluation**

"Not lip service, but real commitment to an evaluation plan is what's required," says Toni Stone. Michael Roberts concurs: "Community organizations should have a strong evaluation component which documents how their technology programs have helped underserved populations. These evaluations should be from the users' perspectives more than the staff's."

The programs we looked at used a variety of evaluation approaches. No one program seemed to have "all the pieces" in place, perhaps because there is seldom funding available to support comprehensive evaluation and because we do not know enough about how to evaluate technology programs, especially when they serve such diverse purposes. But all are thoughtful about what is working and how to improve results. For more information about evaluation strategies in these five programs, please see Appendix B.

Our observations about success factors, not surprisingly, resonate with those that Lisbeth Schorr identified in her 1997 book, *Common Purpose*, about how to identify and extend successful social programs:

- Successful programs are comprehensive, flexible, responsive, and persevering.
- Successful programs see children in the context of their families.
- Successful programs deal with families as parts of neighborhoods and communities.
- Successful programs have a long-term, preventive orientation, a clear mission, and continue to evolve over time.
- Successful programs are well managed by competent and committed individuals with clearly-identifiable skills.
- Staff of successful programs are trained and supported to provide high-quality, responsive services.

- Successful programs operate in settings that encourage practitioners to build strong relationships [with clients] based on mutual trust and respect.

## RECOMMENDATIONS FOR ACTION

We have four specific recommendations for action by the Annie E. Casey Foundation. These build on what has already been accomplished in the field in community technology programs, and they emphasize deepening and extending our understanding of what works.

- **Support and extend community technology programs, when the success factors are present or can be created.**

We urge the Foundation to build on the considerable body of information we now have, and on the well-developed skills and insights of technology pioneers in communities, to document and extend what is best about these community technology programs. Collectively, the authors of this study have more than 40 years of experience in seeding, growing, and evaluating community technology. Rather than fund additional, isolated "demonstration" projects, we urge the Foundation to support the careful analysis of what is known and the extension of successful practices into new communities. Today there are few mechanisms for sharing and deepening this knowledge. The Foundation could bring to this problem not only resources, but a rigorous approach to analysis and replication. Your expertise in working with families is particularly needed and timely.

- **Document and extend computer-based curricula and programmatic activities; support the professional development of community technology leaders.**

The Foundation could have a major impact on effectiveness by supporting improved systems for sharing information and expanded professional development activities. Many interesting and useful computer-based curriculum materials exist, covering a range of subjects: literacy, homework help, project-based learning (in science, math, language skills, arts), neighborhood history, family history, journal writing, games and tutorials, network navigation and search, English as a Second Language, business skills, computer repair and building, computer system administration, job hunting, and resume preparation. However, too often each community program searches for (or creates) these materials in a vacuum. More effective means of cataloging and sharing materials would lead to improved effectiveness in the field and a richer set of activities upon which to draw.

In addition, staff and leaders of technology programs need a stronger professional network. Opportunities for professional development in this emerging field are scarce, and the skill set that is required for success involves an unusual blend of technical, teaching, and administrative abilities.

Much of this work can be accomplished by providing support to the pioneers in the field, who can work with experts from universities and other institutions to develop the professional infrastructure that is needed. We emphasize that many of the skills and much of the knowledge required to move forward reside in the communities themselves: by supporting such an effort the foundation would be able to build capacity locally, while advancing the national agenda.

- **Study what works, and why it works.**

The Foundation can help deepen our common understanding of the success factors that are specific to technology programs. We have three specific examples; many others could be identified.

*Teaching Methods.* Many methods exist for teaching software applications and other computer skills, including self-paced computer tutorials, videos, workbooks, and manuals, as well as classroom instruction by teachers. We do not know enough about which of these (or in what combination) is most effective for use in community technology programs, or with people of different reading abilities and ages.

*Support Requirements.* We have created a snapshot of several programs whose scale, costs, and objectives are quite different. Is there an "ideal" model, that includes a certain number of staff and volunteers to serve a particular class size, a certain mix of formal instruction and informal exploration, a certain amount of time on the computer? Or are there many different effective models, as we suspect? Can we quantify and document some of this information?

*Research on Families and Computing.* Although there is a large body of research on the use of computers in schools, and a much smaller set of studies on the effectiveness of community computer centers, there is little specific work on the use of computers by family groups. Given Casey's interest in children, and the potential of computers to engage many different age groups, it would be helpful to know more about this subject.

- **Help develop meaningful evaluation questions and instruments.**

Evaluation questions and instruments need to be improved and widely shared across programs. There are a number of relatively isolated examples of impact studies, including three national CTCNet reports, a large-scale analysis (currently underway) of the first two years of the Department of Commerce's Telecommunications and Information Infrastructure Assistance Program, several studies of the multi-site technology initiatives of the United Neighborhood Houses of New York, and a recent survey of technology use in youth-serving organizations by Brandies University's Center for Human Resources. In addition, there are reams of anecdotal evidence from program staff about the popularity and effectiveness of their work.

Bringing together the insights of community leaders and the findings of these studies is the next evaluation challenge. The Foundation can help synthesize the "gut knowledge" and the more formal data. Then we can move on to formulate the kinds of questions that are needed to deepen our understanding of what works and apply it more broadly in communities.

## **THE ROLE OF CTCNET**

CTCNet, a national association of 300 community technology programs, has nearly ten years' experience starting and supporting projects like those described in this paper. It has created a number of resources and relationships that can be applied to the expansion and evaluation of community technology centers. In particular, CTCNet can provide technical assistance (through its staff and affiliates), peer support (through on-line communications, national and regional meetings,

and print communications) and examples of best practices (through its Web site and other publications, and through a new program called the Community Technology Leadership Institute). Access to CTCNet has helped program staff with typical problems such as:

- Finding appropriate hardware and software for a variety of audiences and purposes
  - Setting up a local area network
  - Identifying funding sources
  - Designing evaluation instruments
  - Dealing with the challenge of preventing inappropriate use of computer equipment
  - Training staff and volunteers
  - Developing partnerships with other community institutions
  - Customizing curriculum and materials for use by particular age, language, and other groups
  - Scheduling the use of computers and other facilities
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**Note:** there are a number of appendices (including case studies) which accompany this report, as follow:

APPENDIX A: CASE STUDIES

[\*Austin Learning Academy \(ALA\)\*](#)

[\*New Beginnings Learning Center Case Study\*](#)

[\*PUENTE Learning Centers\*](#)

[\*Women's Economic Agenda Project \(WEAP\)\*](#)

[\*West Side Community Computing Center \(WSCCC\)\*](#)

[Appendix B: Resources](#)

[Appendix C: Evaluation](#)

Appendix D: Bureau of Labor Employment Projections

[\*Occupations With the Largest Job Growth, 1996-2006\*](#)

[\*Fastest Growing Occupations, 1996-2006\*](#)

Please consult the full report on the CTCnet Web site: <http://www.ctcnet.org/casey/>

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**Steve CISLER**

Tachyon, Inc.

4415 Tilbury Drive, San José, California, USA 95130

1 408 379 9076

[cisler@pobox.com](mailto:cisler@pobox.com)

<http://home.inreach.com/cisler>

## **LearnLink, Assessment and Evaluation (Eduardo CONTRERAS-BUDGE)**

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*LearnLink, Academy for Educational Development (AED). Washington, DC, USA*

### **Synthesis from the field: the core lessons**

LearnLink works in the field, and learns from it, in the real-life applications, adventures, discoveries and mishaps of using technology for the public good. But there is also a core task required from LearnLink through which experiences are linked and distilled into knowledge and lessons, sent back to feed interventions, and shared with the development community. Eventually, too, they contribute to the shaping of synthesis products and overall pictures that try to make sense out of it all and thus also help design better interventions.

### **Models of use of ICTs for development**

As part of its core task, LearnLink is working around "models of use" of information and communication technologies for development and learning systems. These are non-prescriptive models, but rather a cluster of elements that are configuring promising and feasible approaches for addressing a development challenge with the help of ICTs.

These "models of use" derive firsthand from LearnLink's own experiences with field projects requested by Missions, from the experiences and lessons being derived from other organizations' and partners' own projects in developing countries, and from the debates, conceptualizations and strategizing occurring worldwide on equitable uses of ICTs.

Models of use under consideration include, for instance,

- the uses of networked computers for learning and teaching in schools,
- telecenters as community access points and learning centers,
- mediated professional development for educational agents, or
- enhancing NGOs' capabilities, reach, impact and sustainability with ICTs.

The focus of any model is on defining the problem being addressed, the features of the intervention, and some salient design, planning, implementation and evaluation guidelines and issues. (Other Notes deal with models; this one only addresses assessment).

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Note: These are summary points from LearnLink's document "[\*Assessment Guidelines for Designing and Planning Projects and Preparing for Evaluation\*](#)." E.Contreras-B & E.Rusten,9/98. The opinions are those of the author. His work is supported by LearnLink. The LearnLink Project is funded by the U.S. Agency for International Development (USAID) and is conducted by the Academy for Educational Development (AED) under contract number HNE-I-00-96-00018-00. Thus, the author's current work on assessment and evaluation for ICTs & Development has been made possible through USAID funding.

## **Assessment: step one for interventions and models**

One of the core areas for LearnLink is Assessment and Evaluation. LearnLink must provide guidelines, strategies and tools both for assessing the context and conditions for a possible intervention, as well as for monitoring and evaluating it.

In the course of developing these assessment guides, our understanding of the models and the very diverse experiences and projects has also become more sharp and sophisticated. Our first approach was expressed in the draft "Assessment Guidelines for Designing and Planning Projects and Preparing for Evaluation" (LearnLink, 9/98).

### **What are the Assessment Guidelines?**

These intend to provide a flexible, modular framework for exploring, mapping, highlighting and briefly characterizing the relevant contexts, actors, preconditions and factors to be dealt with when considering, designing and planning an intervention involving ICTs.

Used as instruments by developing agents, the assessment guides can organize and illuminate the understanding of the problem-in-context, the proposed approaches, and their strategic, practical and resource implications.

A number of suggested methodological approaches and procedures, all adaptable to context and scope of problem and resources, are also provided.

As part of the USAID original mandate, these guidelines are being pre-tested and further refined and revised by coupling them with the prevailing models of use LearnLink is pursuing at present.

### **Domains for the assessment:**

The Assessment Guidelines consider three essential domains:

- Assessing the Larger Development Environment, as the necessary first step;
- Assessing the Organization's Readiness for the intervention under consideration, and
- Assessing the Communication, Education and Information Technology Environments affecting the intervention.

1. In the larger **development environment**, three main areas stand out:

- assessing the **enabling environments** (e.g., situation & trends; policies and norms; economy, technology and Infrastructure; social, cultural and political factors; resources that may be mobilized).
- assessing the **main players**, that is, the participants, the people and institutions that may benefit, and the stakeholders for the intervention.

- assessing **equity issues** up front, prior to design, such as socioeconomic, gender, educational or cultural inequities, gaps or barriers...

2. The second main dimension is a selective focus on **organizational readiness**.

In assessment guidelines for the intervention, that means:

- Capable, motivated organizations and people, competent to perform and deliver, in a learning organization.
- Organizational Mission and Strategy review.
- Organizational Competence or Capacity: human capacities, as well as organizational structures, processes, resources and operations; and performance assessment.
- The uses & flows of communication & information.
- Communication and information infrastructure, equipment, resources and assets of organization
- Sustainability, both of the intervention and the organization
- Organizational equity questions, revisited at this interventional level.

3. The final essential domain involves assessing the **communication, education and information technology environments**.

- The communication, information and learning "ecology" for the organization dealing with the intervention is assessed, notably its technological components or aspects. The specific interest is not only on the infrastructural aspects, but on the possibilities open for the intervention, and on the human capacities to be tapped or facilitated.
- The technology infrastructure, the ICTs markets and settings, and notably the telecommunications infrastructure and services; computer and communications equipment and services; local Internet status and trends.
- ICT policies and regulations, human capacities in ICTs, specific ICT key players and stakeholders, and content matters.

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**Eduardo CONTRERAS-BUDGE**

Senior Assessment and Evaluation Coordinator

LearnLink, Academy for Educational Development (AED)

1825 Connecticut Avenue , N.W., Washington, DC USA 20009-5721

+202-884-8721

+202-884-8979

[contrer@aed.org](mailto:contrer@aed.org)

[www.aed.org/learnlink](http://www.aed.org/learnlink)



## **For the Educated People only ... Reflections on a Visit to two Multipurpose Community Telecentres in Uganda (Mona DAHMS)**

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*Aalborg University, DENMARK*

### **Introduction**

This article is based on the information acquired during two short visits to two Multipurpose Community Telecentres (MCT) in Uganda, the Nakaseke MCT and the Nabweru MCT. The visits took place during July 1999, in connection with my research which deals with an evaluation of the impact of MCTs on human, social and economic development in rural areas of Tanzania. The full travel report from the visits is available from the author.

The article starts out with a short description of the two MCTs visited, including project aims, physical lay out, services offered and users of the MCTs. In the second section the main concepts used in the article are discussed and defined. The third section elaborates on the title of the article, i.e. it discusses the question of who is the target group of the project. The fourth section takes a closer look at the 'digital divide', often mentioned in discussions on information and communication technology in Africa. The fifth section looks at provision and production of information and the conclusion summarizes the debate.

While I am grateful to all the persons who spent time with me in Uganda, informing me about the projects and taking me to visit the MCTs, I alone am responsible for any mistakes in this article.

### **The two MCTs in Uganda**

*The Nakaseke Multipurpose Community Telecentre and Library Pilot Project* started in December 1997 and the center was officially inaugurated in March 1999. It is located in Nakaseke, approximately 50 km from Kampala. The project is sponsored by UNESCO/Danida Funds-in-Trust, in partnership with the International Telecommunication Union (ITU), the International Development Research Centre (IDRC), British Council (BC) and local partners, such as Uganda Telecom Limited (UTL), Uganda National Commission for UNESCO (UNC-UNESCO), the Public Libraries Board (PLB) and Nakaseke Local Councils.

The aim of the project is to introduce new information and communication technologies and library services in the rural area of Nakaseke, in order to demonstrate that providing information and communication to rural communities catalyses the development process and results in improvement of the quality of life of the people.

The Nakaseke MCT is presently housed in a T-shaped building, where the downstroke of the T is a spacious library hall, the right-hand cross of the T is a small computer room and the left-hand cross is a communication room. The following materials and equipment are found in the MCT:

- 3.200 books (99% in English, for children and adults, fiction and non-fiction).
- Newspapers and some few periodicals.
- One television and one video cassette recorder.
- Five computers, one of which is reserved for library staff. The computers were not connected to the Internet at the time of the visit (July 1999), due to lack of a suitable telephone line.
- One printer.
- One scanner.
- One telephone inside and one telephone box outside the MCT.
- One telefax machine.
- One photocopying machine.

There are two fixed telephone lines, one is shared by the inside telephone and the telefax machine, and one is for the outside telephone box. Neither line is very good - failures occur often. The power supply is somewhat unreliable and subject to power cuts.

The services presently offered at the MCT, are the following:

- Computer training and application
- Telephone calls, local, national and international
- Sending and receiving telefax
- Photocopying
- Library services
- Newspapers
- Video-shows, educational and entertainment (mostly in English)

According to the librarian at Nakaseke there is a huge unmet demand for information material in local language, as well as a great need for information material which can be used by the illiterate people of the community.

Library users become members of the library for a fee of Ush. 2.000 (US\$ 1,43) for 3 months, during which time they can borrow books for a period of 2 weeks. The number of users is approximately 45 per day, mostly students, teachers and business people. Farmers do not use the library, mainly because the majority of them are illiterates and therefore cannot use the material at hand.

The photocopying service is the most popular. It is used for copying of certificates, documents, minutes of meetings for school administrative staff etc. Charges are Ush. 50 (US\$ 0,04) per page and the income varies between Ush. 8.000 (US\$ 5,71) and Ush. 20.000 (US\$ 14,29) per day. The telephone services, charged at Ush. 300 (US\$ 0,21) per minute (local call), have app. 15 - 22 customers per day, most calls being made to Kampala. The telefax machine is not much used.

Computer training which was not planned as a key activity has been very popular. Almost 100 people (mainly hospital staff, school secretaries and secondary school students) have up to now (September 1999) been trained on software packages like Microsoft Word and Microsoft Excel. Training periods are 30 hours and charges are Ush. 20.000 (US\$ 14,29) per package.

*The Nabweru Multipurpose Community Telecentre* is part of the International Development Research Centre (IDRC) Acacia project, Uganda. The MCT opened in May 1999, while the project started in Dec. 1997. It is located approximately 5 km from Kampala. Funding for the MCT comes from IDRC and from the Community. Presently, Uganda National Commission for Science and Technology (UNCST) is the executing agency, i.e. 'the owner'.

The overall objective of the project is to develop, test and promote community based information and communication technology applications for the development of rural communities.

The MCT is housed in the one end of a fairly new building which houses the sub-county headquarters in the other end. The MCT part of the building has 5 rooms, of which the largest is the computer room. The materials and equipment found in the Nabweru MCT are as follows:

- One television and one video cassette recorder.
- Five computers, all with Internet access.
- One printer.
- One telephone.
- One telefax machine.
- One photocopying machine.
- Uninterruptible Power Supplies for the computers for short power cuts (< ½ hour).
- One generator for longer lasting power cuts.

The fixed telephone line, shared between the telephone, the fax and the computers, is not very good - there is often congestion, making telephone calls, faxing and Internet connection difficult. Also power supply in the area is very unreliable and of low voltage.

Services offered at the Nabweru MCT are as follows:

- Computer training and application, including Internet access
- Telephone calls, local, national and international
- Sending and receiving telefax
- Photocopying
- Video-shows, educational and entertainment (mostly in English)

The telephone service, charged at Ush. 500 (US\$ 0,36) per 3 minutes (local call), together with the photocopying service, charged at Ush. 50 (US\$0,04) per A4-page, are the two services most used. The computers are used mostly by young people who surf the Internet for scholarships. Ten

frequent e-mail users use the computers on a daily basis. Computer training is also popular with the community people.

### **The Main Concepts**

Before discussing (some of) the observations made in the MCTs I would like to discuss - and thereby clarify - the meaning of a few of the most important concepts. The two telecentre projects both have as part of their aim the provision of information and communication technologies for community development. Thus, the most important concepts are Community, Development, Information, Communication and Technology.

A definition of **community** in connection with MCTs as meaning 'anything from community ownership to community access' is found in Fuchs (1997, page 3) - but the actual meaning of the word 'community' is not clearly defined. The following definition is taken from Gyekye (1998):

*"A community is a group of persons linked by interpersonal bonds - which are not necessarily biological - who share common values, interests and goals. What distinguishes a community from a mere association of individual persons is the sharing of an overall way of life."*

(Gyekye, 1998, page 35 - 36).

A community is thus, according to Gyekye, characterized by a common way of life. In Nakaseke the dominant economic activity is small scale peasant farming and the majority of people are thus farmers, many of whom are illiterates. In Nabweru the economic activities are more varied, due to the proximity of Kampala.

The next concept to be discussed is **development** which may be defined as 'cultural change' leading to improved living conditions for a given community. From this definition it is obvious that only the community itself can determine what constitutes 'development' - thus community participation must be an integrated component in all development projects.

The most often used word in telecentre debates is **information**. In phrases like 'Information technology', 'Information Society' etc. the word is used in the special sense in which it is used in Information Theory, i.e. a physical quantity which can be stored, processed and transmitted via technical means. Warren Weaver, the co-worker of Shannon (who developed Information Theory) says:

*"The word information in this theory, is used in a special sense that must not be confused with its ordinary usage. In particular, information must not be confused with meaning."* (Shannon and Weaver, 1962, page 99; here quoted from Jensen and Skovsmose, 1986, page 46).

Fuchs talks about 'The Value Chain of Information' as being Data -> Information -> Knowledge -> Wisdom (Fuchs, 1997, page 7), with wisdom being the highest form of information. It is important to distinguish between these four words and to use them carefully, in order to avoid confusion in discussions.

**Communication** is essential for the collective learning process (within an organization or a community) leading to development, i.e. to improved living conditions for that community. The collective learning process is based upon co-operation between individuals working towards common goals while undergoing individual learning processes (which in the experiential learning theory takes the form of the Kolb cycle: Experience -> Reflection -> Generalization -> Test -> Experience -> etc. (Kolb, 1984; from Holgaard, 1999)). Thus, communication is the purposeful dissemination within and between members of a community of individually acquired information and knowledge, from sources of data within or outside the community (Holgaard, 1999).

The holistic **technology** definition introduced by Müller (1980) defines technology as consisting of four elements: Technique (the 'hardware'); Knowledge (the 'software'); Organization (the 'org-ware'); Product. This definition distinguishes itself from most other technology definitions by including the product. Focus upon the product may contribute to an explicit needs-oriented problem solution or - in other words - the oft-encountered pitfall: "Here is the technical solution - what is the problem?" can be avoided.

### **The Target Group**

The title of this article is based on a remark made by the Acting Project Manager of the Nakaseke MCT: "There is among community people a perception that the centre is for the educated people only and we [i.e. the staff of the centre] are trying hard to break down that perception". 'Educated' here obviously means people who have undergone a formal education and thus can read and write, while 'non-educated' are people who have acquired information, knowledge - and in some cases wisdom - through informal learning processes.

From project documents it is obvious that the 'target group' of the Nakaseke telecentre project is the rural community in Nakaseke sub-county. Remembering that this is a farming community with a large proportion of illiterate people who do not understand English, and looking critically at the list of services presently offered by the Nakaseke MCT, the perception does not seem quite unfounded. The only services which can be used by the 'non-educated', i.e. the illiterate farmers who constitute the majority of the community population, are the telephone service, the photocopying service and - to a much lesser extent - the video shows. The literacy courses, the adult education and the skills training advertised on the MCT signpost in front of the centre are not presently available. Thus, a reflection on just **who** are the actual beneficiaries of the telecentre seems justified. Although it was not mentioned as a problem during the visit to Nabweru, the same restrictions concerning the illiterate community members' use of the telecentre services may be found there too.

An observation worth making is that in neither of the two telecentres were those services which are mostly used by community members (i.e. the telephone and the photocopying services) physically integrated with the other information services, i.e. the library and the computers. In both centres were the telephone and the photocopying machine placed in a separate room, while the computers in Nakaseke were in a small room adjacent to the library and in Nabweru in a spacious room situated by itself at the end of the building. This physical lay-out of the centre may not be the most

suitable one for fostering among the illiterate community members familiarity with and acceptance of the other services (books, computers) offered by the telecentre.

In some telecentre projects, like for example the Tanzania Community Tele-Centres (CTC) project, funded by International Institute for Communication and Development (IICD) and executed by Telecom Systems Ltd. and the Computing Centre, University of Dar es Salaam, the particular beneficiaries of the project are explicitly stated to be the professionals and the business people who, by using the telecentre, will be in a position to deliver better services to the community, with less frustration and more efficiency (Verheij, 1998). In this way the community being serviced by the professionals and the business people will ultimately benefit, although in an indirect way. Whether the term 'community centre' is still justified in this case may be open to discussion.

### **The 'Digital Divide'**

The above remark by the Acting Project Manager in Nakaseke serves as a warning of a community which is split into two by the MCT: The educated who can make use of all the services in the centre and the non-educated who cannot. In other words: The 'Digital Divide' in the midst of the rural community. Concern about this very split is raised in the UNDP Human Development Report 1999 which points out that Internet access divides educated from illiterate, men from women, rich from poor, young from old and urban from rural (UNDP, 1999). The UNDP Report labels it 'the gap between the knows and the know-nots' and in other articles and reports it is often labeled the gap between the 'information-rich' and the 'information-poor'. Let us take a closer look at this gap:

Compare the 35-year old cybercriminal, Kevin Mitnick, who is imprisoned in USA because of a large number of illegal, digital break-ins into computer systems of companies, causing damage to research and development worth millions of US\$ (Elias, 1999) with 56-year old Sylvia Odero from Kenya who without much difficulty can list 50 indigenous vegetable items (including methods for gathering, cultivating and using them) all of which are disease- and drought-resistant, grow quickly without the use of fertilizer or pesticides and make for healthy nutrition (Appelton, 1995). Is he the 'information-rich' and she the 'information-poor'? Is she the 'know-not' while he is the 'know'?

According to the value chain of information (Fuchs, 1997) *wisdom* is build upon accumulated *knowledge* which is the result of acting on *information* which again is a result of the process of accessing, assessing and applying *data* (Heeks, 1999). Although the information in Sylvia's case is traditional information, with 'data', i.e. the plants, being accessed, assessed and applied via 'organic' technologies (Heeks, 1999) and stored as implicit, tacit knowledge, it nonetheless represents the highest form of information: human wisdom.

The gap between the 'haves' and the 'have-nots' in terms of material goods and wealth is real and existing between countries and within countries between the elite and the poor - but it is not a gap caused by the lack of information, knowledge or wisdom, rather a gap caused by the lack of infrastructure, money and literacy skills to make the information, knowledge and wisdom of the poor explicit and communicable. Thus, I strongly support the point raised in Heeks (1999) about using information and communication technologies for giving the poor a voice and making them active information providers rather than passive data recipients.

### **From Recipient to Provider**

According to Heeks (1999), technologies that deal with information and communication can be categorized into 4 types:

- Digital technology (computers, digital data communication equipment, networks)
- 'Intermediate' technology (radio, tape recorder, television, video cassette recorder, plain old telephone system)
- 'Literate' technology (books, newspapers, periodicals)
- 'Organic' technology (the human body, the human brain, the human senses)

Provision of information to a rural community faces (at least) three problems: The language problem, the literacy problem and the relevance problem. These problems should be taken into consideration when deciding which type of information and communication technology to use.

The usage of the library in Nakaseke (an average of 45 users per day) indicates that 'literate' technology is useful in a rural community although the language problem is pronounced. This problem could, however, be overcome - and the library could become even more useful by meeting the huge demand for written material in local language - if translation of books and other written material is undertaken.

The literacy problem is clearly expressed in the great need for data material which can be used by the illiterate people of the community of Nakaseke. Such material could be produced using 'intermediate' technologies, such as tape recorders, video recorders and photographs (Birungi, 1999). Also 'organic' technologies could be used, such as community theatre, drama etc. Provision of data material for illiterate people using digital technology is not impossible but would require substantial improvement and adaptation of the equipment.

The relevance problem - or the problem of 'source proximity' of the data provider (Heeks, 1999) - can be overcome by recognizing and acknowledging that the illiterate community members possess and produce a lot of tacit knowledge and wisdom about local conditions of living. This experientially based tacit knowledge (often the produce of the accumulated knowledge of many generations) could be transferred into explicit knowledge by identifying local experts and letting them record information on their areas of specialization on audio- or videotape recorders (Birungi, 1999). Also local production of radio and television programmes should be encouraged. Making the local knowledge explicit and communicable would increase the collective body of knowledge in the community, i.e. organizational learning would take place. In the process of learning, knowledge generated outside the community would also be more easily integrated into the tacit work habits of the local people, thereby contributing to the collective learning process (Castells, 1996)

Thus, making the poor the information providers will bring about two advantages: It will produce easily accessible and relevant data material for poor rural communities and it will turn the poor into active providers rather than passive recipients.

An added advantage of bringing the 'non-educated' in as information providers may be that the gap between the 'educated' and the 'non-educated' will be diminished. A serious problem facing many African states today is the decreasing enrolment to primary education and the consequent rise in illiteracy rates among young persons. In Uganda, major information campaigns about Universal Primary Education (UPE) during the summer 1999 indicates that there is a real problem. In Sengerema District, Tanzania, the percentage of an age-group who complete primary school is as low as 50 % (Mchomvu, 1999).

Reasons for this situation are: The poorest families cannot afford to pay the school fees; they cannot afford to lose the income that a child's labour may generate; the quality of school education is low and does not increase employment opportunities; there is a serious mismatch between the curriculum taught in school and the knowledge required for the livelihood of the child and its parents (Kelly, 1998). Under these circumstances it is no wonder if school enrolment is decreasing but this trend may be changed by introducing into the school curriculum the locally generated knowledge, made explicit and communicable as described above. Also, the attitude of parents towards school education may change when they themselves are exposed to different types of information, generated using a variety of technologies.

### **Conclusion**

In this article I have attempted to point to a few of the pitfalls which should be avoided when discussing (and establishing) community telecentres in rural Africa. Firstly, it is important to acknowledge that there is no equality sign between 'poor' (in terms of money and material wealth) and 'information-poor' - although the information held by the poor is often tacit and non-communicable and therefore not easily recognized by outsider. Secondly, a community (tele)centre project should start out with a needs analysis, including all community members. Based on this analysis it can be decided what the product is, i.e. which services are to be offered in the centre. Only when this decision has been made, should the selection of appropriate information and communication techniques be made, and in the process of selecting appropriate techniques imagination and creativity should be applied, as should reflections on personal processes of learning and acquiring information. In this way we may achieve telecentres which are truly serving all members of a rural community.

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***Comments to and critique of this article are welcome:***

**Mona DAHMS**, Department of Communication Technology, Aalborg University  
Fredrik bajers Vej 7A6, DK-9220 Aalborg Ø, DENMARK  
Phone: +45 96 35 86 77; Fax: + 45 98 15 67 40; e-mail: [md@kom.auc.dk](mailto:md@kom.auc.dk)

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## **Establishing a Public Internet Centre in Rural Areas of Mongolia (Narangerel DANDAR)**

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*System administrator, Technology Dept., Datacom Co., Ltd., MONGOLIA*

The main purpose of the project is to broadcast information and deliver Internet access to rural areas.

Mongolia has about 1.57 mil sq.km of territory and 2,4 mil (1998) inhabitants. Nearly one-fourth of the population live in the capital city Ulaanbaatar. Administratively, Mongolia is divided into 21 aimags (provinces) and about 300 soums (rural units). The telecommunications infrastructure is under developed especially in rural areas and the telephone network there based on old Russian technology.

For today, our project covers 4 aimags: Erdenet, Khovd, Dornod and Umnugovi. These aimags represent north, west, east and south part of Mongolia respectively. We already established the Telecentre in Erdenet and Khovd aimags and they were connected to the Internet via satellite system at a speed of up to 64Kbps. The connection in Dornod and Umnugovi aimags will be implemented in October.

The main sponsors of this project are OSI (Open Society Institute) in Mongolia and Datacom Co., LTD of Mongolia. Public Internet Center (PIC) provides free Internet connection to Secondary schools, Local Government Office and NGO/NPO according to the requirement of Sponsors. The PIC, organizationally, is established on the basis of Membership. The Members can be NGO and NPO-s like local women's organization etc. The Local Library will be one of the member to the PIC's Board of Management.

OSI-Mongolia and UNDP office in Mongolia are going to grant a voucher to Members of the PIC that costs equal to 50% of total granted money for the NGOs. The business users will be charged at the relevant price for their Internet access.

We are intending to connect the Secondary Schools and Local Government Offices through radio modem. The PIC will work closely with Local Government Office as they are going to support in providing a room for PIC. PIC needs to negotiate with LGO (Local Government Office) the recognition of the granted vouchers as a donation to the NGO/NPO and do not recognize it as an income for PIC. As a Tax Law of Mongolia, the gifts and donations to NGO/NPOs would be considered as a tax-free income.

PIC provides the following facilities and services to the Members and Customers:

- Internet room with 6 PC, modems and related equipment (printer, UPS etc.)

- Dial-up access with 6 ports
- Internet access, email
- Fax service
- Web hosting/design
- Local telephone service etc.

The price for these services based on the usage and will be varied on the service/users type.

Problems we are facing and their solution:

*Electricity.* The electricity in rural areas is non-stable and power down occurs so often. Supplying by power for 24 hours is very expensive. In order to solve this problem partially, there is required to install generator or UPS.

*Phone line.* Rural telephone network is still based on the old Russian technology. The telephone connection is unreliable and its speed is low. Therefore, suitable for such kind of lines and a speedy modems are required for the dialup connection. Sometimes, it influences the price when we are choosing the equipment.

*People.* Main problem is language problem. Most documents, materials on the Internet are in English so we need intensively to develop the content in local language. The PC penetration is very low in rural areas, so computer general literacy is also very low compared to urban's population.

To prepare local trainees and elaborate manuals and documents specially for them.

Delivering Multimedia, Java scripts and graphics are unavailable to rural areas. The contents must be in short and require low resource.

### **Basic needs:**

Content development. To provide useful daily information for rural people (e.g. quick market relevant information like price of raw material (cashmere, wool etc.), weather.

### **Conclusion**

The Spreading of Telecentres in rural areas is possible and will give the positive results if we will solve the financial issues.

I would like to express our thanks to IDRC for organizing this conference and other activities that concentrated especially regarding this issues.

We think that following activities might be useful in the future:

- To create special web-site on Telecentre issues. We do not have enough experience. So, the information, experience of other similar projects, words from experienced people would be very useful.

- To organize training for people who are involved in the Telecentre, to give a possibility to exchange their knowledge to each other through on-site visits, might be better and fruitful to work in other Telecentres for certain time of period.
- To develop a methodology on determining of the below mentioned questions as we need for it to frame and define our job results:

Why the people need for Telecentre?

If Telecentre affects to the people's life and assists indirectly/directly for their improvement?

How we will define the indicators for it and how will measure this kind of factors? etc.

We need to synchronize our activities and the Telecentres need to collaborate together.

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**Narangerel DANDAR**

Associate Professor, Department of Communication Technology

DataCom Co., Ltd.

Negdsen Undestnii Str.49, Ulaanbaatar 210646, MONGOLIA

976-1-315544 (105)

976-1-320210

[narangerel@datacom.mn](mailto:narangerel@datacom.mn)

<http://www.mol.mn>



## **Learning Lessons from Telecentres in Latin America and the Caribbean (Karin DELGADILLO, Raúl BORJA)**

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*ChasquiNet Foundation, Quito, ECUADOR*

### Abstract

*This document summarizes contributions on the nature and development status of telecentres in Latin America, gathered through an online consultation process that was organized by the International Development Research Centre (IDRC) and facilitated by ChasquiNet, Ecuador, in July 1999, and that involved telecentre operators and researchers in new information and communication technologies. This information is expected to serve as the basis for future detailed research on the challenges and opportunities facing telecentres in Latin America and the Caribbean, and on their impact on social and economic development.*

Those of us who are involved in new electronic communication technologies have asked ourselves many times: how can we learn from experiences with telecentres in the region?

Learning implies, first, capturing experiences and analyzing them. But how are we to capture experiences if they are generally isolated one from the other? And how are we to analyze them without first constructing a methodology for evaluating these new practices in the region? Finally, what use are lessons if they are not “socialized”? Is it possible to learn them without socializing them?

Within the region, significant progress has already been made in this respect. The survey sponsored by IDRC in early 1999 produced interesting results. A questionnaire was submitted to 23 telecentre operators in Latin America and Caribbean, and the results were used to prepare and up-to-date a “typology of telecentres”, with the least six different categories.<sup>1</sup>

The central question would appear to be the following: are the new information and communication technologies *per se* part of the new paradigms of development in countries of the region?

This is not a new question, if we think back to the problems, opportunities and challenges of alternative communication that attracted so much attention during the 1970s and '80s<sup>2</sup>. The north-

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<sup>1</sup> Interested readers may access the results of this survey through [www.idrc.ca/pan/telecentres.html](http://www.idrc.ca/pan/telecentres.html)

<sup>2</sup> On this debate see: Matta, Fernando, “Alternative Communication: Solidarity and Development in the Face of Transnational Expansion”, in *Communication and Latin American Society* (eds. Rita Atwood and Emile McAnay), Madison, University of Wisconsin Press, p 190-214.

south gap in terms of real possibilities for access to information and communication technologies has not been narrowed since then. And furthermore, in most developing societies, one indicator of the glaring discrepancies in living standards is precisely the gap between those who have access to the most sophisticated information and communication technologies, and those who are still limited to using an invention of the past century, the telephone.

Nevertheless, in this age of globalization, new information and communication technologies have been presented in many scenarios as the paradigm for resolving the problems of development and democracy, not only in countries of the region but throughout the South. This paradigm is difficult to sustain today, although criticisms of it have yet to be fully validated<sup>3</sup>.

But how can we know for certain that the new information and communication technologies are not in themselves a paradigm, but rather merely a tool that may or may not be useful in meeting the challenges of development in the countries of Latin America Caribbean?

This question brings us face-to-face with the challenge of building a methodology for evaluating the processes by which these technologies are incorporated into the daily life of people in these societies, and the roles they play in development strategies.

These questions have inspired us propose an effort to systematize experiences with telecentres in the region, starting on one hand with the research and systematizing that has already been done, and on the other hand launching a process to learn from practice, i.e. to systematize concrete experiences in order to learn from them, something that in the current jargon of NGOs is called "the lessons-learned process".

This is an open process, in the midst of which there arose the idea of formulating a collective research project into methods for monitoring and evaluating the telecentres. This project did not in fact spring from any particular NGO or group of individuals, but rather implies a process of participatory construction by operators of telecentres in the region, and by intellectuals working on the issues of new information and communication technologies.

### **The first steps of the project**

Once the first ideas had been put forth, an NGO in Ecuador, ChasquiNet, and the IDRC's PAN program drew up a tentative roster [*lista*] of possible participants, which came to be known as TELELAC. ChasquiNet also produced an initial "skeleton" of topics for discussion, established basic rules of the game, and coordinated the process of online communication. Many people, including telecentre operators, electronic communication researchers, alternative communication project directors and officials, were soon working enthusiastically on an agreed agenda.

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<sup>3</sup> See: Gomez, R., "The Nostalgia of Virtual Community: a study of computer-mediated communications use in Colombian non-governmental organizations", *Information Technology & People*, 11(3), p. 217-234.

On the basis of initial responses to its soundings, ChasquiNet constructed a questionnaire, with open questions about the status of telecentres in the region, their problems and expectations, answers from which were collated and distilled into the arguments that will be set out in this working paper

It should be noted that the survey questionnaire was answered by most of the participants in the online discussion, and their ideas form an essential part of this document. Participation was relatively spontaneous, although pressure had to be applied in some cases to meet deadlines; in general however, the dialog was effective, continuous and very cordial -- and hence productive. Here are the results:

### **Results of the TELELAC virtual consultation: action rather than evaluation**

In attempting to respond collectively to the question underlying the project - how can we implement a program of collective evaluation and learning from experiences with telecentres in the region? - we encounter two phenomena.: first, the main problem faced by the telecentres is the lack of any regional forum for communicating experiences acquired.

The other phenomenon gathered from the online discussion is that monitoring and evaluation activities carried out in the region have not so far been the "strong suit" of the telecentres. In fact, what evaluation there has been (as opposed to monitoring) has generally been done in the natural course of a given communication project, frequently in an attempt to "make up for mistakes", something no doubt fully legitimate, as part of an ongoing effort to correct errors and make projects more efficient.

Efforts to evaluate the region's telecentres appear to have consisted primarily in *ad hoc* attempts to identify needs and problems, in light of the goals and objectives that were set for the projects in advance. Very rarely was evaluation undertaken as an *ex ante* methodology for constructing the project. For example, the Sustainable Development Network in Nicaragua holds weekly meetings to evaluate performance against its objectives.

Finally, there have been some evaluation experiments that were external to the projects, carried out by international donors more as "surgery" than as "diagnosis". These evaluations have been invaluable, above all for the external players in the projects, rather than for the people involved in implementing the telecentres themselves. From the viewpoint of telecentre coordinators who have received support funds from cooperation agencies, an evaluation is something to be feared, much like receiving a black mark in school, with the risk that they will not get any more funding for the project. Because of this fear, we frequently find that project reports do not contain any real data on their performance.

### **Experience with telecentres**

Responses to the survey questionnaire show that, generally speaking, the telecentres are part of some communication or training project for specific sectors. In certain cases, they belong to projects to build academic research networks, development networks and information centres.<sup>4</sup>

Telecentres have frequently arisen from isolated experiments. They have been developed more or less spontaneously, and pose the need to relate to other similar projects, and to create something more organic, more coordinated, so as to be part of a regional strategy for social communication and information.

Nevertheless, we now have broad experience with telecentres. We may say that telecentres in the region have been dedicated to:

- Training members of civil society organizations (NGOs) and associations (labor unions, business groups, etc.) in use of the Internet.
- Providing public telecommunication services to students, tourists and individuals.
- Providing basic information on how to use the Internet, understood primarily as using one tool in particular: email.
- In a few cases, telecentres manage funds.
- In Paraguay, they are used to support the municipal decentralization program, by facilitating the provision of information on public services.
- They have frequently been used to provide support to groups of students at the basic, secondary and university level, as well as to their teachers.
- Much fewer experiments have been devoted to working in networks for social, developmental and academic research.
- It is very common to provide communication services requested by tourists.
- There are some instances of support for community radio stations and alternative means of communication.
- Finally, in a few cases support has been provided to persons with disabilities.

It should be noted that to date, the services provided by telecentres relate mainly to connection and training on the Internet. In this area, users are trained in:

- Designing Web pages.
- Using public phones.
- World Wide Web.
- Chats and VCR.
- Discussion groups.
- Bibliographic consultations over the Internet.

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<sup>4</sup> A systematic description of telecentres in Latin America and the Caribbean can be found in: Telecentros en la Mira ["Focus on telecentres"], Gomez R., Revista Chasqui, CIESPAL, Quito, June 1999.

Some telecentres have broadened their services into a much more conventional field:

- Training in basic computer programs.
- Providing access to educational CD-ROMs.
- Providing printing, scanner, fax services.

We may conclude at this point that the region's telecentres are responding to immediate user demands, and in some cases they have no pre-established operating plan that would allow them to provide good service at low cost.

They also act as facilitators in resolving specific technical problems for users, meeting communication needs and providing access to information, including serving as facilitators for computer equipment.

There have been some experiments in preparing communication project profiles, for which users are consulted about their needs, agreements are drawn up, contracts with financing agencies are signed, etc. This process is still in gestation and a more systematic and creative approach is needed for identifying solutions to the specific wants of users.

Nevertheless, there is a major problem in the region: the high cost of telecommunications and the lack of any frameworks to regulate access. To this we must add the lack of infrastructure that affects not only rural areas but also some of the poorer urban districts, the poor quality of telephone lines (many of which are still analog), and finally the low income levels of the majority of the population, a structural factor that poses a specific obstacle to access to new information and communication technologies.

Faced with these problems, the telecentres have tried to find a response. But this will require much more than ad hoc solutions - there must be a change in state policies that will make access to telecommunications more democratic. This means that organizations and social groups involved in the telecentre projects must press for the definition of policies and decisions, for which they need to have strategic allies at all levels in the region

### **The success of the telecentres**

Our own survey, as well as the one conducted earlier this year by IDRC<sup>5</sup>, has provided us with first-class material that will have to be "socialized" more broadly. For example, it has allowed us to highlight the achievements of the region's telecentres, which may be identified at two levels:

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<sup>5</sup> See: Questionnaire distributed to telecentre operators in Latin America and the Caribbean, IDRC, Feb. 1999, available at [www.idrc.pan/telecentres.html](http://www.idrc.pan/telecentres.html).

- The material or connectivity level. The telecentres have purchased equipment, improved the conditions of their premises, connected to the networks and to Internet servers. In other words, they have "set up shop".
- From another dimension, there are some highly strategic accomplishments, and a true relationship has been established with the community, going well beyond the obvious material limitations (inadequate infrastructure, lack of operating capital, etc.). In this respect, local management committees have been established, although potential users are still unaware of what a telecentre is or could be. In other words, "the foundations of the building have been laid".
- In some cases, users have become promoters for the telecentres, which has led to less paternalism and opened new possibilities for self management.
- Noteworthy as well is the creation of coordination mechanisms among users for making more efficient use of the little equipment available.
- There something very valuable in this approach: high-level technical experts have become involved in social affairs that were previously unfamiliar to them, in which they have learned from people who do not have their technical knowledge and skills, but who have great sensitivity in human terms, and a tremendous social commitment. This is one of the greatest lessons learned from the telecentres in the region.

### **Management of the telecentres**

Here again there have been several very interesting and varied experiences.

- Management of the telecentres is generally entrusted to an individual who is responsible for programming, training, course supervision, promotion, technical care of the equipment, supplies, etc.. In other words, a real "orchestrator" - for example, the Sustainable Development Network and the APC network of Nicaragua, in Nicaragua.
- In some cases telecentres have administrative and financial autonomy: they pay their license or franchise fee, for example to an NGO, which in turn trains personnel for the telecentres. Generally speaking, there is still no self-sustainable management in telecentres of the region. This is a strategic limitation of the first order. Example: Neighborhood Information Units in outlying districts of Bogota, Colombia.
- There are cases where a local coordinating organism, a management body or committee with various members will become involved. This requires a management structure, but little progress has been made in this respect. Example: the case of the AMICAS classrooms in Paraguay.

- In functional terms, there is no pre-conceived structure for the telecentres. Generally speaking, they work in some makeshift physical premises, they do not have a program budget, users are dealt with by any person or member available, someone maintains the premises and keeps them clean, someone provides night service to the public, the central team meets once a month, examines problems, and attempts an ad hoc evaluation, proposes solutions, etc.. All this is a very spontaneous and volunteer-oriented process, which may be effective but is not, by definition, very efficient.
- Financing is generally the "umbilical cord" (not yet cut) to external cooperation agencies. These donors will usually fund the purchase of equipment, but will not cover operating costs, which are financed through the sale of services, generally at low prices so as to encourage continued use of the service. One of the services that yields the greatest revenues for current expenditures is the public booths and the cybercafes. Public Internet booths are much in fashion, but the price of the services offered by these centres limits access by low-income users. In any case, it would appear that users are being subsidized by the telecentres. But who is subsidizing the telecentres?
- In some cases, the telecentres have received a refundable loan from some government agency, or a municipal grant. There is one example of a grant from a private body. But there are also cases where service is provided free to users.

Here we find another great limitation: telecentres are still not providing training adapted to their users' needs, of the kind that would convert Internet tools into instruments for pursuing the development agenda of the community itself. In many cases, the generalized use of English is an obstacle to learning about new technologies, and for this reason an effort should be made to incorporate other languages such as Spanish and Portuguese. This problem is even more acute in the case of indigenous communities and individuals, who are still using their ancestral languages. It is therefore essential to define information and communication strategies that will involve different cultural aspects of the community, and turn themselves into "multiplatform" services.

Another problem here lies in the dispersal and duplication of efforts, as well as the lack of systematic information on managing telecentres, and on the tools, resources, materials and methodologies to be used. Hence, the importance of implementing a regional network for articulating and exchanging lessons learned.

Another problem with the telecentres is the lack of any method for evaluating their impact as an instrument for strengthening their management.

There is also a lack of training in financial planning, which is so necessary for developing strategies of self-sustainability.

In summary, there has still been no success in making the telecentres self-supporting and self-financing, and this is a strategic gap that must be filled immediately.

## **Opportunities for the telecentres**

Participants in the TELELAC roster have proposed guidelines for resolving the problem: implement a sustainable development strategy for telecentres, with a view to achieving at least the following goals:

- Establish strategic alliances with social groups and sectors identified as “ideal beneficiaries”.
- Training users in the efficient use of communication and information tools, and in information management.
- Training community facilitators (not necessarily technical or computer experts).
- Designing user models for Internet tools, adapted for each specific social group or sector.

## **The first proactive suggestions**

- Individuals and organizations consulted through the TELELAC roster stressed the need to respond to these problems through a dynamic approach that will have the goal of constructing an online resource centre, based on the Web, and one that will be accessible to people who do not have the same technology, so as to share lessons learned, review applied methodologies, refine tools, socialize documents, etc.
- They also stressed the need to articulate local and regional dynamics for strengthening the role of the telecentres in the region, by providing forums for interaction and making tools and materials available to operators, promoters, researchers, trainers and users in general. For example, an indigenous initiative might be seeking to learn about the materials that are available for connecting their community radio to the Internet, and so they need access to other local and regional experiments.

Members of the TELELAC list have proposed a number of specific alternatives to socialize what they have learned. Among the most important means are:

- Discussion lists [*listas*: groups?].
- A Web site for conducting a more theoretical discussion that would include the conceptual framework of these experiments and projects.
- Discussion lists [groups?] on progress and achievements of the telecentres.
- Using the press, written essays, manuals and guides etc. as means for socializing discussion
- “Face-to-face” meetings between facilitators, committee members, researchers.
- It was also recommended that virtual meetings should use Spanish and Portuguese, since many people have difficulty with English.

All of these means for socializing experiences carry with them relative advantages and risks. For example, discussion lists [groups?] do not reach all the people who need them. In other words, the recommended measures are not alternatives to each other, but rather complementary.

## **Telecentres are tools, not ends in themselves**

Other experts have already suggested that telecentres are a development tool that can help to fill the social, economic and knowledge gaps that are frequently referred to as the growing gulf separating the "information rich" from the "information poor", although we are just beginning to consider the difficulty of evaluating their impact<sup>6</sup>.

Perhaps the most important contribution that we can make, thanks to the process of online consultation and dialogue, is to systematize some specific descriptions about telecentres in the region, prepared by their own stakeholders.

Some elements of the concept now being developed are as follows:

- Telecentres should facilitate access to new communication and information technologies, on behalf of those sectors of society that are most affected by the "technology gap".
- Telecentres should be viewed as ways to provide low-cost access to Internet tools and for incorporating technological improvements.
- Telecentres should be active media in terms of strategies of "social reproduction" for those sectors identified as "ideal beneficiaries".

## **Ideal beneficiaries of the telecentres**

The ideal users of the telecentres would be those low-income sectors that have little access to new communication technologies, and that are virtually cut off from conventional means of communication as well. This will necessarily involve grassroots organizations. We know that these social sectors may not have technical expertise, but they have human sensitivity. Telecentres in their midst could be factors for encouraging and supporting citizen empowerment.

Most important would be to fulfill the role of facilitating social empowerment through modern technologies of communication and information. These social sectors must interact as a function of their autonomous and integral development, and telecentres must strengthen their management capacity and support social and cultural networks, in order to affirm the processes of defending human rights, gender equity, democratization of local society, inter-culturalism, solidarity, reciprocity, and improving living standards.

## **Current needs of the telecentres**

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<sup>6</sup> R. Gomez, P. Hunt, E. Lamoureux, IDRC, "The issue of telecentres: How can they contribute to sustainable development in Latin America", May, 1999 (<http://www.idrc.pan/telecentres.html>)

The greatest needs of the telecentres currently are:

- Overcoming the lack of training equipment and infrastructure, a deficit that in part explains rising operating costs, and in particular the shortage of technical instructors.
- Resolving difficulties in implementing the franchising network.
- Helping them to cope with rising costs, which are a serious problem for telecentres working with low-income groups.
- Achieving agreement on rules of the game, for example, regulations and priorities for use, rules to legitimize and legalize the powers of each of the players, in order to ensure sustainability of the projects.
- Resolving the most common technological and management problems: lack of equipment, lack of premises, high connection costs, lack of initial capital, connection difficulties, high cost of maintenance, upgrading equipment, output speed etc.
- Seeking strategies to sensitize the local and regional authorities to the development opportunities offered by telecentres.

### **Proposed solutions**

Our discussion of solutions has so far focused on efforts to obtain funding from external cooperation agencies. We have also spoken of making more efficient use of equipment.

The TELELAC roster proposed several valuable ideas in seeking solutions:

- Building a network of telecentres.
- Organizing forums and local committees of telecentres.
- Holding regional meetings of telecentre operators.
- Implementing thematic lists, and in particular lists for exchanging experiences.
- Holding training workshops.
- Carrying out joint activities and virtual meetings.
- Organizing Web conferences.
- Publishing an electronic magazine.
- Holding meetings with situation simulation.
- Organizing databases with updated information.
- Producing manuals.
- Locating technological and teaching experts in the telecentres to help with solutions.
- Exchanging operating personnel.

- Holding meetings with operators and researchers for exchanging experiences and overcoming the communication gap between these two groups
- Creating a corporation of telecentres, over the medium term, that will be in a better position to negotiate with donors, multilateral agencies and governments.

## **Conclusions**

To the extent that we can define methodologies for exchanging lessons learned in strengthening existing initiatives and avoiding the duplication of efforts, and for gaining access to knowledge and incorporating in telecentre agendas methodologies for evaluating their impact as instruments for strengthening their mission, and not as a tool of judgment, we may identify more clearly the social impact of telecentres and help the community to use information and communication technologies as an instrument for its development. We must remember that there are no magic recipes, but only guidelines that can strengthen the development of the telecentres and help them from falling into error. This means that we can develop strategies so that negative impacts will be converted into useful lessons and can strengthen their development. We must not forget that evaluation is constructive and is part of the process of developing the project, and it must not be seen by international cooperation agencies and executors as instruments of chastisement or pressure.

Within this framework, it is important to develop synergy with other initiatives under way, such as the Acacia and Bellanet programs, to strengthen the dynamics and the processes of evaluating their impact. Defining actions and responsibilities for achieving this synergy is a commitment of all of us who are working in this area. This demands a concept of teamwork, if we are to avoid duplicating efforts in a field where resources are scarce.

At the regional level, we need to unite and cooperate among ourselves, especially in implementing policies to strengthen the management of telecentres for development.

On the other hand, the definition of a regional program for exchanging lessons learned and providing instruments for evaluating their impact is important for strengthening local and regional experiments.

The key to development is to cooperate, distribute activities and assume responsibilities.

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### **Karin Delgadillo**

Coordinator - Community Networking Programme

ChasquiNet Foundation

Colina 311 y Orellana, Quito, Ecuador

P.O Box 17-21-180 Quito, Ecuador

593-2 525-106

593-2 543-075

[karin@apc.org](mailto:karin@apc.org) or [karin@chasquinet.org](mailto:karin@chasquinet.org)    [www.chasquinet.org](http://www.chasquinet.org)



## **Education for All in the Information Age (Laurel ELMER)**

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### **The Potential of Information Technology for Improving Educational Access and Quality in Developing Countries**

*Tulane University, USA MAY 1999*

#### **A. An Educational Paradigm for the Information Age**

The technological revolution, led by advances in information and communications technologies (ICTs), poses new challenges and opportunities for developing countries in achieving and sustaining economic and social development. As observed in a recent World Bank study, the emergence of a knowledge-based global economy, in which the structure of production and trade is increasingly information-intensive and technology-driven, “challenges developing countries to adjust or be excluded” (Hallberg and Bond, 1996). Accelerating technological change requires a workforce that is adaptable and receptive to innovation, and an education system that can provide continuous learning opportunities for workers to remain competitive. While presenting new challenges, technology also offers developing countries the means for making a successful adjustment to the changing global economy. In particular, advances in telecommunications and computing technology are converging to provide new models and resources for teaching and learning to meet these needs.

Revolutionary advances in information technology are having a dramatic impact on education and training systems in schools, the workplace and the community in both advanced and developing countries. The convergence of the once distinct media of image, sound, books, and computer networks into digital multimedia is changing the way education is being produced and delivered. A new generation of instructional tools and delivery modes made possible through technological innovation has broadened access to higher quality education without regard to time, distance or geopolitical boundaries. Computer, television, cable, satellite, laser, fiber-optic, and microchip technologies are combining to create a vast interactive communications network that is making the world’s knowledge base accessible anywhere on earth at any time.

These trends are helping to shape the emerging instructional paradigm for the information age, which is learner-centered with a focus on collaboration, teamwork and problem-solving skills. The new paradigm’s emphasis on continuous learning is well served by the Internet as a resource, instructional tool and medium of exchange. New electronic technologies such as CD-ROMs, computer bulletin boards, and multimedia hypertext over the Internet allow individuals to tailor training to meet specific requirements. New video and computer conferencing capabilities provide access to subject specialists without being confined to a specific location. As a medium of exchange, the Internet is especially effective in fostering interactivity and collaborative learning among diverse

groups of people with common interests. Network-based interactive communications are creating new learning experiences that are also dramatically altering the instructional paradigm. In contrast to the presentation-based approach of conventional instruction (“teaching by telling”), the emerging paradigm is being shaped by the “learning-through-doing” environments made possible by the new media: e.g., computer-supported collaborative learning, interactive multimedia, hypermedia, and experiential simulation (Dede, 1996, 2-3). The notion of “multi-channel learning” adds a new dimension to the new paradigm that recognizes different learning styles, different paths connecting learners with sources of learning, and different channels that are mutually reinforcing (Shrestha, 1996, 16-17). The increasing variety of channels and delivery options and the whole range of multimedia technologies represent a new medium of instruction that is highly individualized and flexible to meet the needs of all kinds of learners.

At the same time, costs of these newly emerging technologies are decreasing dramatically. It has been observed that “the digital revolution has been decreasing the cost of storing, manipulating, and transmitting information by 50 percent every 18 months, with no end in sight” (Knight, 1994, 2). Trends in decreased cost and emerging innovations in information technology offer developing countries the possibility to “leapfrog” over development stages that helped shape the educational systems of industrialized countries. Moreover, LDC’s have a unique opportunity to benefit from the R&D efforts of others, especially as costs decline. These trends, particularly in wireless technologies, offer great promise for delivering educational services in developing countries, where existing infrastructure and formal learning systems are failing to meet the growing demand for education and training services.

## **B. Failed Goals for Universal Basic Education**

According to the latest UNESCO figures, almost 1.5 billion children and adults in the developing world lack the literacy and numeracy skills associated with a basic education. Indeed, most developing countries are unable to provide basic education to all segments of their populations, especially girls. Weak infrastructure and the lack of adequate resources for equipping and maintaining schools characterize the education sectors of many developing countries. It is estimated that two out of three girls of primary school age (6-12) are not enrolled in school; and for those who are, dropout and repetition rates are disproportionately greater for girls than boys. This gender gap, which is particularly acute in areas of South Asia, the Middle East, North Africa, and Sub-Saharan Africa, tends to increase at the secondary and tertiary education levels (King and Hill, 1993). In addition to poverty and the lack of schools, other social-cultural factors constrain girls’ educational participation. These include distance from schools, the indirect opportunity costs due to domestic chores, school schedule, early marriages and pregnancy, curriculum biases in favor of boys, teacher gender and the lack of role models for girls (King and Hill, 1993; Hartnett and Heneveld, 1994; Odaga and Heneveld, 1995).

The growing body of evidence on the enormous benefits of girls’ education to economic growth and social well being suggests that girls’ education is a development imperative (Floro and Wolf, 1990; Subbarao and Raney, 1994). Yet, education for all policies in many developing countries may be unrealistic if only conventional educational strategies are pursued. There is growing optimism

surrounding the potential of new information and communication technologies, especially through distance learning, for addressing educational access and quality issues in developing countries. In particular, the innovative methods associated with the new educational paradigm combined with distance learning formats offer tremendous potential for addressing many of the more important obstacles to girls' education (e.g., distance, opportunity costs, gender bias, schedule).

### **C. The Potential of Distance Learning**

#### **Review of Developing Country Experience**

Distance learning can be defined as an educational process in which the source of instruction is removed in space and/or in time from the learner. Other defining elements include the use of technical media to unite the teacher and learner, the provision of two-way communication, and the absence of a learning group (Shrestha, 1996, 6). While distance learning has historically involved print-based correspondence study, more common delivery modes today include audio, video and computer technologies. Distance learning programs in both developed and developing countries have generally replicated conventional presentation-based instruction across barriers of distance and time. Given the pace of innovation and falling costs, new distance learning modes represent a promising policy option to significantly expand and improve educational service delivery in developing countries -- for basic education as well as for workforce and professional development. Distance learning can widen access to learning where there are no schools or classrooms, and it can raise the quality of education by making resources and new methods available to teachers and in the classroom.

Many developing countries have experimented with distance learning methods as a relatively cost-effective means of reaching large numbers of widely scattered learners. Several reviews of distance learning experiences in Africa, Asia and Latin America since the late 1960's offer evidence that this approach can be a cost-effective tool for a wide range of educational and instructional purposes. Case studies reflect a variety of distance learning applications in formal and nonformal education, from primary to tertiary levels, and across the full range of subject matter (Perraton et al., 1982; Murphy and Zhiri, 1992; and Shrestha, 1997).<sup>1</sup> Most of the case studies reviewed employed traditional pedagogical principles (i.e., one way information transfer from teacher to learner), and were generally used to pursue conventional educational ends. The most common applications involved teacher training, secondary education, and basic numeracy and literacy for out-of-school students and adults (Shrestha, 1997, 10). The combination of media technologies has differed considerably from country to country. While earlier initiatives primarily involved traditional correspondence courses, more recent experiences with interactive radio instruction have been used successfully in a number of developing countries to teach math and science, language arts, health, teacher training, and adult basic education (Hartenberger and Bosch, 1996). Educational television

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<sup>1</sup>Case studies reviewed include Ivory Coast, Kenya, Mauritius, Tanzania, Zimbabwe, Malawi; Brazil, Dominican Republic, Mexico, Nicaragua; India, Sri Lanka, Indonesia and Korea.

has also been used in a number of countries with varying degree of success (Shrestha 1997). In most cases, these experiences reflected “technological add-ons” to the conventional teacher-centered system.

### **1. Effectiveness of Distance Learning**

The lack of quantitative research on the impact of distance learning pedagogical strategies and designs is widely noted in the literature. Despite this, conclusions from these various case studies suggest that distance education programs in developing countries have been effective and inexpensive. As one author notes, this holds true “... as long as their enrollments are high enough to permit economies of scale” (Shrestha, 1997, 4). Despite evidence of effectiveness and successful applications, however, educational technologies are not being widely adopted by developing countries. Reasons cited in the literature include a lack of understanding as to the “right” conditions for their sustained and effective use; and the perception that distance education is considered to be a second-best alternative to conventional programs (Lockheed et al., 1991).

Research studies and evaluations on the effects of distance learning in Western societies might be instructive, despite the large variation in contextual factors. Shrestha’s review of distance education in developing countries cites a number of empirical studies that testify to the effectiveness of distance education in the cognitive, psychomotor and affective domains (1996, 18-19). Dede cites evidence that new technology-based models of teaching and learning result in improvements in educational outcomes in terms of increased learner motivation, mastery of subjects, and better test scores. (1998, 8-9). Research on delivery modes and correlation to student achievement outcomes documented by the Task Force on Distance Education at Pennsylvania State University has shown that students learn better via distance learning (“teletraining”) modes than face-to-face instruction (cited in Knight, 1994). Finally, a recent synthesis of research findings based on over 300 reports and studies concludes that there is “no significant difference” no matter what media is used for learning (Russel, 1999). At the least, these findings are persuasive in countering the perception that distance learning is a second-rate alternative to face-to-face instruction and suggest that distance education represents a promising policy option to significantly expand and improve educational opportunities in developing countries.

### **D. Barriers to Distance Learning**

Developing countries have a unique opportunity to use technology to develop an education system that is more responsive to their economic, political and social development. Yet, differing economic, political and institutional arrangements limit this technological potential to provide more and better educational services in many developing countries. Several important barriers to the use of distance learning systems as a viable policy option for developing countries need to be considered. These include the lack of human resources needed for the development and sustainability of technology-based learning; the lack of physical infrastructure, including hardware systems and organizational frameworks to support modern technologies; and the lack of recurrent funding necessary to acquire, develop, and service appropriate software and courseware on a continuous basis (Shrestha, 1996, 28).

In addition to these structural barriers to incorporating technology into formal learning systems, the emergence of the new instructional paradigm has important implications for educational planners in developing countries, especially with regard to the choice of pedagogical strategies and delivery modes (Dede, 1996; Bradsher, 1995). There is broad agreement in the literature that the evolution of distance learning will be affected more by the professional development of designers, educators and learners, rather than by the technical development of more powerful devices. A number of equally important considerations include the appropriateness of the instructional delivery system, the relevance and quality of the courseware, and the presence of explicit incentives such as certificates or formal degrees to ensure the participation of the target population. Needs assessments are critical for identifying ways to motivate the target population and to overcome possible physical or psychological barriers to its participation. As Shrestha points out, "good instructional design is paramount to the success of education offered at a distance. Careful planning, based on sound knowledge of who is going to learn what, by what means, in what kind of circumstances, to what effect and with what purpose in mind, needs to be combined with effective ways to ensure, through formative evaluations based on feedback from the learner, that intended purposes are met" (1996, 29).

## **E. Conclusions**

Given the low levels of teledensity (telephone lines per capita) and Internet penetration in the developing world<sup>2</sup>, electronic distance learning has a long way to go before being considered as a mainstream approach to educational service delivery in developing countries. Although declining, the costs of many of the basic technologies, such as personal computers, computer software, telephone and Internet access, and interactive multimedia CD-ROMs, are still well beyond the means of average households in the developing world. As some experts have concluded, "the developed world model of personal acquisition and ownership of technologies that facilitate access to and participation in the Information Age is not replicable in the foreseeable future in the developing world. Alternate models must be pursued" (Dorsey and Hess, 1998, 3).

It has been argued that new kinds of educational organization are needed that can fully exploit the potential of newly emerging technologies in a cost-effective manner. Current trends in decentralizing the education sectors in many developing countries reflect a shift in this direction. For example, decentralized participation by local stakeholders in educational planning and decision-making is being promoted in many developing countries as a way to increase the relevance and quality of education, reach remote and disadvantaged groups, mobilize additional resources, and build institutional capacity (Rugh and Bossert, 1998).

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<sup>2</sup>. See the ITU *World Telecommunication Indicators*, 1988; and the web-based *International Communications Headcount*: <<http://www.headcount.com>>

The community-based “telecenter” model under experimentation in a number of developing countries may well represent a new organizational form for delivering quality educational services on a more equitable and cost-effective basis. Indeed, the concept of the “telecenter,” which is drawn from earlier experiences in Scandinavia and Canada in providing public access to ICTs, is being hailed as a solution for a wide range of socioeconomic development problems. Various called community learning centers, telecenters, telecottages, cybercafes, etc., these facilities are connected to telecommunications networks and provide a range of electronic services to the public. At the low end, telecenters provide telephone, fax and e-mail services; whereas, more sophisticated configurations offer full Internet connectivity with specialized information retrieval or distance learning delivery. Additional services such as word processing, duplicating, translation, desktop publishing, consulting, etc., could be offered on a fee-for-service basis, giving the centers a self-sustaining base. Telecenters could conceivably encompass the full range of synchronous and asynchronous delivery for multi-channel learning. Educational applications could include drill and practice for math and language instruction; reading comprehension programs; simulation programs for science and geography instruction; hyperlinked reference materials; collaborative learning programs; and workforce training modules focusing on content and skills’ acquisition, as well as professional development (Dorsey and Hess, 1998, 17). The range of services to be offered by the telecenter will ultimately be determined by the information needs and resources of the client community.

The potential of computer-based technologies for solving problems of sustainable development is tremendous. The Internet brings resources to communities that otherwise would not be available, and represents an important networking tool for sharing local, regional and global experiences. In providing access to the Internet, the telecenter can serve the community as an information exchange center, educational resource, and professional development site. As noted by Dorsey and Hess, it can simultaneously address both the problems of technological access and equitable access (1998, 6). Once the telecenter is connected to the Internet, the entire community can then participate in a variety of educational, public health and economic development programs which will provide the potential for an improved standard of living and self-sustainability not before envisioned nor considered possible.

As a relatively recent phenomenon, the telecenter movement is being embraced by the international development community as a potentially powerful tool for addressing problems of poverty and underdevelopment. Since many of the telecenter projects springing up throughout the developing world are still in an embryonic state, the impact of telecenters on sustainable development is largely untested. New research agendas associated with this model will need to be elaborated. Despite the lack of empirical evidence, however, the telecenter model appears to be a promising option for reducing knowledge gaps within developing countries and for contributing to “education for all” policies in the emerging Information Age.

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**Laurel ELMER**

Senior Associate, Management Systems International  
3906 Ingomar Street, NW, Washington, DC 20015, USA  
Phone: + 202-362-0340; Fax: + 202-362-0340  
[lelmer@erols.com](mailto:lelmer@erols.com)

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# Evaluating Telecentres within National Policies for ICTs in Developing Countries (Roger W. HARRIS)

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Universiti Malaysia Sarawak, MALAYSIA

## Introduction

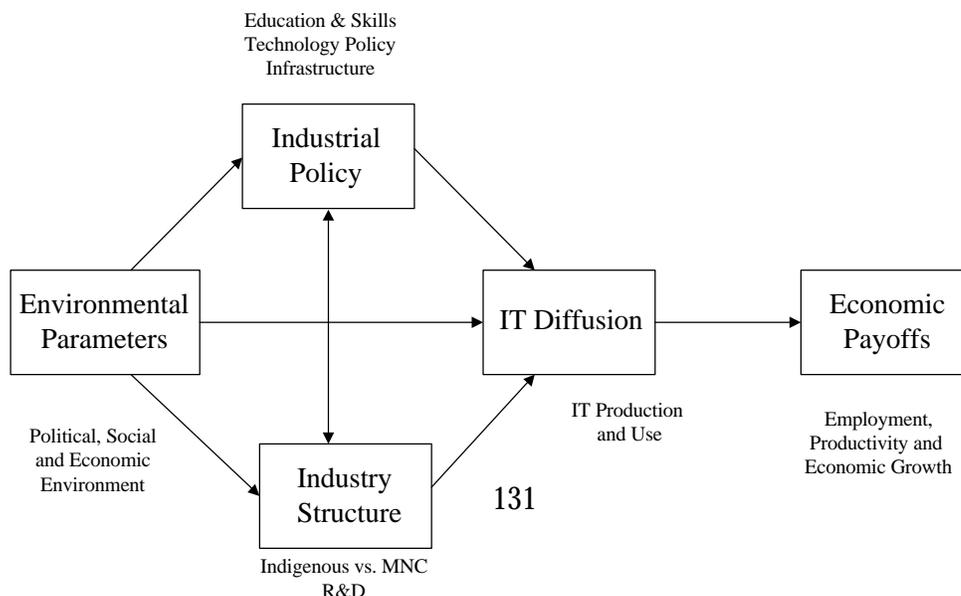
One definition of telecentres is a physical space that provides public access to ICTs for educational, personal, social, and economic development. Telecentres are designed to provide a combination of Information and Communication Technology (ICT) services, ranging from basic telephone or e-mail service to full Internet/World Wide Web connectivity (Gomez, Hunt and Lamoureux, 1999). Within this definition, a variety of institutions can be found, as well as a variety of labels. Differences tend to relate to the range of services offered and their financial orientation.

This discussion paper addresses the significance of the telecentre movement within the national policies for ICTs in developing countries. It provides two frameworks that are used to locate the telecentre concept within the wider consideration of the deployment of ICTs for national development. It is argued that telecentres are crucial for developing countries to achieve sustainable human development through their policies for ICTs. A model for evaluating the operation and the efficacy of telecentres is also suggested.

## A Framework for ICT led Development

One framework for examining the role of ICTs in development, which has been applied to developing countries, is that by Dedrick, and Kraemer (1998). This is shown in figure 1.

Figure 1. Framework of IT-Led Development (Dedrick & Kraemer, 1998)



The framework indicates that achievement of the economic payoffs associated with ICTs are dependent on IT diffusion. Without diffusion of IT, countries will not acquire the benefits of ICTs. The other factors that contribute towards the economic payoffs of IT depend on its diffusion for their effectiveness.

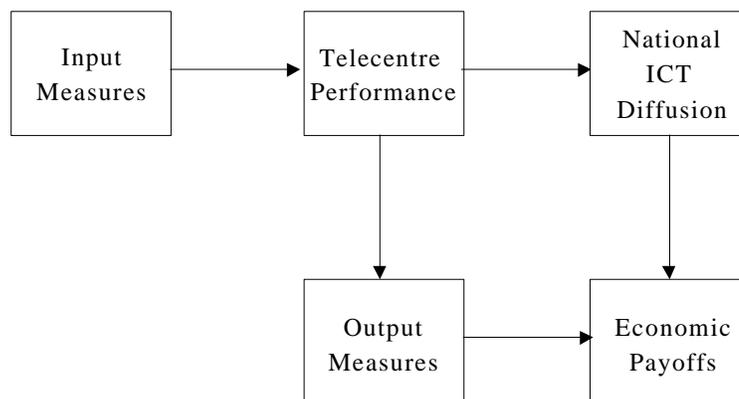
Telecentres operate in the diffusion variable. Therefore, telecentres (among other diffusion measures) serve to moderate the influence of the other factors. Diffusion of IT within nations is achieved through a number of means. In developed countries diffusion is often measured in terms of the proportion of households that contain a computer, that has access to a telephone or by the percentage of workers with access to computers in their work. Such measures exhibit stark contrasts between developed and developing countries. For example, whilst the USA has 1.5 people per telephone, Malaysia has 8.4. Whilst 22.4% of the population of the USA has access to the Internet, only 0.7% of Malaysia's population has.

Given these disparities, telecentres offer the only foreseeable opportunity for any measurable increase in IT diffusion in developing countries. Given also that the vast majority of the world's population resides in developing countries, around 80%, telecentres can be seen to be pivotal factors in the achievement of IT diffusion and the subsequent economic payoffs of ICTs for most of mankind. Many developing countries are struggling to articulate coherent national policies for the successful application of ICTs to their development. For many, such policies compete for attention with some of the most pressing needs of their population, such as health, nutrition and housing. There is a pressing need for a greater understanding of the potentials and pitfalls of national ICT policy-making in developing countries. The framework for IT-led development implies a series of complex relationships between factors that are highly specific to any given nation. It lays out a research agenda for further explication of these relationships within varying contexts so that developing countries can achieve the potential of ICT whilst simultaneously avoiding costly mistakes. Understanding the need for and the role of the telecentre makes an important contribution to the global impact of ICTs.

## Evaluating Telecentres

This section offers a framework (figure 2) for evaluating the contribution that a telecentre makes towards to national diffusion of ICTs and its economic benefits.

Figure 2. A Framework for Telecentre Evaluation



Two classes of evaluation criteria can be identified, input measures and output measures. The following sections describe each class and offer some instances.

## **1. Input Measures**

Input measures relate to the activities that the Telecentre engages in. They are not immediately associated with the benefits that the user community enjoy, but they are regarded as essential pre-conditions for those benefits to emerge. Consequently, they can be used by operators as guides for establishing telecentres and for constructing the services that they will provide.

Input measures are relatively easy to gauge. They relate to activity as opposed to results, but the two should not be confused. Input measures are also more easily affected by those for whom they provide a measure of performance. Consequently, they are often over emphasised by interested stakeholders, sometimes to the exclusion of other, more important, methods of service evaluation.

The following input measures can be identified.

### **Resources**

The first class of input measures is concerned with the physical resources that make up the telecentre. They consist of accommodation, equipment and people.

### **Accommodation**

The telecentre should be accommodated in premises that are suitable for community access, perhaps in a building that is already used for this purpose, e.g. a library. The centre should be constructed in a manner that reflects its multiple uses, by providing privacy where it is needed and by facilitating interaction where it is beneficial. The ambience should encourage openness and client-service. Visitors, especially first-time visitors, should be able to make use of the services easily. There should be easy access to information about the centre's services, presented in a way that clients find easy to comprehend.

### **Equipment**

The telecentre should be equipped having regard to the needs of the community it serves as well as the capability of the centre's operators. As a minimum, computers with access to the Internet should be provided. In addition, fax and telephone services would be considered appropriate for most centres. Printing should also be offered and scanning can be considered.

### **People**

The people manning the telecentre should be user-oriented rather than technical specialists. Evidence suggests that computer users are more likely to seek assistance from support staff who are friendly and who can build empathy with their clients than from people who are less able to do so but who may possess greater technical knowledge. The approach of the telecentre staff should be problem oriented not technology oriented. They should react to client encounters in a way that

recognises their primary and secondary effects. The primary effect is to solve a problem for which the client seeks the services of the centre. The secondary effect relates to the extent to which the client increases his/her understanding of the technology being used and the likelihood that he/she will use this knowledge in order to approach the centre to help solve additional problems later on.

## **1.2 Services**

The second class of input measures is concerned with the services that the telecentre provides. They would include; computing, Internet, fax, telephone, training, and technical support, information support, institutional support, teleworking and networking through some form of a telecentre users/operators association.

### **Computing**

A primary function of a telecentre is to provide computing capability to people who are unlikely to be able to acquire it through any other means. Computers are therefore essential. They should be standard devices, which usually means an IBM type Personal Computer. The latest models are not essential as a great deal of useful work can be carried out on older models. It is likely that the majority of clients will not need sophisticated functionality, but a Windows interface would be an essential minimum. Multimedia capability might be desirable in some circumstances, but would probably not be essential. Minimum software would include; word processing, spreadsheet, e-mail, graphics, database, presentation, programming, and Internet.

### **Internet**

Access to the Internet is the other primary service of a telecentre. E-mail capability would be an essential minimum, but this would be greatly enhanced with web browsing. The speed of the connection as well as the services of the Internet Service Provider will also affect this service.

### **Fax**

Facsimile provides a useful alternative for many means of communication where Internet access is not available or is not practical.

### **Telephone**

Voice telephone services would be easy additions to Internet data services. In some cases it may be feasible to provide locally based cellular networks

### **Training**

Information literacy training is a way of transferring computer knowledge to user clients so that they are able to use the centre to increasing effect. It increases diffusion. As clients gain proficiency, they would depend less on the centre's staff for carrying out routine operations, such as exchanging e-mail and web browsing.

### **Information Support**

Information support relates to the assistance that the centre can offer to clients in terms of knowing and advising where to look for the information that they need. Such services could be extended to engaging with known information providers in order to encourage them to make certain types

information available across the Internet. This might extend to the development of an Internet portal, which delivers access to information that is relevant to the client community.

### **Technical Support**

In order to maintain the equipment at acceptable levels of service and availability, technical support will be necessary. This relates primarily to maintenance of all the equipment. Technical support need not be constantly on hand, provided there is a locally available service that is sufficiently responsive. Measures of equipment availability are often expressed as time between failures, time to repair and time in service.

### **Institutional Support**

Many telecentres will be associated with institutions of one sort or another. In some cases they may be government sponsored, in other cases they may have been set up by NGOs, research projects, charitable foundations or other establishments. In such cases, these institutions can provide various forms of assistance for the centre, which would enhance their client services. Such assistance might include managerial and financial advice, organisational direction, service delivery help, and operational support and co-ordination. Telecentre operators and owners can be brought into a team-like operating environment in which ideas and results can be shared and from which a conception of best practices can emerge. Areas for consideration would include regulations, tariffs and licensing.

### **Teleworking**

Opportunities for teleworking can be extended to the non-computer owning majority population through telecentres. Telecentre operators might take on the role of agent, recruiter and trainer for distant employers who can offer work to local populations.

### **Telecentre Associations**

The aims of such an association would be to further the aims of its members and to protect the interests of telecentre clients. Telecentre operators could be organised into an association that might define a code of conduct as well as offering professional membership for bona-fide operators. Such a code might be fashioned out of the experiences of telecentre operation in any particular locality or country. It would provide an opportunity for relevant stakeholders to contribute towards the development of the telecentre concept.

## **2. Output Measures**

Output measures relate to the achievements of the Telecentre within the community it serves. Output measures are distinguished from input measures in that they relate to the additional benefits that the community enjoys as a result of utilising the services of the centre. They can only be expressed in terms of benefit to the community. In most cases they would contribute in one way or another to sustainable human development. Accordingly, they are highly specific to the needs of the community that the centre serves. Of course, certain needs may be common for the communities of a particular locality, state or country.

Output measures are more difficult to gauge than are input measures. More points of contact are required in order to ascertain their effects. It will also be necessary to gauge the secondary effects of telecentre use which are felt by non-users, for instance family members. A further difficulty relates to the task of distinguishing between the effects of the telecentre and those of other agents whose impacts are similar. Given the dynamics of social and economic life, identifying causal effects is always a challenge. A further complication arises with output measures of effectiveness in that it is often difficult to obtain hard data, owing either to wide dispersion of the subjects, or the personal nature of the data, e.g. family incomes. This difficulty should not deter operators or analysts from obtaining appropriate measures in a softer format, such as client opinions or ratings. Careful research is required to obtain and interpret such data. Nevertheless, it cannot be doubted that output measures provide the acid test for telecentre evaluation. Therefore, more attention needs to be paid to the definition and measurement of output measures than to the input measures.

The following output measures can be identified.

### **2.1 Community-Based Indicators**

The first type of output measure relates to those that are grounded in the community served by the telecentre. Given the variety of communities that telecentres are likely to serve, and the differences between them, only general measures can be mentioned here. A key aspect of the community-based output measures therefore, is that the institution responsible for setting up the telecentre should define both the community it is intended to serve as well as the specific community-based indicators it is targeting. These will vary, of course, according to a variety of factors. For example, whether the centre is urban or rural based, what are the most pressing problems within the community for which informational solutions might be available through the services of the telecentre?

### **Socio-econometrics**

A variety of statistical measures can be used in the areas of influence that are targeted by the telecentre. Typical areas might include education, health, economic activity, social exchanges and cultural preservation. The particular mix and emphasis of such areas of influence will vary between telecentres and between localities. Nevertheless, telecentre operators, and the institutions that support them, must be able to define these areas of influence as well as the social parameters that indicate their value. For example, the crops of a farming community may be troubled by a particular pest and the local agricultural support agency instigates a programme of control and eradication through the Internet. The farmers learn of the programme through the telecentre and the operator is able to gauge its effectiveness by tracking the existence of the pest over the period of the programme. If data is available which describes the effectiveness of earlier programmes, then comparisons can be made which can be used to measure the effectiveness of the telecentre.

### **Stories**

Given the problems associated with the measurement of socio-economic factors, individual stories and anecdotal evidence provide valid forms of evaluation. They can be used on their own, but they are particularly potent when presenting a mixed picture of hard and soft data.

One example relates to the activities of the Swaminathan Foundation in southern India. Farmers tended to plant tomatoes at the same time, resulting in a glut at the local market. At one time, 15kgs of tomatoes could be bought for one Rupee. A week or two later there were no tomatoes on the market. By carefully co-ordinating their planting activities through the local telecentre computer network, the farmers were able to stagger their deliveries of tomatoes to the market so that they all received a reasonable return for their produce.

## **2.2 Sustainability Measures**

The second type of output measure relates to those that will heavily influence the extent to which the centre can sustain its services. Given the novelty of the telecentre concept and that most existing telecentres can be described as experimental and are therefore subject to intense scrutiny and careful management, specific measures need to be installed that will ensure the centre continues to serve the community beneficially after the experiment is over. Some sustainability measures can be identified as follows:

### **Ownership**

Is ownership unequivocal? Are the differences between ownership and operation well understood among all the stakeholders? Where does ultimate responsibility lie? If responsibility cannot be identified, then services will suffer as soon as something goes wrong. The more distant and the more vague ownership is, the longer it will take to rectify shortcomings. Local ownership tends to instil a more responsible and responsive approach to operations and management.

### **Finances**

Are the financial arrangements secured? Is there a viable business model in place that will ensure sustainable services for the user clients? Many telecentres offer business opportunities for local entrepreneurs. Advantages accrue from having local stakeholders. But the communities for which telecentres are likely to be most beneficial are probably the least likely to have a surplus of entrepreneurial skills. Additionally, rural telecommunications are often unattractive to investors because overall revenues are insufficient. In some cases, e.g. the Swaminathan foundation, centres are established on a 50-50 basis with a local operator. In Bangladesh, poor women who have already proven their credit-worthiness through the Grameen Bank micro-finance system operate village payphones. Can such arrangements be tailored to local conditions so that telecentre ownership offers an attractive business and can individual investors be nurtured with the necessary managerial and financial skills to enable them to become successful?

### **Replicability**

For the same reasons of newness and experimentation, telecentres may demonstrate considerable and well-documented successes in one or in a few localities. The reasons for these successes may be due to a variety of local factors, not the least being the intensive involvement by committed individuals from outside with an interest in demonstrating the potential of the concept. Such efforts should not be reproached, but wholesale sustainable development will only emerge from the extent to which it will be possible to replicate such achievements across a wide population, in circumstances that would not allow the close attention received by experiments and pilot

implementations. It must be possible to institutionalise the telecentre concept for it to have widespread effects.

### **Responsiveness**

This measure relates to the ability of the telecentre to respond to the changing needs of the client community. Communities are dynamic organisms, and the introduction of ICTs will have its own influence on community dynamics. Consequently, the telecentre should be capable of evolving in step with its client community and expanding its services accordingly.

### **Conclusions**

Developing countries face the dilemma of ICTs further deepening the divisions between themselves and the developed countries whilst simultaneously recognising that ICTs provide the means for reducing that divide. Other than the simple acquisition of technology, specific mechanisms will be required to overcome the disadvantages suffered by the vast numbers of people who are unlikely ever to own their computer. Sustainable human development is closely related to information and the knowledge it affords. Societies have already recognised this relationship in the institution of libraries. Telecentres extend the concept of providing public access to knowledge but in an updated fashion that reflects the power and potential of computers compared to that of books. The library is a well-understood concept and the telecentre now requires the same level of understanding and institutionalised recognition in order to allow the majority populations of developing countries to share in the benefits of a wired world.

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### **Roger W. HARRIS**

Lecturer

Universiti Malaysia Sarawak (UNIMAS)

Faculty of Information Technology, 94300 Kota Samarahan, Sarawak, MALAYSIA

082 671000 extn.605

082 672301

roger@fit.unimas.my

<http://www.unimas.my/fit/roger/>

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[www.idrc.ca/pan/telecentres.html](http://www.idrc.ca/pan/telecentres.html)

## **Gender analysis of telecentre evaluation methodology (Rebecca HOLMES)**

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**Document prepared by:** *Women'sNet - Rebecca Holmes, Melody Emmett, Anriette Esterhuysen, and Sonja Boezak.*

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### **INTRODUCTION**

#### **Purpose, Scope and Limitations of this Document**

This document sets out to explore the issue of how gender can be meaningfully integrated into telecentre evaluation methodologies. It is animated by African experience and specifically by South African experience. A lack of time and resources has limited the scope of this document and it is recommended that more of both are put into further investigations of these issues. Specifically in terms of primary research with women and men working as telecentre operators and managers, with women and men in communities serviced by telecentres and an investigation of similarities of these experiences across countries and continents in the developing world.

What is Women'sNet and the Association for Progressive Communications Women's Networking Support Programme (APC WNSP)?

#### **Women'sNet**

Women'sNet is a South African project based at SANGONeT, a not-for-profit Internet Service Provider that provides Internet connectivity and value-added services to organisations working for environmental and social justice in Southern Africa. Women'sNet was jointly initiated in 1997 by SANGONeT and the Commission on Gender Equality, a constitutionally appointed independent structure set up by the South African government in 1996 to promote gender equality.

Women'sNet mission is to empower South African women to use information and communication technologies towards advancing women's equality. We work to implement this mission through the development of web-based resources (<http://womensnet.org.za>) of relevant, local information about gender and women's equality issues; a gender-sensitive training programme and by lobbying and advocacy related to gender and information and communication technology policy.

### **The Association for Progressive Communications Women's Networking Support Programme**

The APC Women's Programme aims to increase women's access to information and communication technology training and facilitate information flow between North, South, East and West on gender issues. It offers opportunities to women and women's organisations in all regions of the world, but has a particular focus on redressing inequalities in access to technology related to social and ethnic marginalization and the North-South technological gap. The Programme includes four main components: information flow; outreach; training; and research and policy.

### **Women'sNet's approach women and information and communications technologies**

Women'sNet approach to women and information and communication technologies is both practical and political. From a practical perspective, we view ICTs as powerful tools for networking, communication and information exchange about women's, gender and other issues. We believe that women should be empowered with ICT skills so that they can have access to these benefits as well as develop useful and marketable skills.

The Women'sNet web site is one example of the practical, tangible benefits of women harnessing the power of ICTs. Women'sNet's 'Information Strategy Team' developed the basic architecture of the web site through a collaborative process. At a five-day workshop during which the group – who had no web publishing skills – received intensive web publishing skills training, the group designed and built the web site based on information and communication needs articulated by representatives from South African women's organisations at national brainstorming workshop. The result - a group of information workers from South African and African women's organisations empowered with web publishing skills to use in their organisational work, and the first local South African gender equality resource on the web, a resource that fills a content and information gap.

From a political perspective we understand that just as women, and particularly poor and black women, have been marginalised in the social, economic and political spheres, similar gender specific discrimination operates in the arena of ICTs and the information society. We believe that unless specific interventions are made at a policy, content and skills empowerment level, women will be disproportionately represented within the "information poor" and ICTs will be developed and utilised in a way that does not reflect women's specific needs.

### **Women'sNet's Approach to Telecentres**

Women'sNet is interested in the potential telecentres represent for women and men to engage with new information and communication technologies in way that has practical value for their lives and the development of their communities.

At this point we have not identified any one particular type of telecentre as a "best model". We are interested rather in learning how different types of telecentres are able to effectively meet the communication and information needs of women in the communities they serve. We are also interested in what practices and conditions at telecentres can lead to women (and men) utilising new technologies for development and gender equality purposes.

We do have a specific interest in examining to what extent telecentres can function as sites for communities to participate in developing resources to meet community-specific information needs. Women'sNet is currently working to consolidate planning for a pilot project for two women's telecentres in rural areas in KwaZulu Natal and the Northern Province. Our objective is to use the methodology and product of a community-based information initiative in KwaZulu-Natal, the Women's Handbook Project, as a template for developing web-based information content and to train and encourage women how to access this information in a telecentre.

The Women's Handbook project has produced two handbooks, one for Pietermaritzburg, an urban area, and one for the smaller towns in the KwaZulu Natal Midlands, which all fall under the iNdllovu Regional Council. The Women's Handbook contains practical information on women's rights, facilities available to them and contact details of officials and local representatives responsible for ensuring their rights are upheld. The Handbooks are available in English, Zulu and Xhosa, in order to ensure that the vast majority of women in the city and the Midlands have access to the information in their mother tongue.

Why Women'sNet believes incorporating a gender analysis into telecentre evaluation is important

The most critical reason to incorporate a gender analysis into telecentre evaluation is to evaluate whether or not gender is an issue in terms of telecentres and if so in what way. Without concrete information we can only speculate about the different (or similar) way women and men, and different groups of women and men are consuming (or not consuming) telecentre services. We can not identify barriers if they exist. We can't develop new project designs or development strategies that try to address these barriers.

## **WHAT IS A GENDER ANALYSIS?**

A gender analysis seeks to understand women and men's different experiences and identify factors that explain this difference. A gender analysis is informed by a feminist perspective that asserts that there is an unequal distribution of power and resources in the world that unfairly favors men and that this inequality is reinforced by social, political and economic systems.

If for example it was observed that at Telecentre A, the same number of women and men came to use all the telecentre services; that at least 50% of all staff and specifically 50% of the technically skilled staff were women; and that there was a gender balance in the management committee of the telecentre, then we could reasonably say that gender was not a significant variable when we evaluated Telecentre A.

The reality, however, may be closer to Telecentre B where telecentre ownership and management is concentrated in the hands of men, that women in the community perceive no value in the services offered; that less than half the telecentre staff are women and women staff are concentrated in administrative jobs. If this was the case we would have to identify gender as an issue in our evaluation.

### **A Women's Empowerment Approach**

Women'sNet's experience in working with women and information and communication technologies suggests that while a gender analysis is a useful theoretical framework and gender equity is our ultimate goal, a women's empowerment strategy is the first step in reaching this goal.

What this means is that our projects have a women-specific focus and we concentrate on building women's ICT skills capacity and defining ICT-based solutions for the information and communication needs women's organisations articulate. We do this for both practical and political reasons. From a practical perspective many women learn ICT skills more effectively when they are trained by women in groups of all women, and women's organisations in South Africa have unique information and communication needs

From a political perspective we believe that an African gender and ICT politic (and hopefully a political movement) will emerge when African women's organisations have engaged with technology sufficiently to come to their own understanding of its usefulness and the barriers that impact on their ability to use it. For obvious reasons, few women's organisations in Africa have engaged with ICTs to this extent at this time.

Evidence of this reality is the fact that ICTs are cited only once in the Dakar Platform of Action (Africa's agenda for women's empowerment developed and endorsed by all African governments in preparation for the Fourth World Conference on Women in 1995). More recently, the response to efforts to raise the profile of gender and ICT issues at, for example, the Economic Commission for Africa's 40<sup>th</sup> Anniversary Conference in Addis Ababa in 1998, continues to reflect the reality that only a small group of organisations and 'experts' are animating the African gender and ICT political debate. As a result we are confronted with the reality that unless we adopt a very focused women's empowerment strategy we will be reinforcing a very top down approach to gender and ICT issues.

### **GENDER ANALYSIS OF TELECENTRES**

Telecentres are not working properly because the people who started them had no programme for long-term sustainability. Very few are properly utilised by communities. There is a general lack of

commitment and diligence and this leads to people feeling demoralized and not open to learning new skills. In South Africa we need a culture of commitment. We cannot talk about a gender perspective until telecentres are viable for the whole community and this will not be the case until there is a context for appropriate management structures. Issues of accountability are a problem. People lack leadership qualities and management qualities. Women should be on management structures but not as a front. They must be women with skills who can deliver. Women must not come up with superficial solutions to issues. Women need help to develop skills but the transfer of skills must be appropriate and they must be visionary. Intellectual skills alone will not lead to the empowerment of women. Empowerment must be multi-faceted and impact on the intellectual, physical and spiritual growth and status of women. There needs to be space for introspection if growth and empowerment is to take place. Rural women must not be used by policy-makers and donors to make good speeches; this is the way in which women abuse other women. These women regard rural women as inferior and this affects the openness of rural women to learning new skills.

Summary of comments by Thembi Majomozi, a researcher on ICTs and telecentres for the women's organisation, Agisanang Domestic Abuse Prevention (ADAPT), an NGO based in Alexandra Township in Johannesburg focusing on domestic and sexual violence.

### **Women's Empowerment and a Gender Perspective for Telecentres**

By providing the appropriate infrastructure, tools, information and training, telecentres have the potential to empower individual women and women's organisations by giving them options and opportunities and the capacity to take opportunities. Women's empowerment takes place in the broader context of a society in which patriarchal values and practices have been internalised by women and men. The pressure for women to subscribe to these values and practices, which emphasise inequality, domination and control, exclusiveness, class distinction, independence and destructive dependency, is considerable.

A gender perspective holds in tension the process of practical empowerment and an ongoing analysis of the gender construct of the society which defines the stereotypical roles of women and men and determines the balance of power between women and men at every level of life.

If women are to be truly empowered, the process of practical personal empowerment should ideally run parallel with a supported process of personal exploration (through access to appropriate equipment and materials, a conducive environment and relevant training). This in turn should lead to a broader analysis of the social, cultural, religious, political and economic roots of gender inequalities and the development of appropriate information dissemination, networking, lobbying and advocacy strategies for women. A long-term vision cannot be imposed. It only evolves if the whole process of policy, selection, implementation and skills transfer fosters its evolution.

## **National Policy and Planning**

The parliamentary committees in South Africa tasked to address issues that impact on telecentres are male-dominated. There was only one woman involved with the telecommunications policy-making process. As a result the criteria for establishing telecentres have been largely determined by men, often in isolation from women in communities the telecentres are meant to serve.

### **Questions**

- Who designs and serves the overarching structures?
- How does this influence an analysis of “success” from a gender perspective?
- What interventions can be made to introduce more favourable processes for women?

### **Evaluation Methodology**

- An analysis of the structures in terms of the quantitative and qualitative representation of women and the decision-making processes.
- A questionnaire aimed at the Minister, Commissioners and decision-makers staffing the overarching structures. This should be evolved in consultation with women’s organisations and individual women users in communities, and should aim to assess the openness of policy-makers to a specific focus for women in the creation and implementation of policy and the extent to which practices incorporate women’s views and needs.
- Follow up interviews on the basis of responses.

### **Selection of Telecentre Sites**

Decision-making structures are top-down structures. The selection of sites for telecentres, unless specifically aimed at women’s organisations (as is the case with APEL in the Northern Province), is not informed by the needs and aspirations of women in a particular community.

In some case studies site selection was determined by organisational interests. In Uganda a telecentre was set up to serve women’s organisations and women served on the management committee of the telecentre. UNESCO (and IDRC’s Acacia Project) have jointly sponsored similar projects in Mali, Uganda and Mozambique. In some places there are baseline studies (starting with access, usage and needs). Where there are no baseline structures (including the situation in Uganda and Mali), the telecentres are located close to places where there are target organisations and early adopters (people who because of individual roles or organisational connections are users because of work, profession, information needs, educational levels).

Operationally there was an attempt to choose groups where there were women on the Steering Committees. There were also major efforts to ensure that there is at least one woman staff member. The telecentres have the potential to reach out to other women’s organisations.

### **Questions**

- How are telecentre locations selected?
- Should the selection criteria for all telecentres consider how women in the area will benefit?

### **Ownership of Telecentres**

The majority of telecentres are run as community owned structures such as civic organisations, community radio stations, etc. Other telecentres are run as individual businesses.

### **Questions**

- Are telecentre owners women or women's organisations?
- Where communities own telecentres, are women's organisations involved?
- Where telecentres run as individual businesses are the individuals who are provided with equipment men or women?
- Is the experience of women owners of telecentre/businesses in rural areas empowering for them or is it simply a means of survival?
- Are business models mission-driven or not?

### **Evaluation Methodology**

- Interviews with women's organisations in areas where telecentres are located to establish their understanding of the mission of these centres, their links with organisations and the extent to which they serve women's interests in a particular community?
- Interviews with women-owners of telecentres about their vision, mission and experiences.

### **Managers/Training of Managers**

The Universal Service Agency explicitly states that for each telecentre set up with support from the USA, one member of each team trained should be a woman. This strategy was considered to be not only gender-sensitive but also quite radical. Of the existing telecentres, those that are most successful are the telecentres in which there is a skilled or dedicated manager.

There is a need for women to be trained together as well as on their own. Women training on their own is a very empowering experience. Equally, there is a need for men and women to be trained together. These different kinds of training meet different needs and different objectives will be achieved. Mixed groups are important to build commitment to and understanding with regard to women's issues but a women's agenda is most powerfully driven by women themselves. Training should as far as possible be practical and experiential. Often management courses can end up being theoretical.

### **Questions**

- How many of the people trained are women?
- Who is in charge and who makes the operational and content decisions?
- What training processes are employed?
- What are the objectives of training?
- Is training the same, no matter what the mission of a particular telecentre may be or is it dovetailed to incorporate different kinds of service provision?
- Does training take into account the learning needs of women?
- Who determines the content?
- Are trainers of women, men?
- Are women trained in mixed groups or with other women?
- Do managers manage in isolation or in consultation with a reference or support group from the community?

### **Evaluation Methodology**

- An analysis of training materials and processes used.
- A questionnaire to training materials producers and facilitators to ascertain their objectives, specific sensitivity to women, the extent of consultation with women's organisations in the design of materials.
- Interviews with the decision-makers to establish what guides decision-making with regard to content, selection of materials and selection of trainers.
- A quantitative analysis of the ratio of women to men managers and staff in telecentres.
- A focus group consisting of women managers, women trainers and representatives of women's organisations to evaluate how the training received is empowering or disempowering for women.
- Interviews with women managers to ascertain whether they are supported by other groupings in the community, whether they have been treated equally with regard to equipment provision, whether they understand their role in broader relationship to other women in the community, how they are managing their other roles as women, whether telecentre

### **Services offered by telecentres**

In some telecentres, particularly in rural areas, services offered are the basic use of equipment – telephones, faxes, photocopying machines. There are indications that higher order services providing government information, for example, are not of key interest to women. Issues such as the education of children, food and firewood are considered to be issues of more concern to women than men.

One of the main services offered by telecentres is the use of telecommunications equipment. Only a few telecentres are beginning to provide a range of information. It is important that telecentres are not used as vehicles for government propaganda. Women and women's organisations (rather than male-dominated traditional and civic local authorities) need to be asked what information women there require whether electronically, verbally or in document form.

### **Questions**

- What are the actual needs of women?
- Are services geared specifically to the needs of women?
- How can these concerns be built in to telecentre services?

### **Evaluation Methodology**

- A review of services offered by telecentres.
- A focus group consisting of women users to explore their needs and their experiences of telecentres.
- A quantitative/qualitative survey of women users.

### **Women as information creators through telecentres**

The focus of most telecentres is on giving access to equipment rather than on providing information. As more telecentres become information providers, how can an environment be created which is empowering to women so that they can become empowered to generate their own information, create websites, etc.

### **Questions**

- How do women in the community assess the relevance of the information provided?
- Does information provided encourage networking with other women or women's organisations?
- How enabling is the environment for women to seek additional relevant resources?
- Are women motivated through information provided to analyse and review their stereotypical roles?
- Do information needs expand over a period of time? If so how?
- Are women encouraged to access information relating to governance, which has specific relevance for them?
- Are they motivated to produce their own resource materials? If so, what motivates them? If not, why not?

### **Evaluation Methodology**

- A questionnaire to information providers to assess the nature and quality of information provided.
- A focus group of women users and representatives from women's organisations focusing on information dissemination and communications.

## **Users/non-users of telecentres**

Most telecentres have begun to keep user logs.

In Uganda, Mali and Mozambique information on users has been collected with coding according to male, female and adult and youth. The aim is to establish how many women are using the telecentres and for what purpose.

In the case of GaSaleka in the Northern Province preliminary indications are that there are more male users than female users (approximately 55% men and 45% women). A survey of non-users could yield useful information on the barriers to usage.

## **Questions**

- What are the reasons for non-use by women? Are they restricted because of time, ignorance, fear, cultural and social conditioning?

## **Evaluation Methodology**

- Interviews with women across sectors and age groups. An analysis of profiles emerging.
- Specific Targeting of Women (e.g. crèche and other facilities)
- Linkages with other structures in the community
- Telecentres that are perceived to be successful have strong linkages with other structures in the community. This is the case with GaSaleka.

## **Financing models/process**

Long-term sustainability of telecentres is of ongoing concern. Skills in financial management and planning are generally lacking. Women need to be targeted for training in financial management and planning. Donors have the power to incorporate a gender perspective as part of their requirements. If it is strategic for donors to include criteria for gender transformation in their funding requirements, these criteria must be drawn up in consultation with women's organisations rather than in isolation.

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## **Rebecca HOLMES**

Acting Project Manager - Women'sNet

Women'sNet at SANGONeT (Southern African NGO Network)

13<sup>th</sup> Floor, Longsbank Building, 187 Bree Street, Johannesburg 2000, SOUTH AFRICA

PO Box 31, Johannesburg 2000, SOUTH AFRICA

+27 11 838 6943

+27 11 492 1058

[rholmes@sn.apc.org](mailto:rholmes@sn.apc.org) or [women@sn.apc.org](mailto:women@sn.apc.org)

<http://womensnet.org.za>

## **Designing Research for Telecentre Evaluation (Heather E. HUDSON)**

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*Coordinator, Evaluation and Learning Systems, Acacia Program, IDRC<sup>1</sup>*

### **1. Initial Considerations**

#### **1.1. What is a telecentre?**

For purposes of this analysis, a telecentre must meet two essential criteria:

- it must provide access to telecommunications services (no “tele” - no telecentre)
- it must be accessible to the public (i.e. it must not be exclusively for one group such as school students).

Aside from those factors, telecentres may vary in many ways in terms of:

- location: urban vs, rural, community size, demographics
- services provided: phone, ICTs, other information
- business model: profit making, cost recovery, subsidized, etc.

... and several other factors. See Appendix A: “Typology of Telecentres.”

#### **1.2. Information is Critical to Development**

Information is critical to development; thus information and communication technologies (ICTs) as means of sharing information, are not simply a connection between people, but a link in the chain of the development process itself. There is now considerable evidence that telecommunications contributes to socio-economic development; studies have shown that access to information through telecommunications can facilitate many development activities including agriculture, fisheries, commerce, tourism, shipping, education, health care and social services.

In general, the ability to access and share information can contribute to the development process by improving:

- *efficiency*, or the ratio of output to cost;
- *effectiveness*, or the quality of products and services;
- *equity*, or the distribution of development benefits throughout the society.

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<sup>1</sup> E-mail: [hudson@idrc.org.za](mailto:hudson@idrc.org.za), phone: 27 11 403 3952; fax 27 11 403 1417; after January 1, 2000: [hudson@usfca.edu](mailto:hudson@usfca.edu) (also use sooner if above address doesn't work), phone: 1-415-422-6642, fax 1-415-422-2502.

Telecentres are a means to provide access to tools to create, access, and share information. Thus, if we are to understand how they may contribute to development, we must understand what information is needed in their communities, and what other factors may influence the initiation and impact of activities that may be considered developmental (from economic, social, cultural and/or political perspectives).

## **2. Functions of Evaluation**

The evaluation activity itself may serve two different but related functions:

- *formative*: feedback on the project or activity: how well it is working, what changes or improvements should be made, what was learned that could be applied in other similar projects, etc.
- *summative*: Did the project achieve its goals? What was learned about how ICTs can contribute to social and economic development?

These functions are related in that the feedback or process information may help to improve projects so that they are more likely to accomplish their goals, and some of the information collected such as data about who is using telecentres, and for what purposes, can be useful both for feedback to the project and for tracing project impacts.

### **2.1. Formative Evaluation: Process and Feedback**

Each project should build in mechanisms that can be used to gauge how well the project is progressing, and can provide feedback to the field staff and stakeholders. The specifics will vary with the type of telecentre.

#### **Facilities:**

- Is the equipment operating reliably?
- Are spare parts and technical assistance available when needed?
- Are the telecommunications links sufficiently reliable?
- Are there any unforeseen technical problems?

#### **Staff:**

- Do the project staff have the necessary skills?
- Are the project staff performing satisfactorily?

#### **Users:**

- Are target groups using the facilities as expected?
- Have target groups suggested any changes that would facilitate usage? e.g. training, hours of operation, role of project staff, etc.
- Are other groups who were not targeted using the facilities?

#### **Applications:**

- Are the facilities being used as expected? If not, what unforeseen circumstances may be hindering usage?
- Are users trying applications that were not expected? If so, what are they?

#### **Usage Trends:**

- What trends or changes can be observed in how the facilities are used, and in the volume and type of users? E.g. are the number of users or frequency of usage increasing? Is there growth or change in the composition of users? Are there significant numbers of users who tried the facilities once but did not return?

Such information, which can be collected through logs, automated records, and interviews with staff and a sample of users, can be helpful in making mid-course modifications, and in sharing experiences with similar projects. (See example of log from Timbuktu in Appendix B). For example, in South Africa, telecentre managers have been found to need more business training and equipment problems have been documented, and the attitude of project staff toward newcomers to telecentres was identified as important to users in Mali and Uganda.

## **2.2. Summative Evaluation: What Difference Did It Make?**

The other function of evaluation is to determine what were the impacts or effects of the project? In other words, What difference did it make? One way to approach summative evaluation is to determine to what extent the project achieved its goals. This approach assumes that the project started with explicit goals (or goals that could be easily made explicit from the project plan), and that the goals can be explicated as concrete targets that can be measured or tracked.

It also requires analysis to identify the various stakeholders:

- e.g. local community, donors, government agencies, user groups.

Another approach might be to identify the various levels of impact:

- community
- target groups: women, NGOs, youth, small business, etc.
- sectors: health, education, agriculture, tourism, etc.
- national: e.g. impact on communications policies.

Identifying goals is further discussed in the section below.

## **3. Planning the Evaluation**

### **3.1. Understanding the Context**

Of course, telecentres do not exist in a vacuum -- they are situated within cultural, social, economic, political and policy environments, which may influence who uses ICTs, how they are used, and/or what impact usage may have. Thus baseline information on these contexts is important. For example:

### **The Socio-Economic Context**

- **Cultural information:**  
What local languages are spoken?  
How widespread is use of an international language such as English, French, Spanish, Portuguese, etc., (especially if printed materials or Internet access are to be available)?  
Do men and women work or socialize together or separately?  
Do youths and adults socialize together or separately?
- **Education:**  
What are literacy levels among men? among women?  
What schools, colleges, training centres are available in the area?
- **Communities of interest:**  
Where do people need to go or contact to get information about: extended families?  
government services? business matters? etc.
- **Economy:**  
What is the basis of the local economy?  
What skills are needed to work in the local economy?  
What opportunities exist for diversification, and what skills would be required? (This is important because there is often an assumption that better computer skills will help people to get jobs, but the availability of such jobs may vary, depending on the local economy and proximity to urban areas.)

### **The Telecommunications Context:**

#### **Existing facilities:**

What basic telecommunications facilities already exist in the community: are there payphones; if so where located and do they work? Lines to businesses? Residences?  
Are there other suppliers of services operated by the telecentre: photocopying, computers, Internet access, etc?

#### **Tariffs:**

What is the price to have a line installed? Monthly rental?  
How much is a 3 minute direct dialed call to major communities of interest? How much is such a call from a payphone?  
Are there any subsidies or discounts: e.g. for schools, low income users, rural areas, etc.

**Telecommunications Policy:**

What is the current structure of the sector (see the taxonomy in Appendix A)?

Are any major changes in the sector planned: e.g. rebalancing tariffs, privatization, introducing competition?

**3.2. Identifying Objectives**

In order to plan the evaluation, it is important to understand the objectives of the telecentre project. This sounds straight forward, but:

- various stakeholders may have different objectives: e.g. donors, partners, communities, telecentre staff;
- objectives may not be very clearly defined
- reasonable timeframes for achieving different objectives may vary.

To identify the objectives, evaluators may be able to obtain information from existing sources such as project documents; where such sources are lacking or unclear, they may need to interview representatives of stakeholders or others to ascertain their objectives for the project.

**3.3. Making the Objectives Explicit**

Evaluators may find that objectives listed in documents or suggested in interviews need to be clarified and made explicit in order to make decisions on methodologies, variables, and instruments. For example, the Acacia project document state that Acacia is designed “to empower sub-Saharan African communities with the ability to apply information and communication technologies [for] their own social and economic development.” What does this mean in the case of telecentre projects?

One way to get at this question, is to pose the question of various stakeholders: *What would make this a successful project?* Answers might include:

- providing access to ICTs for people in the community
- training community residents in use of ICTs
- usage of the telecentre by target groups: e.g. women, youth, entrepreneurs, etc.
- increased awareness of the importance of information in local development
- sustainability: ability of the telecentre to continue to operate past the project phase
- economic development in the community: e.g. job creation, better prices for products, new outlets for products from the community, etc.
- social development in the community: e.g. adoption of practices to reduce disease such as better sanitation, maternal and child care, sexually transmitted diseases; improvements in education in the community such as basic literacy, school completion, job skills.

All of these goals have been proposed by various stakeholders for telecentres. Often sustainability as an end in itself is combined with one or more of the other goals. The evaluators must then attempt to make these goals explicit and develop a plan to determine to what extent they have been achieved.

### **3.4. The Chain of Inference**

Many of the goals proposed for telecentres imply causality between use of the telecentre and a specified outcome. They are really hypotheses with an implied chain of inference that must be made explicit in order to trace a causal connection between provision of the telecentre and development. The chain of inference for telecentres may be complex, because they are typically intended to serve a variety of community needs, which may not be as clearly defined as in projects designed for a particular sector or target group. For telecentres to have an impact on development, at least the following are required:

#### **Community access:**

- the equipment must be conveniently located;
- the telecentre must be open at hours when people want to use it;
- the services must be affordable;

#### **Awareness:**

- community members must be aware of the centre and the services it offers,

#### **Skills:**

- community members must be able to use the equipment or to get assistance in doing so.

#### **Lack of Barriers:**

- there must not be constraints that would unduly hinder the impact of the utilization of the ICTs (e.g. lack of jobs or entrepreneurial activities; cultural norms that affect certain groups such as women; lack of transport to reach new markets, etc.)

Some benefits may accrue to individuals who use the telecentre such as getting help in emergencies and saving time by using telecommunications to arrange logistics or substitute for travel. Other benefits may require more complex types of information-seeking or use by people with institutional affiliations, such as members of community organizations, entrepreneurs, employees of NGOs, businesses or government agencies, etc.

### **3.5. Short Term vs. Long Term Impacts**

A danger of the recent enthusiasm about the role of ICTs in development is unrealistic expectations among donors and policy makers who expect significant short term impacts. Of course, we may see some dramatic examples of the value of access to information such as a farmer getting a much better price for produce, artisans finding markets, health workers getting assistance to save lives, etc. But much of the impact is likely to take longer and be much more indirect. Better information about planting methods could eventually result in better yields and thus more income for farmers; schools with access to the Internet could result in more graduates prepared to continue their education or to qualify for jobs, etc. But this takes time!

While planning evaluation that can capture these longer term benefits, we should also look for indicators that logically would have long term impact:

- women who have learned new skills
- NGOs that have been able to obtain and disseminate information
- entrepreneurs who have obtained information about new markets, etc.

These are more likely to be the kinds of changes that can be documented in the first year or two.

## **4. Research Design**

### **4.1. Indicators and Usage Data**

From the goal explication process, it should be possible to identify indicators that will be tracked to attempt to answer short term questions such:

- who is using the telecentre (number of users, gender, age, occupation, etc.)
- what services are being used?

and the longer term questions of:

- what difference did the telecentre make: to the users? to the community?
- is the telecentre sustainable?

Indicators and instruments for collecting data on them are discussed in detail in Anne Whyte's paper. We have found that most telecentres collect some form of usage data at least to keep track of their own income. No one to date has refused when requested to collect a little more information that could be useful both to them and to the evaluation. This information is critical both in providing an ongoing record of how the telecentre is being used and in providing data that can be used in planning subsequent field research.

### **4.2. Turning Goals into Hypotheses:**

Based on the input from stakeholders and/or your own research interests, you may be able to formulate hypotheses that could be tested by the evaluation. For example:

- Women are more likely to use telecentres if telecentre staff are women (or include women);
- Vandalism is likely to be reduced if the community takes responsibility for the telecentre, or if the telecentre is located in a site with another function: shop, school, community centre, etc.
- The business model makes a difference in development impact (e.g. a business-oriented telecentre is likely to contribute less to social and/or political development than one with explicit development goals).
- Training a core group of users results in more usage of ICTs (or faster take-up by target groups) than a drop-in self-teaching approach.

As noted above, many goals and assumptions about telecentre implementation and impact such as those above are really untested hypotheses!

### 4.3. Testing Hypotheses: Research Design

Much of the evaluation of ICT projects is based on case studies. While such studies can provide valuable insights into the usage of the facilities and their perceived value to participants, they cannot address fundamental questions of causality such as:

- did the telecentre actually result in creation of new jobs in the community?
- did farmers get better prices or find new markets as a result of the telecentre?

There are a variety of research designs known as “quasi-experimental” (because in field settings they cannot control for all extraneous factors as could be attempted in a laboratory setting) that can be used for telecentre evaluation. The following designs are not perfect, but are superior to stand-alone case studies in improving *validity* of your results:

#### **After only:**

No baseline information is available, so it is difficult to isolate and quantify impacts. However, strategies that can be used include:

- Retrospection: asking users to state how they got the information or carried out the task before the TC
- Contrary to fact: Asking: “If you did not have the TC, how would you do this?”

#### **Before-After:**

Design that collects data on specified data before and after the installation of the telecentre

The danger of both of these designs is that they can lead to false conclusions such as “the telecentre created more jobs” because it does not control for extraneous factors that might have had this effect anyway - such as a new development initiative, new road, etc.

#### **Adding a Control Group:**

**Matching:** You can get better insights into causality if you can add a group of sites that are similar in what appear to be relevant aspects such as population, isolation, economic base, etc. and collect the same data in both sets of sites.

**Random selection:** You may also use randomly selected sites if you have a large data set to draw from, or if you can influence the project design to randomize choice of where the telecentres will be installed - but this approach would be quite rare except possibly in Senegal because of the very large number of phone shops, and in South Africa using the CIET data base.

**Controls using various forms of telecentres:** In countries where there are phone shops that have added ICTs, private telecentres, cyber cafes, etc., you could include these sites in your sample in order to test the hypothesis that the business model makes a difference in usage and benefits.

### **Multiple Measurements:**

Whether or not you can set use control sites, collecting data at several points after the TC is installed is likely to provide better insights into causality than a single “after” data collection. Also, later waves of data collection will help to determine whether usage of the telecentre dropped off after initial interest, or whether demand and applications have changed over time.

### **Sampling:**

In collecting community data, using a systematic approach to drawing a sample (rather than interviewing the first people you see or people known to the interviewers) strengthens the validity of the data. Sampling frames are discussed at length by Anne Whyte.

In order to ensure that the data tell you what you think they do (known as *reliability*), several steps are required. For example:

### **Pretesting:**

Instruments must be carefully designed and pretested to make sure respondents understand the questions being asked. For example, if code sheets specify “youth” or “adult”, how are these terms defined and interpreted?

### **Training:**

For field surveys, interviewers must be trained in how to ask the questions and code the responses. For example, they must learn to ask the questions consistently, to avoid asking leading questions or making assumptions about how the respondent would answer.

**Spot Checking:** Log sheets or interview forms must be spot checked to ensure that they are coded correctly and completely. For example, all staff need to know how to complete logs and to understand that daily records need to be kept regardless of whether the manager is there.

## 5. Users and Beneficiaries:

In attempting to identify and measure the benefits of ICT projects, it is important to consider users as both individuals and members of an organization or user community. For example, telecentre users may seek information:

- as individuals
- as members of an organization, e.g.:
  - family
  - work group: e.g. job, school, profession
  - cultural or religious organization
  - political organization, etc.

Their perceived role as individuals or members of a group may influence their needs for information, the people with whom they communicate, the sources they contact for information, etc. It may also be important to consider demographic characteristics of users that may affect their information needs, such as gender, ethnicity, education level, income level, geographical location, etc.

To measure benefits, it will also be important to learn about the purposes for which people use the telecentre, for example:

- **Emergencies:** This application does not depend on education, literacy, or any sophistication, although a decision on where to seek help may depend on those factors;
- **Personal Needs:** Staying in touch with family members including relatives who have gone elsewhere to work, students away at school, and extended family living in other communities.
- **Entertainment:** e.g. socializing with friends, playing video games, watching videos, finding entertaining websites, etc.

These personal applications are likely to be the only reasons that most *individuals* will use ICTs. The other reasons that people use these tools have to do with their connection to a larger organization, as a worker, entrepreneur, official, active participant in a social or other organization, etc. Some of the applications include:

- **Entrepreneurs, businesses:** information on markets and prices; outlets for products; transport of products to market; logistics; ordering supplies and spare parts; managing accounts; seeking solutions to business problems, etc.
- **Government services:** links with HQ, administration, logistics, etc.
- **Sector-specific applications:** e.g.

- **Agriculture:** extension services: access to databases, training, distance education, market information, etc.
- **Education:** access to information for class preparation, assignments, research projects, etc.
- **Tourism:** planning itineraries, making reservations, enabling tourists to keep in touch with families or work;
- **Health care:** consultation, administration, continuing education and training for health care staff; public health education, etc.
- **NGOs:** may be involved in some of the sector activities above, or organizational and community development: training, logistics, access to expertise, etc.

In thinking about users and potential benefits, two concepts from diffusion theory of innovations and the impact of communications may be relevant:

- **The “two-step (or multi-step) flow” model:** i.e. the real beneficiary may not be the user: for example the user may be the agricultural extension agent, the health worker, the social worker; while the beneficiaries are the farmers, women and children, disadvantaged groups, etc.;
- **The “early adopter”:** some people may be more likely to use ICTs sooner than others: for example, people with more education and those with clearly defined information needs such as artisans who need to find markets and merchants who need to contact suppliers, etc.

## 6. Content

Content varies substantially among telecentres (see the attached typology). Some telecentres have resource materials such as newspapers, magazines, books, videos, etc. on site. Some provide access to content elsewhere, such as through the Internet. Telecentres may also provide means for local people to create or disseminate their own content, through desktop publishing of flyers, announcements, newsletters, etc.

For evaluation purposes, it would be useful to document:

- the types of content available and how they are used: e.g. newspapers, books, videos;
- content produced by people using the centre: flyers for events, price lists for shops, wedding and funeral announcements, newsletters, etc.

Researchers could then interview a sample of people who used or produced this content to find out how it was used, and what impact it made to them personally or to their organization or business. This approach could also identify demand for additional types of content and media.

## 7. Sustainability

Finally, the evaluation should include an assessment of the sustainability of the activity past the pilot project phase. Of course, findings on benefits and impacts will be important. If the project has not had much impact on the target population or achieved its primary objectives, its future sustainability may be of little consequence. However, where projects have achieved their objectives or are well on the way to doing so, it will be important to collect and analyze data that can provide an indication of future viability, for example:

### **Costs and Revenues:**

- What revenues does the project generate now? Are these markets likely to remain stable or increase?
- What were the startup costs: e.g. equipment, site, training, etc.
- What are the ongoing operating costs of the telecentre?  
e.g. personnel, supplies, spare parts, rent, utilities, technical support, etc.
- Are the projected revenues sufficient to cover ongoing costs?
- What other sources of revenue might the project develop? (e.g. selling additional services; finding major clients as underwriters; building operating costs into an organizational budget, etc.)
- Are there ways to reduce costs (e.g. discounts from telecom operators, sharing equipment or staff, etc.)

### **Facilities:**

- Has the ICT equipment proved to be reliable in field settings?
- Are power supplies and telecommunications networks sufficiently reliable?
- Is timely technical support available when needed?

### **Staff:**

- Do the current staff have the skills to continue to operate the facilities?
- Is the current project management committed to continuing with the project?
- Are others available who could be recruited and trained to work on the project?

### **Commitment:**

- Is the activity a priority for the target group concerned (e.g. school district, health ministry, community)? The project will probably die, or be left in obscurity, or equipment may be vandalized, if there is not strong commitment from its constituents.

This analysis is important regardless of whether the telecentre is assumed to be viable as a stand-alone enterprise by the end of the project period, or whether it is expected that ongoing support from donors or government agencies will be required.

## **8. Evaluation as Learning**

Evaluation may appear threatening to field staff who may resent someone “looking over their shoulder” or fear that they and their projects are being judged as successes or failures. While it may not be possible to avoid these perceptions completely, as far as possible evaluation should be presented and conducted as a means of learning:

- to provide feedback to project staff on what is working well and what needs to be changed or improved;
- to plan for sustainability: are facilities being used as predicted? Have sources of revenue for future operations been identified?
- to identify successful strategies and lessons learned that could be shared with other projects;
- to share with projects supported or operated by other organizations.

To implement this “evaluation as learning” philosophy, it is important to involve the project staff in identifying what information would be useful to them, in deciding how to collect the information, and in some cases, in the data collection itself. For example, in the baseline telecentre studies in Mali and Uganda, telecentre staff were trained in doing interviews and sat in on focus groups. They could thus hear directly from community members about their information needs and their perceptions of the telecentre. Similarly, any ongoing monitoring of activity such as usage logs for telecentres should be designed in consultation with the staff, and they should be shown how the information collected can be useful for them in seeing trends in usage and understanding customer needs.

Evaluation as learning should also be reflected in how information is shared with various stakeholders. Research results should be communicated to the project staff and to interested members of the community, as well as to stakeholder organizations. Exchange visits between similar projects and workshops where practitioners have a chance to share information can also be useful learning experiences.

---

## Appendix A: Telecentre Typology

**Telecentres:** provide access to telecommunications services available to the public

But may vary in location, function and design:

### 1. Local Context

**Location:** urban  
periurban  
rural  
remote (very isolated; difficult access)

**Population:** population size, density of service area

cultural groups in area  
languages: spoken, written

**Economy:** per capita (or household) income  
main local economic activities  
other sources of income: remittances, etc.

**Social Factors:**  
education levels: by age, gender  
schools in area  
major health problems (morbidity, mortality)  
health care facilities in area

**Other community factors:**  
leadership structure  
political groups  
religious groups, etc.

## **B. Telecentre Services:**

- telephone only (phone shop)
- telephones plus other ICTs (fax, computers, email, Internet)
- other ICTs only (computers, email etc. but not payphones)
- other information: e.g. newspapers, magazines, books
- other services: e.g. training, copying, typing, desktop publishing, research

## **C. Telecentre Organization**

### **Institutional model:**

- Community:  
stand alone  
as part of community organization
- Sector base:  
school  
library  
other development sector

### **Business Model:**

- profit making:  
stand alone  
as part of another venture

- cost recovery:  
non profit; able to cover costs
- subsidized:  
by public sector users  
by international donors  
by government, etc.

### **Ownership:**

- individual entrepreneur
- business
- NGO
- community
- government agency

### **D. Policy Environment:**

#### **Government Telecommunications Structure and Mandate**

lead department or ministry  
regulatory body

#### **Government Policies on Access**

- Universal service or access goals
- Special tariff policies  
subsidies:  
rural  
education  
health care  
low income  
incentives:  
provision of services

#### **Structure of the Telecommunications Sector**

- Degree of privatization of telecom sector:  
government department  
corporatized  
partially privatized  
fully privatized

- Degree of liberalization (competition):
    - value-added services (e.g. ISPs)
    - international services
    - long distance (interexchange) services
    - local services
- 

**Heather HUDSON**

Coordinator, Evaluation and Learning Systems, Acacia Program, IDRC

IDRC Regional Office for Southern Africa

P.O. Box 477, Wits 2050, Johannesburg, SOUTH AFRICA

27 11 403-3952 x263

27 11 403-1417

[hhudson@idrc.org.za](mailto:hhudson@idrc.org.za); after January 1, 2000: [HUDSON@USFCA.EDU](mailto:HUDSON@USFCA.EDU)

<http://www.idrc.ca/acacia>

## **Telecentre Evaluation: A Tele-community Perspective (Loyola JOSEPH)**

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*Chief Executive, Foundation of Occupational Development (FOOD), INDIA*

The telecenter concept started in India very recently when Internet services were made available to public. Initially the telecenters were catering to students who were searching for institutions abroad for higher studies or for information on subjects relating to their studies. Some were using it for finding placements in countries outside India but for many it was more of an entertainment medium.

During the initial period, telecenters were not that successful since the users were temporary in nature that is once they get what they were searching for they no longer use the telecenter. Hence the telecenters did not have permanent clients for their survival.

Of late telecenters in India have gained importance in two areas, namely working for a company from remote through telecenters (telecommuting) and to get self employed by doing contract jobs for more than one company (small office / home office).

Telecenters for telecommuting is becoming an increasingly popular working option in India mainly because it offers substantial benefits to both employers and employees in start-up companies, small business houses and for small entrepreneurs. Corporate giants are also getting interested in telecenters because it allows them to offer attractive “flexi-hours” packages to their employees. Self-employed youth find telecenters to be a boon since they offer them the technological infrastructure required for today’s small office.

The telecenters have been instrumental for many to start working from home.

### **Evaluation of telecenters**

During our evaluation on telecenters and potential areas where one can use the telecenter we have found there are more than 700 companies only in U.S. who are interested in full/part time telecommuters and independent contractors.

We have also found about 300 World Wide Web telecommuting links that are dedicated to resources for people who want to work from telecenters. Some of these web pages are continually updated on a weekly basis with companies that are posting brand new job openings for telecommuters. These are resources that one can revisit time and time again to keep one aware of new jobs, as they become available.

One can work for a company that is located in a completely different state or country by utilizing the services of a telecenter that is nearby. This prevents the brain drain that is currently occurring in many developing countries.

The present trend is to transport work to the worker rather than the worker to the workplace. We hear that about 40% of the total U.S. work force are telecommuting either as self-employed home office workers or as telecommuters working from telecenters.

This rate is currently growing. We also hear that very large companies such as IBM, AT&T, Pacific Bell, and others have taken to offering telecommuting packages to their employees. AT&T alone has 40,000 telecommuters! And the U.S. government currently has a goal of providing telecommuting work for 60,000 of their employees. More and more companies are beginning to employ telecommuters on a daily basis.

Soon it is expected half of the U.S. working population will be working either from home or from a telecenter.

The concept of telecenters and telecommuting presents a huge opportunity for utilizing the services of India's educated unemployed youth!

Telecenters are the first step towards motivating unemployed to get self-employed without the need for any investment by utilizing their skills with some minimal training on tele-working.

As a part of our promotional activity we have identified the following activities that have potential scope to enable the educated unemployed to productively use telecenters.

As a service to the unemployed we are already contacting various institutions and networking with few telecommuter associations to seek assignments for Indian telecommuters so that they can work for a company outside India without having to relocate.

We are currently exploring the following types of job positions:

Administrative Assistants  
Database Managers  
Reporters  
Advertising personnel  
Desktop Publishers  
Reviewers / Editors  
Architects  
Engineers  
Marketing personnel  
Sales personnel  
Art Designers  
Graphic Illustrators

Field Engineers  
Secretarial personnel  
Artists  
Financial Analysts  
Billing Clerks  
General office workers  
Software Developers  
Calligraphers  
Graphic Artists  
System Administrators  
Cartoonists  
Programmers

Systems Analysts  
Claims Processors  
GUI Designers  
Icon Artists  
Clerical Workers  
Technical Trainers  
Illustrators  
Poets  
Translators (language)  
Data Processing personnel  
Typesetters  
Data Entry operators  
Project Managers

Technical Writers  
Internet Researchers  
Tele-marketers  
Copy Editors  
Photographers  
Transcriptionists  
Customer Support personnel  
Typists  
Proofreaders  
Web Designers  
Publishers  
Writers  
Recruiters

### **Telecommuting through telecenters**

Many employers have started realizing the advantages of telecommuting. The major benefits of telecenters are that it allows corporate companies to recruit employees from outside their geographical area. Employees can be linked to their office by equipping the telecenters with computers and telecommunications facilities.

This makes the company's employee package more attractive also reduces the cost of office overheads and support services. It has been noted that telecommuting also increases employees' productivity by 10-30%.

Some of the advantages of employees using telecenters are that it reduces travel time to and from office, eliminates both the stress and costs associated with a daily commute, increases job satisfaction, allows for flexible work hours, permits a more balanced home life, increases productivity and commitment, and decreases miscellaneous expenses such as travel and lunch costs.

We also find that in the long run telecommuting eases traffic congestion associated with rush-hour commutes, decreases pollution levels caused by automobile emissions and conserves energy resources in the corporate workplace.

We find that employee commitment, employer support and intelligent use of the technology are some of the key factors for the success of telecenters.

Some concerns that have been raised against telecommuting are that the work force becomes more dispersed, there is inadequate remote management practices and also a lack of well-defined system to measure employee output.

When employees work at an office it can be easier to find ways to compensate for deficits. If something is not working, you may be able to go and literally find that person or resource and

confront the issue face-to-face. When employees begin to work remotely, some of the ways we compensate for office deficits no longer work.

Proper training for managers, tele-workers and co-workers can assist the organization in not only preparing to have effective remote practices but also in refining current work processes and eliminating inefficiencies.

### **Telecenters for self employment – our experience**

Of late E-commerce is becoming popular on the Internet. We find that more and more people have now moved towards purchasing products and services from supermarkets established on the Internet.

Many international companies who have established supermarkets on the Internet are appointing tele-workers from dispersed locations worldwide to act as representatives for marketing their products and services through the Internet.

Our organization has been exploring the possibilities of utilizing telecenters to promote self-employment among youth by enabling them with the skills to act as e-marketers for Indian supermarkets.

For your information, we are running an electronic network in India for the past 5 years. Started with a single host system in Chennai (South India) the network has been expanded over the years to more than 10 sub-host systems reaching out to even remote areas.

The strategy we have adopted is to establish telecenters that provide basic training on the Internet and tele-working to educated unemployed youth and then offer them 500 hours of free Internet browsing facility. These trained personnel are then attached to Indian-based Internet Supermarkets as e-marketers.

These e-marketers act as Supermarket representatives by promoting the company on related sites, holding online/offline discussion groups, posting information on search engines, answering client queries and maintaining customer relations. The e-marketers are paid a commission by the supermarkets on the sales completed by them.

This concept has not only opened out a new area in self-employment but also helped promote telecenters. The telecenters are facilitating the commuters by providing necessary infrastructure including hard disk space for storing and retrieving data.

The telecenters are also well-equipped with other office automation facilities like DTP, photocopying etc which enables them to offer online as well as offline infrastructure to the e-marketers.

We find that many unemployed youth are successful in finding a permanent income and livelihood within the 500 hours of free browsing that we provide by establishing a permanent client base.

The multiple benefits that we have attained in this are as follows:

- Self-employment opportunity for the educated unemployed.
- Indian products find international markets.
- Our electronic network has become sustainable since the Supermarket pays us for offering training and browsing time to the e-marketers.
- Our additional infrastructure and office space is put to better use.

As a non-profit ISP we need not compete with other multi-national ISPs since we create and maintain our own permanent user base (the e-marketers) who utilize our networking services.

Once the e-marketers start earning substantially and manage to buy a computer on their own, we will motivate them to work from home.

This will have added advantage such as flexibility in work schedule, more attention towards children, no commuting hassles, etc.

Also, in many Indian homes the working women are commuting to their office for work. Hence telecenters will be an ideal option for women in India who can spend their commuting time with their children.

In developing countries like India telecenters and telecommuting can be the best option to create mass employment for the educated unemployed. Hence any orientation and support on the subject to Indian NGOs will be very much useful to disseminate the technology to the community.

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**Loyola Joseph**

Chief Executive, Foundation Of Occupational Development

C-Block, 1<sup>st</sup> floor, Bharathiar Complex, 100 feet road, Vadapalani, Madras – 600 026, INDIA

(91-44) 4848201, 4805066

(91-44) 4838826

[food@XLWEB.COM](mailto:food@XLWEB.COM)

<http://www.XLWEB.com>



## **Buwama and Nabweru Multipurpose Community Telecentres: Baseline Surveys in Uganda (Samuel KYABWE & Richard KIBOMBO)**

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*Researchers, Makerere Institute of Social Research (MISR), UGANDA*

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Finally, though not as an after-thought, we wish to thank the data entrants at Makerere Institute of Social Research (MISR) for volunteering to participate in the data entry exercise.

Any errors of fact or opinion which remain in spite of so much advice and assistance, are entirely our own but not those of the institution where we belong.

*Samuel K. Kayabwe (Economist)*  
*Richard Kibombo (Statistician)*  
*September, 1999*

## **1. Introduction**

Drawing from experience how information and communication technologies (ICTs) have transformed the way people in the industrialised world manage their professional lives, International Communications Union (ITU), United Nations Educational, Scientific and Cultural Organisation (UNESCO), and Canada's International Development Research Centre (IDRC) jointly financed the "Multipurpose Community Telecentre (MCT) Pilot Project for Africa". Within this pilot project umbrella, is the Acacia Initiative, an international effort led by IDRC to empower sub-saharan African communities with the ability to apply information and telecommunication technologies to their own social and economic development. Thus, Acacia is meant to test the proposition that ICTs can also have significant transformation effects in the developing world like they did in the developed countries.

Arising from the foregoing, IDRC has funded two Acacia telecentre sites in Uganda, through the National Council for Science and Technology (NCST) as the implementing agency, in Buwama and Nabweru Sub-counties in Mpigi District. Thus, IDRC found it necessary to retain the services of Makerere Institute of Social Research (MISR) to undertake a baseline data collection exercise, as per TOR in Annex 1, for the two sites to form a basis for future impact evaluation.

The rest of this report, therefore, gives a brief overview (background description) of the two survey sites; provides the methodological issues; provides the status of the telecentres as at the time of survey; presents baseline findings pertaining to the potential MCT users; and gives a summary of key issues and concerns pertaining to the sustainability of the telecentres in the context of the findings.

## **2. An Overview of the Study Sites**

### **2.1 Buwama Sub-county**

Buwama Sub-county, the location of one of the two Acacia telecentres, is found in Mpigi District. Its headquarters is an hour's drive on a high way tarmac (approximately 64 Km) connecting Kampala City centre to the rich hinterland of South-western Uganda and the land-locked countries of Democratic Republic of Congo, Rwanda, and Burundi. The sub-county borders Kituntu and Nkoni Sub-counties in the south, Ssesse Islands (on Lake Victoria) in the east, Bulu Sub-county in the west, and Budde and Kamengo Sub-counties in the north. It is composed of 10 administrative parishes namely, Bunjako, Buyinja, Bongole, Jjalamba, Katebo, Kawumba, Lubugumo, Nabiteete, Mbizzinya, and Ssango. Altogether, there are 57 villages scattered in all the 10 parishes. The sub-county has only one major trading centre called Buwama located in Mbizzinya Parish.

The sub-county has an estimated population of 350,000, with only about 30% literate (according to the census of 1991) and about 6824 households. Crop farming, at peasant scale, is the main economic activity consisting mainly of coffee and horticulture. Second to crop farming, is fishing/fish mongering as an economic activity occupying a significant cross-section of the population particularly in the parish of Bunjako which is an island on Lake Victoria. As for subsistence purposes, bananas, sweet potatoes and cassava are the major food crops in that order of

importance. Generally, the sub-county is food secure all the year round except for the cyclic food shortage associated with the periodic drought, at least once every 10 years, according to the timeline information collected from the community.

The health status of the sub-county is just moderate with only 2 health centres, one sub-dispensary and only 59% pit latrine coverage. The information and communication network is still very poor with only postal services—telephone service has been lacking since the political turmoil of the 1970-80's.

## **2.2 Nabweru Sub-county**

Nabweru Sub-county, the location of the second Acacia telecentre, is also found in Mpigi District. This is just a fifteen minutes' drive (approximately 6 Km) towards the northwestern part of Kampala City. Thus, Nabweru is one of the peri-urban sub-counties bordering Kampala City and it is easily accessible by both trunk and feeder roads. The sub-county borders Kampala District on both east and south, Wakiso Sub-county on the west, and Matuga Sub-county in the north. Administratively, the sub-county is split into six parishes namely, Kawanda, Kazo-Nabweru, Nansana, Nakyesanja, Maganjo and Wamala. Altogether, there are 26 villages and three major trading centres (Nansana , Kawanda and Kawempe).

The sub-county covers an area of about 25 square kilometres, settled by about 53,290 people of whom 27,228 and 26,071 are females and males respectively as per 1997 projection. Nabweru, being partially a peri-urban sub-county, is one of the fastest growing sub-counties in Mpigi District with its major economic activities composed of trading and farming. The sub-county is dotted with small trading centres and small-to-medium scale agro-processing industries especially maize mills and coffee processors. It is estimated that there are 1,103 businesses (mostly retail shops), and 8,000 farming families practicing both crop and livestock keeping (zero grazing, open diary farming, poultry and piggery) as the major economic activities as per 1996/97. Also, a significant cross-section of the adult population are salaried employees in both formal and non-formal sectors.

Unlike Buwama Sub-county, food production for subsistence is very low in Nabweru Sub-county due to small sizes of farm plots (average size 0.5 acre) leading to 80% of the population depending on food that is produced outside the sub-county.

The sub-county has a total number of 4 health units, 27 clinics and 21 drug shops. Safe water and sanitation coverage is estimated at only 45% and 14.6% respectively. Actually, poor sanitation, a direct result of lack of physical planning, is reported to be a serious matter in the fast growing trading centres of Kawempe and Nansana.

### **3. Methodology**

#### **3.1 Survey Preparation**

Survey preparation involving fine-tuning the data collection instruments used for Nakaseke Telecentre Baseline Survey<sup>1</sup>, to suit the Acacia telecentre study sites in Buwama and Nabweru, marked the entry point into the exercise. For consistency with Nakaseke Baseline survey, there were no additions to or subtractions from the instruments (Annexes 2, 3 & 4) except minor changes like reformatting the flow of some questions, assigning codes to open-ended responses and realignment of codes in a systematic order to make the instruments more user friendly during data collection.

#### **3.2 Pre-visits**

The pre-visits which began on July 22, 1999 marked the beginning of the baseline survey in both Buwama and Nabweru Sub-counties. These pre-visits which lasted for 10 days, divided between two study sites, had several specific tasks:

- i) To familiarise ourselves (consultants) with what was going on at the telecentre sites;
- ii) To operationalise the telecentre data collection logs for user registration (Annex 5) and for recording daily usage data (Annex 6). These data will enable analysts to make period-to-period comparisons (monitoring) and measure the impact (evaluation) of specific aspects of the programme. Through monitoring and evaluation, it will be possible to verify the consumer's propensity to use various services of the telecentre such that more efficient and effective utilisation and reinvestment in the telecentre can be guided.
- iii) To introduce, sensitise and seek consensus about the survey from the local councillors (LCs), chiefs, telecenter steering committee, and core use groups. This exercise was not very successful due to the poor turn up of the LCs. Nevertheless, those who attended the sensitisation appreciated the need for a baseline survey and assisted in transmitting the information to the rest of the community about the exercise.
- iv) To identify and recruit potential enumerators for training as data collectors for the survey. In this connection, a total of 24 enumerators (12 for Buwama site & 12 for Nabweru site), 10 of whom were core-user volunteer trainees at Nabweru MCT and 3 members of the steering committee at Buwama MCT, were trained in all aspects identified under v). The rest of the trainees came from the community but with a minimum qualification of "O" level in addition to having shown keen

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<sup>1</sup> Nakaseke Telecentre is the pioneer MCT in Uganda. It was set up through the initiative of UNESCO/IDRC/ITU and started its operations in March 1999. A baseline survey regarding the telecentre services was conducted in the same month of its inauguration by a Pact Consultant, Malcolm A. Versel.

interest in the telecentre objectives. In so doing, the baseline exercise was made participatory in line with Pact's<sup>2</sup> premise of making the entire data collection exercise participatory.

- v) To train the enumerators on a variety of techniques pertaining to data collection including, but not limited to, survey methods, interview techniques for questionnaire administration with particular reference to the MCT survey questionnaires, and conducting focus group discussion (FDGs). As one of the training methods, simulation exercises were used and they greatly improved the enumerators' ability to administer a one-to-one questionnaire interview. The training lasted for four days (2 days per study site), at the end of which the trainees were subjected to a one day test in questionnaire administration in every study site to ensure competency.
- vi) To pilot test the user profile/organisational questionnaires. The instruments were pilot tested after the training exercise and this formed part of the enumerator training. In order not to pollute the environment, pilot testing was carried out in those parishes not earmarked for the survey. As a training technique, pilot testing exposed the enumerators to practical field work and helped in strengthening their confidence level in administering questionnaires. The enumerator-trainees, grouped in pairs, pilot-tested the instruments in turns so that they could learn from each other. Back from the field, the pilot tested questionnaires were discussed in plenary and experiences shared for consistency.
- vii) To construct a sampling frame for the survey. Due to the heterogeneous nature of the community in terms of their socio-economic activities, as already highlighted in the section on the 'Overview of the Study Sites', it was agreed during training that the community be stratified into homogenous potential user groups for effective and proportional representation during the survey. The following potential user groups were, therefore, identified by the enumerator-trainees and their relative size within the community ranked or measured in order of importance:

a) Nabweru Telecentre Site:

- Business Community (Retailers, Restaurants, Entertainers, Bricklayers, Wholesalers, Small scale Manufacturers & Craftsmen in that order of importance ) ≈ 35% of the community
- Salaried Employees (Public and Private) ≈ 30% of the community.
- Students and Unemployed Youths ≈ 20% of the community.

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<sup>2</sup> Pact is an independent international non-profit corporation, registered in Washington DC. It is a leading facilitator of organisational development for both nascent and established NGOs in countries in transition and emerging economies around the world. Pact strengthens local NGOs' capacity to further development goals while establishing ties to grassroots communities.

- Farmers ( Poultry keepers, Cattle Keepers & Peasants in that order of importance) ≈10% of the community.
- Health Practitioners (Clinicians) ≈ 5% of the community.

b) Buwama Telecentre Site:

- Students/ Unemployed Youths ≈ 35% of the community.
- Farmers (Poultry keepers, cattle keepers, horticulture, & coffee farmers in that order of importance) ≈ 22% of the community
- Business Community (Retailers, Fishmongers, Coffee Traders, Health Practitioners, & Workshop Owners in that order of importance) ≈ 18% of the community.
- Teachers ≈ 15% of the community.
- Salaried Employees (Public and Private) ≈ 10% of the community.

viii) To identify and select the study parishes: This was done during the training of the enumerators. First of all, the enumerators, being residents of the study sites, were asked to list down all the parishes within the sub-counties where the telecentres are including those parishes in the adjoining sub-counties. For Buwama Telecentre, the following parishes were listed: Bunjako, Buyinja, Bongole, Jjalamba, Katebo, Kawumba, Lubugumo, Nabiteete, Mbizzinya, and Ssango (all in Buwama Sub-county). As for Nabweru Telecentre, the parishes listed were: Kawanda, Kazo-Nabweru, Nansana, Nakyesanja, Maganjo, Wamala, Naluvule and Kyebando (first 6 in Nabweru Sub-county & last 2 in Wakiso Sub-county).

ix) To construct a sampling frame of potential user organisations. While the training of enumerators was in progress, the Information Officers for both MCTs were assigned the responsibility of listing down all the organisations located /operating within the selected parishes. The listed organisations were later used as a sampling frame from which 9 representative organisations were purposively selected, on basis of their major activities and membership or scale of activities, for a structured interview.

All the tasks enumerated above were successfully executed, thanks to the Telecentre Managers, the Information Officers and the enumerator-trainees for their co-operation. At the end of pre-visit exercise, the consultants had set everything ready for the survey to take off.

### 3.3 Sample Selection

The criterion used for selection of the study parishes was purposive - based on **proximity** to the telecentre as “proximity” was observed by the enumerators to be one of the determinant variables for accessing the services of the telecentre. Thus, the five<sup>3</sup> parishes selected per study site were those within a radius of 16 kilometres from the telecentre. These were: Kazo-Nabweru, Nansana, Maganjo, Naluvule and Kyebando parishes for Nabweru Telecentre; and Mbizinnya, Ssango, Katebo, Jjalamba and Bongole parishes for Buwama Telecentre.

From each one of the parishes selected, four representative villages were randomly selected for inclusion in the study. For Nabweru Telecentre, the selected villages were:

- Kazo Central, Lugoba-Kazo North, Nabweru South and Nabweru North in Kazo-Nabweru Parish;
- Nansana West I, Nansana West II, Nansana East I and Nansana Ocheng in Nansana Parish;
- Kawempe A, Kawempe B, Maganjo A and Maganjo B in Maganjo Parish;
- Kayunga, Ssenge, Naluvule, and Gombe in Naluvule Parish; and
- Kyebando A, Ganda, Kazinga and Nsumbi in Kyebando Parish .

As for Buwama Telecentre, the selected villages included:

- Katikannyonyi, Buwama B, Buyaya and Mbizinnya in Mbizinnya Parish;
- Kayanja, Ssango, Buyiwa and Buwanda in Ssango Parish;
- Bulunda, Katebo, Bumeera and Kitoolo in Katebo Parish;
- Jjalamba, Namasawo, Lubanga A and Lubanga B in Jjalamba Parish; and
- Nyondo, Bongole, Mitala-Maria and Maggya in Bongole Parish.

At the village (selected) level, 25 respondents across all the identified potential user groups were randomly interviewed giving total of 100 respondents from each one of the five selected parishes per

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<sup>3</sup> The number of 5 parishes was determined on the assumption that we would need to take a sample of 100 respondents per parish, altogether 500 respondents per study site.

study site. However, the number of respondents per user group was pre-determined to ensure proportionality to its relative size within the community as identified during the enumerator training exercise. Following this systematic procedure, every parish in Nabweru site was supposed to be represented by 30 business community, 30 salaried employees, 20 students/youths, 10 farmers and 10 clinicians interviewed. As for Buwama site, every parish was supposed to be represented by 30 students/youths, 30 farmers, 20 business community, 10 teachers and 10 salaried employees.

For some user groups with several different categories of users such as the business community and farmers, another aspect of representability was introduced to take care of the diversity/ variability within each group as already indicated in the report. However, this time there was no pre-determination of numbers –it all depended on the individual enumerator’s awareness of the level of variability in any given locality to ensure representativeness.

### **3.4 Data Collection**

Survey: Questionnaire administration (one-to-one interview) by enumerators started on August 2<sup>nd</sup> and 4<sup>th</sup>, 1999 in Nabweru and Buwama study sites respectively. This exercise lasted for 10 days in each site and at the close of the exercise on August 13<sup>th</sup>, a total of 1000 questionnaires had been completed in accordance with the pre-set target.

- b) Organisational Interviews: Organisational interviews were conducted by one enumerator, specifically assigned this responsibility, among a sample of representative potential user organisations (Annex 7) using a structured questionnaire (Annex 3). A total number of 18 organisations (9 organisations per study site) were visited and interviews held with the leaders.
- c) Focus Group Discussions (FGDs)<sup>4</sup>: FGDs were conducted in two parishes not included in the survey specifically to eliminate the possibility of including some community members who might have been interviewed already as part of the user profile data collection. Hence, FGDs were conducted in the parishes of Nakyesanja and Kawumba in Nabweru and Buwama study sites respectively. In each one of the parishes, 4 FGDs were conducted among four major homogeneous groups namely, farmers, women, youths, and business community. This exercise was done by two enumerators (facilitated by one consultant), one moderating and another probing respondents’ questions and taking notes –see Annex 4 for a model checklist (initially developed by Pact for conducting FGDs in Timbktu and used in Nakaseke) that was used for this exercise.
- d) Secondary data collection: In order to get a clear understanding of the telecentres, it was necessary to collect some background information pertaining to the study sites. Thus, secondary information was collected on, but exclusively limited to, location, coverage, population, economic activities, food security, latrine and clean water coverage, literacy levels, communication services, etc.

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<sup>4</sup> By definition, FGD is one of the methods of social inquiry, very useful for soliciting supplementary and complementary information that confirms and facilitates interpretation of the questionnaire data.

### 3.5 Sharing Enumerators' Impressions & Observations

At the end of data collection exercise for each study site, there was a one day debriefing session to deliberate on the impressions and observations made by the enumerators. The debrief was attended by all the enumerators, members of the telecentre steering committees and the telecentre operational staff. At the end of the day, the management and steering committees got to know the concerns (gaps) and needs of the telecentre user communities. These concerns and needs form an integral part of the section report on findings.

## 4 Findings

### 4.1 Status of Buwama Telecentre

Buwama MCT, located on the outskirts of Buwama trading centre, started operating on June 2, 1999 with five (Premio P300 Multimedia PC) computers, one fax machine, one generator, one VTR (Sony SLV-ED1), one TV (Sony 21"), one radio, one printer, and one canon photocopier. However, at the time of the survey, the telecentre was not yet fully operational (no telephone/fax services, no e-mail, & no Internet) largely due to lack of telephone connection. Thus, the telecentre only provides photocopying services, typing/type setting, computer training and video clips. The telecentre is currently housed free of charge in a community centre facility (built and still managed by an NGO - World Vision).

The management of the telecentre is entrusted to a policy making Management and Steering Committee composed of one chairperson, a vice-chair, a secretary and 10 other members. The day-to-day operations are supposed to be handled by a Telecentre Manager (who had already resigned at the time of the survey), one Information Officer, one cleaner, one volunteer, and one Senior Operations Officer (temporarily performing the roles and responsibilities of a Telecentre Manager until the position is filled).

So early in its initial stages of establishment, the telecentre appeared to be facing some management problems that had already culminated into the resignation of the manager:

- i) First of all, it was observed that the Steering Committee lacked moral support from the community for whom, in principal, they were supposed to serve. There was a general misconception among the community, according to information gathered through FGDs, that the telecentre belonged to an individual (or a group of individuals) but not to the community. "How can this be a community project when the management committee was never elected as community representatives?", remarked one irritated key informant. This reflects the anomalies in the inception of the project which lacked **community involvement (participation)** but just a few politically well-connected individuals who took advantage of the situation. There was a general view among the community that the committee should be composed of representatives from all parishes in the sub-county if the telecentre was to be viewed (and managed) as a community facility.

- ii) Secondly, the steering committee was never sensitised on its roles and responsibilities leading to lack of sense of direction and unwanted interference in the day-to-day operations of the MCT.
- iii) Thirdly, unlike at Nabweru Telecentre where as many as 10 volunteers were recruited and trained as a core user group to assist other community members in accessing the telecentre services, at Buwama there is only one volunteer who, should the telecentre become fully operational in the near future, will eventually be overwhelmed by the increased demand from the community.
- iv) Lastly, but of paramount importance to the sustainability of the telecentre, sensitisation has not been done beyond the formal leadership levels down to the beneficiaries. Some potential users and organisations were just hearing about the telecentre for the first time when the baseline survey was being conducted!

## **4.2 Status of Nabweru Telecentre**

Nabweru telecentre started operating on May 1, 1999, one month earlier than Buwama telecentre, with five (Premio P300 Multimedia PC) computers, 2 APC back-up units (UPS 500VA), one fax machine (Panasonic KX-F1000), one generator (Daishin 2.1KVA), one VTR (Sony SLV-ED1), one TV (Sony 21”), one radio, one printer (HP Laser Jet), one Hub (Data switch for printer sharing), one change over switch (to change generator power from D.C to A.C), and one photocopier (Canon NP6216). At the time of the survey, most of the services had already been operationalised, including e-mail and Internet, unlike Buwama MCT. All computers are stand alone PCs (not networked) and only one computer is connected to the Internet through a single phone line which is also used for both fax and voice calls.

The management of the telecentre is entrusted to a policy making Steering Committee composed of a chairperson (sub-county chief), a vice-chair (LC III chairman), a secretary (telecentre manager) and 5 representative members from the parishes of Nabweru, Wamala, Maganjo, Nakyesanja, and Kawanda. The telecentre is managed by a Manager, one Information Officer, one cleaner, and 10 volunteers as a core user group. The MCT services are provided in 3 small rooms all provided by the sub-county free of charge in addition to meeting the electricity bill.

Although the management of the telecentre is representative of the parishes in the sub-county and most of the services already operational, there are some issues that need attention:

- i) Like Buwama sub-county, sensitisation of the community has not been done beyond the formal leadership levels down to the grassroots. Some potential users and organisations were just hearing about the telecentre for the first time when the baseline survey was being conducted!
- ii) The location of the telecentre, being at the sub-county administration headquarters, is a threat to some potential users who tend to look at the telecentre as a government facility not easily accessible to everybody. First and foremost, the sub-county police post, the judicial court and the local prison are all located at the same site where the telecentre is. These are institutions which most Ugandans would like to keep at a distance if possible. Secondly, the sub-county chief and the LC III

chairperson (both government officials) are the same people holding the positions of chairperson and vice on the Telecenter Steering Committee. In addition to the location being a threat to the potential users, it also contributes to the abuse of the telecentre services by the sub-county officials (as it was observed) who tend to access the services free of charge perhaps because of the free office space provided by the sub-county.

- iii) The dial-up Internet/e-mail connection (through a single phone line) is going to be a big hindrance once business picks up as it can only serve one client at a time. This is made worse by the fact that this same line is used for fax services.

## **Potential User Findings**

### **4.3.1 Social Economic Characteristics of the Respondents**

Though there was no deliberate attempt to ensure gender balance in the sample selected, survey results indicate almost an equal distribution between male and female respondents particularly in Nabweru sub-county (**Table 4.1**). This is so because many women in the peri-urban areas of Kampala city are engaged in both formal and non-formal activities either as owners or co-owners. Many micro-enterprises in the peri-urban areas are managed by women as men tend to be involved in other activities outside their residential areas. Thus, the survey captured slightly more women than men in Nabweru. On the other hand, household economic activities in Buwama tended to be managed more by men than women even when they are co-owned. This is because in a rural setting, there aren't as many opportunities for men to engage in other economic activities outside their homes as in the urban/peri-urban areas.

Findings also show that 89.2% and 85.1% of potential users in Nabweru and Buwama respectively were below 45 years old! This indicates that the potential users of the MCT services are in the very active age group. The majority of these, in Buwama, are either farmers or engaged in businesses while in Nabweru, most of the potential users are either professionals (including teachers) or involved in businesses.

**Table 4.1: Distribution of Gender, Age, and Employment Status of the Respondents**

	<b>Nabweru (n=500)</b>	<b>Buwama (n=500)</b>	<b>Total (n=1,000)</b>
<b>Gender Composition:</b>			
Male	47.6%	64.7%	56.1%
Female	52.4%	35.3%	43.9%
<b>Age Distribution:</b>			
Less than 15 years	0.8%	0.8%	0.8%
15-24	33.0%	32.5%	32.8%
25-34	35.4%	31.1%	33.3%
35-44	18.9%	17.5%	18.2%
45-54	8.0%	7.2%	7.6%
55 years and over	3.8%	10.8%	7.3%
<b>Employment Status:</b>			
Farming	13.8%	40.8%	27.3%
Business	25.2%	23.8%	24.5%
Students	19.0%	14.8%	16.9%
Teaching	12.8%	11.6%	12.2%
Professionals - other than teachers (Accountants, Doctors, Nurses etc.)	20.0%	7.8%	13.9%
Casual Labour	8.8%	0.8%	4.8%
Unemployed	0.6%	0.6%	0.6%

Over 88% of the Nabweru respondents indicated that they completed primary education while only 67.7% of the Buwama respondents completed primary education. The same proportion of

respondents was found to be able to read and write in English indicating that only the population that completed primary education can communicate in English (**Table 4.2**). This certainly has language implications on the information MCTs will provide to the communities.

**Table 4.2: Educational and Literacy Status of the Respondents**

	<b>Nabweru (n=500)</b>	<b>Buwama (n=500)</b>	<b>Total (n=1,000)</b>
<b>Educational level of Respondent</b>			
Did not go to school	2.2%	4.2%	3.2%
Koran or other traditional school	0.2%	0.6%	0.4%
Some primary school	9.1%	27.5%	18.3%
Primary Leaving Certificate	7.6%	10.6%	9.1%
Some secondary school	21.5%	22.8%	22.2%
Secondary school certificate ( O Level)	10.3%	13.4%	15.9%
Secondary school certificate ( A Level)	14.1%	6.2%	10.1%
Some post secondary school	2.8%	3.4%	3.1%
Post secondary diploma (Tech school)	17.9%	9.4%	13.7%
University degree	6.2%	1.8%	4.0%
<b>Respondent Can Read and Write Mother Tongue</b>			
Yes	96.8%	93.0%	94.9%
No	3.2%	7.0%	5.1%
<b>Respondent Can Read and Write in English</b>			
Yes	88.0%	68.6%	78.3%
No	12.0%	31.4%	21.7%

### **4.3.2 Current Usage of Various Communication Media**

Results of the potential users survey show that the most dominant means of communication used by both Nabweru and Buwama communities to communicate to those outside the communities was through sending letters followed by making telephone calls. However, in Buwama, usage of the telephone as a means of communication was very limited - as only 15% of the respondents reported to having used telephones to communicate to others outside their community (**Table 4.3**). Worse still, it was discovered that the majority of those who claimed to have used a telephone were actually referring to a World Vision radio call facility!

Results also indicate that most respondents rely on public facilities to send letters and make calls to those outside the community. This is because public facilities are relatively cheap and more accessible. However, respondents complained of problems relating to timeliness, reliability of the public postal services, and coverage. Most areas in Nabweru have no nearby public telephone while the few, which are there, are not functioning. And while most areas of the sub-county are accessible through the newly established private cellular phone network, the majority of the population doesn't have access to such services because they can't afford them. In addition, most areas didn't have easy access to post offices because there were none in the immediate neighbourhood. The problem of coverage in Buwama is even much worse. The entire sub-county has only one post office (located within Buwama Trading centre) and does not have a public telephone network. Coverage by the private cellular phone network (which was extended only this year) is still quite limited and doesn't reach most areas of the sub-county including the telecentre area.

In addition to the problem of coverage, there was a general complaint in both sub-counties about the rampant loss of valuables mailed through the public postal system and slow mail delivery.

Arising from the above problems, as per FGD findings, the farming/business community especially in Buwama depend on the local community network to receive (by inquiring from colleagues/travellers) and communicate information (by sending messages through travellers or commuter taxis). The second most important means by which the farming/business community was receiving information was by individuals travelling to the city to collect the information they need e.g. current market prices for commodities and produce. On the other hand, youths (especially students) relied mostly on postal services to communicate outside their respective communities (**Table 4.4**).

**Table 4.3: Distribution of Respondents using various communication means**

	<b>Nabweru (n = 500)</b>		<b>Buwama (n = 500)</b>		<b>Total (n = 1000)</b>	
	<b>Usage Where from?</b>		<b>Usage Where from?</b>		<b>Usage Where from?</b>	
<b><i>Sending letters out of town/village</i></b>	409 (82%)	Home 18% Friends 27% Public 55%	352 (70%)	Home 30% Friends 27% Public 43%	761 (76%)	Home 24% Friends 27% Public 49%
<b><i>Making out of town/village tel. calls</i></b>	309 (62%)	Home 21% Friends 20% Public 59%	77 (15%)	Home 6% Friends 34% Public 60%	386 (39%)	Home 18% Friends 23% Public 59%
<b><i>Sending faxes</i></b>	62 (12%)	Home 7% Friends 8% Public 85%	22 (4%)	Home 0% Friends 23% Public 77%	84 (8%)	Home 5% Friends 12% Public 83%
<b><i>Using e-mail</i></b>	34 (7%)	Home 0% Friends 18% Public 82%	14 (3%)	Home 0% Friends 14% Public 86%	48 (5%)	Home 0% Friends 17% Public 83%
<b><i>Using Internet</i></b>	14 (3%)	Home 0% Friends 14% Public 86%	7 (1%)	Home 0% Friends 0% Public 100%	21 (2%)	Home 0% Friends 10% Public 90%
<b><i>Listening to Radio</i></b>	494 (99%)	Home 99% Friends 1% Public 0%	483 (97%)	Home 96% Friends 4% Public 0%	977 (98%)	Home 97% Friends 3% Public 0%

<b>Listening to Audio Cassette</b>	418 (84%)	Home 98% Friends 2% Public 0%	393 (79%)	Home 90% Friends 9% Public 1%	811 (81%)	Home 94% Friends 6% Public 0%
<b>Watching T.V</b>	398 (80%)	Home 88% Friends 12% Public 0%	243 (49%)	Home 43% Friends 56% Public 1%	641 (64%)	Home 71% Friends 28% Public 1%
<b>Watching Video Cassettes</b>	241 (49%)	Home 50% Friends 22% Public 28%	139 (28%)	Home 23% Friends 21% Public 56%	380 (38%)	Home 40% Friends 22% Public 38%

The above table also indicates that 99% of the respondents in Nabweru and 98% in Buwama listen to the radio in their own homes. This means that MCT radio services will not be put to much use unless radio programmes (on audio cassettes) tailored to the specific needs of the community are put in place. On the other hand, of those who watch T.V, 88% in Nabweru watch it from their homes while only 43% in Buwama have access to these services from their homes. This implies that for rural areas like Buwama, provision of T.V services through the MCT is a welcome development.

**Table 4.4: Means used by Respondents to Communicate/Receive Information from Kampala**

	<b>Nabweru (n = 369)</b>	<b>Buwama (n=321)</b>	<b>Total (n=690)</b>
<b>Means used to Communicate:</b>			
Messenger	20%	39%	29%
Travel	20%	7%	14%
Letter	38%	55%	46%
Telephone	21%	4%	13%
	1%	0%	1%

Fax			
<b>Means used to Receive:</b>			
Messenger	26%	39%	32%
Travel	11%	5%	8%
Letter	44%	60%	51%
Telephone	18%	2%	11%
Fax	1%	0%	0%

### 4.3.3 Information Needs - Information Communities Need to Receive

Results of the potential users survey show that the majority of the respondents in both sub-counties are interested in information on education/new skills followed by information on health care. This shows that many of the respondents are not contented with what they are currently doing or their level of education and are eager to get information on opportunities available to improve on their skills/level of education. Other significant information needs included information on market opportunities for products/services and information on how to improve product/service (**Table 4.5**). These results generally agree with the FGD findings. FGD results show that both the Nabweru and Buwama farmers were most in need of information on new skills (such as skills for making composite manure), market opportunities, modern farming techniques, and prices of produce. Most of the Nabweru farmers, however, felt that information on modern farming techniques takes precedence over other types of information because if they can't guarantee the quality and quantity of their products it would be unwise for them to go around advertising themselves.

In both communities, the business community (which consisted of mostly traders) was mostly interested in information on prices of commodities (both buying and selling prices). In addition to these needs, women expressed interest in information on health care and information on accessible credit schemes while the youths were mostly in need of information on social issues (especially on sports news), educational opportunities, employment, and credit schemes.

**Table 4.5: Distribution of Information Types Potential Users Need to Receive & Ranked top Priority**

<b><i>Type of Information Communities Need To Receive</i></b>	<b>Nabweru</b>	<b>Buwama</b>	<b>Total</b>

	(n = 500)	(n = 500)	(n=1,000)
Education/New Skills	37%	38%	38%
Health care	24%	18%	21%
How to improve product/service	10%	11%	10%
Current prices of products	2%	4%	3%
Sources of inputs	0%	2%	1%
Market Opportunities for product/service	9%	13%	11%
Available jobs	3%	5%	4%
Social and cultural events	0%	1%	1%
Weather	0%	1%	1%
Govt. Information (e.g. on taxes, laws etc.)	4%	2%	3%
News/Sports	3%	1%	2%
Culture	1%	2%	1%
Religion	3%	3%	3%
Tourism	1%	3%	2%

#### **4.3.4 Information Needs - Information Communities Need to Communicate**

Table 4.6 shows that most potential users, in both sub-counties, were interested in communicating information to outsiders on what they are or can do followed by the need to communicate information on what they can do (say for purposes of seeking employment or funding for projects).

**Table 4.6: Distribution of Information Types Potential Users Need to Send and Ranked top Priority**

<b><i>Type of Information Communities Need To Receive</i></b>	<b>Nabweru (n = 500)</b>	<b>Buwama (n = 500)</b>	<b>Total (n=1,000)</b>
What you are or do	45%	57%	51%
What you have to sell	19%	19%	19%
Your Culture	2%	2%	2%
Social and Cultural events	1%	2%	2%
What you can do (when seeking employment/funding)	27%	19%	23%

#### **4.3.5 Interest in MCT Services**

In Nabweru, both the business community and the farmers indicated that they would be interested in accessing, perhaps through the MCT Internet services, information on local markets and prices (for produce, inputs, and commodities), and for the farmers – information on modern farming techniques. This would help them spend less time (and money in travel costs) looking for this kind of information and would open up new opportunities for them in terms of more markets and new business partnerships. They also expressed interest in provision of user friendly library services by the MCT where they could go and get information as there are currently no such services in the entire sub-county. Another area of interest was provision of Computer training especially to the youths, provision of information on educational opportunities (scholarships), and credit schemes for farmers and the business community.

In Buwama, on the other hand, the major interest expressed especially by the business community was the provision of telephone services. This would cut down significantly their travelling expenses and time wasted looking for market information. It would also help them minimise business losses due to lack of information flow. They pointed out that many of them deal in perishable products like tomatoes, watermelons, and bananas that need speedy delivery and readily available markets. They emphasised that provision of telephone services should take precedence over other MCT communication services because they are more familiar with this mode of communication (telephone) and most of their business partners outside the community have ready access to telephones.

Like in Nabweru, the Buwama farming community also expressed interest in the MCT providing them with information on farming activities (farming skills, prevention of crop/animal diseases, markets and prices for their produce and inputs such as herbicides and fertilisers). They gave the example of the coffee wilt which has devastated their coffee shambas but they have no information as to how they can combat it. Just like in Nabweru, all community groups expressed interest in the MCT providing computer training services to the youths (those who have completed secondary education) so as to boost their chances of getting employment in the formal sector. In addition, the community, especially the women, has found the video services very useful as they frequently use them for their educational/training activities.

#### **4.3.6 Payment for MCT Services**

Both communities found it hard to place a figure on the services that the MCT will provide. They felt that it was up to the MCT management committees to work out charges which the community could afford. They, however, pointed out that such charges should fully cover the operational costs of the telecentre and also make a small profit for the sustainability of the centre. However, the general consensus was that MCTs should charge about half the open market rate for similar services. In Buwama, however, the community felt that for some of the expensive services like computer training, the majority of the population would not be able to afford to pay for the services even at half the market price. They felt they could only afford around 10,000/= ( $\approx$  CAD\$10) for the computer training services.

#### **4.4 Organisational Findings**

Findings show that there was no significant difference in information needs and means of communication (receiving & sending) between the community organisations and the rest of the business community/ farming community depending on the type of activity they are involved in. Nevertheless, organisations in both study sites tended to rely more heavily on travelling as a means to get information they need for their operation. As for sending information, Nabweru relied more on letters whereas Buwama still relied more on travelling. The blame for this mode of communication is both poor communication infrastructure and poor service delivery in public postal and telephone services.

For Buwama, all organisations expressed dissatisfaction with the quality and timeliness of information they receive unlike in Nabweru. This could partly be due to the distance the Buwama community have to travel to Kampala in search of information, let alone the cost involved which makes it difficult to make frequent trips necessary for updated information. For the same reasons, the Buwama community is again not happy with the timeliness of information they send outside.

Usage of computers, e-mail or the Internet was totally lacking among all the organisations visited in Buwama while in Nabweru the majority of organisations used computers for word processing and two organisations had access to e-mail and Internet services. In spite of the fact that the majority of organisations in Nabweru used computers, they seem not to have printing facilities. Thus, almost all organisations expressed the need to use the telecentre for printing services. It is also worth

reporting the interest expressed by most organisations in both study sites regarding the need to access the Internet services at the MCTs despite lack of usage at the time of the visit.

#### **4.5 Summary of Key Issues Emerging from Data Collection**

##### **Awareness Level:**

- There was a general lack of awareness among the community (both Nabweru & Buwama) about the telecentre functions.
- Those who knew about the telecentres did not view them as community facilities. In Buwama the telecentre was viewed as a private facility because of the style the project was inaugurated – a few politically well-connected individuals posed as owners. In Nabweru, on the other hand, the telecentre was viewed as a government facility by virtue of its location (sub-county headquarter).

##### **Services Needed (Missing):**

Although at the inauguration of the baseline survey there was a general lack of awareness about the objectives and functions of an MCT, at the end of data collection the respondents had fully internalised the importance of the telecentres in development aspects of the rural communities. Accordingly, they suggested several aspects (community needs) that could be added onto the current services of the telecentres—these include:

- Establishment of library services
- Establishment of a bookstore
- Using the telecentre as a communication channel for personal announcements (funeral rites, weddings, etc.) to FM radio stations in Kampala — This is specifically a need for Buwama community due to distance and lack of telephone connection to Kampala
- Using telecentre as a channel to advertise and improve own business enterprises
- Using telecentre to access local market conditions and prices of agricultural products
- Using telecentre to access local market information on sources and prices of agricultural inputs
- Using telecentre to access information on improved farming practices in light of the weak agricultural extension service on ground.
- Using telecentre as a channel to receive weather forecasts (early warning information to farmers)
- Using telecentre to exchange information with other people engaged in similar activities both locally and internationally
- Using telecentres to search for sponsorship and better job opportunities both locally and internationally
- Provision of recognisable certificates to computer trainees on completion of training
- Provision of coloured photocopying services

- Provision of wedding and visiting cards, letterheads, receipts, invoices and school reports (This is a specific need for Buwama being a rural community far a way from Kampala where such services are available).
- Putting in place (and in circulation) telecentre programmes of activities so that the community can see how and when to fit in the programme.

#### **4.6 Challenges Facing the Telecentres**

Drawing from the positive aspects noted in sub-section 4.3 and the expressed needs summarised in sub-section 4.5, the major **challenges** (missing links) facing the telecentres, and crucial for their success, are:

- i) Establishment of **local data banks** which are routinely updated and are networked country-wide for purposes of information communication and exchange among the user communities and local organisations. As believed by Acacia Initiative, “by sharing information and communicating among themselves and with others, communities can hopefully remove certain barriers to development and speed up its progress”.
- ii) There is need to establish a common web site with information on all the country’s telecentre communities (what they have to offer and their needs - in terms of markets, inputs etc.) which will act as an interface between the local communities and those outside the communities.
- iii) Translation and transmission of appropriate information to the user communities in a **user-friendly form** (in what language and how?) as 31% of the national population is illiterate according to 1991 census. Illiteracy and low levels of educational attainment can hinder many rural people from using, or even visiting the telecentre, unless measures are put in place to take care of both literate and illiterates.
- iv) **Modification** (adaptation), where necessary, of the information on the Internet to suit the local situation and needs as some of it may not be used wholesale without blending it with the locally researched information for appropriateness.
- v) Satisfying the **human, financial, and material resource needs** required to meet the challenges identified under i), ii) and iii) is by itself an overall cross-cutting challenge. For example, the Telecentre Managers and Information Officers manning the two Acacia telecentres lack the professional and technical know-how in ICT skills! This is exactly what IDRC (1997) observes that whereas Acacia’s visible output will be ‘connectivity’ within communities, the human and organisational capacities to understand and use this connectivity are less visible.

#### **5. Conclusions and Recommendations:**

- The Telecentre Managers and Information Officers, though computer literate, lack both technical and professional skills necessary for the challenging ICT tasks ahead of them. As a matter of extreme urgency, Acacia should intervene in strengthening a range of human resource development

needs right from the community users of the MCT, through the intermediaries (telecentre managers) IT specialists servicing the facilities.

- Constant sensitisation of the community, as opposed to a one-shot sensitisation exercise, to create awareness and sense of telecentre ownership among the local communities is very crucial for the success and sustainability of the telecentres. This effort should start as early as possible and seen through the project life time. Thus, the project should avail funds for routine outreach sensitisation exercises.
- Although telecentre initiatives are community based, and therefore participatory, there is need to jump-start them off with some guidelines on roles and responsibilities to avoid conflicts between operations and steering committee roles.
- Reliance on telecentre volunteer trainees (Core User Group) as a computer-literate corps of users who, once they have acquired skills, could serve the interests of the community does not seem to be reliable as “voluntarism” without some form of motivation is not sustainable in a dynamic society. This is an issue that the steering and management committees should consider.
- The importance of keeping updated user registration logs and recording daily usage data to enable routine monitoring and evaluation of the telecentres need not be underestimated by the Telecentre Managers. It is from these periodic assessments of the telecentre operations that efficient utilisation and reinvestment in the telecentres will be based. Thus, the resident Acacia Project Manager should keep an eye on this important aspect.
- The Acacia telecentres, though connected at project level through the Project Manager, are not operationally linked. As pilot telecentres, they should be connected to foster collaboration between the different participating communities.
- Acacia should encourage and, funds permitting, support the development of the communication infrastructure (network) for Buwama MCT—otherwise lack of telephone connection works against the perceived objectives of Acacia.
- Satisfying the local information needs of the users will be one way, among others, to attract big numbers of the community to the telecentres. This will be a healthy process towards both the sustainability of the MCTs at the expiry of IDRC funding, and the fulfilment of the ACACIA vision that “by utilising ICTs to their own ends, disadvantaged communities may be able to shift some of the decision-making away from metropolitan centres and international development organisations towards the places where development challenges are faced most acutely”.

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**Samuel K. KAYABWE**

Researcher, Makerere Institute of Social Research (MISR)

P.O. Box 16022, Kampala, UGANDA

256-041-554582

256-041-532821

misrlib@imul.com; <http://www.uganda.co.ug/misr>

## **RadioNet: Community Radio, Telecentres and Local Development (Emmanuelle LAMOUREUX)**

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### **Internet On-Line and On-Air**

*PAN Latin America, IDRC, July 9, 1999*

#### **1.0 The Internet Decade**

With the wave of digital conversion and the massive inroads made by the Internet in the early 1990s, the Latin-American community radio movement, like NGOs and other sectors of society, began to take a closer look at new information and communication technologies (NITCs). Unlike other sectors, community radio has a technical and human infrastructure that makes it possible to screen, process, and rebroadcast information found on the Internet. In other words, it can bring the benefits of NITCs to a huge audience that would otherwise not necessarily have access to them, for economic, technological, linguistic, cultural and other reasons.

At the moment, Internet penetration of community radio stations is relatively low. According to the directory of the World Association of Community Radio Broadcasters (AMARC), 254 of the organization's 384 Latin American member stations have access to a telephone or fax machine, 76 have access to e-mail, and 54 do not have access to any telecommunication system whatever (AMARC, 1998, p. 7).

The RadioNet project, which was proposed and implemented by AMARC and is supported by IDRC, hopes to bring the Internet to some thirty regional stations within the next two years, opening up communication channels and facilitating the exchange of programs.

In contrast to community radio, which selectively retransmits information from the Internet over the air, telecentres offer direct access to the Internet and the immense quantity of data it contains. The logical extension of interest in new technologies, the first Latin American telecentres were established in the mid-90s.

Despite a lack of consensus as to what constitutes a telecentre, in an article recently published in the Latin American review *Chasqui*, Gómez, Hunt and Lamoureux characterize it as follows: "... a common characteristic is a physical space that provides public access to ICTs for educational, personal, social, and economic development" (1999).

As regards ICTs, the main service provided by most Latin American telecentres is public Internet and e-mail access. *Red Científica Peruana* is one of the primary forces behind the Latin American

movement to make NICTs available to the average citizen. In 1996, the agency's first Internet *cabina pública* opened its doors in Cuzco, Peru. Other organizations then followed suit.

## **2.0 Internet on-line and on-air: what is the difference?**

Because anyone is free to put up a Web site, not all information on the Internet is of interest to everyone. However, for many students and professionals throughout the world, the Internet is an indispensable tool, a sort of on-line library offering immediate access to any publication one might care to name. A 1995 RCP study showed that 75% of users of *cabina públicas* set up by the agency between 1991 and 1995 held a university degree. For such individuals, direct Internet access -- which allows them to consult sources of information as numerous as they are varied -- is an asset even the best community radio stations cannot rival.

Direct telecentre Internet access allows users to determine the topics they wish to explore. Radio stations, on the other hand, especially if they are plugged in to the Internet or any other external data source, must first screen the contents. "(...) Le journaliste radiophonique choisit and impose à l'auditeur les éléments qui lui semblent pertinents. Cet auditeur n'a pas de choix comme le lecteur d'un journal qui sélectionne ce qui l'intéresse. (...) La seule liberté de l'auditeur, and elle est capitale, c'est de cesser d'écouter ou de changer de station." (Barnabé, 1989, p. 19).

Can community radio constitute an appropriate filter for the Internet? Stations involved in the RadioNet project will have to analyze, select and vet everything taken from the Net in order to incorporate it into their programming. How will such indirect access differ from that offered by telecentres?

## **2.1 the Internet at one's fingertips**

While the Internet has a multitude of flaws, such as a surfeit of information and the difficulty of separating the wheat from the chaff, especially given the exponential level of growth of traffic on the information highway, it also has plenty of advantages:

Access to a great variety and quantity of data - Despite the poor quality of some sites, it would be hard to deny that the Internet is now one of the richest, most varied sources of information in the world. The Net has also become a prime target for convergence, making it of ever-increasing interest to the print and audiovisual media.

*Efficiency* - Internet surfers are "captive" in the sense that they would be hard-pressed to do other chores while navigating; this results in a higher level of concentration than that found in radio listeners. Research has shown that, under normal circumstances, the eye detects almost 80% of the perceptual field, whereas the ear retains only 16%. The fact that the Internet is, like television, a primarily visual medium, merely increases the efficiency of the communication process.

**Economical long-distance communication** - Applications like e-mail and electronic discussions make it possible to communicate with agencies and individuals in other municipalities and countries

for a fraction of what a long-distance telephone conversation would cost, and much more rapidly than traditional mail. This constitutes a major advantage for many users, such as sales personnel who are dealing with suppliers, customers and agents outside the community. It can also prove extremely valuable in promoting the establishment and reinforcement of international networks based on a common cause or interest. At the same time, of course, it must be acknowledged that Internet connections are subject to all sorts of technical problems.

*Opportunity to participate in the global communication process* - By means of e-mail and Web sites, telecentre users can contact millions of people all over the globe. Despite the fact that a large portion of the world's population does not have either private or public e-mail or Internet access, these NICTs represent a significant potential for horizontal communication, in contrast to most media where, despite all efforts to promote participation and ownership by the local population, the minority still continues to address the majority.

Skills that can be used outside the telecentre - Surfing the Net, locating information and using e-mail are skills that can be acquired through training sessions offered by most telecentres, and are increasingly desired by employers.

## **2.2 the Internet by word of mouth**

The raw information available on the Internet is not the same when it arrives indirectly. First, it must go through a multitude of steps, including screening (in accordance with a number of different criteria) and radio formatting -- not to mention the numerous technical glitches that can affect broadcast quality. Nonetheless, indirect Internet access has several of its own advantages:

*Content quality and relevance* - If information is screened in keeping with pertinent criteria and station personnel are able to choose and process data with their listeners' tastes and interests in mind, radio offers considerable potential. Screening makes it possible to select only that information which is relevant, as well as to establish a balance between news from the community and that from external sources like the Net.

*Up-to-the-minute information* - "L'information radiophonique est constamment en mouvement. Elle évolue dans le temps and se complète d'heure en heure, se précise même de minute en minute." (Barnabé, 1989, p. 14). In most stations, commercial and otherwise, media advisories and public affairs broadcasts are programmed regularly, so that news is constantly being updated. Internet sites, on the other hand, are rarely maintained systematically, with the result that users have trouble obtaining recent information.

*Accessibility* - Community radio is accessible to those who cannot read or write, people who speak unwritten languages, the visually impaired, and young children. The relative simplicity of the technology (which may, however, become more complex with digital conversion) constitutes one less obstacle to the goal of an all-embracing communication process. Many tools have been or will be created to allow the Internet to offset these shortcomings --voice recognition systems,

applications in aboriginal languages and dialects, applications for the handicapped -- but there is still much work to be done.

*Affordable Technology* - While the purchase of a computer represents a major outlay for many households, the cost of a transistor is within the budget of most low-income families.

*Opportunity to participate in local communication* - Local radio station employees and volunteers often have their finger on the pulse of the communication network and community decision making. In accordance with community radio principles, all members of the community should be able to express their views on the air. Although small groups will probably be more inclined to take advantage of this opportunity, the ideas and perceptions of those groups are more likely to represent the interests of the community than a world network such as the Internet.

*Community cohesiveness* - While this hypothesis is hard to prove, radio is often termed a “warm” medium, on the basis that it promotes empathy, reconciliation, discussion and bonding within the community. The fact that people can listen to the radio while going about their daily tasks, coupled with its ample mobility and oral nature, justify that reputation.

### **3.0 direct and indirect access: a development perspective**

ICTs can be used for multitude of different purposes: to inform the public, sell products, support or discredit a political regime, and so on. Although information and communication technologies can be observed and analyzed from several angles, what interests us here is how they can contribute to the well-being of the population they serve.

Accordingly, we will focus on the benefits of ICTs to local development. However, to be able to compare the respective potential contributions of the Internet on-line and on-air, certain development indicators must first be established.

#### **3.1 Six development indicators**

In June 1996, the Working Group on IT and Development of the United Nations Commission on Science and Technology for Development (UNCSTD) met in Scotland. By the end of that meeting, the Group's 27 participants had established a series of development indicators. The five indicators proposed by the Commission are of interest because they are specific enough to constitute an evaluation framework for ICT performance, while at the same time being universal enough in scope to be adapted to local circumstances:

- Literacy, education and skills (literacy, education, training and skills, and opportunities for all members of society to increase their capacities)
- Health (life expectancy, maternal and infant mortality, quality of life, and levels of health care available in situations of morbidity)

- Income and economic welfare (high levels of employment, high incomes per capita, and increased gross national product, with appropriate corrections for environmental protection and income equity)
- Choice, democracy and participation (participation in social and economic affairs, with fair economic rewards, the availability of reasonable choice, and participation in the democratic process)
- Technology (the capacity to develop technological innovations and make technological choices) (Howkins and Valantin, 1996)

The Working Group voluntarily eliminated culture as a development indicator, on the grounds that “Les indicateurs culturels sont évidemment aussi importants mais peuvent s'avérer problématiques. Ils sont difficiles à quantifier and on ne s'entend guère pour identifier les valeurs culturelles qui peuvent actuellement faire l'objet d'un développement.” (Howkins and Valantin, 1996). However, given the importance of ICTs in preserving cultural heritage and the damaging consequences of acculturation, we have opted to include culture as a sixth development indicator:

Culture and diversity (artistic freedom and protection for cultural heritage and diversity)

### **3.2 Development on-line or on-air?**

The intrinsic features of radio and the Internet mentioned above mean that telecentres and community radio have different “comparative advantages” in transmitting information able to act as a catalyst for development. Sections 3.2.1 to 3.2.6 review these advantages in relation to the development indicators identified above.

#### **3.2.1 Literacy, Education and Skills**

A number of national programs are aimed at connecting elementary and secondary schools in Latin America and elsewhere around the world to the Internet. *Enlaces*, for example, a joint initiative of the Chilean government and the private sector, views the Internet as a learning tool and plans to provide access in 5,300 primary and secondary institutions by the year 2000.

Community radio and telecentres also have outstanding potential outside the academic milieu -- and, in the case of the former, considerable experience in distance education. The audiovisual properties of the Internet give telecentres a certain advantage where literacy is concerned; the number of educational resources available via this tool is also superior. However, precisely because the Internet is primarily a written medium, it may be less attractive than radio for those who cannot read or write.

#### **3.2.2 Health**

Community radio has always played a significant role in cases of epidemics or other situations in which there is an urgent need to transmit medical information. In 1997-98, the European network

of the World Association of Community Radio Broadcasters organized the *Radio Against Aids* campaign. During the 1992 epidemic in Peru, the national community radio network broadcast information almost continuously on how to contain the epidemic.

Where such crises are concerned, community radio stations are now limited to passing on information from government or medical authorities. The Internet, by offering stations direct access to medical databases, would allow them to do more than simply rebroadcast official releases.

Despite their currently restricted scope, telecentres could also become important instruments for prevention and intervention. The United Nations Development Programme (UNDP) has identified telemedicine as one of the essential applications of telecentres:

*Telemedicine comprises opportunities for medical practice and education on digital, wireless, satellite or broadband networks. It is the use of telecommunications and medical technologies to provide interactive audiovisual communication between physician and practitioner in distant locations and to facilitate the exchange of medical information for research and educational purposes.* (Source: d'Orville)

For the time being, the telecentre movement in most Latin American countries is still in its infancy, and only a small minority of telecentres come close to the visionary aspirations of the UNDP. In Germany, *Health Online*, a commercial service designed for physicians and other members of the medical profession, provides an on-line medical database in several languages that will soon be available outside the country. As regards the Spanish-speaking world, a computerized network project called *Enlace Hispano Americano de Salud* will soon make it possible for Latin American and Caribbean physicians to communicate with those in Spain.

### **3.2.3 Income and Economic Welfare**

While a few community radio stations have managed to generate a certain amount of economic activity through advertising, direct job creation and profit are not their main objectives. Telecentres, on the other hand, have shown some potential in the area of direct banking. Equipped with the appropriate security mechanisms, they can also be used for micro-credit program administration in isolated regions.

Telework and the search for new markets and less expensive communication with distribution networks for small businesses represent other potential avenues for alleviating rural seclusion. Although only a few projects have developed such applications thus far, these are plausible uses for telecentre services. Lastly, where telecentres are based on a commercial model, they can be converted into true small businesses themselves, with the ability to stimulate the local economy.

### **3.2.4 Choice, Democracy and Participation**

More often than not, community radio has been the only means of popular participation in times of conflict or in an authoritarian political context. In some countries, community radio stations have for decades been the sole -- and often illegal -- forum accessible to civil society.

Almost everywhere in the world, electronic networks unite individuals around a common cause. Telecentres allow people to mobilize in accordance with their convictions; however, given that Internet information is influenced by individual rather than collective needs, it may be less effective in rallying local populations around local causes.

### **3.2.5 Technology**

As the Internet and radio are both technologies, giving more people the opportunity to make use of them could lead to increased popular involvement in research and development for technological innovation. In turn, this involvement could result in the development of applications based on the needs of the local population.

### **3.2.6 Culture and Diversity**

Community radio has an undisputed advantage as concerns artistic freedom and the preservation of local culture, helping to perpetuate and disseminate unwritten languages and cultures based on the oral tradition. Several community radio stations also broadcast multilingual programs, which serves to reinforce minority cultural identity, especially in large cosmopolitan centres.

The situation of telecentres is different. For the moment, English and Western culture continue to be over-represented on the Net. Furthermore, the creation of local content will not alter the fact that the Internet does not facilitate the screening process, with surfers regularly spending an inordinate amount of time finding exactly what they want.

## **4.0 Convergence: a good mix?**

The current trend toward convergence has tended to eliminate media boundaries. With initiatives such as the RadioNet project, more and more community radio stations will probably be finding their information on the Internet, and this will certainly have an influence on their broadcasts.

For stations with access, the Internet may act as a regional channel for communication and the exchange of programs, as well as a source of information on a multitude of subjects for broadcast. The impact of RadioNet on programming, and consequently on listeners, will depend largely on the daily choices of station staff and volunteers.

At the same time, however, Internet access comprises certain appreciable risks, such as alienating community radio from its local audience. Just as the Internet can be used to enrich broadcast content, the sudden input of information available may prove detrimental to community radio programming quality.

The other aspect of convergence is the impact of community radio stations on Internet content. As these stations and other local groups gain access to the Net and set up their own Web pages, the network will become increasingly diversified and offer users across the world a greater quantity of regional and community information. Several research centres and NGOs are also working on creating tools and applications that will provide those traditionally excluded from the Net (the

underprivileged, the disabled, the functionally illiterate, the visually impaired, etc.) with a means of access.

While predictions are already being made in some quarters that the traditional media will gradually disappear, to be replaced by an on-line technological “magma”, it is still too early to determine precisely the outcome of the existing convergence process. Still, the Internet will doubtless profit considerably from input from the traditional community media, and community radio stations will increasingly shed their current closed-network structure to do more than just broadcast local data to the local community.

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**Emmanuelle LAMOUREUX**

Graduate student

Norman Paterson School of International Affairs, Carleton University

1125 Colonel By Drive, Ottawa, Ontario CANADA

+1(613) 520-6655

+1(613) 520-2889

[manouva@hotmail.com](mailto:manouva@hotmail.com)

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## **Impact of the Internet: some conceptual and methodological issues, or how to hit a moving target behind the smoke screen (Michel J. MENOUE)**

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*Visiting Professor, Department of Information Science, City University*

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### **Abstract:**

*The growing concern for demonstrating the impact, assumedly positive, of ICTs, the Internet, Information, etc. seems to be primarily driven by the need to justify urgent and massive investments in these areas, or benefit from them. This approach might be short-sighted and not so much productive. The notion of impact itself is floating on a continuum of assessment perspectives ranging from mere market penetration to lasting social transformation and beyond. It needs to be carefully mapped. The Internet is itself a far from explicit object. It covers infrastructures, resources, transactions, and the outcome of their use. Ordering the various facets would help positioning what it is that one wants to investigate and how this relates to other universes. It is for instance questionable whether the Internet can be studied independently from other ICT's which it may only substitute or refresh. The Internet users community is a not less elusive and volatile object of study. It seems, at least in a cross-cultural perspective, to be hardly amenable to standard methods of investigation. It further only represent a minority fraction of the constituencies which are supposed to evidence "impacts".*

*Impact studies have a natural tendency to try and show the changes between an initial situation, though it is more often than not described in rather vague terms, and a new situation. And to do so as quickly as possible. The result is often disappointing. It is further useless, since it is the process of change by which stakeholders moved from one to the other situation which one needs to understand in order to learn from this endeavour and take more effective action in the future. To make things worst, only a vague attention is paid to the characteristics of the people and their own needs and views, although they are the determining piece of any information or communication system. Based upon experience drawn from a series of impact studies, the paper will try and offer some practical directions to cope with these vexing problems.*

### **The need for evaluation**

Concern for evaluating the impact of the Internet, and the Information and Communication Technologies (ICT) at large, respond to three main drives:

- Political,
- Managerial,
- Intellectual.

Policy and decision makers who are approving or supporting programs for the development of the Internet, would like to have some sort of evidence in support of the claims by the proponents or themselves that it will bring about all the said benefits. Conversely, the Luddites in the group would like to find evidence that the benefits are not so obvious, or do not offset the damages.

Managers of organisations in the information sectors, whether for-profit or not-for-profit, would like to find at the end a decent justification for their long standing claim that their business is the most important one in the modern economy and the key to growth and success. Eventually, they are also interested in understanding better what their business is and how it operates.

Finally scholars are struggling with the nature of this new object, or phenomenon, its effects and its potential consequences. Members of the public at large would not be less pleased with a decent explanation of what this Internet is, what the Internet revolution means for them and how to deal with it.

Since the 40's, we have lived through a series of so-called revolutions: the information revolution, the media revolution, the ITC revolution, the knowledge revolution and other post-industrial, post-modern, post-you-name-it and all sorts of misconceptions of complex and changing socio-technical situations. The fascination for technology and novelty, associated with the sizeable investments and prospects for even wider profits, have contributed to the dominantly positive credo that ICT, and thus the Internet, are good, essential, positive. What Richard Heeks (1999) nicely calls the "contemporary ICT fetish".

Time is more than ripe for starting an effort toward clarification, which for sure won't succeed overnight. In fact, most of the recent attempts in this direction, such as the one by Charles Meadow and Weijing Yuan (1997), have apparently been met with the deepest indifference. The following considerations are based in part upon the work carried out in the framework of the international research program "Impact of information on development" sponsored by the International Development Research Centre, IDRC, of Canada, especially in the study of the impact of electronic communications in Africa (Menou 1998a). IRDC's support is gratefully acknowledged. We also relied upon discussions in the electronic conference "Measuring the Development Impact of ICTs" hosted by Bellanet (<http://www.bellanet.org/lyris>).

### **What is "impact" ?**

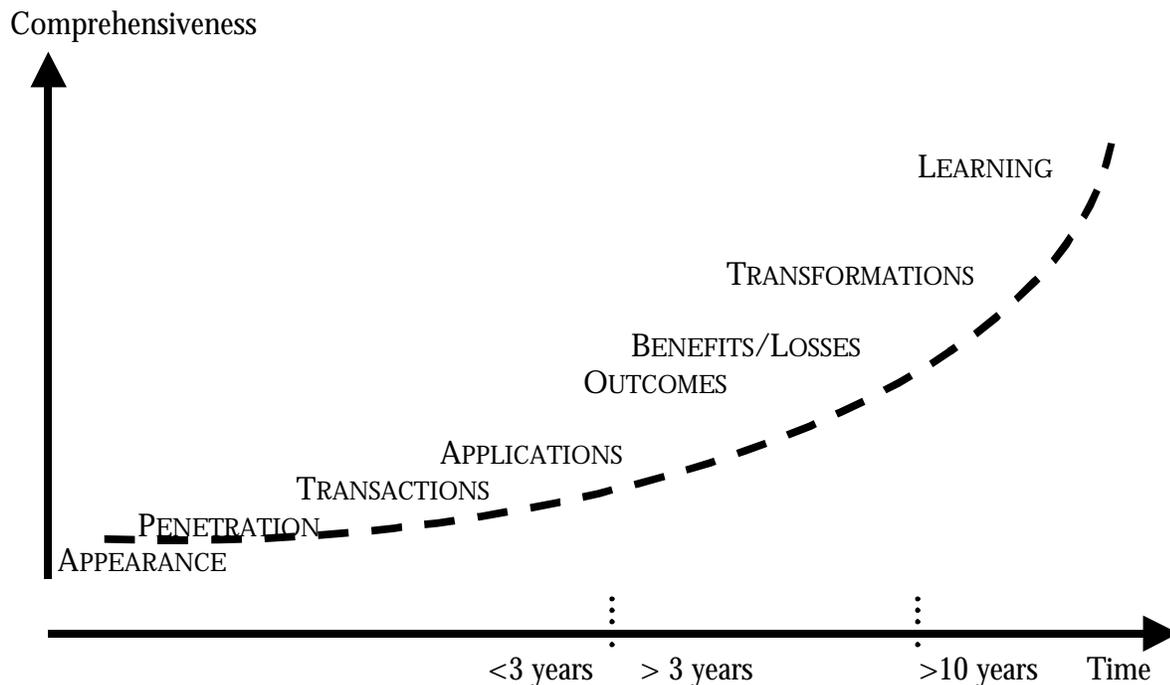
Impact has become a buzz-word appearing in almost any paper or speech on the "new" information and communication technologies, adding to the already long collection of loose terms used in our field. It refers to a variety of phenomena along a continuum, tentatively presented in Figure 1 below, which goes from the mere appearance of a "novel" object to lasting material or behavioural transformations at the individual or social level.

At the lower end of the spectrum, one would say that there is an impact of Internet because a number of individuals or organisation are using one or more of its resources, or pretend to do so. Then, for instance, the fact that a number of government agencies over a given period of time set up web sites is reported as an impact of the Internet which authorises speculation about the advent of digital democracy or else. Somewhat more solid is impact as growth of the number of users or applications, that is in plain language the penetration of the product or service. Some will see an impact of electronic commerce when total transactions have amounted whatever symbolic figure, e.g. "the first million", when others will wait for a significant portion of transactions in a particular sector to be conducted by electronic means. Each week we are told of the Internet revolution with

the latest growth figure among the some 160 millions users, while others, like John Daly (1999), reminds us that these are only a tiny minority of a few percents of the world population.

From this point, some will seek to identify impacts within the changes in the patterns of use like the number of times, or hours, particular Internet resources are accessed, the sophistication of the navigation, the adoption of new tools and techniques, etc. Thus the number of firms using an Extranet for the control of the supply chain, and its degree of integration, would conform an impact of the Internet, irrespective of the use of EDI by the same firms and others in the same sector. Expanding from this point, impact will be sought in the evolution of the applications used. Thus a sector where the number of firms which use a combination of Internet, Intranet, Extranet and telework is "important" will display an higher impact of the Internet. Moving further ahead, one will consider for which functions or activities the Internet is used and thus see a greater impact of the Internet when home, social and productive functions are carried out through the Internet.

Figure 1. The Impact assessment continuum



Then, at last, the effects resulting from these endeavours will be considered. Impacts will be looked for in the various changes occurring among the users. In first place shifts in the communication patterns, that is, for instance, the substitution of postal services by electronic mail, or plain telephone by IP telephony. More significant changes are those which affect the information resources available to the users, or even their knowledge base, their information seeking behaviour, their decision making process, the patterns of handling their businesses or even their organisation. Beyond these changes in resources or behaviour, one will look for change in the effectiveness or even cost-effectiveness of these behaviours and changes. These changes may further be reflected at

a broader organisational or societal level. Accordingly, the reduction of the time and cost of a particular transaction through the use of an Intranet will be called an impact. So will an increase in the turnover.

However, these "impacts" are not only linked with a dramatically complex set of factors, beyond the mere "use of the Internet", but may not substantially alter, nor do it durably, the way individuals or organisation handles the particular activity. In other words, such changes may be more of transactional than substantive nature. It would therefore be more appropriate to call them "effects" than "impacts". When the actions undertaken as a result of the above mentioned changes have produced outcomes, the latter could themselves induce a subsequent series of changes, that is the adaptation, adoption and institutionalisation of the initial ones. At this stage, we have finally entered what should be known as the impact area proper.

As a matter of fact, impact is the collision of two bodies, and their resulting alteration. When there has been an impact, neither bodies are the same. We thus contend that impact should be restricted to substantive and lasting changes occurring in the knowledge base, behaviour, organisation or effectiveness of the individuals, institutions or society. To the extent sustainability is a primary attribute in the above definition, we would even restrict further impact to changes in the actors' ability to cope with their problems. What could be formulated in the following way: "Impact is the change in the ability of people to satisfy their needs brought by the outcome of the use of the Internet (or any other information resource)" (Menou 1998b). At this point impact is quite similar to learning.

This is not to say that the other aspects, including those at the lower end of the spectrum, should not be considered. On the contrary, it is most likely that their observation is a condition for impacts to be traced. The more so since there is limited chance of lasting changes in behaviors or skills without high penetration. But they resort to a phase where the two universes are interfering and not with the one where they collide. It would thus be appropriate to consistently use distinctive names.

### **What is the Internet that we talk about?**

The Internet has become some kind of generic term. While it is commonly used in many instances, it is all but easy to figure out what precisely it is referring to. Is it the global network? Is it any network relying upon TCP/IP protocols? Is then UUCP based electronic mail excluded? Is it a particular facility, such as electronic mail, electronic conferences, the world wide web? Is it a combination of these facilities, and then which ones and how many of them should be used for the mention to be appropriate? Does particular component have a specific impact, different from the one of the whole set of components?

Should we work within a technological universe whose boundaries and components are clearly identified, as suggested by John Daly (4/5/1999)? Should we rather focus on a concept of the particular communication space(s) as suggested by Sam Lanfranco (3/5/1999)? It is quite difficult to offer a definition of the Internet, and not less to specify what components it is made of which should be considered in impact studies. The more so since each particular technology is changing rapidly, and all technologies are combining or merging at a not less fast pace. As a matter of fact, it is the versatility of the digital technologies, and their ability to produce "infinite" forms of output from a single input, which makes them, together with biotechnologies, revolutionary, as stressed by Sandra Braman (1999).

It might thus be simpler to admit a general definition of the Internet as a digital network. From there, to specify which actual forms are being considered in any particular study, preferably starting from a standard list of known elementary forms, e.g. electronic mail, the web, etc.. One should further, using possibly a standard list of attributes, such as the one proposed by Andrew Finn (1999)<sup>1</sup>, indicate what are the key characteristics of these forms, especially their range of access and type of content. One may expect that in a number of instances it will be not only difficult but inadequate to fully separate the Internet from its family of the information and communication technologies. This is for instance the case when considering learning material which can be accessed through the Internet but also on CD Roms, audio cassettes, video tapes and television.

The digital network so defined can be compared to the overall physical properties of an universe. We may call it its communication field. But what exactly is that universe? The digital network can be present and possibly used in a variety of universes which are defined by the entities which inhabit them and their main functions, as relevant for the impact study. In other words we would consider such universes, or spaces, to use Lanfranco's terminology, as the individual space, the family space, the "workspace", the social participation space. These four spaces may have a varying importance according to the actors and circumstances. They also overlap more or less extensively. They may be regarded as the "basic spaces" to be explored in Internet impact studies, or similar ones<sup>2</sup>, as shown in Figure 2. Each of these spaces is susceptible of taking a spatial extension ranging from a few feet from the entire cosmos<sup>3</sup>. Each of them can also take a temporal dimension of a few minutes to eternity<sup>4</sup>.

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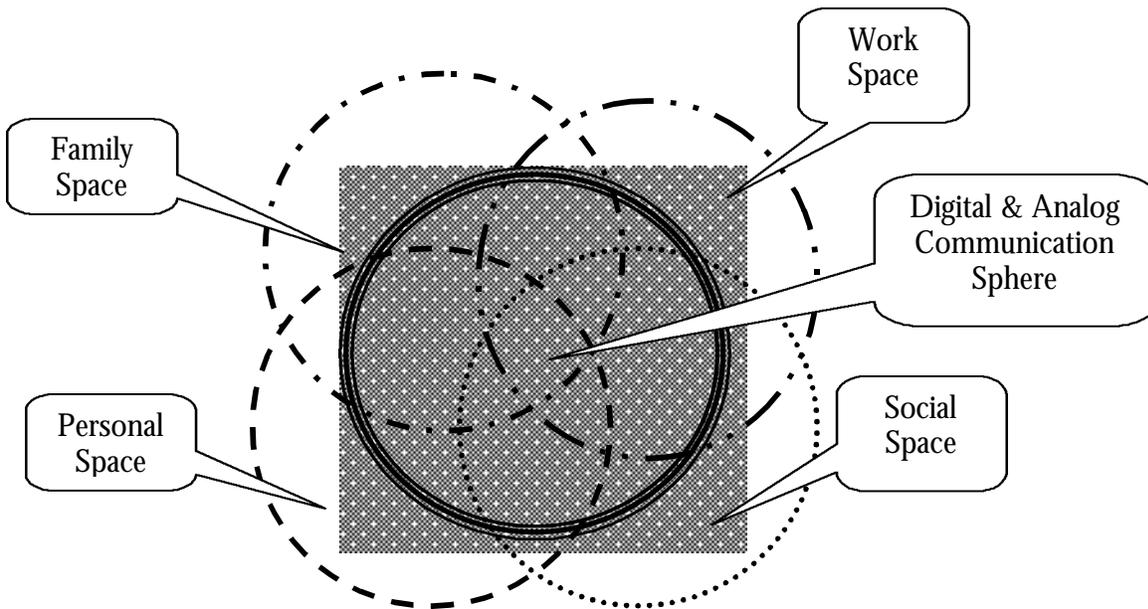
<sup>1</sup> The 10 attributes he is considering are: Type of content, Directionality, Degree of non-simultaneity, Type of conduit, Analog/digital representation, Number of access points, Type of connection, Bandwidth, Storage, User interface.

<sup>2</sup> Many studies of the impact of information and telecommunications in education speak of a "learning space". This should rather be considered as the basic function of "creation and exchange of intangible goods" (see below), since learning takes place simultaneously within the four basic spaces.

<sup>3</sup> The building of a satellite based host for Internet connections in space has recently been announced in the media.

<sup>4</sup> Which is quite long backwards, but may be quite short forwards, considering the uncertain life span of digital objects.

Figure 2. Universe to be observed in Internet impact studies



Up to now, irrespective of the definition or scope used, impact studies have considered the Internet as a self-contained space. The other possible communication forms have come into the picture almost exclusively from the perspective of their substitution, or as testimony of the past. This might be a bit short. Even when digital communication will have pervaded all spaces and become vastly predominant, one can hardly imagine that there will be no room for analog communications, at least as long as the said spaces will be inhabited by natural, i.e. non genetically manipulated, human beings and other living organisms. For the time being, and hopefully for still some time, communication takes place in both a digital network, or digital field, when it exists, and in an analog one. The tradeoffs between the two go far beyond substitution or competition. For instance, the role of personal contacts and physical interaction in computer mediated communications has been evidenced for long. Trying to understand the impact of the Internet without making appropriate room in the picture for the other forms of communication which occur in relation to the same needs or events is at least short-sighted. The conjunction of this dual mode communication sphere and the basic spaces is thus the universe to be studied.

According to the particular scope and purpose of a study, it may be useful to further specify the universe by indicating a number of dimensions or attributes. Among these, one may consider that the main functions performed by the actors are likely to be of interest in most instances. This attribute might be condensed in 4 basic categories which will be a standing feature in any observation framework:

- Communication
- Administration /Decision

- Production or exchange of tangible goods and services
- Creation or exchange of intangible goods and services (e.g. research, learning, artistic creation, etc.).

We will thus define our object as "A social space, in a given time and location, operating through analog and digital communication fields". The further basic attributes of both the social space(s) and communication fields will be specified as required.

### **What to look for?**

From what has been discussed thus far, it appears that we are looking for the changes in the designated social space(s) as a result of the tradeoffs between the digital and analog communication fields. More precisely, we would like to see if there are changes in the resources, behavior, organisation, achievements or skills of the actors in the considered space(s).

In the same way as we tried to outline a matrix of objects and attributes which could be used for delineating more precisely what Internet is studied, it would be useful to start from a standard series of impact areas. These can be:

- Physical
- Intellectual
- Professional
- Economical
- Cultural
- Social
- Political

While common sense and some empirical evidence point to the likely interaction, and sometimes interdependence, of these areas, focusing on one or another is advisable, rather than trying to come to grips with a comprehensive impact of the Internet. This does not preclude to investigate the whole range of areas, but doing it separately and using methods which are appropriate for each one is likely to prove more effective. It is worth underscoring that physical changes have so far not attracted much attention, even under the narrow prism of health hazards. When the generation which is now raised with computers and the Internet will begin to show psycho-motor deficiencies it will be, once again, too late. Excessive attention is also paid in our view to behavioural changes at the expense of the physical ones.

Donald Lamberton (1995) stressed that most discussions of the information infrastructure do overlook three fundamental aspects of the scene: the information stocks and flows, human capital and organisational capital. We cannot agree more and thus suggest that it would be appropriate to focus attention on the creation, maintenance and enhancement of these 3 entities. We would further add a fourth one, which is now called "social capital", and was probably better described by the name of culture.

Even though they concentrate on the assumed link between the use of the Internet and the changes in the considered spaces, most impact studies do make room to a variety of other factors,

considered either as attributes of the two principal objects or as environmental factors, conditions, externalities, etc. Some recent examples illustrate this. McCreadie and Rice (1999) consider facets of the information seeking process and influences and constraints on access to information<sup>5</sup>. Ramarapu and co-workers (1999) consider a set of contextual variables, operating conditions, group process variables and task/group related outcomes<sup>6</sup>, which in fact tend to parameterise all aspects of the individual and social context. Klobas (1999) has tested a number of information use models and tentatively reformulated them into a new one called Planned Behavior in Context which integrates 7 sets of factors<sup>7</sup> commanding the use of network resources. These representations are echoing the integration of Robert Taylor's Information Use Environment in the preliminary framework for impact assessment developed in the first phase of the Impact of information on development program and the emphasis placed on what we then called the nested hierarchies linking use of information, action and outcomes (Menou 1993).

Like the wives of the great men in their biographies<sup>8</sup>, the persons are too often the missing element in the models or frameworks. To a limited extent they may be found, but almost inevitably reduced to a set of attributes in relation to the system, the task or the situation, in addition to broad demographic characteristics. That one has been in competitive intelligence for 5 years and using the web in this business for 3 years is certainly worth considering, when comparing the benefits this person may enjoy to those of a less experienced one. Such considerations do no justice to the fact that one can be very smart and the other not, even if she/he graduated from a better school. For some time (e.g. Menou 1995, 1998b) we advocated that the attributes of the persons, which we tentatively called the "Knowledge activating attributes" should be a key component of any impact model. We grouped them into two distinct sets of "structural" and "situational" attributes. Both sets try to depict characteristics of the person which are intrinsic and independent from the tasks/situations, even though the values they take at a particular time are to some extent influenced by them. The structural attributes are those which are the most permanent and stable. The situational attributes are those likely to more vary according to the circumstances. We have included seven "structural attributes": fitness, personality, culture, emotionality, logic, imagination, heuristic capability of the knowledge base, and seven "situational attributes": readiness, capability, appropriation, ability to enact, mediacy, propensity to change, objectification of institutions and processes. A number of scattered theoretical and empirical studies have pointed to most of these attributes but they lacked an architecture and a role in an impact model. Space prevents us to discuss them here.

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<sup>5</sup> There are 4 facets: context, situation, strategies, and outcomes and 6 series of constraints: physical, cognitive, affective, economic, social and political

<sup>6</sup> Contextual variables are technology support, group structure, personal factors and task characteristics; Operating conditions are group and task conditions, stage in group development, existing social networks, and reason for group membership; Group process variables are patterns of group interaction, decisional characteristics, communication characteristics, interpersonal characteristics, structure imposed by the system used; Task/group related outcomes are patterns prevailing after group work, characteristics of outcome, attitudes of group members toward outcome and result implementation.

<sup>7</sup> Social influence, confidence and skills, perceived information quality, usability, attitudes to outcomes of use, perceived control of use, intended use.

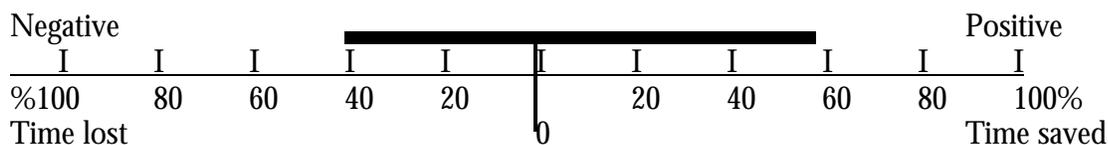
<sup>8</sup> According to an essay by Françoise Xenakis.

On the one hand, it would be useful to consolidate such lists of conditions, other factors, and separate those which are plain attributes of the two core entities, and thus should remain associated to them in the models, and those which are truly external factors. On the other hand, and more importantly, it appears that the use of the Internet, or of information in general, is not likely to have any effect unless the appropriate combination of attributes and external factors exist. This has been evidenced or suggested in a number of projects in the IDRC Impact program (Menou 1999). Rather than "What is the impact of the Internet on space A?" the question should rather read "What, in addition to Internet use, is conducing to changes in space A?" One of the IDRC Impact project, investigating with the LISREL model the role of information in small business success has shown the auxiliary role of information, at the same time it demonstrated the suitability of LISREL for such studies (Vaughan 1999).

Remains the point of "changes in the space A". More often than not, impact studies seem to deliberately or unconsciously predetermine which changes are likely to occur or indeed are expected. Among such preconceptions of benefits are for instance time savings, increased international exposure, business success, participation, etc. They all proceed from the cultural idiosyncrasy of the techno-structure of the industrialised countries. This bias can be found in most indicators. What supports for instance the notion that a longer life expectancy, beyond 50 years, is a "progress"? In the IDRC Impact program, we have taken a strong stance at a participatory and bottom up approach to the selection of the activities that matter and the related problems which should be investigated, the indication and validation of the benefits and losses. To the extent many Internet impact studies are likely to be carried by, or in conjunction with, the organisations which are in some manner promoting the Internet, one can fear that they do not go much farther than market research to worship the ICT fetish.

When considering impacts, even when the negative ones are allowed to show, the study of impact suffers from what Edgar Morin called the "pathology of knowledge", which he explains as a consequence of the disjunction, reduction and abstraction principles (Morin, 1990, p. 18). As a matter of fact this pathology is a pathology of western "scientific" thought. It imposes in particular a strong separation between the values of a measure. An object should be unique and uniquely measured. It is positive or negative. Unfortunately, in real living systems, most phenomena are both positive and negative, black and white, satisfactory and frustrating, etc. Kandath and co-workers (1999) offer a number of illuminating examples of the paradoxes and contradictions in communications geared at social change. Thus the idea that impacts would be better represented or measured along a two dimensional scale representing jointly positive and negative dimensions, such as the one in Figure 3. Instead of tabulating and/or computing values for arithmetic operations, they would be mapped for a more sensorial holistic appraisal where the pros and cons would not be separated but combined in the relative positions of the lines across the neutral point.

Figure 3. A bi-directional scale for impact measures with an hypothetical example



## Who and where are the Internet users?

As if things were not already complicated enough, identifying and tracing Internet users proves to be all but a straight task.

Many studies have chosen to consider users belonging to a particular institutional set up, e.g. faculty and students of academic institutions. Others are anchored at a particular service, e.g. visitors of a given web site or subscribers of a particular news or discussion group. One may try to look at a more open community by referring to the subscribers of an Internet access service, or by dealing with a sample of persons or institutions in a particular geographic area or sector. One may even try and look at the users in a particular country or region by any combination of the above approaches.

In all cases, irrespective of the sampling method applied, it is almost impossible to avoid the consequences of convenience in the selection of the respondents or in the voices of the "Net addicts" being predominant, as Harry Bruce (1995) underscored. In many instances, users are identified through an Internet account. Even where these are mostly individual, it is quite difficult to establish a certain connection between a transaction and a person, or a dog according to the famous cartoon. But the issue becomes hardly tractable when most accounts are collective, as we found in Africa (Menou, 1998a). In addition, users tend to migrate quite frequently from one account to the other, what is not too cumbersome for use studies but is devastating for impact studies which need to be at least repeated over a relatively long period, or rather be longitudinal. It seems at first glance natural to rely upon the service providers to provide the initial access to users. However many object that they have to protect the privacy of their users or customers and cannot provide lists or other data required for sampling purposes. Eventually such data are not even available in any usable form.

The cyber world and the real world also interfere in a way which is not easy to predict. For instance the inactivity of an account in a given period may be due to a variety of circumstances such as travel, pressure of work, breakdown of the LAN, inability to pay telephone bills, thunderstorms destroying the power or telephone lines, etc. This may result in the fact that the most active accounts selected from earlier traffic data for a particular study will suddenly become inactive and out of reach. It is of course natural and convenient to try and conduct surveys through the Internet itself. However, the ability and propensity to respond to questionnaires distributed through electronic mail, and the accuracy of the replies<sup>9</sup>, prove to be culture and environment dependant. In our study in Africa, we found that a face to face discussion was often required. But connecting physical to electronic mail addresses is not so straightforward<sup>10</sup> and in any case, the burdens of traditional surveys cannot be avoided.

If, as is usually the case, the concern is for the changes in a community which includes users and non-users of the Internet, on the one hand, and a variety of roles and positions are represented in

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<sup>9</sup> As a matter of fact, truth or accuracy are all but granted in all replies to questions which are related to the persons' or organisations self and public image under all circumstances.

<sup>10</sup> This is not the privilege of "developing countries". A recent survey of the use of the Internet in academic teaching in France, using a list of universities said to be active in this field in an official report yielded a 30% response rate, of which all reported no use of the Internet.

these two sets, an impact study will have to reach non users as well as users and cover all, or at least the major, categories of stakeholders. Not only is any phenomenon both positive and negative for anyone, but what is positive for one stakeholder is most likely to be negative for another one. The line staff may for instance like the ease and freedom of communication brought by electronic mail, which may be far less praised by supervisors. Therefore the ultimate appraisal need to compound all these contradictions.

### **When and how to do “impact studies”?**

Except perhaps in North America, the experience of Internet users is still relatively new. It is thus very difficult for them to take distance from the transactions and the tool itself and consider their relationship to the problems at hand. Even more difficult is an appreciation of what changes have occurred, or are expected, and of their value. The result is some tautology like: "Electronic mail is great because I can have cheap, effective and fast exchanges with colleagues abroad and this is essential for my work". Well, yes, but how essential is it? Was then no effective business conducted before? This is not to say that it is too early to conduct impact study. On the contrary, we strongly feel that the work toward impact assessment should begin as early as possible, ideally at very first minute the service becomes available, or rather before, as we will see below. But one should be advised that data about impact will not be obtained before several years<sup>11</sup>, and probably ten years or more will be required before reliable findings could be reached.

Impact studies are often based on a simplistic comparison between the initial situation, that is before the Internet, and the situation at any given point in time "after". Unfortunately in many instances the situation before is known only in very superficial terms. It is also often described ex post, through the memories of the respondents, when asked "How did you do that when you had no Internet access?" These are not necessarily the most reliable sources. Impact study should thus cater for a significant effort in order to carefully investigate the initial situation before the use of Internet becomes common place.

The "before-after" approach has a far more radical defect. It will hopefully tell us what changes occurred but very little about how they occurred and why. What is precisely the more important if the impact study is to feed policy formulation. This limitation is even more serious if we admit that the total set of factors, including the attributes and conditions of the spaces and functions studied is the required scope of the analysis. Therefore, impact studies need to be based upon continuous observations. What in turns requires that members of the community, or intermediaries within it, be trained to carried out effective observations. In most instances a combination of both self-observation and observation by a third party may in fact be required in order to achieve the necessary coverage and "objectivity" while minimising the constraints for all participants.

In conclusion to their insightful review, John Leslie and Kenneth Kraemer (1998, p. 210) propose five principles which can guide research:

- Focus on leading adopters

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<sup>11</sup> 3 years from the inception of the service is likely to be a minimum, with a focus on early adopters.

- Sample sites at the extremes of policy application (when studying policies, but in our opinion this advice can apply to all key conditions for any type of study)
- Use census surveys
- Concentrate on long term studies
- Use a mix of methods and measures

We can only adhere to them as they are reflected in our own observations in the IDRC Impact studies. Even though we would rather see long term studies take the first rank and be called longitudinal studies. While the need for census type data can hardly be dismissed, the feasibility of conducting meaningful censuses is more questionable, given the magnitude of the resources they require.

The focus on early adopters, of both the Internet and innovations in their business, is clearly a suitable approach in order to gather signs of change when a study could not run for long enough, or test hypotheses before embarking into a long term study. One should however remain alert of the bias it introduces. The latter may perhaps be balanced if the study do include a control set of non users or average followers.

The advice of using a mix of methods and measures is not less essential. The main reason why is that we still do not know which methods are appropriate under which conditions. They should thus be carefully tested and the results shared within the Internet research community. A second reason is the limitations of most methods and the bias which can be found in both the investigators and the respondents. Any opportunity to cross-check the data is thus worth seizing. Up to know surveys seem to have been the most widely used method. Anthropological methods in conjunction with an action-research overall architecture of the study might be more satisfactory. Assuming that the purpose of the study is to understand what is happening rather than offering quick and dirty results in support of pre-determined plans or theories.

## **Conclusion**

The Internet will pervade all spaces and activities in all human communities. Literature on the subject is already proliferating at a pace comparable to the one of the Internet growth. Studies of the Internet and of its impact in particular will necessarily continue to mushroom. The natural effects of this dispersion will be worsened by a number of factors such as:

- the lack of established conceptual frameworks and models;
- the looseness of definitions and their inconsistent use;
- the variety of methods used;
- the variety of approaches;
- the uniqueness of the studies;
- the paucity of true longitudinal studies.

As a result, as it is already the case in the field of information use studies, the building of a body of evidence by cumulating the findings of the various studies will remain a titanic task.

The subject is further more so complex that no one could seriously hope to make a breakthrough on his/her own, even with the most impressive support and funding, which anyway

are mere wishful thinking these days. It is rather through the patient accumulation of piecemeal specific evidence gathered in a variety of "spaces" that one can expect to progress step by step toward a better understanding of what the Internet is changing in people's life. To that end however the studies should be reasonably coherent.

In order to try and limit the damage, one may suggest a number of initiatives such as:

- setting up a standing inventory of the related research groups and facilitating their networking;
- building and maintaining a clearinghouse or gateway to facilitate access to the related literature, and if possible a digital library;
- building and maintaining a clearinghouse, gateway or database in order to facilitate access to the results of the various studies;
- engaging a co-operative effort in order to:
- compile, clarify and possibly reconcile the various models and frameworks;
- inventory, review and advise about suitable methods for impact studies;
- build and maintain a research agenda;
- facilitate interaction among research groups, Internet industries and users organisations in order to develop combined or comparative studies.

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### **Michel MENO**

Visiting Professor of Information Policy

Department of Information Science, School of Informatics, City University, Northampton Square, London EC1V 0BH, U.K.

B.P. 15, 49350 Les Rosiers sur Loire, France

+33 (0)2 41 51 81 65

+33 (0)2 41 51 81 10 43

Michel.Menou@wanadoo.fr

<http://www soi.city.ac.uk/informatics/is/mjm.html>

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## **Multipurpose Community Telecenters in Selected Philippine Barangays (Merlita OPEÑA)**

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### **Connecting People and Organizations for Rural Development Highlights of the Barangay Consultations, July 6-7, 1999, CARAGA Region**

*Philippine Council for Health Research and Development (PCHRD), PHILIPPINES*

*The consultations were conducted in Barangay Jaliobong, Kitcharao and Barangay Maguinda in Butuan City. A total of twenty-eight participants attended the consultative meeting in Brgy. Jaliobong, Kitcharao last July 6, 1999 at the Jaliobong Elementary School. The participants were composed of municipal and barangay officials, farmers, mothers, rural health and religious workers, agricultural technologists and teachers.*

*The consultation in Brgy. Maguinda, Butuan City was conducted last July 7, 1999 at the Maguinda Barangay Hall. Thirty-nine participants representing the barangay council, academe, farmers, health workers, women's club and NGO attended the said activity.*

#### ***Rationale of the consultation***

Mr. Ricardo Varela of the Department of Science and Technology - CARAGA enlightened the participants on the mandates and functions of the DOST and PCHRD and these organizations' role in the Multipurpose Community Telecenter (MCT) project. It was stressed that the focus of the project is on information and information services; and their impact on development.

#### ***The multipurpose community telecenter (MCT)***

Ms. Merlita Opeña of the Philippine Council for Health Research and Development (PCHRD) gave an overview of the project. The project, "Connecting People and Organizations for Rural Development through Multipurpose Community Telecenters in Selected Philippine Barangays", is jointly funded by DOST, Canadian International Development Agency (CID A) and United Nations Educational, Scientific, and Cultural Organization (UNESCO) and facilitated by PCHRD in collaboration with its partners.

The project aims to contribute to people's empowerment by helping rural communities achieve self-reliance and gain access to information and means of communicating their own views on development issues. It builds on the telecommunication infrastructure that has been put in place by the Department of Transportation and Communication through the CIDA funding.

Barangay Jaliobong and Maguinda are two of the four pilot barangays chosen since their existing telecommunication facilities which commonly provide long distance calls and fax services can help advance the objective of the project.

Through the Public Calling Office (PCO), the project will set up an Internet-linked MCT in the four pilot sites in Mindanao. It shall link the barangay directly to the other stakeholders thus providing the people access to information on education, agriculture, fisheries, health and rural enterprise development.

The MCT will be equipped with reading materials, TV, VHS recorder and will serve as a library. Through the project, PCHRD will facilitate the organization of information providers such as the Department of Agriculture, Department of Trade and Industry, banks, etc. so that their information can be accessed by the barangay clients even without traveling. Information will be translated in Cebuano, if necessary.

Considering that there are no real village telecenter-type projects in existence, even globally, it is expected that the lessons learned from the implementation of this project can be used as models for other barangays.

### ***Demonstration on Internet***

Mr. Paterlito Garcia of PCHRD demonstrated how the Internet works and importantly, the potential benefits that can be derived from it by the people in the barangay.

### ***Consultation - Workshop***

The participants were divided into small groups to identify their information and communication needs on health, education, agriculture, and rural enterprise development. Participants in the session held in Barangay Jaliobong were divided into: (1) Barangay officials; (2) school officials, health workers, mothers and religious groups, and; (3) Purok leaders, farmers, and agricultural technologists. Likewise, participants from Barangay Maguinda were divided into four groups: (1) Local Government officials ; (2) agricultural technologists; (3) educators, and ; (4) health workers. To ensure participation from the assembly, facilitators were assigned to each group. A leader and a secretary were chosen by the participants to document and present their outputs. Other issues and concerns were raised during the open forum.

Workshop outputs of each barangay are presented in Annex 2.

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## **ANNEX 2 - OUTPUTS OF THE CONSULTATION**

### **A. BARANGAY JALIOBONG, KITCHARAO**

#### **IDENTIFIED INFORMATION NEEDS**

**Technology**

- Rice farming (lowland and upland)
- Upland farming (e.g., Cassava, pineapple, mango, etc.)
- Food preservation ( e.g.,fish canning)
- Technical skills and development on electricity, automotive, and food technology
- Ways and means on fishing
- Animal-raising

**Business/Livelihood**

- Where to buy cheaper tools, fertilizer, chemicals, etc.
- Ways on how to operate successful cooperatives
- Where to get capital for business with minimal interest
- Ways to get exact price of our products
- Access for financial/funding institutions for brgy. development projects
- Feasibility study on small mining/quarrying operation of marble/limestone
- Feasibility study on fish cage and feed mill
- Feasibility study on Brgy. land use

**Health/Nutrition**

- Information on nutrition and environmental sanitation
- Family planning method
- Information on Schisto and its treatment
- List of products with Sangkap Pinoy seal
- Information on maternal and child care

**Education/Training**

- Capability building on human resource development
- Procedures in conducting investigatory project
- List of scholarship grants for teachers and students
- Values that will educate the people

**Directories/ Databases**

- Different existing religious groups in the country
- S & T updates, inventions, discoveries
- Distribution of children aged 16 years and below
- Different organizations and its services (NGOs, foundations, etc.)
- Market linkages on all products
- Directory of all national and local agencies
- Employment opportunities

**Others**

- Crime prevention program

Information on Erap Sari-sari store  
Economic status of the country  
National laws on agriculture and fisheries

### **FORMAT OF THE DESIRED INFORMATION**

Magazine  
Video  
CD  
Internet  
Book

### **INFORMATION PROVIDER IN THE COMMUNITY**

Department of Agriculture  
Department of Health  
Department of Environmental and Natural Resources  
Department of Education, Culture and Sports  
Department of Interior and Local Government  
NGOs-Clean Phils.  
Department of Social Welfare and Development  
Department of Transportation and Communication  
Agricultural Training Institute  
Department of Public Works and Highways  
Department of Science and Technology  
TV  
Radio  
Cable TV  
Philippine Information Agency  
Word of Mouth

### **ISSUES AND CONCERNS**

1. The management of MCT is the concern not only of DOST and its partners but the barangay people as well. Operation of MCT should involve the community itself (eg. barangay council and existing cooperatives).
2. The support of the community is vital to the success and sustainability of the project.
3. The project will make available equipment (PCs) and training. As a principle, the project will look for strategies that will make the MCT a self-liquidating concern. Some services may be for free, and some on a fee basis.
4. The participants indicated that they are willing to pay for the services if the services are affordable. The project should also consider the possible income for the barangays.
5. A separate infrastructure for the MCT project can be considered, that is, the Barangay can request the municipal and provincial executives to build the infrastructure. However, to hasten the project implementation, the project should make use of the existing DOTC- Telepono sa Barangay facility.

6. Organization of the municipal information resources and contact entity to ensure the municipal link is necessary.

## **B. BARANGAY MAGUINDA, BUTUAN CITY**

### **IDENTIFIED INFORMATION NEEDS**

#### **Education**

- S & T updates
- DECS memorandum
- DECS new educational programs
- DECS employee's benefits
- Scholarship grants for teachers and students
- Literacy rate

#### **Livelihood**

- Cassava farming (price, marketing, processing, financial assistance, etc.)
- Rice farming (new technologies, price, pest control, financial support, processing, etc.)
- Programs of different agencies on farming (specifically farm to market road And financial assistance)
- Weather conditions (for farming purposes)
- Current trends in growing coconut, cabbage, pechay, banana, mango, Durian ,sweet potato, garlic, and onions
- Current trends in raising poultry and livestock and fish farming
- Information on handicraft industry

#### **Directories/Database**

- List of lending agencies
- List of agencies and its projects
- Networking/linkages (LGUs, NGOs, GOs, private sector, etc.)
- Information from other countries
- New government laws
- Information about government (local and national levels) and the Private sector

#### **Health**

- City Health Office memorandum
- BHW incentives and benefits
- IEC materials
- Nutrition programs
- Information on drug addiction and prevention

### **ISSUES AND CONCERNS**

## Roles and Responsibilities of Barangay Maguinda, DOST-PCHR and partners :

### *Community*

- Care and maintenance of facilities
- Provision of qualified personnel
- Information dissemination on existing facilities to nearby barangays
- Proper utilization of facilities
- Acceptance of the project and commitment to support the project including the willingness to pay for MCT services, depending on use/user, and the willingness to organize the local information.

### *DOST-PCHR*

- Conduct of computer training and provision of technical support
- Provision of different information materials
- Provision of facilities (computer, VHS, TV, CDs)
- Networking and linkages with other agencies
- Sustainability of the project

There is a need to identify a certain group or sector of the community to serve as the management committee and to operate the MCT.

It was felt that, with the support of the barangay council, and a strong NGO, the Knights of Rizal, in which majority of the population belongs to, the MCT project will be sustainable.

Two groups, the barangay council and the barangay high school, were identified as possible groups which can manage the project. The choice, the participants felt, should be one which is neutral, and which can serve all members of the barangay.

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### **Merlita M. OPENA**

Head of the Research Information, Communication and Utilization Program  
Philippine Council for Health Research and Development (PCHR), Department of Science and  
Technology

Gen. Santos Avenue, Bicutan, Tagig, Metro Manila, PHILIPPINES 1631

(632) 837-75-37, 837-75-34

(632) 837-29-24, 837-29-42

[mmo@health.pchr.dost.gov.ph](mailto:mmo@health.pchr.dost.gov.ph)

## **On Estimating Telecentre Demand in Mexican Rural Municipios (Scott S. ROBINSON)**

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*Professor, Departamento de Antropología, Universidad Metropolitana – Iztapalapa, MEXICO*

The challenge of creating a set of self-sustaining Telecentres in five contiguous rural municipios in Mexico necessarily involves a model for estimating demand for this model of ICT delivery. Given the socio-cultural and political conditions in these small towns and villages a series of issues come to the fore: How do we conceive demand for a service few are even aware of? How does the technology fit or conflict with traditional cultural norms and preferences? Who belong to the different local factions with potential interest in the service? What are the different political dimensions of this problem? What are the ethical responsibilities of the distinct actors involved? These are some of the questions to be addressed synthetically in this short paper.

### **Why should anyone care about ICT in the villages?**

There are two perspectives driving the current transfer of ICT innovations into rural cultures and economies: the future scaling of revenues from miniprofits on a variety of digital services (a function of the forthcoming convergence of the Internet, television, voice IP, video on demand, ecommerce, etc. on wireless satellite fed community networks, e.g.), and a normative effort on the part of philanthropically motivated citizens' groups (NGOs, activists, academics et. al.) who wish to reduce the "digital divide" among the info haves and have nots in their respective countries, regions and communities. These objectives can be, but are not logically contradictory entrepreneurial and social-cultural-pedagogical initiatives. The generic Telecentre model can integrate both dimensions or objectives, and will, without doubt, have profound political and cultural consequences independent of which model is locally dominant.

As a consequence, those who do care are either strategic planners for future commercial telecomm endeavors, and/or NGO participants who seek to replace the abdication of the neoliberal State by assuming public responsibilities for quasi-abandoned educational and cultural projects. In Latin America, I know of no firm official Telecentre promotion policy; in fact a not-so-subtle resistance policy could be argued to obtain in many nations. In Mexico, the present government just doesn't care (for a variety of conflicting reasons), thereby leaving the field to private and citizen initiatives. Are the mercantile and NGO projects incompatible? And are traditional marketing methodologies appropriate for these local contexts and cultures?

### **Verbal cultures vs. Digital culture?**

Villages and small towns turn on gossip and small talk on street corners and in the market, while simultaneously watching soap operas, “news” and sporting events on television at home. These could be conceived as two complementary media cultures, one containing local and regional information, the other providing just plain entertainment and not much information. Video game shops, in my book, belong to the entertainment category. Throughout rural Mexico, critical information refers to commodity prices for local produce (hard to get), peso-dollar exchange rates for remittance transfers (posted at a franchise in most towns), who may run for mayor next election (adult male gossip), the next wedding (all female gossip), and which name dance orchestra will play at the next public fiesta (on the radio with a unisex teenage audience). A popular saying has it: “no pasa nada” (nothing’s happening...), but, of course, the channels of local cultures are now multiple and humming, especially in the evolving international labor and export economy. But how does ICT-supplied information fit in?

Four groups now require doses of information that are either unavailable, hard to find, or expensive to procure. School teachers, municipal authorities (mayor’s office, water system and local land tax office), health officials and senior high school students, four distinct groups, need or can use organized information, respectively, to promote their careers (and improve their incomes), improve municipal services and expand the local revenue base, control vaccination and epidemiological data, and prepare quality schoolwork that enhances grades and scholarship options. Herein is the potential market for ICT services a Telecentre can provide. In my view, local entrepreneurs are scarce, distrusting of public information systems and prefer to mind their own data and communications; hence, they are not a ready audience for local ICT endeavors.

Given the potential demand among the four groups mentioned, the issue becomes how to present the virtues (and vices..) of the evolving Digital Culture (a combination of a culture of information and a kindred category of information management tools and skills) to the local audiences. It may be a question of identifying the respective ongoing information (distinguishing facts from concepts) and incentive systems for each group, and creating demonstrations of ICT assets keyed to each. Aspects of the Digital Culture must mesh with local information and entertainment languages, codes and preferences; it’s an “add-on”, never a substitute for the dense face to face dynamics of small places. The concept of “public domain” may well **not** be a valued concept nor commodity in rural societies emerging from colonial situations. Each “cliente” requires a mechanism for assessing current information inputs and unmet or amorphous demand, often a function of incentives external to the local town or village institution (linked to external education, political, and health bureaucracies...). Yes, the assumption exists that specific cultural and age groups can identify their information and entertainment needs if the menu offered is coded for their language, preferred behavior and incentives. And, to be sure, there is a risk that the current stratified order will be enhanced by differential access to information and ICT resources (distance education programs, for example). The tactic of inviting each group to construct their ideal database may be a worthwhile and effective starting point.

**What needs to be taken into account?**

It should be evident that the four audiences identified constitute key factions in local systems of power and privilege, each with specific information needs. There well may be others (large landowners, influential outsiders and their residential “subdivisions”, state government agencies and officials,—all obtaining in the region in question), but they tend to have resolved their demand for ICT services by this time. However, some of them may constitute a sector with potential demand for ICT services, a level of cost efficient “connectivity” the local Telecentre is responsible for bringing to town. Can the social and strictly commercial clientels coexist via the same Telecentre virtual ISP (e.g., each Telecentre is equipped to offer additional Internet connections to a finite and local universe—coaxial cable or wireless modem from the satellite downlink from a master ISP on the roof)? It may well be that the generic Telecentre model is the local ICT vanguard, thereby creating another set of legal, commercial and technical issues to be addressed.

But the arena of power factions and influential groups is where each Telecentre is located in physical and social spaces. Here’s where potential audiences and clienteles live, work and adapt innovative tools to their needs, codes and values. Does the “creation of a public domain” tactic, designed so that each faction may reap probable benefits given greater access to information, training, communication with kin, etc., generate, at the same time, a risk of rejection, a predictable resistance in some sectors, points of power unamenable to a freer flow of information pertinent to local and regional matters? A “go slow” approach in government ICT regulatory (plus distance education) policies, combined with foot dragging by threatened elites, may mean local Telecentre pilot projects are doomed to stall on takeoff. Sustainability can only be achieved when all important local factions are employing the tools and information services offered. Those Telecentres that do achieve a stable flight require, at the least, a no-loss or break even business model. And this strategy is set within the context of local power politics, thereby obliging each Telecentre initiative to have a clear mind about what and how to negotiate project objectives with local factions’ leadership.

### **Another case of situation ethics?**

Yes, but...the issues require reviewing so as to understand what’s at stake. In my view, the generic Telecentre paradigm is an inherent imposition of new (but not necessarily alien) information and values into traditional cultural contexts. In effect, this is a form of induced innovation with a rush factor. And why the rush? Here’s the rub: if the specific interest groups in these small places do not mobilize their participation in the new information order, they will remain peripheral in what may be termed the emerging dualism of those who know how to find what they need, and those who don’t have a clue, nor access. In other words, by not rushing, local factions are doomed to remain marginal in the post colonial order. Viewed in this fashion, we can perceive an apparent contradiction between a preferred respect for local, traditional cultures and the information onslaught signified by Internet access, versus the potentially romantic premise that subaltern societies can somehow “catch up”, or reduce their current dependence, using the new ICT tools. This is not an easy knot to untie...and retie.

### **So how do we measure an induced demand? Rather, how do we induce an estimated demand?**

The formula may be complex and, to my mind, there is as yet no generic menu:

- 1) identify local factions with information needs and incentive structures (e.g., local tax systems, salary bonuses for school teachers, improving health data and sanitary conditions, student scholarships);
- 2) negotiate certification and/or resources for incentives often requiring extensive networking with state and federal governments as well as private agencies);
- 3) induce local NGOs to organize and incorporate, adopting the Telecentre communication model as a revenue generating and public policy participation strategy;
- 4) select appropriate ICT technology package—computers (Linux or Wintel?) and their configuration at a central locale, dedicated Internet connection, training programs onsite and online,etc.;
- 5) create and maintain an online and CD-ROM database of valued-added local and regional information;
- 6) adopt a quantitative and qualitative operation monitoring data system;
- 7) situate the project in the local institutional context—libraries, Casas de la Cultura, schools, museums;
- 8) create honorary “citizens’ support groups” linking local initiatives to more comprehensive power networks;
- 9) invite high and middle school teachers to bring their students to the Telecentre, offering user discounts and friendly training and entertainment packages;
- 10) deliver free and valued information to different authorities they could not otherwise obtain...

### **Wrap up**

The current project to create a series of Telecentres in five municipios within Morelos state, Mexico poses a series of questions addressed here in a shorthand fashion. Identification of potential clientele and their probable incentives for using the Telecentre is a starting point—each local project must refine their strategy in this regard. This process is a complex exercise in tracing social and power networks, identifying specific arenas where more information access does not meet resistance. Telecentres are both a commercial venture and a metaphor linked to ongoing changes and issues in public policy—each local project must meet demand, cover its operational costs and sustain itself, whereas the information generated and distributed should converge with a growing

citizen demand for transparency in government as well as educational and cultural resources. If this citizen-driven demand not forthcoming, Telecentres may not prosper.

Telecentres also may constitute the ICT vanguard in rural towns and regions. We may be on the cusp of dramatically lowering costs for local connectivity, and the hardware and software packages are just coming into focus (Linux OS on PCs, satellite downlinks feeding village intranets, wired or wireless). But the Telecentres must be content driven, information supplied need be keyed to legitimate certification systems for distance education projects and other legitimating sources of demand. Local entrepreneurs are scarce, and youth access to games for a fee may not cover the costs. Such content should be a function of what each user faction needs and demands. Whereas inducing demand can generate still more demand for information services, the risk of over and under capacity is also present. Two years may be an average startup period when all these elements and actors are in play.

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**Scott S. ROBINSON**

Professor

Departamento de Antropología, Universidad Metropolitana - Iztapalapa

Louisiana 133-2, Colonia Napoles, México, D.F. 03810, México

525 687 6030 525 682 4687

525 687 6030

[ssr@laneta.apc.org](mailto:ssr@laneta.apc.org)

<http://www.laneta.apc.org/rir>



## **Telecenter evaluation issues - the Salvadoran experience (Clemente SAN SEBASTIÁN)**

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*Red Científica Peruana, gerente, proyecto Infocentros El Salvador*

### **1 Background**

Between March of 1998 and June of 1999, the Salvadoran government, with the sponsorship of the World Bank, implemented the “Conectándonos al Futuro” project. The main objective of the project was the realization of a participatory study to define the main actions leading to the transformation of El Salvador into a “learning society”, defined as a society more flexible, able to use increasingly the ICTs and the knowledge for development purposes. In June of '99, the project presented a national strategy and pilot projects to the nation<sup>1</sup>.

The project was realized with the active participation of members of associations and organizations of the civil society, private sector and local and central government, involved in thematic learning circles. Some complementary studies were done, as well as workshops and an international electronic conference to share best practices and experiences from other countries.

The main focus of project was not telecenters. Nevertheless, it soon appeared that various countries were having interesting experiences of providing public access to ICT for educational, social and economic development, that can be shared fruitfully with the salvadorian society, and perhaps generate interest for the creation of a national telecenters initiative to bring solutions to information access problems.

250 persons from very different sectors attended a workshop on telecenters in august of 1998. Scott Robinson presented the experience of the rural mexican telecenters, and Jose Soriano presented the Red Científica Peruana (RCP) Model.

The Salvadorian government was immediately interested in developing a 100 telecenters network in the country, using funds coming from the privatization of the national telephone company, CTE ANTEL. He also took the decision to start a four years partnership with the RCP, so this organization could transmit his experience during the take off of the project.

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<sup>1</sup> The strategy document can be found in the Website of the project: [www.conectandonos.org.sv](http://www.conectandonos.org.sv)

## **2 Brief presentation of the Infocentros project**

The infocentros project<sup>2</sup> is based upon four main components:

- A broad base organization, representing all sectors of salvadorian society, in charge of the strategic leadership of the project.
- An important production of information and applications, both at local and national level. At national level, the information design will be done by thematic groups. The following groups have been proposed for a first round of information production: rural development, education and vocational training, local development and governance, Small businesses, migrant community, modernization of the state, culture and arts, competitiveness, understanding the laws, environment and health.
- A physical network of 100 infocentros
- Massive training at all levels: users of Infocentros, operators, information production groups.

Every infocentro is a small business paying a monthly franchise fee to the association, and receives the hardware, software and manuals, training, maintenance and assistance. The computers and main hardware are replaced every four years. For the franchisee, an infocentro is an attractive business, with an approximate return on investment of 150 %.

## **3 Some ideas to evaluate the infocentros project**

The project has considered various types of evaluation of his activity focused on the quality of the service provided to the user, presented in the following sections.

### **3.1 Measuring the use of infocentros**

A first type of data, basically quantitative, permits a detailed monitoring of Infocentros activity:

- For each infocentro, hourly activity, for every type of service provided to the user. The data collected can be aggregated with geographical criteria, type of zones (rural, urban), etc.
- Types of services offered (E-mail, websurfing, web designing and hosting, scanner, photocopies, conferences, training, etc.)
- Type of user: who are the users of the infocentros and their use of the center. The data can be aggregated with all kind of criteria: age, gender, profession, etc.

The data collecting process can be done through various processes: data available in every infocentro, passwords of users and code number of prepaid cards. The data processing will be done by the monitoring and evaluation unit of the association and the operators of the infocentros will receive a constant feedback so they better know the demand in their center and benchmark their activity with other centers. The information on use of the infocentros is also very important to optimize the use of bandwidth of the whole network.

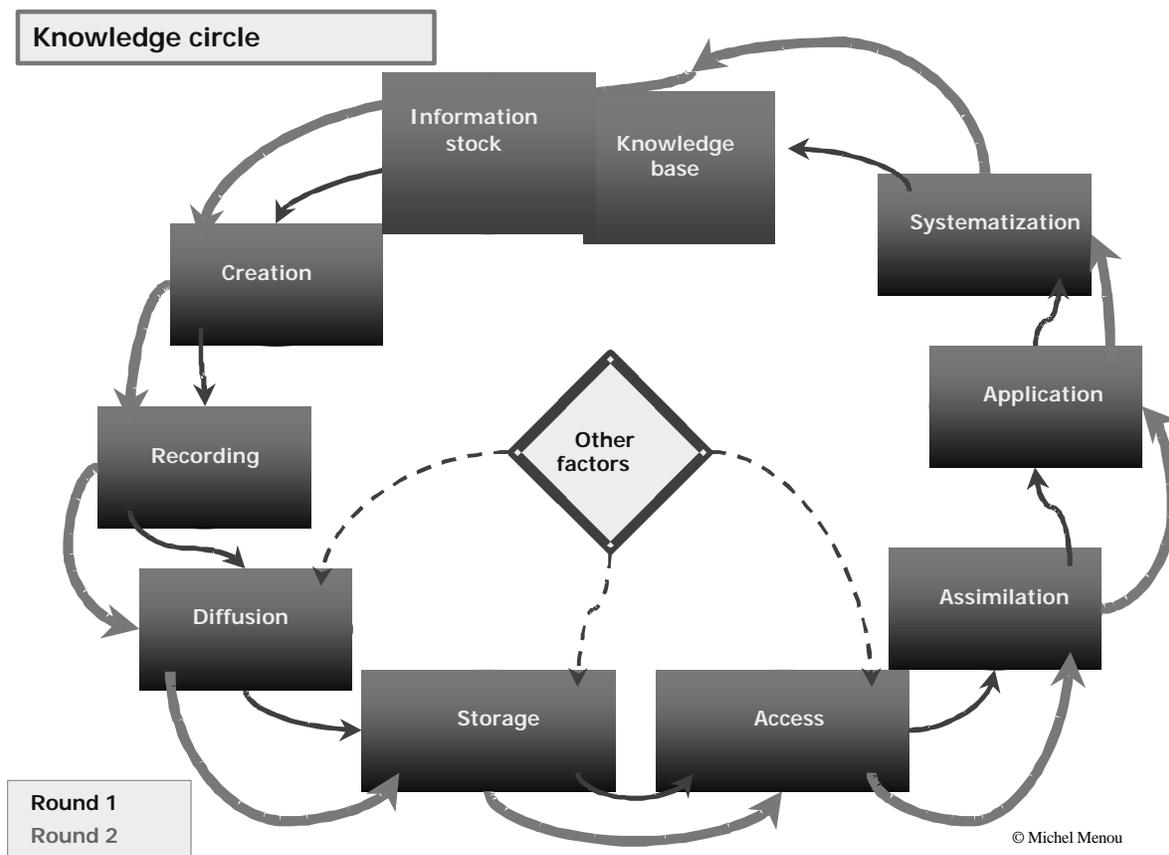
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<sup>2</sup> [www.infocentros.org.sv](http://www.infocentros.org.sv)

### 3.2 Production and use of information

Since his beginning, the Infocentros association has considered that the information and its use for economical and social development were critical to the success of the project. Therefore, a special attention is given to his evaluation and therefore to the design of specific tools to facilitate the analysis.

The Conectandonos al Futuro experience showed that most people describe information issues in terms of existence (“there is no information about this problem”) or in terms of access (“it’s impossible to get this data, I don’t know how to get it”). In fact, the reality is a bit more complex, and the information and knowledge pass through a sequence of phases, or steps: creation, recording, diffusion, storage, access, assimilation, application, systematization, and finally go to the knowledge base of the person, or the institution, as described in the following scheme:



Because of the complexity of information and knowledge flows, the evaluation of information and knowledge use in the Infocentros can't be reduced to access problems, but have to consider the whole process or cycle. For instance, the following issues should be considered:

- Definition of the information stock locally available: It is crucial for the success of each Infocentro to know, before the opening, the information available in the town or village, its cost, etc. This is the reason why before being allowed to get a franchise to operate an Infocentro, the franchisee has to analyze the local context, emphasizing on information issues. This study provides important baseline data which is an important instrument to meet the local needs and demands of information, and is a very important tool for the whole association for the production of information.
- Creation of information: The groups in charge of producing relevant contents of information use the data related with the demand of the population (users and non users), but also from the servers (statistics on web visits, etc.). It's also possible to create interaction mechanisms with the user (interactive portals, lists, and focused interviews).

#### **4. Impact evaluation of the Infocentros**

A real monitoring and evaluation of the last phases of the knowledge cycle (assimilation, application, systematization and impact on the knowledge base) is the more difficult part of an impact evaluation of the Infocentros. It is also the only real impact evaluation if we agree with the definition proposed by M.Menou: "impact is the change in the ability of people to satisfy their needs brought by the outcome of the use of information". (The information difference, theoretical and practical issues in its investigation", 1997).

A good impact evaluation allows to anticipate the future demand for information, and therefore to increase the social usefulness of the Infocentro and its profitability, but this is complex, and requires:

- Very good qualitative and quantitative baseline studies of the initial situation of the communities. The data needed could in this case probably be far beyond the capacity of the franchisee of collecting data, or facilitate the data collection in his community.
- A well designed monitoring system, able to describe the daily activity of the Infocentro
- A clear idea of what is the scope of the evaluation

#### **5 Preliminary conclusions**

The monitoring and impact unit of an Infocentros network should at least include the following characteristics:

- Design, budget planning and installation at the creation of the network, with the collaboration of all stakeholders
- Consider all the phases of the knowledge cycle
- Use different methods and indicators, to increase validity and reliability: data coming from servers, from daily statistics, from focused analyses, etc.
- Be easy to use
- Be used during a long period, as the impact of information is a medium to long term process.

Clemente SAN SEBASTIAN  
Infocentros program manager  
RED CIENTÍFICA PERUANA- INTERNET PERU  
Bulevar del Hipódromo 324, Colonia San Benito, San Salvador, El Salvador  
Tel. 503 279 07 92, Fax: 503 279 07 89  
[Clemente@vianet.com.sv](mailto:Clemente@vianet.com.sv); [www.infocentros.org.sv](http://www.infocentros.org.sv);  
<http://ekeko.rcp.net.pe/>



## **Telecentre Evaluation Methods and Instruments: What works and why? (George SCHARFFENBERGER)**

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*PACT Inc., Washington, DC, USA*

For the past year PACT, an international NGO specializing in supporting the growth of civil society, has collaborated with IDRC, ITU and UNESCO to develop evaluation methods and instruments and to collect baseline data for the Multipurpose Community Telecentre (MCT) Project in Africa. The three primary funding agencies are working with other international and national partners in Africa to introduce, diffuse, and assess the impact of the multipurpose community telecentre model by developing, implementing and monitoring the impact of five Multipurpose Community Telecentres (Mali, Mozambique, Uganda, Tanzania, and Benin). The centres are intended to stimulate and support:

- local capacity for informed decision-making -- particularly in the areas of health, education, economy, governance and general socio-economic development; and
- the production of local information and knowledge to foster local development while contributing to a better understanding at the regional, national and international level of the local community's needs.

The MCT pilot project seeks to develop a sustainable model (or models) that meet the evolving information, communication and learning needs of the community. The experimental nature of a pilot presumes that these models will develop and evolve considerably during project implementation and thereafter. This "rolling design" approach (akin to what is referred to as "action research") requires a strong learning system, a flexible and nimble management style, and adaptive management systems. Additionally, the high degree of stakeholders' interest and investment in the MCT project at all levels justifies a serious and systematic effort to monitor real costs and measure true impact. In a context of mushrooming plans to rapidly expand MCT-type resource centers in Africa and elsewhere, such an investment in evaluation is not only justified but it should be considered critical.

The need for monitoring and evaluation of telecentre efforts has been raised in multiple conferences and meetings addressing the issue of rural community information and communications access.<sup>1</sup> It

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<sup>1</sup> Guelph, NTCA's Washington conference, the Maryland University seminar on Information Technology and Social Inequity, BICA, etc. -- conferences and meetings that seem to be mushrooming almost as quickly as telecentre projects themselves...

is unfortunate that the energies expended in calls for and hand-wringing about the lack of telecentre evaluation have not been matched by equal energies and resources going into doing something about that lack.

The MCT project was an exception in that the initial IDRC/ITU/UNESCO Pilot MCT project documents contain specific references to evaluation linked to the eventual need to modify the project design during implementation. Considerable effort by visionary project leaders such as Johan Ernberg, John Rose and others at the international level were devoted to developing an initial conceptual framework for evaluation and into drafting a set of survey questionnaires.

But despite these promising beginnings and sincere intentions, monitoring and evaluation systems for the MCT pilot project, as originally conceived, were not adequate for its broad learning needs. Budget allocations for monitoring and evaluation were modest and there was limited input from field-level project stakeholders in developing the framework, process, and initial questionnaire. The evaluation framework and process were developed **after** the project design of the initial MCTs (Mali and Uganda) thus divorcing monitoring and evaluation from the planning of other project activities. The framework itself was not related to explicit strategic or activity-level cause and effect hypotheses. There is no evidence of a detailed logical framework. Either would have provided a better focus for the research questions to be asked and investigative process to be followed. The questionnaires themselves were highly quantitative. They responded primarily to certain learning needs of international and national sponsors, particularly in terms of building the business case for MCTs. They were less geared in their focus or timing to on-going project design efforts and to the information needs of telecentre managers and local management committees for day to day operations-related decisions.

As project implementation began in mid-1998, many at IDRC, ITU, and UNESCO were coming to share these concerns. Anne Whyte's initial effort to promote the development of a framework for Acacia's telecentre learning system, the appointment of Dr. Heather Hudson to oversee Acacia's evaluation and learning activities, and the openness of ITU, UNESCO and IDRC to Pact's proposal to participate in the development of a participatory learning model for the Mali and Uganda pilot projects were all indicative of that change. Between September and November 1998 a collaborative effort led to the development of a draft methodology for what Pact terms a learning system." The initial phases of the methodology were pilot tested and baseline data was collected for the MCT's in Timbuktu, Mali (December 1998) and Nakaseke, Uganda (March 1999).

This paper summarizes the principal elements of that methodology and the lessons learned during the process of baseline data collection in Mali and Uganda<sup>2</sup>. It incorporates lessons learned by Pact in similar information needs assessments/communications mapping exercises over the past year in Indonesia, Bangladesh and Mongolia.

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<sup>2</sup> More detailed reports on the methodology is available on the IDRC telecentre site: <http://www.idrc.ca/pan/telecentres.html>

## A. Methodology Overview

The Learning System methodology used in Mali and Uganda integrates multiple data collection instruments that are sequentially implemented to obtain relevant data from a wide range of perspectives. The process is a highly participatory and one in which local stakeholders refine the various instruments and play key roles in data collection, analysis and subsequent project decision-making. The interlocking design of the instruments, their sequencing, and the manner in which they are implemented provide opportunities to verify and deepen understanding of information coming from previous instruments.

**Survey Questionnaire:** The questionnaire provides a quantitative overview of community information and communications needs, priorities and use patterns. The questionnaire used in Mali and Uganda were based on model questionnaires provided to Pact by ITU/UNESCO.<sup>3</sup> It includes four sections:

- basic demographic data (used to develop a “profile” of high potential users and to disaggregate survey results)
- data on access to information and communication technologies
- information priorities – both information needed and the information the respondents wish to communicate
- data on communication and information access and use patterns -- frequency, sources/targets, priority uses.<sup>4</sup>

The surveys were administered to stratified samples of several hundred people in six high potential user groups. Survey results were entered into an Access database where they could be manipulated to produce tables, charts and basic statistics.

**Protocol for semi-structured organizational interviews:** The protocol is used to identify the information/communication needs and use patterns of key institutions and organizations related to the MCT’s objectives. It also provides for the collection of data on the clients, activities, volume, costs, and operations of organizations that are themselves information providers. The interview guide is arranged in a logical flow, beginning with general information on the organization, its mission and activities and only then introducing questions about the role of information and communications. At the last stage the interviewer relates the information needs/patterns/context to the services that might be available through the MCT. A tabular format for recording interview data is used to facilitate aggregation and quantification. Ideally, the questions are enriched by the analysis

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<sup>3</sup> ITU/UNESCO developed 3 questionnaires – one for potential users, one for users, and one for eventual use in soliciting perspectives on impact. Only the first was used as the basis for baseline data collection. IDRC’s Heather Hudson and Polly Gaster of the Mozambique MCT project suggested helpful modifications.

<sup>4</sup> Subsequent development of the methodology has added data on “satisfaction” with current information communication resources.

of data coming from the survey questionnaires. Follow-up interviews complement the data collected with additional questions/perspectives developed from analysis of the results of the focus group discussions.

**Protocol for focus group discussions:** This second protocol is used to deepen the understanding of the issues, patterns, inconsistencies, etc. that emerge from the surveys and organizational interviews. Six focus group discussions were held at each site. Each focus group represented a key user or stakeholder group related to the MCT pilot project's objectives. The methodology uses focus group facilitation techniques (as opposed to group interview techniques)<sup>5</sup>. The emphasis is on exploring the diversity of viewpoints rather than pushing towards consensus. The techniques are used to gather information and participants' perspectives in several specific areas but also to understand that data and the data coming from the other instruments. The logical discussion path is similar to that of the organizational interviews. In addition to the facilitator and recorder, several people observe and record pertinent statements (both verbal and non-verbal) using a table format to facilitate aggregation and reporting.

**MCT Management Workshop:** A facilitated workshop allows the community management committee to examine and analyze information coming from the other instruments and to add their perspectives. The management workshop design is a modified version of Pact's Organizational Capacity Assessment Workshop. Its output is a series of decisions related to MCT services as well as the development of key performance indicators for the MCT.

**Log Sheet:** The log sheet is an organized format for entering for on-going data on telecentre use patterns. IDRC's Heather Hudson developed the log sheet that was adapted for Uganda and Mali from the ITU/IDRC user questionnaire.<sup>6</sup>

The methodology is designed as a "learning system" with the objective of providing project managers with on-going input into their decision-making. Periodic repetitions of the survey questionnaire, organizational interviews and focus group discussions should therefore be integrated as regular project activities in addition to the analysis of regularly collected user and use information via the log sheets. The capacity assessment workshop should also be repeated at regular intervals (at least annually) to translate information gained from on-going data collection into decisions such as the services to be offered by the MCT, prices, etc. The workshop is also used to monitor changes in key MCT performance indicators. Since Pact's contract was limited to methodology design and the collection of baseline data system, the MCT and local management committees should organize these on-going activities, perhaps with the collaboration of national research and/or management development institutions. The Learning System model also calls for active information sharing

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<sup>5</sup> Among the greatest challenges during the participatory baseline data collection process was helping local managers to appreciate the distinction between the two.

<sup>6</sup> While a column is provided for "comments," it might be useful to also add a column asking for a rating of the quality of the service using a simple Likert scale.

between Uganda and Mali and with other MCTs to foster cross-learning and the eventual development of global MCT performance standards. Cross-MCT networking should be facilitated and encouraged by all three international project partners and through the use of such forums as IDRC's telecentre network.

## **B. Distinguishing Characteristics of Pact's MCT Evaluation Methodology**

Pact's methodology includes several distinguishing characteristics:

**Local stakeholder participation in instrument design:** In both Mali and Uganda, the assessment instruments and their implementation process were enriched by considerable input on the part of local project managers, management committees and MCT staff. This included not only the obvious need for a linguistic and cultural vetting of the various questions/discussions but also for opportunities to add options for multiple choice questions, to eliminate questions irrelevant to the local contexts and to add questions and question sets of particular local importance. For example, in Timbuktu the historic importance of Islam resulted in the addition of religion as one of the multiple-choice options for priority information needs. In both Mali and Uganda local staff and managers determined the various household expenses levels used as proxies for income in the demographic section. Sampling frames, including the definition of "high potential user groups," were developed with considerable local input as were procedures for random selection of participants in the survey questionnaire and focus group discussions. This was accomplished through a half-day workshop on sampling theory and techniques.

**Local stakeholder participation in baseline data collection:** The majority of the data collected via the survey questionnaires, organizational interviews and focus group discussions was by the staff and management committee members of the MCT's themselves. This conscious (though admittedly controversial choice) to use those directly involved in project implementation rather than more "objective," "professional" outsiders was motivated by several factors:

*local knowledge:* The local knowledge of MCT staff and other community-level stakeholders was a key asset in rapidly selecting interviewees, fine-tuning survey instruments, and in obtaining valid information. In both Timbuktu and Nakaseke, the advantage was linguistic but also cultural. Both communities have recently been subject to significant civil strife pitting local communities against external forces. Given the short time frame, the use of "outsiders" for information collection, particularly regarding subjects with a degree of sensitivity, would have been problematic at best. Additionally, reliance on local data collectors significantly enhanced the ability to get across certain points during the interviews and added richness and understandability to the focus group discussions.

*skill development:* To a considerable degree, the success and sustainability of the MCTs will be determined by the ability of their management to gauge the evolving information/communication needs of the community and to adroitly adapt MCT services in consequence. The mastery of what are essentially market research skills (sampling and survey skills,

interview techniques, focus group facilitation skills, and organizational capacity self-assessment) was one of the baseline data collection exercises' most significant outcomes. MCT staff participating in the data collection stated that the experience had given them a new sense of the importance of the MCT for their community as well as confidence in their new skills. Using practiced training techniques, a careful balance of theory and practical skill instruction, alternating intensive "learning" with even more intensive "doing," and continuous on-going assessment, consultants were able to impart a remarkable amount of new skills in a very short period. While success was far from total, spot-checking of survey data indicates that the vast majority of staff readily assimilated the new skills and produced valid data.

*ownership:* One of the greatest challenges for all monitoring and evaluation systems is gaining the cooperation of front-line managers. Even if data collection and analysis is done primarily by external organizations or persons, the cooperation of local managers is key. For example, accurate data on use will be critical to MCT Learning Systems making local management support for accurate and consistent use of log sheets essential. Unfortunately, the common case of project monitoring systems is one in which there is little understanding on the part of frontline managers of the ultimate use or importance of the information being collected nor any clear sense of direct relevance to them in their day-to-day jobs (see below). With little understanding, minimal direct usefulness and no ownership, the low priority given M&E by frontline managers is not surprising.

The MCT Learning Systems methodology attempts to address this shortcoming with a model that more effectively fosters not only cooperation but also a sense of ownership of the M&E system by the MCT staff, local management committee and other local stakeholders. This includes a concerted effort to provide an understanding of the data system, of the data being collected and its ultimate use and, more importantly, opportunities to help decide what data is collected and how. The MCT system then goes one step further by giving local stakeholders key roles in data collection and analysis and supports the direct application of M&E results to local project decision making. The goal is to provide local managers with an understanding of the direct usefulness and importance of M&E while fostering a deep sense that the process and data are owned by the local community.<sup>7</sup> Comments from participants in the management workshops in Mali and Uganda indicate that their involvement in the Learning System process was the first time that they fully understood that the MCT itself was destined to be owned by (and the responsibility of!) the community. While power holders in the community may have already had that consciousness, the baseline data collection process provided an opportunity to spread the sense of ownership much more broadly.

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<sup>7</sup> Albeit as "co-owners" with project stakeholders at the national and international level.

*building demand for MCT services:* The baseline data collection exercise provides an exceptional opportunity for MCT staff to market the services of the MCT. Conversations that took place before and after the various formal interviews and focus groups discussions resulted in a broad community dialogue on the telecentre that was greatly enhanced and in part incited by the participation of the MCT staff in data collection activities.

*sustainability:* Using local staff – paid or volunteer – for data collection can significantly lower overall costs. By integrating on-going data collection within the job descriptions of MCT staff, progress can be made in responding to one of the most critical of all monitoring and evaluation questions – How will M&E and learning continue following the end of the project? For a project whose true impacts are likely not to be felt until well after the end of 3-year project funding, lowering the cost of on-going data collection is certainly welcomed.

**Operational bias:** Most would agree that a project’s M&E system should respond to the multiple learning needs of its many stakeholders. Methodologically that often is easier wished for than accomplished. Limited resources (especially time) create the need to determine priorities and make choices. Pact believes that the primary focus for the learning systems of an action/research pilot project should be strategic and operational, ie. designed first and foremost for the information needs of those making the longer-term strategic decisions and the people who are taking the day to day management decisions. In the MCT’s context, even “longer-term” strategic decision-making is likely to be a fairly short-term affair. The experimental nature of the MCT and the probability of rapidly evolving information and communication needs and technology choices as the telecentres information and communications services come on-stream mean that the traditional gap between operational adjustments and the evolution of strategies is considerably reduced. That in turn implies that the Learning System should be heavily weighted towards the needs of the MCT operators and local community managers. This makes additional sense for projects that will see the transfer to local community ownership and control at the end of their short three-year life span.

The management workshops that were held in both Mali and Uganda as integral parts of the development of Learning Systems are indicative of the operations bias of the methodology. The workshops modeled desired behaviour by immediately applying the lessons learned from the analysis of initial elements of the baseline data to critical management decisions needed to begin telecentre operations: What services should be prioritized and for what target groups? What fee structure should be implemented? How should service delivery be organized (hours of operation, customer support and, in the case of Timbuktu, the location of the new telecentre), etc. Because the questionnaire data could not be entered into a computerized database in time, local managers were taught to do basic analysis using hand calculations. This simple exercise demonstrated the immediate value of the survey data in real life decision-making by local managers. It also helped to increase the sense of local “ownership” of the data while demystifying the role that computers play in the data analysis process.

The workshop design called for the development of management performance indicators for the telecentre itself. Unfortunately this was not successful, partially due to the lack of time but primarily

due to the methodology's reliance on a minimum level of operational experience in order to develop the indicators. Since neither telecentre was operational at the time of the baseline data collection, only the concept of performance indicators could be introduced and a preliminary list of capacity areas developed. Follow-up workshops have been recommended to both local management committees.

**Objectivity:** With such a high degree of participation by local project staff and other stakeholders, the question of "objectivity" is certain to be raised. Isn't there an inherent "conflict of interest" in having project managers, staff and community stakeholders be responsible for their own evaluations? The argument boils down to perceptions of the function of M&E – and perhaps to the extent to which the emphasis is placed on the "M" or the "E." Should an M&E system be designed as a management tool for project managers? Or should it be geared to judging the performance of people, a technology, or an approach? Beyond both of these, to what extent should it be developed to capture the "lessons learned" as a guide for future efforts elsewhere? Ideally an M&E system should be able to serve all of the above but, as stated previously, limited resources require choices and prioritization. Pact believes that a project such as the MCT pilot project requires an M&E system whose major focus is on serving to promote successful project implementation. First and foremost it must contribute to the project reaching its objectives. The needs addressed, investment levels, and mushrooming replications of telecentres in one form or another dictate such a priority in this high visibility pilot effort. That doesn't and shouldn't exclude the other purposes – particularly long-term learning based on impact analysis -- but the central focus should be operational. If the emphasis is on the operational it needs to be fully "engaged" rather than "arms-length."

But even if it were accepted that the M&E system should largely serve operational needs, some would still take issue with the particularly high level of local participation proposed under the Learning System approach. Isn't there a risk that self-interest will bias results and actually work against project success? This is a valid issue but only to the extent that perceived individual interest and project success come to diverge. Management science learned several decades ago that one of the most effective strategies for fostering high performance is to promote a sense of a stake in the eyes of employees in an organization's success. For these managers, self-assessment has become an effective pillar of human resource programs<sup>8</sup>. A heavy reliance on local participants in data collection and analysis becomes problematic however where participants are not perceived and/or do not perceive themselves as central stakeholders in project success or if the outputs of the M&E system are used (or if they are perceived to be used) to judge performance upon which are based sanctions and rewards.

Meanwhile, the alternative of using "external" resources may not be that much better. If monitoring and evaluation data is used to sanction or reward performance, data collection and analysis by external organizations/individuals will not stop the natural tendency of project managers to try to make themselves look good. Pact believes that such an approach creates an adversarial relationship between the evaluator and project managers which creates its own biases and, more significantly,

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<sup>8</sup> Albeit not the only pillar!

discourages the learning and adaptive management styles essential for a successful pilot project. From an operational viewpoint is far better to have project staff, the local management committee and other local stakeholders serve as “researchers” or at least “co-researchers” within an M&E system. External evaluation resources and viewpoints are still important but primarily in supporting the lead role-played by local stakeholders. External researchers can provide spot-checking in the sense of quality control and complementary studies in cases where there are obvious questions about performance or where locally collected data capacity is limited. To the extent possible, such external data collectors and analysts should see local managers and communities as their principal clients.

**Validity/Reliability:** The heavy reliance on “non-professionals” in instrument design and in data collection might also raised questions as to data validity. As mentioned above, care was taken to adequately train and prepare local staff for these tasks and control systems were used to spot-check data collected. Data was reviewed during entry into Access. Incomplete or clearly inconsistent questionnaires were eliminated from the samples<sup>9</sup>. The overall data set was examined using several key data points – household expenses, education level and radio use. In each, the distribution of the sample was close to the expected distribution (taking into account the relatively small sample size in Timbuktu). In Timbuktu the results closely paralleled similar data collected by an FAO-funded media study. Data on communication patterns and priorities were also verified during the focus group discussions. Mission consultants feel unequivocally that the data is accurate and valid to the extent required by the learning needs of the pilot MCT project. Local knowledge and internalized self-interest in accurate data (in addition to intelligence and effort on the part of the data collectors) appear to have more than compensated for the lack of “professional” experience. More importantly, the more than acceptable level of validity/reliability of the data, combine with the other listed benefits of local participation in data collection/analysis to more than justify opting for this approach.

### **C. Problems experienced in the design and implementation of the MCT participatory Learning System**

Several issues arose during the design and implementation of the Learning System model. Some of these relate to the specific contexts in which data was collected but others are more systemic and have been (or are continuing to be) examined as the model has been applied to new settings over the past few months.

**Lack of focused hypotheses/Logical framework:** A lack of agreement on specific conceptual and operational hypotheses presents obstacles to the creation of a targeted monitoring and evaluation system. The MCT pilot project is built upon a very general causal chain that links improved access to information and communications with increased individual and community welfare. It is closely related to even more general linkages between telecommunication

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<sup>9</sup> These were less than 5% of questionnaires.

development and economic growth and between education and social and economic development<sup>10</sup>. The MCT model assumes that improved access for disadvantaged, isolated communities, and particularly for the disadvantaged within those communities, can have a beneficial impact far in excess of project costs and that such access can be cost-effectively and sustainably delivered via community-owned public access telecentres.

MCT pilot project documents seems to focus development hypotheses on the impact of improved use of information in decision making but go on to acknowledge a significant and often unexamined caveat to the above causal chains, ie. the observable fact that making information available doesn't guarantee that it will be accessed nor when accessed that it will be useful or used. Indeed, empirical evidence provided by underutilized and financially unsustainable resource centres and a number of early public Internet access projects demonstrates the reality of that caveat. To address this breakdown in the causal chain, the MCT pilot project has a dual strategy of:

- 1) working with small pilot user groups through which it hopes to demonstrate to others the advantages of more information-intensive decision making and
- 2) mobilizing the talents of a national-level content development committees to ensure the identification and production of appropriate content.

But while these strategies may help, the specific causal threads leading from increased access by this newly motivated user groups passing through the appropriate and relevant information and finally leading to specific increases in production of goods and services, better health, more democratic and transparent governance, etc. are far from clear.

Equally problematic is the lack of effective linkages between the local management committees and the national-level content development groups. In both cases, the content development groups had yet (at the time of the survey work) to become fully operational. In both Mali and Uganda, attention by the project coordinators needs to be equally divided between promoting and motivating both organizations and developing structured plans for regular exchanges. First among these could be the joint analysis of the findings of the baseline data collection exercise to ensure that the first priority of the content development groups corresponds to the expressed information needs of the community rather than the priorities of international or national sponsors however well-intentioned.

An effective M&E system should be developed simultaneously with (and be the direct outgrowth of) the project design. This was not the case for the MCT pilot project<sup>11</sup>. The multiple, vast and general nature of the hypotheses upon which the MCT pilot project is based lend themselves to the development of an M&E system of equal complexity, size and generality. As said previously, the original questionnaire was heavily weighted towards proving the business case for MCTs. The weight of that particular starting point, of apparent greater interest to international and national level

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<sup>10</sup> Both of which the topics of substantial conceptual and methodological debate despite their general acceptance as conventional wisdom.

<sup>11</sup> With the exception of Mozambique where baseline data collection was used as the basis for project design.

stakeholders and “investors” than to local management committees and staff, complicated the attempt to adapt it to local needs through a participatory process. In retrospect, a far better approach would have been to develop a logical framework or at least a limited number of clear conceptual and operational hypotheses, meaningful to local stakeholders, during the project design process and to use those as the basis for designing the M&E system. This seems to be the direction IDRC is taking with its telecentre evaluation network and the thoughtful work of Anne Whyte – with the only caveat being the need to prioritize and concretize a much smaller set of underlying action/research questions.

**Time and timing:** Pact underestimated the amount of time needed to fully implement the initial phase of the Learning System and found that it’s design was in some ways too early and in some ways too late. The Learning System design is complex and its participatory methodology time-consuming. In both Mali and Uganda important trade-off decisions had to be made between time used to train/prepare data collectors and time doing data collection as well as between the different instruments within the Learning System suite. In the case of Timbuktu, the bias went towards data collection – particularly towards a rich diversity of organizational interviews and focus group discussions. This meant less well-prepared data collectors and fewer surveys. In Uganda, the choice went more in the direction of training and more towards surveys, resulting in fewer organizational interviews and focus groups. While these decisions are not seen to have reduced the overall validity of the baseline data collected, in both cases there was less and less rich data than the ideal. At both sites, the time spent working with management committees in data analysis and in integration of the data into strategic and operational decision making was severely limited. The fact that survey data could not be entered into an Access database until well after the end of the two consultancies meant that the full richness of that data was not available as an input into the organizational interviews, focus group discussions and management workshops<sup>12</sup>.

Ideally the baseline data collection process should have been undertaken as part of project design.<sup>13</sup> But because baseline data collection took place only when the telecentres were on the verge of opening, when decisions about equipment, staffing and orientations had already been taken, adjustments based on the information produced will be complicated. At the same time, the fact that the management workshops designed to analyze and respond to the information produced by the baseline data collection took place before stakeholders had any true experiential understanding of what it meant to operate an MCT, the objective of producing performance indicators was overly optimistic. In retrospect the baseline data collection should have been separated temporally -- with a portion implemented during project design and the rest (additional interviews and focus groups as well as the management workshop) after six to eight months of active operations.

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<sup>12</sup> In subsequent application of the Learning System model, Pact has experimented with the use of 3COM Palm Pilot handheld computers to replace paper questionnaires. The advantage is that data can be immediately uploaded to Access and made available for analysis by local stakeholders during the management workshop. The use of bubble sheets and a bubble-sheet reader is another possibility to decrease the time between data collection and its availability.

<sup>13</sup> As was the case for the Mozambique MCT.

**Lack of clear follow-through plan:** Pact's unsolicited proposal to develop a Learning System for the pilot MCT project received a positive response from ITU, IDRC and UNESCO and has been strongly supported by all three despite the fact that it varied from their initial plans. IDRC's Heather Hudson has been a particularly helpful technical resource, mentor, and moral support. All three organizations accepted and indeed embraced the fact that Pact's proposed intervention had a much greater participatory and operational orientation. It was considerably more costly than the amounts allocated in budgets for baseline data collection. This was accommodated through the use of other line items, moving up some of the funds earmarked for evaluation in later years and finally IDRC's willingness to add additional funds to the Learning System development and baseline data collection effort. While these served the immediate needs and resulted in what Pact considers a successful development, testing and launch of the MCT Learning System, the longer-term implications of the participatory model have not been fully integrated into forward project planning and budgeting:

- M&E needs to be converted into an on-going project activity with staffing and budget implications that have yet to be fully addressed.
  - The heavy reliance on local stakeholders in Learning System activities will require a different kind of support, guidance and backstopping on the part of international and national-level partners. This begins with a continued operational focus but also includes the need to reassure stakeholders that M&E data will not be used by international or national sponsors to reward or punish performance. Finally, the judicious use of external researchers needs to be planned in such a way as to provide control mechanisms to ensure overall valid results and to fill in where local expertise is lacking.
  - It was Pact's intention to leave behind the skills and a system that could be implemented almost entirely by local stakeholders. Underestimates of the time it would take, mentioned above, meant that that objective was only partially achieved. Most importantly, an additional facilitated management workshop within the next 4 to 6 months after a second round of locally managed questionnaires is highly recommended to confirm the link between the Learning System and management and to establish performance indicators.
  - One of the key aspects of the evaluation plan included in the project documentation was an active linking of M&E methods and results between all five pilot MCTs. An unambiguous plan of how M&E will be coordinated across all five sites and how best to use the power of the Internet to link the five local staff, local management committees, and national steering committees in a broader process of cross-site exchange and learning has yet to be developed. I hope that this IDRC Telecentre Evaluation Workshop will contribute ideas as to how a community of practice for MCT managers can be fostered and made a reality as a first step in building a larger learning community among community information and communications resource institutions of all types.
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**George Scharffenberger**

Vice President, New Initiatives

Pact Inc.

1901 Pennsylvania Ave., N.W., Washington, DC 20006, USA

202.466.5666

202.466.5669

[gscharffenberger@pacthq.org](mailto:gscharffenberger@pacthq.org)

<http://www.pactworld.org>



## **Outcome Mapping: A Method for Reporting on Results (Terry SMUTYLO)**

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*The Evaluation Unit, IDRC*

The Evaluation Unit's conceptual and practical work over the past year with donors, Southern research institutions, program staff, and evaluation experts has brought to the fore a fundamental problem with existing approaches to reporting on development impacts. When referring to "impact", development organizations usually mean significant and lasting changes in the well-being of large numbers of intended beneficiaries. These changes are the results for which funders and partners expect accountability. This is problematic because the complexity and fluidity of development processes mean that achieving such impacts requires the involvement of a variety of actors, often over a considerable period of time. When large scale change -- or impact -- is achieved, it is often the product of a confluence of events for which no single agency or group of agencies has control or can realistically claim full credit.

In response to this problem, the Evaluation Unit and several IDRC programs have been working with Dr. Barry Kibel, Pacific Institute for Research and Evaluation, to adapt his Outcome Engineering approach to the development research context. The result is a methodology, which we are calling "Outcome Mapping".

Outcome Mapping characterizes and assesses the contributions a project or organization makes to significant and lasting changes (outcomes). Outcomes are defined as changes in behaviour, relationships, activities and/or actions that the initiative was helpful in bringing about. In Outcome Mapping a program is assessed against its activities that contribute to a desired outcome, not against the outcome itself.

Outcome Mapping focuses the initiative's planning, monitoring, and evaluation around its boundary partners. This allows it to **measure the results** it achieves within its sphere of influence, to **obtain feedback** about its efforts in order to improve its performance, and to **take credit** for its contributions to the achievement of outcomes. To gather the appropriate data to do this, it emphasizes on-going monitoring by the initiative of its actions in support of the outcomes and the progress of its boundary partners towards the achievement of outcomes. Because it focuses on change, Outcome Mapping can help an initiative be more strategic about the actors it targets, the changes it expects to see, and the strategies it employs. Outcome Mapping is intended to be participatory so that members of the initiative can articulate their intentions, develop monitoring tools, and set evaluation priorities and data collection needs together.

The Evaluation Unit is currently developing a facilitation manual for IDRC programs that want to use Outcome Mapping for designing, monitoring, or evaluating their work.

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### **Terry SMUTYLO**

Director of Evaluation, International Development Research Centre (IDRC)

250 Albert St., PO Box 8500, Ottawa, Ontario, K1G 3H9 CANADA

+1(613) 236 6163 ext. 2345; Fax: +1(613)-563-0815

[tsmutylo@idrc.ca](mailto:tsmutylo@idrc.ca); <http://www.idrc.ca/evaluation>







































# Understanding the Role of Community Telecentres in Development - A Proposed Approach to Evaluation (Anne WHYTE)

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*Mestor Associates, CANADA*

## 1 INTRODUCTION

*The “telecentre” horse is out of the gate and is in danger of running ahead of any adequate assessment of how to ensure its financial sustainability or to maximise its benefits.*

The debate about the value of modern ICTs to developing regions, some of which lack basic infrastructure for water and sanitation, continues in the halls of development agencies and national governments. *Are ICTs a springboard for leapfrog development? Are they able to deliver improvements in the lives of the poor in the short term? Are community telecentres a forerunner of what might be a “connected” future for hitherto isolated rural communities?* If future investment in connectivity for the poor is to be realised, we need to measure the effectiveness of what has been done so far. This paper argues that (a) research on telecentres should be undertaken **now** and according to best scientific practice so that it can withstand the scrutiny of governments and sometimes sceptical public and private investors; and (b) research projects should try to be as comparative and collaborative as possible, so that the benefits of scarce research resources can be maximised.

This paper is based on a longer report: the *Acacia Research Guidelines for Assessing Community Telecentres*, (Whyte, 1999) which is designed to support research and evaluation studies of community telecentres<sup>1</sup> in Africa, that are being undertaken by the *Acacia Initiative* of IDRC and its partners. It is also hoped that it will serve as a useful planning document more widely with other groups involved in assessing telecentres in all parts of the world.

The *Acacia Research Guidelines* looks at telecentres from the perspective of the person responsible for researching or evaluating them. The structure of the report mirrors the **decisions** that have to be made; from the initial development of hypotheses, through the research design and sampling strategies, to the identification of variables and indicators, the collection of data and their ultimate analysis and interpretation. The aim is to (1) *identify* the key questions facing the research and evaluation team; (2) to *propose alternative solutions and best*

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<sup>1</sup>There appears to be no universally accepted definition of what a “telecentre” is beyond a general concept that it is a physical centre providing access for the public to distant communications and information services using a variety of technologies including phone, fax, computers, and Internet. Telecentres can be publically or privately owned, be part of a public or private franchise or be provided by international donors. They run the spectrum from “phone shops”, “cybercafes”, cottage telecentres for telework or telecommuting, to specially constructed multipurpose community telecentres (MCTs), some with advanced services such as medical diagnosis and telemedicine.

*practice* based on experience from similar field situations; and (3) to *facilitate comparability between pilot projects* by providing a common reference and starting point. This paper focusses on two of these key issues: research design and the development of indicators to measure the performance of telecentres and their impacts on the community.

The approach is based on three key premises. The first is that it is important to evaluate the experience in community telecentres from the perspectives of the different stakeholders. These include stakeholders at three levels: (1) at the local, community level; (2) at the national level especially, the agencies that are implementing community telecentre programs; and (3) at the international level, where public and private sector donors are becoming more interested in funding telecentre projects.

A second premise is that the evaluation should be as participatory and as locally based as possible, involving national research institutions as well as local community organizations, including the telecentre management and staff. Telecentre assessment should feed into a process of continuous feedback to all stakeholders, especially at the local and national levels, so that participation and feedback become part of a learning system. This has significant implications for how evaluation is conducted.

A third premise is that using common research frames, instruments and indicators will help in comparing the experience of community telecentre programs in different countries. Such an approach does not imply uniformity which can bludgeon local issues and nuances, but rather seeks to encourage comparability of results through the identification of a few core indicators, to which can be added other, more locally specific measures.

Finally, there is a sense of urgency, because an increasing number of pilot telecentres are being made operational before any real baseline data has been collected on the communities they serve.

## **2 THE RESEARCH QUESTIONS**

The logical place to begin an evaluation plan is with the questions that you want to answer (table 1). These questions can be posed at several levels. There are the immediate questions relating to the evaluation, such as “*What is the size of the population served that is needed to make a telecentre financially viable?*” There are also more fundamental research questions, such as: “*What is the role of information and communication in economic and social development?*” “*How do information technologies differ in their impacts from other technological innovations?*” “*What are our assumptions about how information technology and information content changes political power relationships, social learning or economic benefit?*”

Evaluation projects are all too often designed and implemented without adequate attention given to the scientific models or theories that lie behind them. It is important to pay attention to these underlying models early on in the evaluation planning process for two reasons. The first is that the assumptions that the evaluation team brings to the table about how people’s lives are being changed by community telecentres will influence the questions they ask and how they ask them. The evaluation team members should be prepared to

identify their own assumptions about the role of information in social change, and about how community development takes place, not only to identify the key research questions for the study but also to better recognise their own biases. The second reason is that evaluation designs and methods are each embedded in particular research paradigms and the evaluation should reflect be designed in the context of appropriate models.

What research questions might frame an evaluation of a telecentre project? Some of the most important ones concern the social role of information. Communication, which can be defined as the exchange of information and the transmission of meaning (which leads to action), is regarded as the essence of a social system or an organisation (Katz and Kahn, 1978, p. 428). Communication is a social process fundamental to the functioning of any group: it is the means by which social interaction like cooperation, conflict, and leadership is motivated, influenced and restricted. Communication is organised information flow, ordered as much by limitations and restrictions as by openness, and it can only be properly understood in the context of the social system in which it exists. Social systems have been conceptualised as restricted information networks (Ashby, 1952). Thus, the introduction of a community access telecentre, if it is successful, is going to have a major impact on the community- its culture, communication patterns, economy, social structure and future development - and in turn, the telecentre's future sustainability will be determined by the community.

Models of learning and innovation assume a pivotal role for information transmission and exchange. Education and training are formalised systems for transmitting knowledge which is based on information. These models stress that information without context is so much useless noise. The lesson here is that community telecentres are not only social forces impacting the community, but that they cannot succeed unless due attention is given to the type, sources, and quality of information that they transmit, and the applications, such as health care and education, to which the information is relevant. If telecentres are seen as technological providers rather than social and cultural community centres, experience suggests they will be less sustainable and provide less benefits.

How does the social construction of information (and the Internet) affect the way in which a telecentre is viewed and the way in which it will change social exchange of information within a community and between it and the outside world? Information can be created within the community or it can be brought in from outside, and community development results from an interplay of the two forces. The introduction of a telecentre changes the previous balance between endogenous and exogenous information and, *very importantly*, the relationship between their different suppliers. Control of information has long been central to maintaining political power and economic advantage. At the same time, there are traditions in many societies of reciprocity in freely exchanging valuable knowledge, such as about the medicinal uses of plants, which clash head on with western ideas about patenting knowledge.

### **3 THEORETICAL UNDERPINNINGS**

Program evaluation developed in the 1960's out of a need to prove that publically funded social projects were worthwhile. The 1960's also saw the rise of the scientific method

within the social sciences and an emphasis on experimental design, statistical significance and assigning causality. While evaluation methodology has evolved considerably since then, it is still heavily influenced by the need to measure performance for accountability purposes. Part of that accountability is focussed on the return on the financial and other investments made in the program: the other is related to the initial objectives laid out for the program. Evaluations undertaken in this mould do not deal very well with a program which learns as it goes along, and changes its objectives and activities mid-stream. Neither are they particularly appropriate for programs that are so successful, they result in major transformations in the project communities. Most evaluations are designed to measure incremental changes along predicted (outcome) trajectories. In other words, traditional evaluation models do not necessarily deal well with adaptive complex systems, which is what human communities and social information systems are.

An important lesson of general systems theory for evaluation is that one of the first steps in designing an evaluation project is to map out, or model, the system being evaluated: its components, its connectivity, its feedback loops; its boundaries; its inputs, throughput and outputs; its behaviour and its critical thresholds. The next lesson, from complex systems theory, is to recognise that the general systems model is a gross simplification of reality in that human systems are never linear but develop with a good measure of surprises and uncertainty. They are adaptive or *learning* systems in which apparent linear changes can suddenly lead to a dramatic development or reversal of a characteristic, when some critical state is reached (as described by *catastrophe theory*, or “*the straw that broke the camel’s back*”). The third lesson for evaluation, taken from the history of science, is to recognise that science, and thus evaluation, is contextual and value-laden, carrying the burden of the values embedded in the theory and methods adopted and the value systems held by the evaluation team.

Discussions such as those proposed above are particularly important for the evaluation of telecentre projects, because the systems being studied; that is, communities in which telecentres are changing the patterns of information and communication, are inherently *adaptive complex systems* where projects outcomes are likely to be unexpected and decidedly stochastic. It will be surprising if there are not surprises in assessing community telecentres. At the same time, the large financial and political investments being made in community telecentre programs will tend to drive evaluation towards shorter term accountability objectives and away from “fuzzy” research questions. Evaluation teams should take the time to achieve a balance between the two, and include some discussion of the longer term research questions and alternative models of community development with their stakeholders.

The key elements of an adaptive systems approach to evaluation are:

- develop a systems model of the program or project to be evaluated in order to “scope” the evaluation;
- identify the stakeholders in the project and find out their information needs from the evaluation and research. Test your scoping model with different stakeholders to develop a working model for the evaluation;

- design the evaluation or research study to be adaptive to new information and diverse information needs and adapt your working model;
- include a variety of different methods and research instruments to obtain different types of qualitative and quantitative data;
- develop a workplan that is appropriate for the goals of the evaluation and the available budget and timeframe;
- be as participatory as possible in conducting the research and evaluation, including representatives of different stakeholder groups in data collection and interpretation and using self-assessment as part of the evaluation tool-kit;
- select an evaluation and research team that is credible with diverse stakeholders, including both internal and external expertise;
- ensure that there is interaction throughout the evaluation or research study between the evaluation team and stakeholders, and that the evaluation itself contributes to learning and adaptation at all levels.

#### **4 THE RESEARCH PLAN**

What are the implications for the research and evaluation plan? First, that the evaluation should make its assumptions explicit and that the evaluation team should be prepared to have these assumptions challenged. Second, that although limitations and biases cannot be avoided, they can be compensated for, by involving as many different stakeholder views as possible. The evaluation process should include a stakeholder consultation process. Third, each method and instrument adopted for an evaluation study was originally developed within a particular scientific paradigm and its assumptions need to be reflected upon to see if they are consistent with the overall approach of the evaluation study. Fourth, the evaluation study design should not be overly rigid but should itself be open to new discoveries and posing new questions as the project is underway. In other words, the evaluation study should itself be an adaptive learning system. Fifth, the evaluation study should include several different methods and research instruments designed to capture different types of information. In total, the evaluation project should be able to be evaluated.

Research design includes consideration of several interrelated components: the purpose of the evaluation exercise, resources available, research design, sampling frame, the selection of indicators and primary and secondary data to be collected, the selection of research methods and instruments and the type of analysis and reporting. There is no one ideal design for an evaluation or research study. All studies involve compromises in the light of the on-the-ground circumstances and the realities of resource constraints. Many compromises are achieved through tradeoffs made between survey design, sample sizes and type of data collected to obtain as accurate results as possible within the time and funds available.

##### **4.1 Multi-stakeholder process**

Projects and their evaluations have multiple stakeholders. An important early step in any evaluation is a *multi-stakeholder process* designed to enable telecentre stakeholders and those responsible for the evaluation to arrive at a shared understanding of the overall objectives of the evaluation and how they will be achieved. The evaluation plan should identify who they are and, if possible, should “map” how their interests are separate or cluster together in

relation to their stakes in the project. This may help to simplify the otherwise daunting task of dealing with large numbers of stakeholders, some of whom may be relatively peripheral to the evaluation. The process should also address agreed procedures for reporting results; interpreting their significance; and disseminating them.

At the end of the day, the research team needs to be confident that it knows who the stakeholders are, what their information needs and expectations are for the evaluation. It is likely that some stakeholders will have unrealistic expectations for the evaluation study and it is better to work this through with them before the final report is in their hands. An effective way to achieve several of these ends is to include appropriate individuals from some stakeholder groups in the evaluation team and in data collection.

Another challenge for the research and evaluation team is that while all stakeholders have interests in the telecentre project, some of those interests may be in conflict. Managing multi-stakeholder processes can demand skill in mediation, negotiation and conflict resolution and almost always requires patience. Consistent with the desirability of being responsive to new events and information, the evaluation study design should be open to being modified in the light of feedback from stakeholders. Table 2 gives an example of potential stakeholder groups in a community telecentre project, and the kind of information that they are likely to want.

At the beginning of any assessment or evaluation process, an explicit exercise should be engaged in with the evaluation team and key stakeholders to “map out” the system being assessed; to describe their understanding of its structure and how it operates within its environment; to identify critical conditions and limitations; to agree on the objectives of the (telecentre) project; to define its inputs and outputs; and to agree on what indicators will be used in the evaluation to measure its behaviour, characteristics and impacts. The advantage of this approach is two fold: (1) it ensures that the evaluation team have an overall and systematic understanding the project (and one which should be updated regularly throughout the assessment process); and (2) it is a *group exercise* which should involve all the evaluation team and as many key stakeholders as possible so that everyone has a (negotiated) shared vision of the evaluation project in the context of the project or program being assessed. In practice, the scoping exercise can range from an informal process for the evaluation team to a major multi-stakeholder workshop held over several days in which participants and a facilitator work through a series of steps together. It also acts as a *buying-in* process where ambiguities and differences in understanding are brought into the open and at least partially resolved for the purposes of the evaluation project.

## **4.2 Resource allocation**

The telecentre assessment will require a considerable investment of resources. These include money, time and people. It is worth planning the allocation of these resources carefully, especially when some can substitute for others. Participatory methods, for example, take longer to collect and analyse data but may cost less in terms of budgetary outlays for expert salaries and travel costs. Evaluation studies are generally considered to cost around 5-7% of a project’s total budget, depending on the evaluation design, the years

involved and the type of data required by the stakeholders. However, evaluation exercises are also useful as business planning and marketing tools since they can produce crucial information on what services should be offered and will be profitable, and what the customers need and are willing to pay for.

### **4.3 Initial design decisions**

At the outset, a number of decisions have to be made which will frame the research design. They include:

#### **What will be the research design? Will the survey be a single survey, a longitudinal survey or a cross-sectional survey?**

A key question for the research design will be the question of single or repeated data collection using the same respondents or different samples of the population on different occasions. Longitudinal surveys in which data are collected from the same respondents on different occasions are likely to produce the most accurate information but are the most expensive and suffer from their own problems of respondent attrition and bias through repeated interviews.

#### **How will baseline data be collected?**

The evaluation of telecentre impact requires some **baseline** (pre-telecentre) data. There are several ways in which these can be obtained: a baseline survey before the telecentre is operational; a retrospective survey after the telecentre is operating in which respondents are asked about the pre-telecentre situation; and a cross-sectional survey in which some communities without telecentres are used as “controls” for comparison.

#### **How is the “population” for each telecentre to be defined?**

What is the definition of the telecentre ‘community’? It could be those living within a specified geographic area or administrative unit; or some measure of the ‘population served’ by a telecentre. Some agreed definition of the ‘community’ in the context of the telecentre is needed.

#### **What sub-samples will be selected for study?**

An important design decision relates to which sub-groups of the population to survey in order to answer the research questions. These might, for example, include the “early adopters” or leaders of community organisations, or telecentre users, or particular economic or social groups. It is likely that several sub-samples of the community population will be chosen within each evaluation study.

#### **How will community level variables be measured?**

Another key decision relates to the survey of the general population or households in the community. For a number of reasons, statistically robust samples using random sampling of total populations is not practicable in developing country situations where face-to-face interviews are necessary, up-to-date and complete records of residents do not exist, and cost is a major factor. Alternative strategies include selecting households according to location,

or to interview in other locations (telecentre, schools, community meetings). Each of these strategies have costs and benefits in terms of sample bias and ease of conducting the survey.

### **What primary and secondary data are to be collected?**

The *Acacia Research Guidelines* pay most attention to questions related to primary data collection such as performance reports, interview surveys and focus group discussions, but secondary sources such as government statistics, census data and telecommunications records should also be examined as, where available, they require less time and cost to obtain, and provide useful cross-checks with primary data collected by the project.

### **For household surveys, who will be interviewed within each household?**

The usual choices for whom to count as the respondent is the head of household; the adult person who comes to the door; or all members of the household who are available to answer the survey. While these choices are the most practical, they can introduce systematic bias which can be overcome only by extra effort such as re-visits or carefully selecting the time to come back. For example, people at home are less likely to be the employed members of the household and the survey may wish specifically to talk to employed people.

### **How will ongoing monitoring be undertaken and how will these data feed into the evaluation?**

Routine monitoring of use, users and equipment performance undertaken as part of the business management of the telecentre, including data entry logs and phone logs should be fed into the evaluation study.

## **5 TELECENTRE INDICATORS**

Indicators are at the heart of any evaluation, and they require considerable effort to first identify, then to refine and ultimately to agree upon. Indicators for assessing telecentres are a common thread linking project objectives, key concepts and data collection across the telecentre projects in different parts of the world. Having common indicators for telecentre assessment is the key to comparative research.

Indicators are measuring devices. They define concepts such as “telecentre user” or “improved emergency response” in terms of measurements and data which can be collected and analysed. They define what data need to be collected and at what time intervals. For example, are *telecentre users* going to be defined as anyone who has used the telecentre once? What about the classification into *users*, *regular users* and *frequent users*? How will these be defined? Is frequency of use the only relevant measure or should there be some component of *telecentre user* which measures how long the average visit is and what activity is undertaken? In one study, *users* were divided into those who used the telecentre as a workplace, regular users and occasional users. Are there definitions which can be used across different national programs or does the concept need to be locally defined? There is no necessary right or wrong answer: the key is to select indicators that meet the objectives of the study and fulfill certain general criteria about constructing indicators.

The development of indicators for telecentre evaluation is at an early stage and, despite the fact that indicators are context specific, there is reason for optimism that some common core indicators can be agreed upon which will frame data collection for telecentre pilot projects in different countries. Key criteria are their relevance to the local situation and their reliability, together with robustness when used for comparative analysis from one project or country to another. The indicators proposed in the *Acacia Research Guidelines*, some of which are presented in tables here, constitute a first generation of indicators for telecentres. Some are borrowed from other evaluation studies which have similar goals and research hypotheses: others have been developed by *Acacia* research projects and applied during the baseline studies. It is important to recognise that all the tables of indicators and basic characteristics outlined in this paper are proposals, and not blueprints. They are checklists which can provide a starting point to help researchers discuss the specific data needs of their own evaluation projects. As evaluation studies of telecentre projects are implemented and analysed, these indicators will themselves be refined and better grounded in a body of research results.

To develop good indicators, you need a clear vision of what you are trying to achieve and measure. The basic approach to creating indicators involves four steps: identification of what is to be measured; development of trial measures; assessment of each trial indicator against agreed criteria; and selection of best indicators for a specific project (table 3). There is also a good measure of common sense needed in developing indicators because of the several trade-offs that are involved. For example, more indicators are not necessarily better. Each indicator has a cost in terms of collecting data, as anyone who has designed (and shortened) a questionnaire will attest, and the added value of each indicator has to be assessed against the cost of obtaining the data for it. Some indicators might require data which cannot be reliably collected or for which data cannot be collected over time in a consistent and reliable way. Some data may require reinterviewing of the same respondent but the sampling strategy does not ensure that the same people are re-surveyed.

All indicators are based on assumptions about what is relevant and therefore, to some extent, are expressions of value. This is one reason why indicators are best discussed with different key stakeholders before they are used; both to get their views and perceptions and to ensure that the data collected will respond to their information needs. If a Ministry needs to know how the area serviced by a telecentre changes over time or whether telecentre use is reducing youth unemployment, some indicators of these changes need to be included, if the evaluation is to be useful to that stakeholder. The competing needs of different stakeholders is an important part of the tradeoff process, and their involvement will make this clearer to them.

It can be quite difficult to clarify exactly what type of change is to be measured but it is not worth glossing over ambiguities at the design stage as they will only come back to haunt the evaluation study later on and can incur costs in time, usefulness and credibility. What is anticipated or planned to change? A *state or condition* (as in family income), an *attitude* (as in more interest in consumer goods), *knowledge* (e.g. learning a new language or skills) and *behaviour* (practising innovations in farming) are all changes that a telecentre impact evaluation might include.

The process of indicator development is seen as a combination of brainstorming, borrowing the ideas of others, multi-stakeholder discussions, being both clear about definitions, criteria, goals and priorities, and finally, being very parsimonious with the number of indicators that are selected. In short, more work and hard decisions at this stage reap rewards later in a more focussed and cost-effective evaluation. The indicators discussed below and given in the tables are simply checklists which can serve as a starting point for discussion. It is not intended that data be collected to measure all the indicators. What is more important is that research teams interested in regional comparisons try to select some core indicators in common across projects.

## **5.1 Telecentre Performance Indicators**

Telecentre performance has two important yardsticks against which it should be measured: (1) the telecentre's own goals and performance targets, as set out in its business plan, mission statement or program proposal documents; and (2) the needs and satisfactions of its users. The value of having common core indicators for measurement is that one telecentre's performance (or one national program) can be objectively compared to another in a cross-sectional analysis; and changes in the performance of individual telecentres or national programs can be reliably measured over time. The proposed indicators are grouped into: (1) basic telecentre parameters; (2) indicators of demand for services; (3) service performance; and (4) indicators of user behaviour and perceptions.

### **5.1.1 Basic telecentre parameters**

There are a number of qualitative and quantitative parameters which together describe the telecentre: its location, origin, ownership management, facilities and equipment, staff and services. Also important to this description is the telecentre's funding sources and revenue generation. Some indicators are designed to be repeated over time to measure changes in the telecentre; it has been shown that the start-up phase (usually the first year) and subsequent operational years are generally very different in these indicators. Telecentre services tend to expand, especially in business support activities, and public funding and grants usually decline or end after an initial 1-3 year start-up phase.

Behind the measures proposed here, lie a number of hypotheses about possible success factors which can be tested when different telecentres are compared. For example, the degree of community involvement in, and commitment to, a telecentre, is often assumed to be a success factor. This is measured in terms of the community's role in the origin of the telecentre, its ownership and management, as well as their satisfaction with its performance (table 7) and basic community characteristics (table 4). It is reported that telecentres that are set up through international donor initiatives or public programs rather than being community-driven or the result of local entrepreneurship have a more difficult time being financially viable after the initial funding runs out (ITU, 1998).

### **5.1.2 Indicators of demand for services**

Measures of demand for telecentre services should be included in the baseline community survey and also preferably in any feasibility study undertaken before the telecentre project is

underway. The indicators will also measure changing demand for services as the telecentre becomes established and better known (table 5).

### **5.1.3 Service performance indicators**

The performance of a telecentre in providing the services it offers results from a combination of equipment and human performance, set within a broader context of the quality and reliability of power and telecommunications infrastructure and financial structure. Many of the indicators proposed in table 6 present these different components in terms of the service experienced by the user. The telecentre manager will need to work back from these indicators to identify the source of any problems in service delivery. Sometimes the cause will be equipment malfunctions or breaks in power supply or telecommunications connectivity. Sometimes there will be major “downtime” resulting from theft or vandalism. Service performance is also related to how the telecentre is managed and staffed. Telecentre staff play a key role in providing user-friendly technical support to users, in ensuring good administration and risk management, and in educating people to adopt appropriate user behaviour. Service performance is also related to telecentre design, both in the type and quality of equipment purchased, the maintenance contracts bought, in relation to the anticipated demand for services. One basic parameter critical to equipment performance is the total population (or number of users) that it is supposed to serve, and the amount of time any equipment is in use.

### **5.1.4 Indicators of user behaviour and perceptions**

While they will only give a partial picture of the role of the telecentre in the community as a whole, measures of user behaviour and perceptions are at the heart of any evaluation of telecentres. User surveys are likely to be cost-effective: they can be conducted at the telecentre, the participants have an interest and are knowledgeable about the topic, and longitudinal data can be obtained if users are given an identity code and respond to a short survey on each visit. It is worth considering having a panel of users who will form a longitudinal sample in addition to random sampling or user log-in procedures. This will provide a measure of change over time in a number of variables such as telecentre services used, frequency and length of visits, and payment per visit, as well as changes in satisfaction and perceived benefits.

From telecentre users, two groups of indicators can be obtained: reports on behaviour (what services were used on each visit, for what purposes etc.) and subjective measures of their perceptions about the telecentre services and its benefits for them (table 7). These indicators need to be capable of analysis by individual and group characteristics (age, gender, educational level, occupation, membership in organisations, etc.) so basic data should be collected on the user respondent when s/he first agrees to take part in the user survey. The data from user surveys will be compared with the data collected by telecentre staff on performance and will provide both cross-checks and information from different stakeholder perspectives. Collecting data from users while they are at the telecentre increases its accuracy and there is a shared goal to use the information to improve the services provided.

## **5.2 Indicators of sustainability**

There is considerable interest in the issue of sustainability of telecentres, especially for those which receive assistance during the start-up phase in the form of reduced tariffs, special investments in equipment and infrastructure or international donor assistance. The big question is “*Will the telecentre be financially viable once the special grants have ended, the equipment needs to be replaced and upgraded, and the telecentre has to compete on a commercial basis, or at least run on less public funding?*” A number of telecentres have been established in African communities which do not meet the minimum level of income and infrastructure which would seem to be necessary for their financial success and there is concern that these will, like other development projects before them, fail and bring with them the experience of failure for the community involved. These questions also arise for telecentres which are established by the private sector, but in these cases, there is a smaller gap between the cost of start-up and the reality of annual operating costs and revenues because they tend to be more incremental in approach (starting as a phone kiosk) and build up as demand and revenues allow.

### **5.2.1 Financial sustainability**

The basic indicator of financial sustainability is that the revenues of the telecentre (including grants, in-kind support, and cash earnings) are greater than the expenditures, and that this happy situation is projected to continue at least for the next three years. This accountant’s view of financial viability is complicated by the fact that community telecentres are seen as a mix of public good and private service, and this mix is generally reflected in the funding structure. Many telecentres receive some public funding, at least during the start-up phase although there are many commercial phone-fax shops and cybercafes, particularly in urban and peri-urban areas with high population densities, that operate without direct public support. The situation is further complicated by the special tariffs, grants and regulatory arrangements made to support telecentres in their initial phases, especially in areas where they are unlikely to survive on their own earnings. The financial sustainability of a telecentre is therefore dependent on a number of intersecting factors related to the telecentre’s own budget, its local catchment area of users, and to the wider policy and technology environments in which it operates. In practice, telecentres may be seen as financially viable if they cover their operating costs.

The telecentre will have significant start-up costs in building or converting a structure to house the equipment, in putting in suitable power and telecommunications supplies, and in equipping it. For a number of the pilot telecentres supported by the *Acacia Initiative* and its partners, these initial costs are being fully or partially met by public funding or international donor support. In some projects, the normal criteria for installing telecommunications links (in terms of population, GNP or economic activity) are being waived by the government. These subsidies mean that the telecentres get started, but they do not ensure financial sustainability in the longer term. Several of these pilot projects may, in fact, have a harder time achieving sustainability once the subsidies and grants end. In general, the budget for the start-up phase will be different from later operational years and in some cases, may not well predict longer term sustainability.

Table 8 outlines the main items in a telecentre budget which need to be taken into account in assessing the financial risk of a telecentre. Experience from telecentres in different parts

of the world shows that the costs that are most commonly underestimated related to staff training, security (both physical security and data security) and to the costs of updating and maintaining equipment, especially computers. There are built in uncertainties in the expenditures, especially in relation to communication costs, which are established by the telecommunications supplier and which can change suddenly with a change in government policy. In a preliminary evaluation of the USA experience in South Africa, one of the major problems was the prices charged by the telecentre operator for the services. USA does not fix tariffs or prices and found that the pricing structure varied between telecentres and could be well below or well above actual costs (Khumalo, 1998). This clearly jeopardizes financial sustainability, both directly and in terms of future user satisfaction.

On the revenue side, important aspects are how long the initial grants and public subsidies will continue and how the major funding that this often represents will be replaced from other sources of revenue. A distinction is made in table 8 between revenues earned from the core business of the telecentre (which is not fixed but generally relates to connectivity services and the provision of computers and software) and revenues which are earned from ancillary activities. It is not uncommon that the core business is not sustainable by itself and that successful telecentres over time increase the number and volume of the ancillary activities. These services, such as education and training and business services depend are more dependent on qualified staff in the telecentre who are undertaking the tasks rather than providing access to the equipment to enable the user to do the tasks him/herself. Some telecentres in Europe provide a range of business centre services for small and medium enterprises and local organisations, including inputting and analysing data, secretarial and desk-top publishing services, budget preparation and reception services. Most anticipate that this part of their business will increase as a percentage of their revenue (ITU, 1998).

The telecentre budget and business plan form one approach to measuring financial sustainability. There are also a number of indicators of demand and economic models which have been developed to predict whether telecommunications services will be commercially viable based on the socio-economic characteristics of rural and urban areas in developing countries. These indicators are also useful for looking at telecentres. Some standard indicators of capacity to pay for telecommunications are GNP per capita; population density; penetration of electrical power in rural areas and penetration of telephone service. It has been generally accepted that rural users in developing countries are able to pay 1 to 1.5% of their *gross community income* on telecommunications services (Kayani and Dymond, 1997). In the poorest rural areas, this figure may be as high as 3% because of the lack of alternatives for communication without incurring long journeys (Ernberg, 1998). The ITU uses a figure of 5% of *household* income to estimate capacity to pay for telecommunications services.

In reality, these figures are rarely realised for two main reasons: (1) they assume that the telecentre is accessible to everyone when they need it, meaning that it is well located, is open and is functional; and (2) they do not take account of collect calls and people receiving incoming calls at the telecentre. In studies in Kenya, Malawi and Zimbabwe, the proportion of collect calls for outgoing calls at rural payphones was reported to be 60% (Danida, 1991). This does not account for incoming calls which are known to be common for payphones in rural and small town Africa. In Mozambique, a country with a high out-migrant population,

queues of people line up outside the payphones at the weekend waiting to receive their incoming call. For a telecentre operation, this would mean that it is providing the service and incurring fixed costs but is not receiving any revenue. It has been proposed that some account should be taken of this phenomenon when assigning telecommunication charges to rural telecentres as the telecentre is in fact co-generating the revenue that is being paid out by the caller (usually in the urban areas). In South Africa, it is reported that some telecentres charge a fee for receiving an incoming call.

The World Bank model for testing the feasibility of rural service telecommunications provision estimates average rural incomes using a formula including per capita GDP, country purchasing power parity (PPP) income distribution figures, and rural population as a percentage of total population. The result (*average rural income*) is compared with the *estimated capital cost of providing the service per line* based on population density and geographic factors and the *estimated required annual revenue per line* to cover capital costs and make a profit. The model then calculates the number of inhabitants required to support a single telephone line. As demand increases, the area of commercial viability also expands. This not only means that the ratio of marginal and unprofitable customers decreases but it also enables a government regulator to use the model to ensure that marginal customers are served by providing tax and fiscal incentives to the telecommunications provider (Kayani and Dymond, 1997).

Indicators based primarily on per capita income may be too conservative. A study in Botswana estimated the demand, penetration and revenue for an average village (1,800 population) to determine the feasibility of installing private and public phones. It was concluded that the average rural revenue would be \$1,200 per line which was below the level required for profitability. A loss of 3% on the annual revenue of the public telecommunications corporation was predicted but five years later the demand from rural communities was more than twice the projected demand and village payphones earned up to 50% more than projected (\$2,700 per line) (CANAC, 1990). There are several reasons for these indicator errors, including the difficulty of predicting demand for a service which is not yet available in the area, and the even higher costs to payphone users of the alternatives, which usually involve long journeys and uncertain probabilities of successful results. Clearly, people place a higher value on their time than might be assumed.

### **5.2.2 Policy and regulatory environment**

The existence of a supportive policy and regulatory environment can make or break the financial and social feasibility of a telecentre program. Three important areas for indicators of a supportive policy environment relate to: (1) commitment to provide telecommunications service to all parts of the country, including marginal rural areas; (2) fiscal and regulatory measures to enable telecentres to be commercially viable; (3) encouragement to the development of a market for Internet Service Providers; and (4) a non-discriminatory policy on access to Internet service.

Even though new technologies, including satellite technologies and wireless phones, are reducing the costs of providing telecommunications, it still holds that rural areas generally cost more to service and produce less revenue than urban areas because costs are a function

of subscriber density. A key issue for the economic viability of telecentres in rural areas is whether the government is sufficiently committed to providing universal access, that it will provide the necessary support to telecommunications providers. Governments can provide incentives to providers to service areas which are seen to be unprofitable. In a monopoly situation, cross-subsidies can be made, for example, between rural and urban areas.

### **5.2.3 Indicators of human resource sustainability**

The question of sustainable human resources should be asked at both the level of the individual telecentre and for the regional or national telecentre program. Shortages of adequately trained staff and loss of trained staff and technical experts to other employers, usually in the private sector, plague public sector telecentre and telecommunications programs. Key indicators relate to salaries and benefits compared to those offered by competing employers, staff turnover rates, and investment in training staff. Another indicator is the number and ratio of qualified technical staff from the local area (or country) compared to imported technical expertise.

Investment in training is another approach to measure human resource sustainability. A relatively easy indicator to obtain is the number of technical ICT training courses being provided in local (national) institutions over time, and the number of graduates or diploma students that they are producing. This will provide some measure of the pool of qualified personnel and how it is changing over time.

Some measure of the investment in human resource training as a proportion of the overall telecentre program is another indicator of sustainability although appropriate benchmarks need to be established. World Bank projects in information technology average about 24% of the total project costs invested in training and technical support. In the United States, the information technology industry spends between 50-68% on training, in a context where the basic knowledge of incoming personnel is quite high. For telecentre programs in Africa, it is almost certain that the investment in training should not be less than for developed countries and it is almost certain that it is. It is therefore important that human resources, and particularly the training aspects, be examined as a key issue in the success and future sustainability of telecentres, both at the level of the individual telecentre and at the level of the national program agency.

## **5.3 Applications and information content**

### **5.3.1 Content demand indicators**

Any evaluation of telecentres will need to pay attention to what information the local users want to access and use. Some measures of demand, collected from key organisations, community leaders and from the baseline community survey, will identify at least the perceived priorities for information at the outset of the telecentre project. Later surveys, both community-wide and more frequent user-surveys, asking the same questions will provide direct measures of changing needs. It is important to pay particular attention to the applications and content that is valued by key institutions and services already in the

community, such as medical facilities, schools and colleges, and government offices. The baseline survey of the main economic activities of the area will also provide data on what applications, such as price data for locally produced goods, are likely to be useful, even if the community members are not yet themselves aware of the vast array of information sources available on the Internet, or through specialised networks.

Understanding the local needs for applications is the first step. Responding to them is far harder and longer and more difficult to measure. The telecentre program managers and the individual telecentre operator are on the front line in facilitating their users to have access to information that is really useful to them. This is a measure of their own abilities to act essentially as community development officers or *animateurs*.

Indicators of how the telecentre will perform in providing *high-quality information* (i.e. that is locally useful and valued) include: (1) the emphasis placed by the telecentre operator/management on applications; (2) their level of knowledge of how to access that knowledge, or link to specialised applications networks like HealthNet; (3) their ability to create and disseminate local information through local web pages or participation in an applications network; (4) the applications software and reference materials that they have collected such as CD-ROMs which respond to local needs.

### **5.3.2 Information on-line**

Individuals in developed countries not only have more access to information; there is more information relevant to their needs that is on-line or at the end of an automated phone system. The rapid increase in the use of the phone and the Internet has led to a dramatic response on the part of commercial companies, governments and traditional information providers like libraries to put their information on-line. The commercial use of the Internet, including banking and investing on line, has exploded. Communities in developing countries express a similar demand for *locally relevant* information on-line; whether it is daily market prices, the posting of changes in government regulations, agency staff direct phone numbers or e-mail addresses, or research data-bases for Africa. The *Tradepoint Senegal* project is finding that getting government departments to go on-line with information necessary to make electronic trading in Senegal work is a major bottleneck. The farmers and entrepreneurs in the local chambers of commerce are ready and enthusiastic to work on-line faster than the national government bureaucracy can respond.

### **5.4 Impact indicators**

Measures of impact on individuals, organisations and on the community collectively are a key objective for most evaluation studies. They relate to some of the most important research questions for many stakeholders, within the community, at national program level, and for international donors. *Is the telecentre a positive force for community development? Does it benefit some people more than others? Does it act as a catalyst for other positive initiatives and innovations at local level? Does it help people to help themselves?* These questions convey the assumptions and vision of the promoters and funders of telecentre programs. There are narrower and more practical questions also: are there some economic sectors where a telecentre is more

successful at producing benefits than others? For every user who comes to the telecentre, how many others are indirect beneficiaries? Are there dis-benefits and who suffers them? What features of the telecentre lead to the greatest number and most equitable distribution of benefits? How can these features be strengthened and replicated?

One of the big conundrums in measuring impacts is the question of causality. *Did the telecentre contribute to a rise in the local economic productivity, or to the greater participation of women in local organisations, or were these prior economic and social changes that themselves were the catalysts for the telecentre being located in that community?* Clearly, economic potential local leadership, and community initiative are factors in deciding where telecentres are to be located, even for those telecentre programs where the “public good” rationale is strongest. The best one can usually do, given that these are generally small scale surveys and not large data sets capable of endless statistical manipulation, is to obtain good baseline data on the community (table 10); to measure succeeding changes carefully; to demonstrate a strong association between the telecentre and the economic and social changes found; and to apply the argument of “reasonableness” in judging the likely direction of causality. The case will be considerably strengthened if there are supporting data from several telecentre sites and from “control” communities without telecentres. It is in this area where regional comparisons and consistency in measuring indicators will produce the greatest pay-off.

#### **5.4.1 Economic impacts**

There have been a number of statistical studies which have analysed longitudinal data from the US and from 60 countries to measure the correlation between increased investment in telecommunications and in per capita GDP or GNP. These have found that there are causal relationships in both directions, and that the contribution of telecommunications to productivity can be measured at both the aggregate level of the national economy and for particular economic sectors. An important characteristic of telecommunications is that each user’s potential benefit rises as the total number of users increases - the opposite of the tragedy of the commons. Another is that although both parties to a telephone call will benefit from the communication, generally only one party pays directly for the call. The general thrust of the studies done in telecommunications in developing countries, where the relative gains in cost-effective communications are initially high are that the projects produce major benefits in efficiency and productivity as well as public-good benefits. These benefits include better price information, reduction of downtime when equipment is broken or needs maintenance, reduction of inventory, timely delivery of products to market, reduction of travel costs and energy savings (Hudson, 1998).

How to translate these to the community level where one is largely dependent on primary data that can be collected by the evaluation team? Household level economic data about income, savings etc. are sometimes difficult to obtain and to cross-check. Strategies to deal with this problem include (a) the use of key informants who are motivated to help the evaluation team; (b) to use indirect measures of wealth accumulation (such as owning consumer goods like radio, television, refrigerator, bicycle), which can also sometimes be observed directly (for example: new house construction); (c) to ask questions relating to spending patterns rather than savings; and (d) where possible to use available statistics (e.g. local market prices). A valuable complement to household survey data is to ask a panel of

representative households to record a household budget of income and expenditures using a specially designed booklet. Clearly the best data on impacts will come from longitudinal studies which can measure changes from a pre-telecentre baseline situation. Many of the indicators in table 12 assume therefore that measures of change will be taken at different times.

#### **5.4.2 Social impacts**

In addition to the problems discussed for measuring economic impacts, social indicators highlight another measurement issue: the need to define the indicator somewhere between “bottom-line” social measures like mortality rates, which if the telecentre has any contribution to make, will be impossible to separate out from all the other contributing causes; and direct impacts on behaviour, such as the number of telephone calls made per household per month, which can probably be easily measured but doesn’t necessarily have great significance as a social impact. The indicators suggested in table 12 are drawn from many possible ones, selected for probable data availability and relevance.

Some of the indicators can be measured directly; others will be measures of attitudes and values. It is recommended that a panel of households or individuals be established to keep time-budget diaries. These will provide a wealth of information on changing social behaviour and patterns and are rewarding also for those who agree to keep them. Schoolchildren are one group who can be encouraged to keep time diaries as a school project. Others who are willing to participate may be members, and leaders of local organisations who, with appropriate explanation, can understand the purpose and value of collecting these data.

#### **5.4.3 Impacts on organisations**

While many of the same indicators proposed for individuals and households can be used to measure change for organisations, their importance to the development and life of the community and the analysis of telecentres suggests that organisations should be accorded special attention in the evaluation study. Formal organisations that are important in communities include institutions like schools, chambers of commerce and health clinics; businesses that are more than a one-person operation and have hired staff; and community organisations, NGOs and committees that have some formal structure and mandate.

Information and communication are critical to the success of any formal organisation so that savings in time and money, together with better performance and reliability are key questions for the evaluation. As for individuals and households, indicators can be direct measures of telecentre use and impacts and how spokespersons perceive the costs and benefits to them. The impacts will relate to the efficiency of the organisation, the outcomes it achieves, its decision-making processes and the decisions made, as well as how effective its networking and information sources are for reaching its organisational goals.

## **6 DECISIONS ABOUT DATA COLLECTION AND METHODS**

Four principles for data collection are proposed:

1 The information needs of the different telecentre stakeholders should be built into the design of the data collection. These stakeholders are likely to include leaders and institutions at the community level, telecentre owners and operators, private sector investors, national agencies responsible for telecommunications and international agencies and donors (table 2).

2 Facilitating learning at all levels should be part of the data collection design. One of the important ways to strengthen learning is to include stakeholders as participants in the data collection and interpretation process. At the community level, this means participatory research methods and at all levels, including the national and international levels, an effective stakeholder information process on the results and opportunities for stakeholders to discuss the significance of the findings and have input into the design of future rounds of data collection.

3 Approaches which facilitate comparisons of results across telecentre projects and between countries should be adopted. One of the objectives of the Acacia Initiative is to better understand the interplay of forces between the operation of local telecentres and national policies (vertical links) as well as to identify the determinants of success across telecentres in different situations with different operational histories (cross-sectional comparisons).

4 Sharing data sets in a common data base or data repository. Telecentre data sets have significant value beyond the objectives of the individual projects and it is worth seeing how they can be maintained, possibly in a research facility where they can be made available to researchers for further analysis, or to answer new and different research questions in the future.

From these four “guiding principles” flow a number of practical considerations for data collection. These include:

### **Data dis-aggregation**

If data are to be combined and re-analysed in different ways, it is important that they are as dis-aggregated as possible when collected and initially recorded. This provides for maximum flexibility in future analysis

### **Multiple methods**

As we shall see, each method has strengths and limitations and the diverse information needs of the different levels of stakeholders in the telecentre projects strongly favour including several methods in each pilot project and not relying on any single approach.

### **Multiple samples**

A similar practical consideration favours the use of several sample groups in the telecentre studies: telecentre users provide the most direct and relevant information on telecentre performance but will not provide adequate data on the impacts on the community or

whether the telecentre is responding to the community needs. It will be advisable and probably more cost-effective to have different research instruments focussed on different sample groups.

### **Matching data collection method to data needs**

Different methods are most useful and effective for different types of data and the selection of methods should be made in the light of the data needs (Whyte, 1977).

### **Consider the degree of intervention and local participation integral to the study**

The degree to which community members will be collecting the data on their own community members will be a consideration in selecting the most appropriate methods to use.

### **Selecting methods appropriate to the level of training of the field researchers**

Some methods, such as group techniques, ethnographic studies, or advanced question techniques like attitude scales, require more training and experience than straightforward observation schedules or structured questionnaires.

### **Consider the time and cost implications of the methods selected**

This is perhaps the most obvious of the practical issues of data collection, but worth underscoring because almost all data collection exercises and evaluation studies find themselves with less resources than they need or would ideally like.

## **6.1 Performance reports**

One of the most cost effective and valuable sources of information which is useful for both marketing the telecentre and evaluating its performance will be through keeping records or daily logs. A regular monitoring system should be instituted from the opening of the telecentre, and be part of the operator's duties. Activity records can be recorded by telecentre staff, or by reports filled in by the user, or can be fully automated in some cases, using the telecentre equipment. In all cases, it is important that regular weekly or monthly tabulations, summary reports and reviews be undertaken. This provides ongoing feedback to the telecentre operator and management on performance, where problems lie, and how to improve the situation. Without instituting a regular review process, the accumulated data serves little purpose and soon becomes too daunting an accumulation to process.

Telephones systems can also provide records of minutes of outgoing local, long distance and international calls and these can be allocated to different rates for different types of day and days of the week. In many telecentres, incoming calls are an important service which would not be recorded by the telephone company and may have to be recorded and charged for by the telecentre operator. In some countries, itemised phone bills are available which make the record keeping easier. In general, regular monitoring and log keeping should be as light on operator and staff time as possible.

Computer systems can record the time on-line and off-line usage, pages printed, and e-mails sent and received for all regular users with an account and for occasional users using guest

accounts issued by the administrator. These data can be analysed for different pieces of equipment and for different users, including the caches and bookmarks used.

Users can also be asked to fill in a report on each visit, either through an automatic log-in and/or log-out screen which asks them to log-in using a telecentre user identifier or password rather than their name. The log could ask additional information such as why they used the service and how satisfied they are. The alternative is to ask users to fill in a sheet or book to report on the services used (and even the staff help received) as they pay. Ideally such a system will automatically cover every user and every visit for the basic information on service use and income received needed by the telecentre to run as a business, as well as collecting information such as the gender and address of the user. One major concern here is with the rights to privacy of the telecentre users, and each research team and telecentre management would need to discuss these issues in their local and national contexts. However, it has been reported that log books are already common in some African telecentres and customers are used to filling these in on each visit.

## **6.2 Questionnaire surveys**

Surveys are likely to be the most common method used to study the use and impact of telecentres. Surveys can be used to measure telecentre performance (and user satisfaction) as well as to evaluate the broader impacts at the community level. However, surveys are particularly susceptible to what Kaplan calls “*the law of the instrument*” which is illustrated by the child who, given a hammer, will discover that a great many things need pounding (Kaplan, 1964). There are a number of decisions to be made at the outset of the study about the design of the survey, the selection of respondents and what procedures to follow in the field and in the analysis. The purpose here is to focus attention on some issues that the research team need to think through as they design their methodology, so that they do not hammer away at things that don't need pounding, and when they do, they hit the nail.

### **6.2.1 When and why you need household and community level data**

While telecentre users are individuals, they may be visiting the telecentre on behalf of other members of their household or on behalf of a group or organisation. The *decision* to use the telecentre can therefore be a family or group decision. Thus, the individual's purpose in using the telecentre, the money with which s/he pays for the service, and the outcomes of the visit, are best understood at the level of the household or organisation. Consequently, research on the use and impact of telecentres must consider more than one explanatory level in its research hypotheses and instrument design. These levels include that of the individual, the household, other organisations or groups to which the individual belongs, and the community.

Studies of different social and economic behaviour, such as the decision to migrate; the decision to invest; the decision to use services such as family planning; and the propensity of farmers to adopt innovations; have shown that there are independent effects of community level and individual variables at work (Bilsborrow *et al*, 1984). It would be surprising if decisions relating to the search for information and patterns of communication are any different. Thus, if the research aims to explain communication and information phenomena

and the resulting impacts on people and on the community, community level data are needed.

Communities - their geography, economy, demography and services - provide “opportunity structures” for individuals and households which can act as major determinants of social behaviour (Ritchey,1976). Conversely, these opportunity structures are themselves altered by the communication behaviour that they engender, including the long term viability of the telecentre itself. Research also needs to explain at the level of community variables why people do *not* behave in certain ways (e.g. communicate with family or use the Internet).

For all the above reasons, the community level, as well as the household and individual levels, should be part of the conceptual model and the data collection of telecentre studies. The data needed will range from baseline information on the services available in the community, the demographic and socio-economic characteristics of the population, and information on norms and patterns of behaviour obtained from survey.

### **6.2.2 Alternatives to community surveys**

The importance of community surveys notwithstanding, there are times when it is better to survey more targeted samples of respondents, such as telecentre users, telecentre operators and staff, leaders and staff of other institutions such as a health clinic or school, and leaders and members of local groups (women’s groups, youth groups, Chambers of Commerce, craft cooperatives). These samples are less costly to survey than undertaking a representative sample of households in the community or telecentre “catchment”. They can also be more easily traced for re-interviews. It is thus, of both theoretical and practical interest to survey smaller groups whenever possible and appropriate.

However, where several different sub-samples are selected, there should be some common data collected across all sample surveys to measure how the groups differ on key socio-economic and behavioural dimensions. In addition, it is best if a representative sample of households in the community is also surveyed which can *inter alia* provide information on the proportion of the community represented by the sub-groups and how far the behaviour of each sub-group influences or explains the patterns found in the broader community.

### **6.3 Observation techniques**

What kind of information can be better obtained through observation rather than through interviews? Principally, it is information that the respondent would not be aware of, or particularly recall or would not wish to divulge. This could include information about his or her interaction with the equipment in the telecentre, or with staff or other users, such as how long it took them to transmit their business, how often they had to try to make something work, or how often they had to be helped. It could include the noise and distraction level in the telecentre, how crowded it was, how long people had to wait, what they did while they waited, how well maintained the telecentre was and whether the environmental quality was acceptable.

Asking questions is likely to be the main research technique for studying telecentres, but a great deal can be learnt by simply observing people's behaviour and using interviewer observations during interviews. Some of the same issues discussed for sampling and surveys, arise with respect to observation techniques. The researcher needs to decide on the unit for analysis and how to sample in space and time. Observation techniques can be unstructured or structured. After pretesting, structured observation schedules can be developed and observers trained to use them so that simultaneous observations can be carried out at different points. All observation techniques usually demand that the observer does not intrude on the behaviour of the observed any more than absolutely necessary. The observer should be part of the background, and the longer the observer is there, usually the less effect s/he will have on people's behaviour.

## 6.4 Group techniques

Many of the evaluation studies of community telecentres plan to include some group processes through which organisations, interest groups such as farmers, youth and women, and small groups of users and non-users or just community members can discuss aspects of the telecentre operations and impacts important to them. Group processes are valuable sources of information for the researcher and provide learning processes for the participants as they are exposed to a wider spectrum of ideas and views. There are a number of techniques specifically for use with groups. These include nominal groups, the better known focus groups, and Delphi techniques. Nominal group techniques are used in face-to-face meetings where you want people to think about a question, first by themselves and then to work upon the ideas generated as a group. The method is a rich and efficient way to generate a wide range of ideas and have group input into refining and evaluating the ideas. It is a speeded up and structured version of what often happens in real life.

**Focus groups** provide qualitative data which can be compared with survey data but they should not be statistically compared to survey results. They are particularly useful for exploring particular issues in greater depth, including people's feelings and beliefs; for identifying differences between groups within the community; and for developing follow-up communication messages and education. A focus group discussion or focus group interview is particularly good for generating ideas and providing feedback.

A focus group is usually organised around 6 to 15 people and a few key topics or questions. In a discussion, the participants discuss among themselves and the facilitator intervenes as little as possible. The key is to have good facilitation and record keeping, which should be done by two different people, even if the discussion is tape-recorded. Experience has shown that it sometimes takes one expressed opinion to elicit another, contrary one and a wider range of views may be expressed in a group situation than in individual interviews.

Another group technique designed for groups that do not meet face-to-face are **Delphi techniques**. They are based on three major findings about group processes. One is that assessments made by a group of people are more likely to be accurate than assessments made by the same individuals working alone. The second is that face-to-face meetings tend to be dominated by a few individuals, and are less efficient at processing information. The third is that when people are informed about the range of individual responses (including

their own) from a group to a particular question, they use that information to improve their own response. In this way, the quality of the assessment improves in each successive “round” after the participants have seen the results of the earlier round and can recast their own responses. Delphi techniques are thus designed to build on the predictive capacity of groups while avoiding the distortions of inter-personal processes within face-to-face groups.

Through a series of rounds (usually two because of the time and expense involved) the participants can reach consensus without seeing one another and without knowing whose response is whose. Some Delphi processes aim to reach consensus, while others aim to generate as diverse a range of opinions as possible. In a Decision Delphi, as the name implies, the aim is to reach decisions among stakeholders with different interests in the solution where the issue is a divisive and contested one.

### **6.5 Scenarios**

Scenarios can also be used in surveys or focus groups. Scenario building is a useful group exercise to help people imagine alternative futures for their organisation or community. Going through the exercise of doing the exercise is often as valuable as the scenarios that are generated. It can help people to develop new ideas about their community’s potential in a future with improved information and communications. One advantage of doing scenarios is that people generally enjoy them and appear to readily “project” their own attitudes and feelings into the story line.

A well-constructed scenario presents an internally consistent story about the path from the present to the future; it is relevant to the issue of interest and to the group; it is recognisable from the present; it is challenging and contains some elements of surprise or novelty where the group’s vision needs to be stretched. Ideally, it finds the balance between “thinking the unthinkable” and being grounded in the reality of today so that it is believable (that is, either *possible* or *probable*).

### **6.6 Participatory and self assessment approaches**

In the methods discussed so far, the roles of investigator and the roles of respondent are clearly defined. Participatory research methods, where the researcher is both investigator and participant, are increasingly used in social research especially in community development studies. As an approach, participatory methods are more concerned with the richness and validity of the initial data set than with the techniques for manipulating and analysing data after they are collected. Participatory research assumes that the researcher who is also a participant in the action, will have access to more data and will be able to more meaningfully interpret them, including from the point of view of the respondents. The social relationships between the researchers and the respondents become more important and more intrusive into the data than during an interview situation because they are longer lived and therefore more important to both parties. As a methodology, it is difficult to have cross-checks on the data collected through participatory research so that confidence in the research data depends on the experience and skill of the participant observer.

Generally the starting point for doing a **self assessment** will either be a full-scale review of the organisation or a specific problem that needs resolution. Typical reasons will relate to strategic decision making such as organisational strengths and weaknesses, possibilities for growth or change in its mission and objectives; staffing decisions and financial decisions, typically the need to raise new funds.

It is important before the self-assessment is started, to have a participatory process among the members to agree upon the purpose of the self-assessment; its scope; the data that will be needed; what the key issues are; and the cost and who will pay for it. This enables the group to measure its readiness for doing a self-assessment and utilising the information that will be generated. There are different types of readiness that are required at the outset: *cultural readiness* where the organisational culture will accept suggestions for change and improvement; *resource readiness* meaning that the organisation had the resources (people, time, technology, money) to do the self-assessment and is prepared to commit them; *people readiness* where staff will work together on the project; *leadership readiness* to ensure that the leadership will champion the process and provide it with the necessary support; *vision and strategy readiness*; and *systemic readiness* meaning that the organisation has the systems in place to provide the information needed for the self-assessment (Lusthaus *et al*, 1999).

## **6.7 Household budgets and diaries**

A key interest for telecentre studies is to see if access to the services of a telecentre produces significant savings in time. Anecdotally, it is understood that people such as head teachers, business owners and organisational leaders spend considerable time travelling to town to order supplies, to deal with government departments, and to seek information etc. Similarly, some households can be asked to keep records of household financial expenditures to see if there are impacts of the telecentre on household budgets. Asking selected households to keep time diaries or household financial expenditures (and income if possible) for selected periods before and after the telecentre is in operation would help to quantify the impacts of the technology on patterns of time and money expenditures. It is important that the task be clear, simple and not time-consuming or people will forget to fill in the information or will make errors.

## **6.8 Questions to review after data collection and before analysis**

Even though the research and evaluation team started out with some initial hypotheses about the role and impact of the telecentre on communication and information patterns, it is useful to use the beginning of analysis as a time to review the project and discuss again the research design as a prelude to deciding on what approach to take in the analysis in the light of the data collection experience. Some questions for the research team to discuss include the following.

- 1 What are our theoretical model and assumptions? What alternative hypotheses can we test? How will we treat causal sequences?
- 2 What kind of sample do we have in our surveys and in our other research methods? Does it include a probability sample from a reasonably adequate frame which allows us to make some statistical inferences for a known population?

- 3 Was the response rate adequate, together with how we treated missing information, to reduce biases to acceptable levels?
- 4 Did our questions in the survey or group discussions elicit the right kind of information or should some be treated with caution or even discarded?
- 5 Who, in practice, were the respondents and are they the same as in our initial assumptions about the unit of analysis?
- 6 What are the things being *explained* by the study (behaviours, attitudes or situations) that constitute our dependent variables?
- 7 What problem data do we have, such as extreme cases or differential errors which skew our variables; or inter-correlations between predictors; or interaction effects and how will we treat these statistically or in qualitative interpretation?
- 8 What conclusions can be made from the data and what other information do we need to add?

## 7 END POINTS

It is worthwhile recalling why the *Acacia Research Guidelines* and this paper have been written. Both aim to provide ideas on research and evaluation of community telecentres based on good practice, which starts from consideration of the underlying conceptual models, through research design, data collection, analysis and communicating the results. They have emphasised throughout the importance of including stakeholders in the process and ensuring that their needs for information are met; including the participation of local people and local institutions. It is strongly believed that the use of common research frames and models, methods and instruments, indicators and analysis, will strengthen not only the individual studies but are the best way to find the common ground to test higher order hypotheses about the role and impact of community telecentres and ICTs, in community development.

So far so good. Common ground also needs cultivation and harvesting if it is going to be productive. Sharing research protocols and designs will provide the tools for comparative analysis. What are also needed are a common research data repository and continuing (electronic) discussions among interested researchers and practitioners. Some community telecentres themselves may wish to be networked, to share information and experience.

The *Acacia Initiative* is presently considering how to establish a repository for research instruments and research data to support collaboration between its projects and to provide a facility for comparative research across projects, which can be accessed by researchers now and in the future. A suitable host institution for these data archives will need technical and staff resources to provide the necessary archiving services and to be able to respond to requests for information and data. Among the “down-the-road” issues are the need for guidelines about who can access what level of disaggregated or aggregated data, after what time period, and for what purposes.

The *Acacia Initiative* of IDRC has from the start, been envisaged as a venture in experimentation and learning, and has already charted a bold course in designing individual projects in different countries in Africa within a broader analytical framework. The

experiences of the *Acacia Initiative* and its future challenges may stand as useful signposts for other regions and research collaborations interested in the role of ICTs in developing countries around the world.

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**Table 1 Proposed major research questions for Acacia telecentre projects**

<b>Major research issues</b>	<b>Related questions</b>
<b>Will access to ICTs produce benefits for African communities?</b>	<ul style="list-style-type: none"> <li>• what will the social, economic and cultural benefits be?</li> <li>• how will community institutions be affected?</li> <li>• how will benefits be distributed in the community?</li> <li>• will the telecentre lead to more local development initiatives?</li> </ul>
<b>What negative impacts may result?</b>	<ul style="list-style-type: none"> <li>• to groups or individuals within the community?</li> <li>• to other communities?</li> <li>• how may the potential negative impacts be mitigated?</li> </ul>
<b>What are the impacts of increased community access to ICTs at national level?</b>	<ul style="list-style-type: none"> <li>• will it lead to new demands for participation in government and provision of services?</li> <li>• which national organisations will be impacted and how?</li> <li>• will it increase economic productivity and prosperity?</li> <li>• how will the benefits and costs be distributed nationally?</li> </ul>
<b>What national policies are the key determinants of telecentre success?</b>	<ul style="list-style-type: none"> <li>• telecommunications infrastructure?</li> <li>• publically supported national telecentre program?</li> <li>• cost of connectivity and duties on equipment?</li> <li>• open access policy for the Internet and e-mail accounts?</li> <li>• government information and services on-line?</li> </ul>
<b>What characteristics of communities are indicators that telecentres will succeed, or not?</b>	<ul style="list-style-type: none"> <li>• what are the boundary conditions in terms of population size and structure, economic activity and family income?</li> <li>• what local infrastructure and facilities, including telecommunications?</li> <li>• is local leadership a key factor?</li> </ul>
<b>Is community participation necessary and in what ways?</b>	<ul style="list-style-type: none"> <li>• how much investment is needed in securing initial local support?</li> <li>• is a participatory, community-awareness approach best?</li> <li>• how involved does the local community have to be in the operations and finances of the telecentre?</li> </ul>
<b>How can financial and social sustainability of the telecentre be achieved?</b>	<ul style="list-style-type: none"> <li>• what arrangements need to be made between national government, local authorities, telecentre ownership etc.?</li> <li>• what are the minimal conditions in terms of financial objectives and business planning for sustainability?</li> <li>• what subsidies are needed for start-up, and for how long?</li> <li>• what skills and training do telecentre operators need?</li> <li>• what are the critical factors in success?</li> </ul>
<b>What needs to be done in terms of applications and information content to maximise benefits of access to ICTs for</b>	<ul style="list-style-type: none"> <li>• what are the main application needs and how are they to be fulfilled?</li> <li>• how should community-generated information be shared?</li> <li>• how should telecentres be integrated with local radio,</li> </ul>

<b>communities?</b>	newsheets or other media?
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**Table 2 Telecentre stakeholder groups and key information needs**

<b>LEVEL</b>	<b>STAKEHOLDER GROUPS</b>	<b>KEY INFORMATION NEEDS</b>
<b>Community</b>	<ul style="list-style-type: none"> <li>- civic authorities and leaders,</li> <li>- institutions (police, hospital, schools etc.),</li> <li>- business associations, chambers of commerce,</li> <li>- community action groups/NGOs</li> <li>- sectoral interests (students, women teachers, etc.)</li> <li>- individuals</li> </ul>	<ul style="list-style-type: none"> <li>- <i>telecentre performance</i></li> <li>- <i>community impact</i></li> <li>- <i>applications development</i></li> </ul>
<b>Telecentre</b>	<ul style="list-style-type: none"> <li>- owner/franchisee/management</li> <li>- community liaison group</li> <li>- operator, staff, volunteers</li> <li>- funders, supporters</li> <li>- users</li> </ul>	<ul style="list-style-type: none"> <li>- <i>telecentre performance</i></li> <li>- <i>user needs and satisfaction</i></li> <li>- <i>financial sustainability</i></li> <li>- <i>community needs and impacts</i></li> </ul>
<b>National</b>	<ul style="list-style-type: none"> <li>- agency responsible for telecentres</li> <li>- telecommunications ministry</li> <li>- other ministries (especially those involved in information provision)</li> <li>- policy making bodies</li> </ul>	<ul style="list-style-type: none"> <li>- <i>policy and regulatory environment</i></li> <li>- <i>financial sustainability</i></li> <li>- <i>applications development</i></li> <li>- <i>community impact</i></li> <li>- <i>regional comparisons</i></li> </ul>
<b>Regional</b>	<ul style="list-style-type: none"> <li>- other national agencies responsible for telecentres, telecommunications</li> <li>- other policy making bodies</li> <li>- regional organisations (e.g.ECA)</li> </ul>	<ul style="list-style-type: none"> <li>- <i>policy and regulatory environment</i></li> <li>- <i>financial sustainability</i></li> <li>- <i>regional comparisons</i></li> </ul>
<b>International</b>	<ul style="list-style-type: none"> <li>- Acacia/IDRC-ITU-UNESCO</li> <li>- other international donors</li> <li>- UN and other internat. organisations including World Bank</li> <li>- INGOs, academia</li> <li>- private sector</li> </ul>	<ul style="list-style-type: none"> <li>- <i>regional comparisons</i></li> <li>- <i>policy and regulatory environment</i></li> <li>- <i>general community impact and sustainability indicators</i></li> <li>- <i>applications development</i></li> </ul>

**Table 3 Steps in developing indicators for evaluation**

<b>Steps</b>	<b>Actions</b>
<b>Step 1: Identify all concepts that need to be measured, especially project objectives and outputs</b>	<ul style="list-style-type: none"> <li>• Review all concepts, objectives, results and output statements to clarify them and get agreement</li> <li>• Be clear about what type of change is implied (a situation, state, condition, attitude, behaviour)</li> <li>• Clarify whether the change being sought is an absolute change, a relative change or no change</li> <li>• Specify where and when the change is expected (what target group, what location and in what time frame?) This identifies the appropriate “unit of analysis”</li> <li>• What is the relationship between project activities and the outputs or objectives? Are they direct or indirect?</li> </ul>
<b>Step 2: Develop a list of possible (trial) indicators</b>	<ul style="list-style-type: none"> <li>• think of possible alternative indicators for each concept, objective and output without being too restrictive</li> <li>• conduct internal brainstorming sessions</li> <li>• consult stakeholders and other experts</li> <li>• try to “borrow” from other projects and studies</li> </ul>
<b>Step 3: Assess each trial indicator against criteria</b>	<ul style="list-style-type: none"> <li>• establish an agreed set of criteria for indicators (see table )</li> <li>• use a scoring scale (1-5) to determine the usefulness of each trial indicator (but be flexible and use your own judgement)</li> </ul>
<b>Step 4: Select the best indicators for this project</b>	<ul style="list-style-type: none"> <li>• consider each indicator on its merits against the criteria</li> <li>• consider the mix of indicators to construct a “robust” set that is consistent and complementary in terms of data collection methods and time-frames</li> <li>• avoid having too many indicators (it may indicate that the objectives and outputs are not clearly defined)</li> <li>• the best indicators may change as projects develop: be prepared to “update” your indicators. One common change is to first use <i>input</i> indicators and then realise that <i>output</i> indicators are what are needed.</li> </ul>

**Table 4 Basic parameters for background information on telecentre (excluding financial data)**

<b>Main categories</b>	<b>Parameter</b>	<b>Alternatives/Qualifiers</b>
<b>Location and access</b>	Geographic location	<i>of community</i>
	Type of community	<i>use appropriate categories</i>
	Location within community	<i>with respect to population/ travel time and location of other institutions and services</i>
	Host institution	<i>e.g. school, library, business, mobile unit, stand-alone</i>
	Hours available to public	<i>by weekdays, weekends</i>
<b>Origin, ownership and management</b>	Origin of telecentre	<i>initiated by outside donor, public program, community organisation or private enterprise</i>
	Ownership	<i>Public/private/franchise National agency/Community/ institution/individual</i>
	Management	<i>as for ownership categories</i>
<b>Facilities and equipment</b>	Building	<i>Area provided and rooms/spaces Utilities/telecommunications security/other facilities (waiting area, meeting rooms, toilets, cafeteria etc.)</i>
	Equipment	<i>telephones, photocopier, fax, computers, modem and Internet connectivity, radio, television, VCR, typewriter, printer, scanner, audiovisual aids</i>
	Software	<i>word processing, desktop publishing, spreadsheets, data bases, graphics, communications software, antivirus, drawing/sign-making, educational-typing tutors, literacy and numeracy, languages, simulation and recreational, reference libraries</i>

<b>Services</b>	<p>Telecommunications</p> <p>Business services</p> <p>Job search</p> <p>Education</p> <p>Culture, recreation</p>	<p><i>telephone calls, fax, Internet access, electronic mail, subscription services, voice mail</i></p> <p><i>photocopying, word processing, spreadsheet and data base services, typing services, printing, electronic commerce</i></p> <p><i>job preparation, resume writing, job searches, placement, advice</i></p> <p><i>distant learning, adult education, homework/student support, training classes, typing tutors</i></p> <p><i>cultural events, recreational software</i></p>
<b>Staff</b>	<p>Numbers of staff</p> <p>Qualifications</p> <p>Employment and Reporting Relationship</p>	<p><i>Full-time, part-time, volunteers by gender, age and from community</i></p> <p><i>Formal education, technical ICT expertise, financial, administration, marketing, fundraising, special skills, interpersonal skills, local languages</i></p> <p><i>employed by whom and reporting to whom? On salary or commission? Paid by hour or flat rate?</i></p>

**Table 5 Indicators of demand for telecentre services**

<b>Area</b>	<b>Potential Indicators</b>
<b>Community characteristics</b>	<ul style="list-style-type: none"> <li>• total population/population density/walking distance to telecentre</li> <li>• family income/per capita income</li> <li>• economic activities</li> <li>• literacy rate/ % highest education level (by gender/age/ethnicity)</li> <li>• % families with migrant worker members outside community</li> <li>• number/membership of organised community groups</li> <li>• number of telephones per 100 people</li> <li>• other infrastructure available</li> <li>• other services/institutions organised at community level</li> <li>• presence of community leadership supportive of telecentre</li> <li>• awareness of telecentre services</li> </ul>
<b>Current ICT services</b>	<ul style="list-style-type: none"> <li>• availability of service now (telephone, fax, e-mail etc.)</li> <li>• distance travelled/time taken to meet current needs</li> <li>• frequency service is sought or used (telephone, fax, Internet etc.)</li> <li>• Cost of existing services per use</li> <li>• Reliability of existing services</li> <li>• Main purposes for using current services (business, personal etc.)</li> <li>• Likely impact of telecentre on existing service suppliers</li> </ul>
<b>Expressed need</b>	<ul style="list-style-type: none"> <li>• % population expressing need for specified telecentre services</li> <li>• willingness to pay for services per use/as % of per capita income</li> <li>• % willing to become involved in telecentre start-up or operations</li> <li>• what is expressed demand for each specific telecentre service?</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• what specific applications are needed (by gender, age, group)?</li> <li>• are trained and skilled information brokers available?</li> </ul>

**Table 6 Indicators of service performance**

<b>Potential Indicators</b>	<b>Qualifiers</b>	
Percentage of time that service to telecentre is interrupted	electricity supply cut or phone service down	
Percentage of time that each unit of equipment is working	time = hours telecentre is open to public per week	
Percentage of attempts by users to use equipment that are successful	include all users-attempts during measured time period	
Percentage of successful attempts experienced by each user	by gender, age, relevant user group,	
Causes of intermittent equipment failure	% failures caused by equipment malfunction, break in power supply, connectivity,	
Human associated failures in equipment operation	staff technical or administrative competence, user behaviour or error, inadequate "help-desk" support,	
Number of major risk events to equipment or telecentre infrastructure	through theft, vandalism, accidents, natural disasters	
Number of people served by each unit of equipment/ telecentre	number of users, user-visits, user-attempt, total population served	
Percentage of visits by user in which telecentre was open and operational	by gender, age, relevant user group	
Percentage of successful requests to staff for help to use equipment	by gender, age, relevant user group	

**Table 7 Indicators of user behaviour and perceptions**

<b>Area</b>	<b>Indicator</b>
<b>Telecentre use per visit</b>	Telecentre services used Purposes of use of services Applications used via Internet Service for self or other person/ organisation (relationship to self) Total services used in each visit Services sought but unavailable Length of time of telecentre visit Time/cost of journey to reach telecentre Time/day of visit Payment made for each service and total payment
<b>Telecentre use (longitudinal data)</b>	Frequency of visits Change in schedule (time/day) Change in pattern of service use Change in time spent and payment made Change in demand for other services Change in applications used
<b>Satisfaction</b>	With each service provided With telecentre services/facilities With cost in time/money With telecentre staff/support
<b>Perceptions</b>	Of benefits/dis-benefits/impacts to self/family/organisation Of benefits/dis-benefits/impacts to community Of inequitable distribution of benefits Of alternative services to meet needs Of willingness to pay for services Of how telecentre can be improved

**Table 8 Schematic telecentre budget**

	<b>BUDGET ITEM</b>
<b>EXPENDITURES</b> <b>Start-up costs</b>	Site and building (purchase cost, conversion) Installing power supply, telecommunications Installing security equipment Equipment and furniture costs (purchase/ downpayment) Software, supplies, reference and training manuals Training costs
<b>EXPENDITURES</b> <b>Operating costs</b>	Site and building (rent, maintenance) Insurance and security operating costs Equipment and furniture (lease or amortisation costs over time, maintenance costs) Upgrades to equipment and software Communication costs (fees-fixed and per usage) Staff costs (salaries, benefits) Training costs Outreach and promotion
<b>Revenues</b>	Grants Public subsidies Private donations and fund-raising events In-kind support (e.g. equipment, volunteers) Community support (e.g. rent-free building) Membership fees Revenues earned from <u>core</u> business: Connectivity ( <i>phone, fax, Internet, Web pages</i> ) Direct computer access to users Office services ( <i>photocopying, scanning, audio-visual aids</i> ) Revenues earned from <u>other</u> activities: Business services ( <i>word-processing, spreadsheets, budget preparation, printing, reception services</i> ) Educational services ( <i>distant education, training courses</i> ) Community services ( <i>meeting rooms, social events, local information, remittances from migrant workers</i> ) Telework and consulting Specialised activities: <i>telemedicine</i> Sales ( <i>stationary, stamps, refreshments etc.</i> )

**Table 9 Indicators of a supportive policy and regulatory environment**

<b>AREA</b>	<b>POTENTIAL INDICATORS</b>
<b>Policy framework</b>	<ul style="list-style-type: none"> <li>• competitive market for telecommunications</li> <li>• commitment to universal access</li> <li>• open policy on access to information</li> <li>• liberalisation of trade: import regulations for ICTs</li> </ul>
<b>Telecommunications Service</b>	<ul style="list-style-type: none"> <li>• number of telephones per 100 population</li> <li>• penetration of telephone service in rural areas/outside capital or major cities (<i>note: definitions of “rural” vary and data may not be available for rural areas</i>)</li> <li>• penetration of electrical power in rural areas</li> <li>• implemented policy on universal access</li> <li>• subsidized service to unprofitable areas (cross subsidies, targeted subsidies, route averaging, special fund)</li> <li>• competitive market for telecommunications service</li> <li>• attractive pricing policies to rural subscribers/ telecentres</li> </ul>
<b>Internet Service</b>	<ul style="list-style-type: none"> <li>• non-discriminatory access to Internet service</li> <li>• total number of ISPs</li> <li>• total bandwidth to outside country (kilobytes/second)</li> <li>• total number of leased lines to customers</li> <li>• total number of points of presence (POPs)</li> <li>• percentage of population within local calling area of POP</li> </ul>
<b>Fiscal incentives and regulations</b>	<ul style="list-style-type: none"> <li>• market strength for personal computers, modems and other ICTs</li> <li>• tariffs and duties for computers and other ICTs</li> <li>• cost/waiting time for installation of a telephone line</li> <li>• cost per minute to access POPs</li> <li>• cost per minute for international, national and local calls</li> </ul>

**Table 10 Characteristics of individuals, households and community for data analysis**

<b>LEVEL</b>	<b>POTENTIAL CHARACTERISTICS</b>
<b>Individual</b>	<ul style="list-style-type: none"> <li>- age, gender, marital status, children</li> <li>- income level</li> <li>- education level, functional literacy</li> <li>- languages spoken</li> <li>- occupation, employment status</li> <li>- membership in community groups</li> <li>- category of telecentre user</li> </ul>
<b>Household</b>	<ul style="list-style-type: none"> <li>- location, quality of residence</li> <li>- numbers in household (adults, children, gender etc.)</li> <li>- ratio of employed to unemployed adults</li> <li>- employment status, occupation of head of household</li> <li>- age, gender, marital status of head of household</li> <li>- income level</li> <li>- economic activity by sector</li> <li>- includes one or more users of telecentre</li> </ul>
<b>Community</b>	<ul style="list-style-type: none"> <li>- population size, age, gender and ethnic distribution</li> <li>- settlement type, geography and environmental setting</li> <li>- environmental quality and major environmental problems</li> <li>- area of settlement, surrounding lands, land ownership</li> <li>- languages, culture, religion, ethnicity</li> <li>- income distribution, savings, credit</li> <li>- main economic activities (sectors), and products</li> <li>- commercial activity, businesses and trade patterns</li> <li>- main institutions and organisations</li> <li>- physical infrastructure and services</li> <li>- distance to other services (medical, government, communications, libraries, education, markets etc.)</li> <li>- schools and other educational facilities</li> <li>- school enrolment, drop-out rates, completion rates</li> <li>- adult literacy rate</li> <li>- population growth rate, life expectancy</li> <li>- mortality and morbidity rates</li> <li>- disease prevalence</li> <li>- water and sanitation services</li> <li>- health care programs, facilities , vaccination rates</li> </ul>

**Table 11 Indicators of economic impacts**

<b>CHANGE</b>	<b>POTENTIAL INDICATORS</b>
<b>Income/prices</b>	<ul style="list-style-type: none"> <li>- change in household income</li> <li>- % household income of migrant worker remittances</li> <li>- average daily wage for unskilled labour/agricultural worker</li> <li>- prices obtained for sector-specific products</li> <li>- ratio of cash to subsistence crop production</li> <li>- value of exports (agricultural/non-agricultural) within and outside country</li> <li>- availability of credit</li> <li>- Changes in household budgets</li> </ul>
<b>Work related</b>	<ul style="list-style-type: none"> <li>- % ( esp. youths) employed and earning wages in community</li> <li>- % job searches using telecentre which are successful</li> <li>- % households engaged in enterprises</li> <li>- % households adopting improved technology/new products</li> <li>- increase in hours of service through reduced downtime and travel time (e.g shops, mechanics, pharmacy, clinic, ambulance)</li> <li>- increased number of different markets for buying/selling</li> <li>- changes in occupational patterns</li> </ul>
<b>Wealth/property accumulation</b>	<ul style="list-style-type: none"> <li>- growth in number and size of community businesses</li> <li>- % households owning specified consumer goods</li> <li>- % households owning a vehicle</li> <li>- growth in individual/business telephone subscribers</li> <li>- % households with new construction/major improvements</li> <li>- % households with electricity</li> </ul>
<b>Information search</b>	<ul style="list-style-type: none"> <li>- time to obtain information, communications</li> <li>- monetary cost to obtain information, communications</li> <li>- % successful trips/tries to obtain information/communication</li> <li>- time to place and receive orders for spare parts, supplies</li> </ul>

**Table 12 Indicators of social impacts**

<b>CHANGE</b>	<b>POTENTIAL INDICATORS</b>
<b>Social structure and status</b>	<ul style="list-style-type: none"> <li>- number of households</li> <li>- % households with migrant workers outside community</li> <li>- occupation of heads of household</li> <li>- % professional workers who reside in community</li> <li>- turnover of professionals (teachers, nurses etc.) in community</li> <li>- ratio employed/unemployed adults and youths</li> </ul>
<b>Health</b>	<ul style="list-style-type: none"> <li>- % households with improved water supply</li> <li>- % households with improved sanitation</li> <li>- child mortality rate</li> <li>- main childhood diseases</li> <li>- major causes of morbidity and mortality</li> <li>- % children regularly visiting health clinic</li> <li>- % households with member treated via telemedicine</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>- adult literacy rate</li> <li>- highest educational level attained by head of household</li> <li>- children's enrolment in school</li> <li>- youth/adult enrolment in training/skills upgrading</li> <li>- participation in distant learning courses</li> <li>- competence in English/French/Portugese as second language</li> <li>- competence in skills related to telecentre use (wordprocessing, spreadsheets, simulation games)</li> </ul>
<b>Community action</b>	<ul style="list-style-type: none"> <li>- numbers of community organisations</li> <li>- active membership of community organisations</li> <li>- community action projects</li> <li>- community newsletter/ Web site/ radio station</li> <li>- response times for emergency services</li> <li>- flyers, announcements</li> </ul>
<b>Behaviour</b>	<ul style="list-style-type: none"> <li>- use of telecentre (purpose, frequency, success rate)</li> <li>- use of alternatives to telecentre</li> <li>- pattern of work/recreational activities</li> <li>- patterns of travel to other communities, town, capital</li> <li>- domestic violence/violence towards women</li> <li>- use of specialised professional services (veterinary, counselling, tax advice)</li> <li>- purchases based on information from Internet/e-mail</li> <li>- regular readers of newspapers, news sources on-line</li> <li>- changes in time-budgets</li> </ul>
<b>Knowledge, values and attitudes</b>	<ul style="list-style-type: none"> <li>- self assessed "local pride"</li> <li>- awareness of events in country, international</li> <li>- attitudes towards traditional culture and modernisation</li> <li>- locus of control (I-E scale)</li> <li>- reliance on telecentre services</li> <li>- value placed on telecentre as community facility</li> </ul>

**Table 13 Indicators of impacts on formal organisations**

<b>CHANGE</b>	<b>POTENTIAL INDICATORS</b>
<b>Operations</b>	<ul style="list-style-type: none"> <li>- use of data bases, spreadsheets for financial and other administrative tasks</li> <li>- quality and timeliness of formal reporting</li> <li>- response time to fulfill requests/ emergency respnse</li> <li>- use of registries and on-line expertise to carry out functions</li> <li>- using off site computer capacity to do work</li> <li>- use of reference libraries and downloaded software to improve performance</li> </ul>
<b>Networks</b>	<ul style="list-style-type: none"> <li>- networking within larger association of member organisations</li> <li>- sharing information with other similar organisations</li> <li>- number of electronic networks of which organisation is a member</li> <li>- time/number of interactive discussion groups</li> </ul>
<b>Organisation</b>	<ul style="list-style-type: none"> <li>- number/% staff using telecentre/Internet</li> <li>- number /% staff trained to use ICTs</li> <li>- has implemented own information strategy</li> <li>- growth in activities, membership</li> <li>- attracts good leadership</li> </ul>
<b>Budget</b>	<ul style="list-style-type: none"> <li>- cost savings for information and communication functions</li> <li>- staff time savings for information/communication functions</li> <li>- investment in purchasing/leasing IC equipment</li> <li>- change in revenue and expenditures</li> </ul>
<b>Perceived benefits/costs</b>	<ul style="list-style-type: none"> <li>- change in performance indicators</li> <li>- improved organisational structure/membership/leadership</li> <li>- dependence on telecentre to perform tasks</li> <li>- better networking</li> <li>- reported success stories</li> <li>- difficulties in keeping trained staff</li> <li>- financial costs</li> </ul>
<b>Outreach</b>	<ul style="list-style-type: none"> <li>- own web site</li> <li>- number of hits/requests to web site</li> <li>- production of electronic/print newsletters/bulletins</li> <li>- number of subscribers to newsletters/bulletins</li> <li>- % outreach made available through fax/Internet/e-mail</li> </ul>