ICT4D - Information and Communication Technologies for Development

Self-Paced Learning Materials Developed by Barbara Fillip



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Welcome to the self-paced learning materials for the ICT4D course. My name is Barbara Fillip.

I have taught the ICTs for Development course since 1999 and it has evolved quite a lot over the past few years.

It started as a traditional face-to-face course in a classroom and it later evolved into an online course with participants around the world

Barbara Fillip



Next

eClass Tutorial

eClass Tutorial

View Presentation

Click on "View Presentation" above to click through a short presentation to help you learn how to navigate the CD-ROM.

If you cannot view it, try this <u>alternate format</u> (PDF file).

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Course Information

*** YOU CAN ACCESS THIS NOTE AS <u>A SINGLE FILE</u> (PDF FORMAT) ***

This section is meant to give you all the essential information you will need to effectively participate in the course and make the most of it. It is the equivalent of a course syllabus and it includes the following sub-sections. You will find the links to each of these sub-sections in the frame to the left of this text.

You should go through all the pages within this section before moving on to the modules themselves.

Contact Information

About Knowledge for Development, LLC

Learning Objectives

Target Audiences eLearning & This Course

What's in a Module?

- Who to contact if you have questions or comments.
- Some information about Knowledge for Development, LLC, the company behind this course.
- What you can expect to learn through this course.
- Who should take this course.
- How does this course compare with other eLearning opportunities.
- What are the key elements of each mocdule

You will also find the same information conveniently packed into one PDF file for easy printing and reading away from the computer. You will need the Acrobat Reader to read this and other PDF files on the CD-ROM. A copy of the Acrobat Reader can be found on the CD and installed on your computer if you do not already have it.

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Contacts



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Feedback on these self-learning materials would be very much welcome!

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About Knowledge for Development, LLC



Knowledge for Development, LLC is a small company located in Arlington, Virginia (USA) and headed by Dr. Barbara Fillip. The company was officially created in August 2002 and built on Dr. Fillip's experience as an independent consultant for the previous 5 years.

Knowledge for Development, LLC provides research, capacity building and evaluation services in the fields of Information and Communication Technology for Development (ICT4D), Knowledge for Development (K4D) and eLearning for Development.

For more information visit Knowledge for Development's web site.

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Learning Objectives

Goal of the Course

The goal of the course is to familiarize participants with key concepts and issues related to the potential and real impacts of information and communication technologies on the social, economic and political development of the less developed countries of Asia, Africa and Latin America.

Main Objectives

The course is meant to give participants:

- A clear conceptual framework for addressing issues related to the use of ICTs for sustainable development purposes and the identification of key issues and relevant concepts;
- Specific examples of ongoing activities in developing countries that involve the use of ICTs for development purposes, covering fields such as education, health, e-commerce, agriculture and e-governance;
- A broad picture of ongoing programs and activities undertaken or supported by bilateral and multilateral agencies as well as the private sector and non-governmental organizations.

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Target Audiences

The target audience for this course consists of

1. Development professionals and practitioners in the North and the South

- Staff of headquarters and field offices of large development organizations such as the World Bank and UNDP;
- Staff of NGOs in the South and the North;
- Staff of bilateral development agencies such as USAID, CIDA and others;
- Staff of ministries and government agencies in developing countries;
- Volunteers working on IT issues in developing countries.

2. Future development professionals and practitioners in the North and the South

- Graduate students in the field of international development;
- Professionals looking for a career move and interested in development and IT (including IT professionals interested in applying their skills in developing country contexts);

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eLearning & This Course

This is the self-paced version of the "ICTs for Development" course CD-ROM. It is meant as a self-contained set of training materials to allow people to learn at their own pace, without the need to submit assignments and without communications with a facilitator or instructor.

The table below highlights key differences between this self-paced CD-ROM and the online course which also includes a CD-ROM.

FEATURES	SELF-PACED CD-ROM	ONLINE COURSE
eClass CD Layout	Yes	Yes
Course Notes	Yes	Yes
Readings	Links to the documents on the web	Documents included on the CD
Exercises	Yes, to be done on your own	Yes, to be done within a collaborative learning environment
Discussion List	No	Yes
Facilitation & Feedback	No	Yes
Interactive Quizzes	Yes	Yes
Lists of additional resources	Yes	Yes
Self-paced	Yes, you can review modules of your choice whenever you want	No, you need to keep up with the weekly schedule of modules
Certificate of Completion	No	Yes, if you successfully complete the course

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eLearning & This Course



What's in a Module?

Each module consists in the following

• Learning Objectives

The learning objectives give you an idea of the main themes and concepts covered in each of the modules.

• Notes

The notes introduce you to key concepts and case studies for each of the modules. They also include links to more detailed documents and additional resources.

• Assignments

Assignments include assigned readings, exercises and a quiz.

• A set of assigned **readings**

Readings vary in length and type. Some are general "lessons learned" and others are project descriptions or case studies. Some are more analytical or theoretical than others but each module includes a range of readings.

• A choice of **exercises**

Most exercises are simulated situations where you are asked to put yourselves in someone else's shoes and address a specific problem or issue from their perpective.

o A quiz

The quizzes provided immediate feedback and are not graded. They are an easy way for you to check if you have grasped key facts and concepts from the module.

• A list of additional **resources** specifically related to the module These resources are meant to help direct your explorations in specific topics for independent projects or for focused discussions.

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1 - What is ICT4D?

Before tackling this first module, you should make sure that you review all the materials in the Course Information section.

This first module is meant to....

- Introduce you to ICT4D as an emerging field within the discourse and agenda of organizations working to support development efforts as well as within the development agendas of developing country governments and development-oriented organizations in developing countries.
- Define the term "ICT" or "ICTs".
- Explore your specific interests related to ICT4D
- Share your existing knowledge and/or experience with ICT4D

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1 - Notes

*** YOU CAN ACCESS THIS NOTE #1 AS A SINGLE FILE (PDF FORMAT) ***

"Many people have come to speak of new information and communication technologies (ICTs) as a magic bullet for developing countries to use to advance their social and economic development. &. Is the leapfrogging of development through ICTs feasible? The short answer & is *Maybe*. The slightly longer answer is *We Are Trying to Figure This Out*. And the most insightful answer from the people who devote their lives to these questions is *We Really Hope So."* (Geoffrey Kirkman, 1999).

While this quote is from a publication written in 1999 and this field is evolving fast, it still very much represents where we are.....

CONTENT OF THIS NOTE

A short history of ICT4D What are ICTs? Key Questions Addressed in the Course

Case Studies

Digital Radio (WorldSpace Foundation) Internet Radio Browsing (Kothmale, Sri Lanka) Village Phones (Bangladesh) Digital Libraries (Humanity Libraries)

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Kirkman

Geoffrey Kirkman

Geoffrey Kirkman is a fellow at the <u>Berkman Center for Internet and Society</u> at Harvard University. See in particular the Online Lecture and Discussion (<u>BOLD</u>) Series.

Geoffrey Kirkman, "<u>It's More than Just Being Connected</u>." A Working Paper presented at the Development eCommerce Workshop, August 1999, The Media Lab at MIT.

See some of <u>Kirkman's other publications</u>, in particular on eReadiness (Readiness for the Networked World).

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History of ICT4D

Wave of Events

New issues emerge on the agenda of the international development community on a regular basis. Whether it is the environment, gender, governance or some other topic, annual reports of international organizations such as UNDP and the World Bank illustrate well the changing priorities (fads) of the international development community. While some organizations engaged in activities related to communication for development issues have been pioneering and advocating the use of ICTs for many years (such as Canada s International Development Research Center, better known as IDRC), the growth of organizations now entirely focused on ICTs for development or having developed new ICTs for development strategies within the past decade has been very impressive (and this is not necessarily a good thing). In addition, most development organizations, big and small, are now adding some ICT projects or programs to their portfolio.

The following is a short timeline of events demonstrating the growing presence of ICT4D on the development agenda.

- 1997 -- Global Knowledge Partnership Conference in Canada
- 1998/9 -- World Bank Development Report on Knowledge for Development
- 2000 -- Global Knowledge Partnership Conference II in Malaysia
- 2000 -- Creation of the DOT-Force
- 2001 -- UNDP Human Development Report on "Making Technologies Work for Human Development."
- 2001 -- Creation of the UN ICT Task Force
- 2002 -- Global Knowledge Partnership Conference III in Addis Ababa
- 2003 -- WSIS preparatory phases and December Summit in Geneva
- 2005 -- WSIS second phase summit in Tunis

For details of the items on this timeline, see this week's supplemental reading by Barbara Fillip (pages 7-10).

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What are ICTs?

Hamelink (1997) provides a useful and clear definition of ICTs indicating that ICTs are those technologies that enable the handling of information and facilitate different forms of communication. These include capturing technologies (e.g. camcorders), storage technologies (e.g. CD-Roms), processing technologies (e.g. application software), communication technologies (e.g. local area networks), and display technologies (e.g. computer monitors).

In this course, I will use the term ICTs to include old and new technologies that facilitate the storage and transfer of information. In the readings and other resources of this course you will find that people use different terms and often mean different things. Some people use the term IT (information technology). Others use the term new ICTs, often meaning the Internet. Some use the term ICTs and mean only the Internet and most advanced technologies. Finally, I recently encountered the term eICTs meaning electronic information and communication technologies referring to the Internet and associated advanced technologies.

My own perspective is that all ICTs, old and new, are important in this course. While the Internet and some very advanced technologies clearly have strong advantages and offer opportunities for leapfrogging, there will be circumstances in developing countries where old technologies (radio, television) will be more appropriate.

We will discuss this further since the distinction between old and new technologies may not really be appropriate as radio, television, satellite technologies and the Internet are being combined in innovative ways to reach a wide range of target audiences. In addition, the convergence of technologies and media makes traditional distinctions and classifications less useful. You can browse the web on your television or from your cell phone, make a phone call from your computer, etc&

See the list of <u>technology resources</u>.

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Hamelink

Hamelink, Cees. (1997). "New Information and Communication Technologies, Social Development and Cultural Change". UNRISD. The document can be ordered through the <u>UNRISD web site</u> but it is no longer available online.

See also <u>Hamelink's Keynote Address</u> at the opening session of the Civil Society Sector, WSIS PrepCom 1, July 2002.

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technology resources

Technology Resources collected by UNITes and part of the UNITes Knowledge Base

Software, Hardware, Web Design and other Related Tools and Tesources.

Computer Recycling Programs

- World Computer Exchange
- <u>Computer Aid International</u>

Low-Cost Technologies

- <u>Simputer</u>
- Low Cost PCs in Brazil: Tony Smith, Brazil Unveils PC for the People . Low cost PC developed by the Federal University of Minas Gerais. \$300 PCs will be installed in schools and available for sale to low wage earners on installments of as little as \$15 a month.

New Technologies

- WiFi
 - Matching New WiFi Technology With Virtual Private Networks To Create <u>Affordable Universal Internet Access</u>, Paper by Alan Levy, SOMECE 2002.
 - Scott Foster, "WiFi: A new bridge for the Digital Divide?" Reports, (IDRC) November 2002.
- <u>GSM-Based Wireless Access Solution for Developing Countries</u>
- <u>W2i:</u> Wireless Internet Institute Wireless Internet Opportunity for Developing Countries (<u>Conference</u> June 2003)
- Office for Outer Space Affairs A UN agency trying to enhance the ability of developing countries to take advantage of space technologies.
- <u>Information Technology in Developing Countries Newsletter</u> Newsletter of December 2000, includes article on Linux in India and a short note

about portable radio stations.

- Bellanet's <u>Web-to-Email</u>
- Commonwealth of Learning Telecenter Study: Mike Jensen and David Walker, <u>Telecenter Technology</u> Chapter 19 in the COL s Telecenter Study.
- Regency Foundation: <u>Technology Overview</u>, Telecommunication in Action, 16 pages pdf file. (English, French, Spanish)
- <u>GSM World</u>

Global System Mobile Communications' Association web site.

- <u>UNDP/SDNP Technical Glossary</u>
- Open Development Consortium (ODC)

Forum promoting open standards for the effective and collaborative sharing of development information for the benefit of all stakeholders. (not very active)

• <u>INDIX</u>

International Network for Development Information Exchange& a coalition of development aid organizations.

• **IDML** Initiative

International Development Markup Language (Also in French and Spanish) XML is a new markup standard for networked documents, a set of custom tags similar to those used in HTML. While implementation of the new "meta-language" is in full swing by software developers, there is currently a window of opportunity for various professional groups (medical practitioners, chemists, engineers, etc.) to use XML to define their own sector-specific markup languages. The IDML Initiative was formed to discuss the possibility of a International Development Markup Language, or IDML, for the international development community. IDML would become a data exchange standard for information that is specific to international development, making it much easier to share information with regional offices, partner agencies and with the public. It will also be easier to find and manage information about who is doing what, and where.

- Language, Power and Software
- International Telecommunications Union (ITU) web site
- VITA George Scharffenberg, <u>The Case for Alternative Bandwidth Management</u> to Help Bridge the Digital Divide . Feb. 2001
- IDRC

Mike Jensen. "<u>A Guide to Improving Internet Access in Africa</u> with Wireless Technologies. " August 1996.

Mike Jensen. "<u>The Wireless Toolbox: A Guide to Low-Cost</u> <u>Radio Communication Systems for Telecommunication in</u> <u>Developing Countries - An African Perspective</u>, January 1999.

- <u>Telecommunications and Computer Networks Group</u>
- What is a Satellite?
- Satellite 101
- Environmental Impact of IT : UNU Update (The Newsletter of United Nations University and its international network of affiliated institutes). New project to study environmental impact of information technology. Issue 10, July-August 2001.
- Wayne Marshall, <u>Algorithms for Africa</u>, Linux Journal, # 86, May 18, 2001 (About Linux and the open software movement)

Using his own experiences from Botswana, Marshall says those who are involved in designing and employing IT in developing countries should look at the wider picture. He asks if the onus on growth, which so often accompanies IT projects in the developing world (or elsewhere for that matter), do not do more harm than good. He says that developmentalists and the public at large should at least try to learn from past failures of this approach and have the humility to ask if the western model of urbanization, congestion, resource utilization and environmental depletion are sustainable, even desirable, let alone worthy of export to others in the world

- UNITes: <u>Handheld computer technologies</u> in community service/volunteering/advocacy
- MIDAS, <u>Creative Technologies for Global Communications</u> Developed corDECT, a new system for wireless communications, in collaboration with the Indian Institute of Technology. This system is small and easy to install. It allows rural residents in developing countries not only to get a telephone connection but also to access the Internet.

Open Source/Free software

- <u>Linux International</u> : Linux International is a non-profit association of groups, corporations and others that work towards the promotion of growth of the Linux operating system and the Linux community.
- <u>Like Breast Milk and Goat Poop</u> : The Case for Using Open Source Software in the Third World. By Laura Fokkena. (2001). Keys to Information, Technology, and Education is a nonprofit organization addressing the global digital divide by offering free, customized computer packages and technical training to community groups in the 'Third World'. Our commitment to using free software/open source software makes us unique among organizations working in this field.
- Open Standards and Open Software in South Africa: A Critical Issue for Addressing the Digital Divide, January 2002. National Advisory Council on Innovation. (same document in different formats)

http://www.naci.org.za/docs/opensource.pdf

http://www.naci.org.za/docs/opensource.html http://www.naci.org.za/docs/opensource.rtf http://www.naci.org.za/docs/opensource.doc

• Open Source Foundation for Africa

Radio

- Commonwealth of Learning <u>Portable radio</u> Article about portable radio transmitters.
- Comunica: The Challenges of ICTs and Rural Radio, by Bruce Girard
- <u>Mixing Media: Broadcasting and the Internet for Development and Democracy</u>, by Bruce Girard

Television

United Nations World Television Forum

See the Telesecundaria case study in the module on ICTs for Learning.

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Key Questions

Key Questions

• What is the true potential of ICTs for developing countries?

How much can ICTs contribute to economic growth and sustainable development?

Are we expecting too much of ICTs?

What is the extent to which ICTs can contribute to sustainable development?

• To what extent is that potential being realized?

Are there countries where ICTs seem to be significantly contributing to sustainable development?

Are there other countries where ICTs don t seem to be having a significant impact?

Why are there differences in countries abilities to take advantage of ICTs? Is the potential of ICTs being realized evenly across countries as well as within countries? Are some segments of society not benefiting from ICTs? Why?

• How can that potential be realized more fully to benefit all more evenly, both within and across countries?

If we look at the countries that are realizing that potential, how are they doing it?

What are the countries not realizing that potential failing to do or doing wrong?

Who is responsible for doing what to realize that potential?

What are the respective roles of national governments and institutions, the private sector, the international development community and civil society?

Additional issues

The questions highlighted above cover the broad themes that will be addressed in the course. While I doubt that we will come up with definite answers to all these questions, we will review the existing accumulated knowledge and experience in this field. In particular, we will look at:

• The relationship between ICTs and Development : We often make assumptions regarding the relationship between ICTs and development. We will spend some time thinking about what are assumptions are and whether they are warranted.

- The debate around the Digital Divide : We will investigate the multiple dimensions of the divide and analyze the current discourse in the international development community regarding global efforts to bridge it.
- Strategies to address the digital divide : We will look at specific country strategies that are being developed and implemented.
- The dangers of such a divide in terms of **leapfrogging** and **marginalization**: We will look at examples of countries that appear to be leapfrogging and countries that are at risk of being further marginalized by ICTs.
- The issue of **access**: Access is a key issue and most discussions around the digital divide are focused on whether people have or do not have access to ICTs. We will see that access is at least two things (availability and affordability). In other words, is the technology there and can people actually afford to use it. Some other key issues are capacity and content. Once the technology is there and people can afford to use it, do they have the capacity to use it effectively and is there enough content that is relevant to them and satisfies their information and knowledge needs.
- Beyond access, the need to develop **relevant applications in key areas**: For ICTs to truly have an impact on sustainable development, a concerted effort will be necessary to develop relevant applications. We will spend a considerable number of weeks looking at ICT applications in specific areas such as education, health, e-commerce, governance, agriculture, etc. Through these sessions, we will both learn about interesting pilot projects and innovations in specific counties and refine our understanding of the key necessary elements for the successful development and implementation of ICT projects for sustainable development.
- The utilization of **ICTs for development knowledge and in development work**: Most of the course focuses on how to use ICTs in developing countries. While there are clearly a lot of donor activities in this field, the issue of the utilization of ICTs within the international development community itself is separate and deserves some attention as well. Here we ll touch on one of my favorite topics of discussion, Knowledge Sharing for Development.
- The complementary roles of the private sector, public sector, civil society and the international development community. Throughout the course, we will encounter multiple examples of activities that have involved collaborations and partnerships across organizations and across sectors. We will try to extract some lessons about what makes such partnerships work and how to nurture them.

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Case Studies

The readings and course notes are full of case studies (see the <u>map</u>). The selection in this introduction module is meant to illustrate the range of ICTs that can be used for development purposes and covers some of the more well-known projects.

In this course, little emphasis is placed on the ICTs themselves and the focus is on **APPLICATIONS** of ICTs for development purposes. Still, here is a selection of <u>resources</u> specifically dedicated to the technologies themselves.

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SAMPLE OF CASE STUDIES



List of Case Studies

Case Study	Field	Location
<u>Telesecundaria</u>	Education	Mexico
Educatodos	Education	Honduras
Somos@Telecentros	Access	Latin America
Mobile Phones	Agriculture	Senegal
MARA	Health	Africa
<u>PDAs</u>	Health	India
<u>Robib</u>	Health	Cambodia
PETIS	Agriculture	Mauritius
Kothmale	Access	Sri Lanka
<u>Studio Ijambo</u>	Governance/Conflict Prevention	Burundi
Enlaces	Education	Chile
<u>Kiskaya</u>	eCommerce/eTourism	Haiti - Dominican Rep.

Robib

B

If you're tired of reading, you have a good connection to the web and you understand French, see the video about a telemedicine project linking Geneva (Switzerland) and Bamako (Mali) (<u>on the</u> web).

Telemedicine in Cambodia

Robib is a small village in Cambodia that is serving as an experimental location for a range of ICT applications, including ecommerce, computers in schools and telemedicine. The telemedicine project is a collaboration with Harvard University Medical School doctors.

Since February 2001, a nurse and a technician from the main hospital in Phnom Penh travel once a month to the village of Robib with a digital camera. When the nurse is not able to diagnose a patient, the technical takes pictures. Those pictures are then sent via the Internet to Partners Telemedicine, a US-Based NGO working with staff from Harvard Medical School and the Massachusetts General Hospital. Internet access exists at the local school thanks to a satellite link. Once the pictures are examined by the doctors in the US, a diagnostic is offered and treatment is suggested. If treatment is not available locally, the patients are transported to the appropriate health facilities.

Additional Resources

T elemedicine in Ethiopia

This project tried to address a number of related challenges in Ethiopia. Ethiopia suffers from a severe shortage of healthcare professionals, especially in remote and rural areas. There is a need for improved communications to link remote clinics and hospitals with urban hospitals. There are 5-9 radiologists for almost 60 million people. There are 21 radiologist centers. As a result, the specialists must travel from center to center to examine the patients.

The project planned a teleradiology application. The medical equipment would be installed in one or two clinics in the Tigray region of Ethiopia. Two configurations were envisaged. The first one was to connect one health clinic with the main hospital in Addis Ababa. The second was to connect a doctor traveling from village to village with the regional hospital in Tigray.

More details about the project (<u>on the web</u>).

[Note: I could not find any new information regarding the status of this project or even if it was ever implemented]

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India Health Care Project

In this project, Personal Digital Assistants (PDAs) are used by rural health care workers with the following benefits:

- substantial time saving
- improved effectiveness of preventive programs (more time available)
- increased reliability of collected data
- more efficient work schedules

The India Health Project aims at providing the benefits of Information Technology to rural health workers. The use of computers, communication technology and personal digital assistant (PDA) for data collection in health care delivery systems will result in substantial time savings for health workers. This can be used to improve the effectiveness of preventive programmes, and provide timely information for monitoring, analyzing, planning and emergency response resulting in the improved efficiency of health service delivery.

The basic health care delivery system in India is through sub-centers of Primary Health Centres (PHC) by ANMs (auxillary nurse midwives) covering a population of 5000 each. These ANMs play a key role in providing necessary counseling, first aid, preliminary diagnosis for simple ailments, promotion of various family planning methods, pre-and post-natal care and distribution of common medicines. ANMs also collect various statistics about the population under their coverage, through a traditional system of diaries and registers which often contain erroneous data.

The project addresses the ANMs critical concern with the effective use of time which at present is mostly spent on maintaining registers and preparing reports rather than on delivering quality health care. The project proposes to extend the benefits of information technology to ANMs who are in direct contact with the rural population.

The approach is to train the existing ANMs in the use of PDAs which can process data with east. The PDAs are designed to cater to the semi-literate levels of the ANMs. The use of PDAs improves the reliability of collected data, thus ensuring data integrity and alleviating problems faced by ANMs in completing the paper work. The 40-60% reduction in time for the ANMs to process the data can be used in a more productive manner by delivering quality health care.

Capturing the data of an ANMs target population with the use of PDAs and a PHC

computer, the system generates work schedules, reminders for immunization, pre-and post-natal care information, family planning activities, etc.

Additional Resources

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MARA

Mapping Malaria Risk in Africa (MARA)

90% of the malaria burden in the world is in Africa. Almost everywhere that malaria occurs, the burden of disease and death falls mainly on two vulnerable groups: young children and pregnant women. While treatment and prevention methods have been refined over the years, it is still essential to be able to better target prevention and treatment programs so that those most at risk can benefit from them.

The MARA/ARMA project is a collaboration among a number of organizations to provide an Atlas of malaria in Africa containing relevant information for rational planning and implementation of malaria control strategies.

The objectives of the project are as follows:

- 1. To map malaria risk in Africa
 - a. Through collection of published and unpublished malaria data.
 - b. Through spatial modeling of malaria distribution, seasonality and endemicity.

2. To disseminate relevant information to national and international decision makers and other end users, in a range of useful formats.

3. To develop capacity in malaria / health GIS (Geographic Information Systems).

The project has been at the cutting age of applications of GIS for health purposes. GIS is used to integrate spatial malaria and environmental data sets to produce maps of the type and severity of malaria transmission. The project also had an important capacity building component with training provided on a sub-regional basis around Africa.

These maps have facilitated decision making regarding cost-effective and appropriate methods under different conditions. The maps have helped to rationalize the allocation of scarce resources for malaria control.

Additional Resources

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Mobile Phones

WAP-Enabled Mobile Phones

Senegalese fruit and vegetable producers use their WAP-enabled mobile phones to get real-time information on the prices of their produce on the markets in Dakar.

While most of the farmers are illiterate, they are able to quickly learn to use the technology. Getting accurate information about market prices enables them to negotiate more effectively with the middlemen. Previously, the farmers had no alternative but to rely on the information provided by the middlemen.

The service is provided by Manobi, a mobile services operator and Internet specialist in Dakar, Senegal. Manobi has developed a system that collects data in real time and uses Internet and mobile technologies to follow market fluctuations and trends. Since the data is also of value to the middlemen, everyone benefits.

Read more on Manobi's web site (French and English versions).

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PETIS

Potato Extension and Training Information System

- Overcoming illiteracy: Use audio files in two local languages on a web site
- Content: Advice on potato growing
- User-friendly: icons developed and tested to represent cultural practices in potato production.

The Faculty of Agriculture at the University of Mauritius has set up a prototype Agricultural Information System for use by the rural community of Mauritius. They are testing the use of audio files in two local spoken languages on a web site that offers advice on potato growing, as a means of overcoming the illiteracy barrier and adding user-friendliness for a rural community. The big question they are trying to address is "How can the non-computer-literate farmer benefit from the empowering tool that the Internet is through access to information?"

They first carried out a survey of the information needs of the growers themselves and also the main information required by extension officers dealing with the potato industry. One of the first interesting challenges has been to develop icons representing cultural practices in potato production. A series of icons were drawn and have been tested with the agricultural community, as we expect them to be able to navigate through the use of graphics rather than clicking on text hyperlinks and through accompanying audio files that will tell them what clicking on the icons will do. The results of the assessment of the appropriateness of the icons are reasonable but we would like to suggest further investigation of global icons through the creation of such a clip-art collection, targeting the agricultural community, world-wide if possible. Information, which is usually available in print form or in technical reports have been placed onto a website with additional graphics to facilitate communication.

Get a better idea of what it looks like and listen to the audio files on the PETIS web site .

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Kiskaya

A pilot project on ICTs applied to alternative and/or sustainable tourism

Goals include:

- Developing new promotional and commercialization channel
- Direct communication and interaction between consumers and producers
- Greater awareness and consciousness of tourism impacts

This is a pilot project that uses ICTs to promote sustainable tourism and e-commerce in Haiti and the Dominican Republic. It has three basic components:

- Internet promotion and marketing;
- electronic commerce;
- and cooperative network development.

Internet marketing and promotion is done through a web gateway with resources on alternative, ecological and sustainable tourism on the island.

E-commerce will be done through agreements with partners to promote and sell sustainable tourism products; online reservations and payments, interactive journey design...

They will also establish a network of like-minded organizations collaborating to promote sustainable tourism on the island.

The project is made possible by the Research Consortium on Electronic Commerce and Sustainable Tourism which is funded by IDRC.

Read more on the <u>Kiskaya web site</u>.

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Studio Ijambo

"Hate Radio"

Within thirty minutes of the shooting down of the airplane containing Rwandan President Juvenal Habyarimana and Burundian President Cyprien Ntaryamira on its approach to the Kigali airport on April 6, 1994, barricades went up in the Rwandan capital and the killing began. In the genocidal frenzy that would ensue over the next four months, Hutu Presidential Guards and semiprivate Hutu youth gangs butchered an estimated eight hundred thousand people, mostly minority Tutsi but also moderate Hutu who had supported reconciliation between the two groups.

Despite the inadequacies of Rwanda's information infrastructure, the killings were carried out in a highly systematic and synchronized manner, the result of careful advance planning. One central feature of this planning was the use of radio, particularly the semiprivate station, Radio-Television Libre des Milles Collines (RTLM). RTLM was founded by leading Hutu extremists in the Rwandese Government in mid-1993 in response to reforms that had allowed moderates to take positions in the administration, including the Ministry of Information, which controlled Radio Rwanda, the official governmental station.

"Peace Radio"

In 1995, Search for Common Ground established Burundi's first independent radio studio, Studio Ijambo. This was a time when hate radio was promoting fear and mistrust, and had fueled the massacre of hundreds of thousands in neighboring Rwanda.

Studio Ijambo (web link) ("wise words" in Kirundi) employs Hutu and Tutsi staff to produce about 15 hours a week of news, public affairs, and cultural programming. Entitled Umubanyi Niwe Muryango (Our Neighbors, Ourselves), the main radio drama describes the trials and tribulations of neighbors and how they overcome the problems common to both families; drought, lack of food, a pregnant daughter, division in the village, rumour-mongering neighbours etc.

Studio Ijambo reaches an estimated 12 million people throughout the Great Lakes region.

Read more about "hate radio" and "peace radio" on the web site of <u>Radio Netherlands</u>.

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Somos@Telecentros

Somos@Telecentros

In Latin America, a regional community-based network of telecenters has emerged. The Somos@Telecentros Network is working to strengthen digital inclusion initiatives in Latin America and the Caribbean.

Community-based telecenters are important examples of digital inclusion initiatives. While there are many forms of telecenters that have emerged in Latin America (as in other developing regions), from the private sector cybercafés to the non-profit telecenter, the "community-based telecenters" aim to provide training and a space for community interaction, are born from expressed needs of the community itself, and are conceived, implemented, maintained and managed with the participation of the community.

They are more than access providers. Some have become agents of social change and have developed community programs that address local needs.

For more information

- For details about Somos@Telecentros, see <u>the article by Klaus Stoll</u> in the Development Gateway's Highlight on Telecenters (on the CD), or visit the <u>Somos@Telecentros</u> web site.
- The IDB Study titled "<u>Telecenters for Socioeconomic and Rural Development in</u> <u>Latin America and the Caribbean</u> " provides detailed case studies of telecenters in Latin America and the Caribbean.
- <u>Telecenters in Latin America Videos</u> (all the videos are in Spanish)

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Kothmale

The Internet is increasingly used for broadcasting radio programs. The **Kothmale Internet Community radio project** in Sri Lanka demonstrates that this is a particularly interesting approach in rural areas. The Kothmale community is located three hours away from the capital of Colombo by bus. There is a community radio serving a target area of 20 km radius, covering a number of rural towns. The project uses community radio as an interface between the Internet and rural communities.

The project has three basic features:

1. Radio programs to radio browse the Internet

The community radio broadcasts a daily two hour radio program in which community broadcasters interpret information from selective Internet sites. Listeners can direct queries to the radio station to find specific information from the Internet. The community radio provides the requested information in local language making the Internet information more accessible.

2. Community radio function as a mini Internet Service Provider

Besides its own Internet Café the community radio has provided two free internet access points in community libraries.

3. Community Database Development

The community radio develops its own computer database deriving information which are often requested by community members, from the Internet. This database in local language attempts to solve the problem of non-availability of packaged information in the Internet suitable to rural needs.

In this example, the combination of two technologies and some intermediaries, allows relevant information to reach rural populations more effectively. This project has been supported by UNESCO.

• Find out more on the Kothmale project's web site .

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Enlaces

Chile's program, *Enlaces*, started as a pilot project in 1993. The goal was to create a telecommunications and computer network among 100 Chilean primary schools and associated institutions. By the end of 1995, Enlaces had surpassed its original targets and had incorporated computers into some 180 schools at both the primary and secondary levels. This still represented a very small percentage of schools. The program was then converted into a national program.

Learn more about Enlaces

- Learning Networks (Enlaces), Chile, UNESCO (on the web)
- Michael Potashnik, "Chile's Learning Network", World Bank 1996. (On the web)

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Educatodos

Educatodos is a program supported by USAID in Honduras that has provided Interactive Radio Instruction for out-of-school youth. While primary school enrollments are relatively high in Honduras, repetition rates in early grades are very high, resulting in a large number of students dropping out by sixth grade if they have repeated some grades and are "too old" to continue studying in traditional schools.

Grades 1-6

Since 1995, Educatodos has provided IRI programs for the grades 1 through 6th. The program is managed by the Ministry of Education and is part of the formal education system, providing equally valid certificates of completion for each grade. Since 1995, there have been 312,141 participants in grades 1-6. 88,258 additional participants were enrolled in 2000 and an additional 90-95,000 in 2001. The programs, which combine broadcast or audio-taped lessons and text materials, are run at the local level by a total of about 4000 volunteer facilitators who are members of communities where the Educatodos groups meet. The cost of the program per participant, has proven cheaper than regular primary grades (US\$40 per participant per grade, compared to US\$90 for regular primary grades).

Grades 7-9

Since 1999, Educatodos has been implementing a pilot phase for grades 7 through 9. Out of 100 children born in Honduras, while 94 enroll in 1st grade, only 67 graduate 6th grade, only 43 enroll in 7 th grade and only 24 graduate 9th grade. By April 2002, it is expected that the program will have enrolled 3,000 participants in 7th to 8th and trained 220 facilitators. The costs, while higher than for the grades 1-6, are still much cheaper than the costs associated with traditional schools (US\$68 per participant per grade for Educatodos vs. US\$164 per student per year for traditional schools).

Poverty Reduction Strategy Goal

The Government's Poverty Reduction Strategy states a goal of reaching a 70% enrollment rate in grades 7-9 by 2015. To reach that goal through Educatodos, the program would have to enroll 193, 575 new students. While this is beyond the program's reach financially, Educatodos could significantly contribute to that goal in a very cost-effective manner.

Table: Educatodos: Cost Comparison for Addressing Enrollment Gap

New Students	Coverage	Annual School	Annual Cost
		Cost	Educatodos
100,000	55.5%	US\$ 16.4 m	US\$6.8 m
150,000	63.2%	US\$ 24.6 m	US\$ 10.2 m
193,575	70%	US\$ 31.7 m	US\$13.2 m

However, scaling up the program to reach this 70% coverage goal would be difficult. The financial resources are not available at this point. While the costs of developing the curriculum and materials themselves does not increase with the number of students enrolled, the costs of printing the materials for each additional student do add up. Another difficulty that would likely arise in scaling up the program is the sustainability of relying on volunteer facilitators. Finding the required numbers of volunteer facilitators within communities having the minimum skills to facilitate the grades 7-9 program may be a challenge. Another important assumption of the program is that the target group (out-of-school youth having completed 6th grade) wants to continue studies.

More educational radio resources

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Close

Telesecundaria

Telesecundaria is a TV-based program developed in Mexico in 1968 that offers a complete junior secondary curriculum (grades 7-9) to rural populations where access to traditional secondary schools is not possible. It has been so successful that it has continued to expand both within Mexico where it now targets also grades 10-12 and junior high adult education, and within Central America where it is being used or adapted by all the other countries.

During the 1960s, the Mexican government had to face a shortage of trained teachers willing to work in remote rural areas and an inadequate supply of schools to accommodate secondary students. The Mexican government decided to use television to reach this target group and started broadcasting to 6,500 students in 1968. Today, more than 800,000 students in grades 7-9 are enrolled in the program.

Each lesson consists of a 15-minute televised program, followed by a 35-minute teacher-student dialogue, and a 10-minute break before the next TV lesson begins. After watching a televised segment, which introduces the subject concept and theme, students study the relevant material in a specially-designed textbook, followed by teacher-led discussions to help students consolidate and integrate the content and to address any unanswered questions or concerns.

This is followed by students engaging in activities designed to apply the lesson to a practical situation or experiment, and closes with an assessment of student understanding by the teacher, by individual students, and as a group (Jose Calderoni, Telesecundaria: Using TV to Bring Education to Rural Mexico).

Between 1998 and 2002, the Ministry of Public Education was planning to open 4,500 new Telesecundaria schools to address the needs of an additional 250,000 students. While many schools have requested video conferencing that would allow interaction between students and the television presenters, the high costs of this technology render its use unlikely anytime soon.

The program's success has spurred the government to initiate two new TV-based educational programs, including a three-year high school program for grades 10-12 and a 9-month junior high school program for adults. It is expected that a complete high school program will be distributed on a national scale by 2002.

Telesecundaria is broadcast through Mexico's educational broadcast system called Red EDUSAT, which is transmitted through Solidaridad 1, a government-owned satellite which reaches all of Mexico, the south of the United States, Central America, the Caribbean and part of South America. As a result, Telesecundaria has attracted the

interest of its neighbors.

In 1996, the Ministers of Education of the seven Central American countries signed a Cooperative Agreement with the President of Mexico to use the Telesecundaria system and the program's printed materials, broadcasting through EDUSAT. Mexico provided training in the preparation of TV scripts as well as media education for organizers and teachers.

Panama began broadcasting Telesecundaria programs in 1996, Costa Rica in 1997, and Guatemala in 1998. Honduras and El Salvador are taping and classifying the programs in order to broadcast them on their own.

In Panama, the World Bank is supporting the expansion of a similar program called Telebasica .

More Educational TV Resources

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Resources

Technology Resources collected by UNITes and part of the UNITes Knowledge Base

Software, Hardware, Web Design and other Related Tools and Tesources.

Computer Recycling Programs

- World Computer Exchange
- Computer Aid International

Low-Cost Technologies

- <u>Simputer</u>
- Low Cost PCs in Brazil: Tony Smith, Brazil Unveils PC for the People . Low cost PC developed by the Federal University of Minas Gerais. \$300 PCs will be installed in schools and available for sale to low wage earners on installments of as little as \$15 a month.

New Technologies

- WiFi
 - Matching New WiFi Technology With Virtual Private Networks To Create <u>Affordable Universal Internet Access</u>, Paper by Alan Levy, SOMECE 2002.
 - Scott Foster, "WiFi: A new bridge for the Digital Divide?" Reports, (IDRC) November 2002.
- <u>GSM-Based Wireless Access Solution for Developing Countries</u>
- <u>W2i:</u> Wireless Internet Institute Wireless Internet Opportunity for Developing Countries (<u>Conference</u> June 2003)
- Office for Outer Space Affairs A UN agency trying to enhance the ability of developing countries to take advantage of space technologies.
- <u>Information Technology in Developing Countries Newsletter</u> Newsletter of December 2000, includes article on Linux in India and a short note

about portable radio stations.

- Bellanet's <u>Web-to-Email</u>
- Commonwealth of Learning Telecenter Study: Mike Jensen and David Walker, <u>Telecenter Technology</u> Chapter 19 in the COL s Telecenter Study.
- Regency Foundation: <u>Technology Overview</u>, Telecommunication in Action, 16 pages pdf file. (English, French, Spanish)
- <u>GSM World</u>

Global System Mobile Communications' Association web site.

- <u>UNDP/SDNP Technical Glossary</u>
- Open Development Consortium (ODC)

Forum promoting open standards for the effective and collaborative sharing of development information for the benefit of all stakeholders. (not very active)

• <u>INDIX</u>

International Network for Development Information Exchange& a coalition of development aid organizations.

• IDML Initiative

International Development Markup Language (Also in French and Spanish) XML is a new markup standard for networked documents, a set of custom tags similar to those used in HTML. While implementation of the new "meta-language" is in full swing by software developers, there is currently a window of opportunity for various professional groups (medical practitioners, chemists, engineers, etc.) to use XML to define their own sector-specific markup languages. The IDML Initiative was formed to discuss the possibility of a International Development Markup Language, or IDML, for the international development community. IDML would become a data exchange standard for information that is specific to international development, making it much easier to share information with regional offices, partner agencies and with the public. It will also be easier to find and manage information about who is doing what, and where.

- Language, Power and Software
- International Telecommunications Union (ITU) web site
- VITA George Scharffenberg, <u>The Case for Alternative Bandwidth Management</u> to Help Bridge the Digital Divide. Feb. 2001
- IDRC

Mike Jensen. "<u>A Guide to Improving Internet Access in Africa</u> with Wireless Technologies. " August 1996.

Mike Jensen. "<u>The Wireless Toolbox: A Guide to Low-Cost</u> <u>Radio Communication Systems for Telecommunication in</u> <u>Developing Countries - An African Perspective</u>, January 1999.

- Telecommunications and Computer Networks Group
- What is a Satellite?
- Satellite 101
- Environmental Impact of IT : UNU Update (The Newsletter of United Nations University and its international network of affiliated institutes). New project to study environmental impact of information technology. Issue 10, July-August 2001.
- Wayne Marshall, <u>Algorithms for Africa</u>, Linux Journal, # 86, May 18, 2001 (About Linux and the open software movement)

Using his own experiences from Botswana, Marshall says those who are involved in designing and employing IT in developing countries should look at the wider picture. He asks if the onus on growth, which so often accompanies IT projects in the developing world (or elsewhere for that matter), do not do more harm than good. He says that developmentalists and the public at large should at least try to learn from past failures of this approach and have the humility to ask if the western model of urbanization, congestion, resource utilization and environmental depletion are sustainable, even desirable, let alone worthy of export to others in the world

- UNITes: <u>Handheld computer technologies</u> in community service/volunteering/advocacy
- MIDAS, <u>Creative Technologies for Global Communications</u> Developed corDECT, a new system for wireless communications, in collaboration with the Indian Institute of Technology. This system is small and easy to install. It allows rural residents in developing countries not only to get a telephone connection but also to access the Internet.

Open Source/Free software

- <u>Linux International</u>: Linux International is a non-profit association of groups, corporations and others that work towards the promotion of growth of the Linux operating system and the Linux community.
- <u>Like Breast Milk and Goat Poop</u> : The Case for Using Open Source Software in the Third World. By Laura Fokkena. (2001). Keys to Information, Technology, and Education is a nonprofit organization addressing the global digital divide by offering free, customized computer packages and technical training to community groups in the 'Third World'. Our commitment to using free software/open source software makes us unique among organizations working in this field.
- Open Standards and Open Software in South Africa: A Critical Issue for Addressing the Digital Divide, January 2002. National Advisory Council on Innovation. (same document in different formats)

http://www.naci.org.za/docs/opensource.pdf

http://www.naci.org.za/docs/opensource.html http://www.naci.org.za/docs/opensource.rtf http://www.naci.org.za/docs/opensource.doc

• Open Source Foundation for Africa

Radio

- Commonwealth of Learning <u>Portable radio</u> Article about portable radio transmitters.
- Comunica: The Challenges of ICTs and Rural Radio, by Bruce Girard
- <u>Mixing Media: Broadcasting and the Internet for Development and Democracy</u>, by Bruce Girard

Television

United Nations World Television Forum

See the Telesecundaria case study in the module on ICTs for Learning.

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Close

Digital Radio

While traditional AM/FM radio receivers are widely diffused in developing countries, there are a number of obstacles to their use. One has to do with the necessity for batteries (which has been addressed through crank mechanisms) and the other has to do with geography and the quality of reception in many areas. This second obstacle is now being addressed through the use of digital satellite radio systems managed by **WorldSpace Foundation** (WSF).

The mission of the WorldSpace Foundation is to help improve the lives of disadvantaged persons in developing countries of the world by providing access to eduation and other information broadcast directly to radios from satellites. The satellites can broadcast both audio and visual signals in digital formats.

In 1999, the WorldSpace Foundation developed the Africa Learning Channel (ALC), which began broadcasting over Africa in December of 1999. The ALC addresses issues in basic education, health, literacy, conflict resolution, disaster relief, women and family development issues, environment, cultural heritage preservation, and vocational training. All radio material is collected from NGOs and other producers across the region. Initial broadcasts have been in English and French, but there are plans for programs in Arabic, Swahili and other local languages.

One drawback is that special digital receivers are required to catch the signals. These are still quite expensive (\$250 per receiver). WorldSpace is therefore promoting the distribution of these receivers at reduced costs to NGOs, schools and churches and the groups that have receivers organize coordinated listening groups. Programs can also be rebroadcast by rural and community radio stations so that listeners can tune in with traditional FM receivers.

Find out more on the WorldSpace Foundation web site .

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Radio Browsing

The Internet is increasingly used for broadcasting radio programs. The **Kothmale Internet Community radio project** in Sri Lanka demonstrates that this is a particularly interesting approach in rural areas. The Kothmale community is located three hours away from the capital of Colombo by bus. There is a community radio serving a target area of 20 km radius, covering a number of rural towns. The project uses community radio as an interface between the Internet and rural communities.

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Radio Browsing



Village Phones

The Grameen Bank of Bangladesh introduced cellular mobile phones that are leased to women member of micro-credit programs. The idea was 1) to give women an opportunity to make a living by selling telephone services; and 2) to benefit the villagers using the telephone services.

A study conducted in 1999 by the German Center for Development Research (ZEF) found the following:

- Poor people account for ¹/₄ of all phone calls made through village pay phones;
- The availability of phones provides villagers with substantial benefits in terms of both economic and non-economic considerations.
- The poor do benefit from the services;
- The ownership of the phones by relatively poor households tends to raise their social status;
- Villages with phones are better equipped to cope with natural calamities and to handle law enforcement problems.

Another study, done by The Telecommons Group (TDG) suggests similar results. A key use of telephones for Grameen bank members is for discussions of financial matters with family. Bangladesh is a labor exporting country, primarily to the Gulf States. The Village phone helps to reduce the risks involved in transferring money to rural villages. The phones are also used very often to get prices and market information.

Rural telephone services in Bangladesh are very profitable in the existing regulatory environment. The current regulatory environment makes other technological solutions less financially viable, but cell phone technology is a high-cost solution for universal access.

Gender analysis is important in ensuring true universal access. The gender of the phone owner and the location where services are made available will impact usage by women.

The extent to which this experience is replicable in other countries is debatable. As mentioned earlier, the regulatory environment is in large part responsible for the profitability and feasibility of this approach. In addition, few countries have an organizational network similar to the Grameen Bank s microcredit schemes that is the foundation for the village pay phone network.

• Read the Telecommons Group <u>Study</u> (a multimedia case study) about the Grameen Bank's Village Phones on the web.

• Find out more on the <u>Grameen Technology Center's web site</u> and its other projects related to uses of ICTs to empower the poor.

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Digital Libraries

The Humanity Libraries Project is meant to increase the diffusion of information to developing countries through low-cost libraries (CD-ROM libraries) to help solve poverty, to increase human potential, and to provide education to all. The goal of the project is to provide persons or groups in the South owning a PC/CD-ROM set access to a complete basic library of about 3000 essential books at the lowest cost possible.

The argument is that an average university degree of four years requires integrating about 10,000 pages of information and knowledge. The HDL library contains 160,000 pages, all accessible through one CD-ROM. The project supporters claim that in whatever developing country, a decentralized basis of 5,000 PCs with CD-ROM drives, dispersed over 1000 NGOs, schools and other places, will provide a continuos education base to 60,000 persons. They suggest that one PC could be used in three shifts of 32 hours during 13 weeks by three persons, under the supervision of one teacher per five to ten PCs.

This particular CD-ROM library is in English but they also have a similar library in French, an English Medical and Health Library, a Food and Nutrition Library and a World Environmental Library each containing about 35,000 pages.

We see this project as a massive low cost vaccination campaign against lack of knowledge similar to a universal polio vaccination, says the cover sheet I received with a free copy of the CD-ROM. (Copies can be ordered for US\$6.00).

The project is implemented in cooperation with 70 organizations, including GTZ-GATE, the FAO, SKAT, BOSTID, Peace Corps, UNU, Tulane University, University of Waikato (NZDL), and World Information Transfer.

• Find out more about the <u>Humanity Digital Library project on the web</u>.

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1 - Readings

Unless it is indicated otherwise, all readings are on the web. You will need to be online to follow the links to the documents on the web.

Introduction to Key Issues on the Current Agenda

- Check the latest information on the second round of the <u>World Summit on the</u> <u>Information Society.</u>
- Find out more about the results of the first round of WSIS that took place in Geneva in December 2003 by reading the <u>Declaration of Principles and Plan of Action</u>.

Some older overview articles...

- Mark Malloch Brown (UNDP). " <u>Can ICTs Address the Needs of the Poor</u> ? " Choices, June 2001. (pdf file, 1 page)
- Rafal Rohozinski. <u>The ICT for Development Challenge: Rhetoric into Reality</u>." Choices, June 2001 (pdf file, 1 page).

Supplemental readings

• BBC News: <u>Digital Destinations</u> (A series of short articles showcasing examples of how ICTs are used around the world to address development issues)

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1 - Exercises

Exercise A: Technologies, Their Characteristics and Potential Applications List a number of information and communication technologies. Think about their characteristics and potential uses.

Technologies	Characteristics	Applications
Digital Radio	 Better transmission than AM/FM over large distances Costly receivers 	Broadcasting education and health messages for dispersed rural populations with limited access to ICTs
[Add rows to continue]		

Add 7 to 10 other technologies in the left column and fill out the two other columns.

Resources for Exercise 1A

Exercise B: Development Challenges and the Potential of ICTs

If you are in a developing country, identify a key development challenge that your country is facing. Can ICTs help to address this particular challenge? How?

Write down some of your thoughts (1-2 pages) to answer the question.

Exercise C: What has the IT revolution meant for You?

If you are in a developed country, think of ICTs that you use on a regular basis. How has the IT revolution affected your professional and personal life? What opportunities have ICTs brought to you? Are there disadvantages to being so "connected"?

Write down some of your thoughts (1-2 pages) to answer the question.

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1 - Quiz

1. This course will address only NEW ICTs that have the greatest potential impact on developing countries, such as the Internet. True or false?

True False

2. The acronym WSIS stands for

Wireless Systems & Information Solutions World Summit for the Information Society Water Solutions for Impatient Scientists World Society of Iberian Studies World Society and Information Summit

3. Digital radio receivers such as those used by the WorldSpace Foundation are more expensive than traditional AM/FM receivers. True or false?

True False

4. The Kothmale radio browsing project is in which of the following countries?

India Bangladesh Sri Lanka Singapore Nepal



1 - Resources

This is a list of general resources about ICT4D, starting points for further exploration as well as to keep up with this rapidly evolving field....

ICT4D Portals

Discussion Lists & Electronic Newsletters

Journals

ICT4D Portals

- Development Gateway ICT4D pages
- Eldis ICT pages
- Digital Opportunity Channel
- <u>UNDP's IT Observatory</u>
- <u>ICT Development Agenda Digital Library</u> (Commonwealth Telecommunication Organization)

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Discussion Lists

The key difference between a discussion list and an electronic newsletter is that the newsletter is sent to you on a regular basis

(often once a week) but you have no option to send message to other readers. In a discussion list you and other subscribers are contributing messages.

Before subscribing to a list, I recommend taking a look at the list's archives on the web when possible.

Global Knowledge Development
 <u>http://www.edc.org/GLG/gkd/invitation.html</u>

The list has generated a great source of knowledge. A <u>searchable database</u> has now been created.

• Community Informatics

1 - Resources

See more information at http://vancouvercommunity.net/lists/info/communityinformatics

- Digital Dividend Digest <u>http://www.digitaldividend.org</u>
- Digital Divide (Benton Foundation) A discussion list with a strong US focus at times. <u>http://www.digitaldividenetwork.org</u>
- OneWorld <u>http://www.oneworld.net</u>
 - o Learning Channel http://www.learningchannel.org/emaildigests/
 - o Digital Opportunity Channel <u>http://www.digitalopportunity.org/get_involved/email/</u>
- TAD (Telematics for African Development) Consortium

The Telematics for African Development Consortium was established in August 1995 with a vision of using information and communications technologies to improve Africa's access to and use of information for community development and education. If you would like to receive free information services from the Telematics for African Development Consortium, e-mail Neil Butcher at neilshel@icon.co.za To receive archive copies of TAD newsletter contact Jenny Louw at jennyl@saide.org.za

- UNESCO's WebWorld <u>http://www.unesco.org/webworld/newsletter.html</u> (Electronic Newsletter, focus on UNESCO activities)
- BalancingAct News Update <u>http://www.balancingact-africa.com/</u>
- iConnect (monthly digest) <u>http://www.iconnect-online.org/</u>
- A longer list of eNewsletters compiled on the HumanITy site <u>http://www.humanity.org.uk/resources/newsletters.shtml</u>
- Dgroups

Dgroups was created by a group of development organizations to facilitate communications and knowledge sharing among like minded organizations. Many of the discussion lists are closed and meant for inter-organizational communications, but some are open to the general public.

http://www.dgroups.org/

 List of lists on the Advocacy Project Email lists covering local, regional, national and international news. Topics ranging from human rights and technology to liberation movements and the Balkans. <u>http://advocacynet.autoupdate.com/resource_view/resource_8.html</u>

• ELDIS - List of Newsletters and discussion lists specifically related to ICTs http://www.eldis.org/ict/discuss.htm

• Democracy Newswire http://www.publicus.net

- 1 Resources
 - Global Knowledge Partnership <u>http://www.globalknowledge.org</u> Partners Newsletter

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Journals

- **EJISDC** : Electronic Journal on Information Systems in Developing Countries
- Information Technology for Development (irregular paper publication/ content tables and abstracts online on the web site of <u>IOS Press</u>.
- Journal of International Development Special Issue: Information and Communication Technologies (ICTs) and Development, January 2002. See a <u>table of contents</u>.
- $\underline{i4D}$: a new print magazine published in India, with online archives, started in 2003.

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2 - What is the Digital Divide?



More about the photo above....

This second module is meant to give participants

- A clear understanding of the meaning of the term "digital divide", exploring its many dimensions
- An understanding of why the digital divide has become such an important issue within the international development community
- An overview of the literature focused on examining the relationship between ICTs and economic growth, poverty and inequalities
- An introduction to the concept of leapfrogging (to be further explored in the following module)

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2 - What is the Digital Divide?



Photo

Guacharaca Barrio



This is a three-computer telecenter in the Guacharaca barrio (neighborhood) of Esmeraldas, Ecuador. Esmeraldas is a very poor province of Ecuador where a large percentage of the population is black and suffers from poverty as well as racial discrimination. While indigenous groups are relatively well organized in Ecuador and well represented at the political level, the black population is neither organized nor well represented. In this "telecenter", the computers were provided by Chasquinet.

The telecenter is managed by a women's group that is also involved in a number of microenterprises. The telecenter became operational in July 2001 and when I visited in November 2001, the children were learning basic skills through free game software provided by Chasquinet . Key early skills include learning to use a mouse properly and developing the required fine motor skill in the hand and wrist.

The current location of the telecenter, a very dark, humid room without proper ventilation is a key concern. The women's group has already addressed this problem and has managed to find a new location. Soon, the telecenter will be relocated within the local police station. In exchange for a few computer lessons, the police officers have agreed to let the women use empty space on the second floor of the police station. This will most certainly deal with the security issue as at least one police officer is at the police station at all times.

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<u>Close</u>

2 - Notes

*** YOU CAN ACCESS THIS NOTE #2 AS A SINGLE FILE (PDF FORMAT) ***

CONTENT OF THIS NOTE

Definitions of the Digital Divide Dimensions of the Digital Divide Measuring the Digital Divide

Why Does it Matter?

ICTs and Economic Growth ICTs and Poverty and Inequalities

Leapfrogging or Marginalization

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Definitions

Definition 1

Although often framed as an issue of extremes, the digital divide refers to a collection of complex factors that affect whether an individual, social group, country or region has access to the technologies associated with the information economy as well as the educational skills to achieve optimal application of those technologies. GIIC Analysis of the Digital Divide, Powerpoint presentation, October 2000. (<u>GIIC Web site</u>)

Definition 2

There has always been a gap between those people and communities who can make effective use of information technology and those who cannot. Now, more than ever, unequal adoption of technology excludes many from reaping the fruits of the economy. We use the term digital divide to refer to this gap between those who can effectively use new information and communication tools, such as the Internet, and those who cannot. While a consensus does not exist on the extent of the divide (where whether the divide is growing of narrowing), researchers are nearly anonymous in acknowledging that some sort of divide exists at this point in time. (What do we mean when we say digital divide). (Digital Divide Network Web site)

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Dimensions

Three basic dimensions of the Digital Divide found in the current popular discourse

" Describing the Divide in simple **static** terms: disparities in access to various technologies, but often referring to Internet access.

Example: There were 40,000 Internet users in Senegal in 2000.

" Describing the Divide in **dynamic** terms: Is it increasing? Is it narrowing? How fast? Can the more disadvantaged groups actually catch up?

Example: In Senegal, there were 7.2 personal computers per 1000 people in 1995 and 16.8 personal computers per 1000 people in 2000. Clearly the situation is improving, but is it improving at the same rate as comparable countries? Is the rate of increase comparable to or higher than in industrialized countries?

" Differentiating between the **domestic digital divide** and the international or **global digital divide**.

Domestic digital divide statistics are often not available for developing countries. Let's say that out of the 16.8 personal computers per 1000 people in 2000 in Senegal, 15 of them are owned by companies in urban areas and 1 is located in a rural area. The concentration of ICTs in urban areas in just one aspect of this domestic digital divide.

Describing the nuances:

" ICTs are more than just the Internet (use of wireless telephones in some developing countries)

" Increasing access still refers to a very small minority in developing countries (the divide in the US is now referring to broadband access)

See how people have discussed the digital divide from different perspectives in the next section and explore additional details in Chapter 2 of <u>Spanning the Digital Divide</u>, by Bridges.org.

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Dimensions



Spanning the Digital Divide

In a comprehensive study of the digital divide entitled "Spanning the Digital Divide: Understanding and Tackling the Issues," published by Bridges.org, five basic perspectives are highlighted:

1. The digital divide is a lack of physical connections and training - computer hardware, networking access and training, is required to bridge the digital divide - government, NGO and private initiatives should supply them;

2. The digital divide is a lack of computers, access and training, but the problem will solve itself in time;

3. The digital divide is a lack of computers, access and training, exacerbated by ineffective government policy - government action (or inaction) hinder the development and use of computers and until these policies are changed, the digital divide cannot be solved;

4. The digital divide is a lost opportunity, with disadvantaged groups being unable to effectively take advantage of ICTs to improve their lives - what really matters is how the technology is used;

5. The digital divide is a reflection of the lack of basic literacy, poverty, health and other social issues - computers are useful, but nothing will enable a society to bridge the digital divide until basic literacy, poverty, and healthcare issues are addressed. Read more in Chapter 2 of **Spanning the Digital Divide**, by Bridges.org.

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Measuring

The way we measure the digital divide has become more complex over time, as we discovered its many dimensions and variations across countries.

Table below: How many online (Nua Surveys) as of September 2002 (Check the <u>Nua web site</u> for updated numbers)

World Total	606.6 million	~9.6% of the world's population is online
Africa	6.31 million	(less than 1% in most countries, about 7% in South Africa)
Asia/Pacific	187.24 million	Varies a lot across countries since this includes Japan and Australia
Europe	190.91 million	More than 50% in the UK, but less than 1% in Albania
Middle East	5.12 million	37% in U.A.E but less than 1% in Iran, Iraq and Syria
Canada & USA	182.67 million	60% in the US and 53% in Canada
Latin America	33.35 million	Chile 20%, most other countries in the single digits



What is wrong with this type of graph? (Answer)

Early documents discussing ICTs and the global digital divide often referred to simple measures such as the number of computers, teledensity, and the number of radio receivers.

The easiest way to find a compilation of ICT statistics for a specific country is to consult the <u>ICT at a Glance</u> Database on the World Bank's web site. In addition to general background information about the country, the database provides a range of indicators (some are listed below)

ICT Infrastructure and Access

- Telephone mainlines per 1000 people
- Telephone mainlines per 1000 people in largest city
- Cost of local call
- Cost of call to US
- Cellular mobile subscribers per 1000 people
- Daily newspapers
- Radios (per 1000 people)
- Television sets (per 1000 people)

Computers and the Internet

- Personal computers per 1000 people
- Internet Users (thousands)

ICT Expenditures

- ICT expenditure as a % of GDP
- ICT expenditure per capita (\$)

ICT Business and Government Environment

- Internet speed and access
- Highly skilled IT job market
- Competition in ISPs
- Government online service availability
- etc...

New Frameworks for Monitoring the Digital Divide

In 2002, a study jointly implemented by ORBICOM and CIDA attempted to develop a new framework for monitoring and measuring the digital divide. Named the DDI (Digital Divide Index), the project resulted in a conceptual model measuring both the productive capacity and consumption patterns of countries and communities within countries. The consumptive elements of the model measure the uptake or adoption of ICTs and the intensity of use of these technologies after adoption (also referred to as **info-use**). The productive capacity measure will gauge the ICT skills of populations together with the ICT infrastructure of countries and communities (also referred to as **infodensity**). The framework developed arrives at the degree of "ICT-ization" or infostate, as a combination of infodensity and info-use.

See the full study titled <u>"Monitoring the Digital Divide"</u> on the web.

Continue on to learn more about an innovative approach to more accurately measure the Digital Divide in Africa...

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Answer

What's Wrong with the People Online Graph



- The total number of people online in each region is quite irrelevant since the various regions do not have populations of equal size.
- Even if the numbers were given in persons online per capita (for example, 2 out of 10 people are online), it is not clear what "being online" means. In developing countries, people are more likely to share their online access with others at cybercafés or telecenters, or at work.
- Regional statistics hide huge variations across countries.

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Close

Digital Divide in Africa

Digital Divide in Africa

Within the continent of Africa, online users are concentrated in South Africa and a few other countries such as Kenya and Uganda, Ghana, Morocco and Egypt.

The most comprehensive set of statistics and analysis can be found on the <u>African</u> <u>Internet Connectivity</u> web site. You will also find a <u>Status Report</u> on the African Internet (2002) on the site.

In addition, the International Development Research Center (IDRC) in Canada recently took an in-depth look at the Digital Divide in Africa to better understand the most appropriate way to measure it. The study uses " **bits per capita**" to measure Internet use in Africa because other measures such as the number of Internet accounts or Internet users failed to take into account the large numbers of people who share accounts or use corporate or academic networks to access the Internet.

Based on this research, IDRC was able to develop a map of Outgoing Bandwidth in Africa, showing (among other things):

1) great variations across countries;

2) very limited inter-African Internet traffic.

See the map and document in this week's reading list and on the CD-ROM

- <u>Mapping the Digital Divide in Africa</u>, IDRC, 2002
- <u>The Internet: Out of Africa (PDF map)</u>, IDRC, 2002.

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ICTs and Economic Growth

In April 2003, the Development Gateway's ICT4D page features a series of papers around the theme of ICT for Poverty Reduction and Economic Growth. The articles/papers provided a range of perspectives, illustrating the fact that there is little agreement about the whether (and extent to which) ICTs affect economic growth and/ or poverty. You can find <u>all the articles and related resources</u>, including a literature review, on the Development Gateway's ICT4D site.

This is perhaps not the most important question and it is likely to be a question that never finds a definite answer. Instead of arguing over this type of theoretical questions, almost everyone in this field of ICT4D has been making the assumption that given the right conditions and the right environment, ICTs can do a lot of good both in terms of economic growth and poverty reduction.

Focus on teledensity and economic wealth

Early studies looking at the relationship between ICTs and growth focused on teledensity as a key variable. **Teledensity** represents the number of telephone lines per 100 inhabitants. The teledensity varies from more than 30 in industrial countries, between 10 and 30 in middle income countries, and less than 10 in developing countries. Many countries in Africa are still below 1 telephone line per 100 inhabitants.

Critical Mass argument

The critical mass argument states that there is a positive causal correlation, meaning that information and communication do promote development, provided that a critical mass of telecommunication infrastructure is present. It is often argued that telecommunications do not contribute to development below a teledensity of 1 per 100.

Graphs showing the relationship between teledensity and GDP are static. All they indicate is that the higher the GDP, the higher the teledensity and vice versa, and some countries are able to perform better in terms of teledensity than their GDP would suggest.

These graphs, however, fail to say anything about the speed of the transition from a 1 to a 20 or a 20 to a 30. Until a country has reached a teledensity of 1, it s very difficult to predict how long it will take to reach higher levels. You can get stuck at 1 for a long

time. Once you ve reached one, it takes 50 years to reach a teledensity of 50 (industrial countries).

It takes an average of 21 years to get from a teledensity of 1 to 10 and only 9 years to get from 10 to 20. Some countries have done much better than these averages.

What could be the reasons for some countries having a much faster transition to higher teledensities?

Remember, teledensity is only about fixed telephones lines. There is evidence that new technologies are being introduced much faster. It took 38 years for the radio to gain widespread acceptance, 16 years for personal computers, 13 years for the television and 4 years for the World Wide Web. (Widespread acceptance is defined as 50 million users).

The statistics we were talking about earlier in terms of teledensity do not provide a complete picture. There has been a tremendous expansion of cellular and satellite systems that allow telephone access without fixed telephone lines. That s part of the leapfrogging phenomenon. Many areas in developing countries will never see fixed telephone lines because it s much cheaper and more effective to use wireless technologies. There are areas of the world where cellular phones are much more common than fixed telephone lines.

In addition, the relationship between teledensity (or ICTs in general) and GDP, says nothing about the impact of telephones (or ICTs in general) with regards to poverty reduction and income inequalities within countries and across countries.

Related term: Network Effects

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ICTs and Poverty

• Charles <u>Kenny</u>, Juan Navas-Sabater and Christine Z. Qiang. ICTs and Poverty. Draft for comment, August 29, 2000.

The role of ICTs in poverty reduction is through their catalytic and leveraging effect on earnings opportunities, on educational services, and on welfare provision. The authors stress, however, that the real impact of ICTs on poverty needs to be addressed within a holistic approach. The rest of the economy will have an important impact on the extent to which ICTs can and are having a positive effect on poverty reduction. In practical terms, it makes little difference if a farmer is able to get information about market prices if there are no roads for him/her to transfer the crops to the market.

They argue that recent econometric studies have found increasing evidence of a causal link between telecommunications development and economic development. They also highlight strategies to enhance the impact of ICTs in reducing poverty:

1. Listening to the poor: Central to efforts to expand useful ICT access to the poor is knowledge of their needs and current degree of access.

- 2. Overcoming supply constraints to service provision
- 3. Pro-poor rural and universal access policies
- 4. Public governance and provision of services to the poor
 - Francisco Rodriguez and Ernest J. Wilson, III. "Are Poor Countries Losing the Information Revolution?" infoDev Working Paper, May 2000.

This report is a non-technical summary of research that explores whether there is an information and communication technology (ICT) gap between rich and poor countries, and whether that gap is growing or shrinking. It also discusses the link between that gap and gaps in income, both within countries and across them.

Some conclusions:

All developing countries, even the poorest, are improving their access to and use of modern ICTs, some at a dramatic rate. In virtually every country in the world, more individuals enjoy access to ICT today than ever before.

However, the gap between the rich OECD countries and the poor developing countries is

growing, both in terms of ICT products as well as in terms of incomes. The coincidence of these two trends is suggestive, but a decisive causal link cannot be established.

Although these new technologies appear to be improving economic performance and welfare among the user populations, the link between ICTs and society-wide economic progress has been more elusive. The study confirms what many researchers have found for developed countries, namely a lack of association between economic growth and use of ICTs. A possible hypothesis is that the consolidation of the networks necessary to take advantage of these technologies takes time to form and that their positive effects will be felt in the longer run.

It is quite clear that countries with similar levels of per capita incomes and economic structures exhibit wide variation in their ICT performance. Some developing countries are surging ahead while others are falling behind. They identify the pro-ICT policies that appear to be causing these differences in outcomes. In particular, the study shows that countries enjoy greater technological progress when they produce:

1. A climate of democratic rights and civil liberties that is conducive to innovation and adaptation of ICTs.

- 2. Respect for the rule of law and security of property rights.
- 3. Investment in Human Capital.
- 4. Low levels of government distortions.

However, the authors also find that these links are complex. Although there are great complementarities between ICT and economic and social progress, there are also some important trade-offs between equity, well-being, and the unhindered development of ICTs. Simple claims about the links between ICTs and progress are not correct, and may in some cases be dangerously wrong.

In two areas the authors lacked sufficient data to reach firm conclusions, but we can hazard educated guesses. They cannot tell whether the ICT gap is growing internally within countries between the rich and the poor; nor can they tell decisively whether ICTs are contributing to greater inequality of incomes at national levels. However, they do know that comparable studies in developed countries suggest that information technologies can cause substantial increases in inequality. Whether this effect will be reversed in the long or medium run is still open to question.

A continuation of existing trends in the ICT have/have-not gap may contribute to a number of social problems including skewed economic outcomes and enhanced risk of social and political conflict. While the bad news is that the global equity problem is getting worse, the good news is that international and national bodies have an improved understanding of policies that can expand and accelerate the distribution of ICTs to poor

populations in developing countries.

The research found that investment and use of ICT alone is not automatically associated with economic growth. This finding, which contrasts with the conventional public wisdom, is nevertheless consistent with a large number of economic studies carried out mainly in industrialized countries. On the other hand, it does seem intuitively important that countries that have high and sustainable rates of growth are able to diffuse and use ICT efficiently and effectively. The findings may reflect the fact that ICTs require a sophisticated enabling environment of hardware and policies before they contribute efficiently to economic growth.

More resources.....

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Kenny

Charles Kenny in an economist within the Global Information and Communications Technology Department (GICT web site) at the World Bank.

- Charles Kenny. "<u>Development's False Divide</u> ." Foreign Policy Jan/Feb 2003. (On the web)
- Charles Kenny. "<u>The Internet and Economic Growth in Least Developed</u> <u>Countries: A Case of Managing Expectations?</u> " April 2003. (On the web)
- Carsten Fink and Charles Kenny. "<u>W(h)ither the Digital Divide?</u>" January 2003.
- Charles Kenny. "<u>The Costs and Benefits of ICTs for Direct Poverty Alleviation</u> ", 2002. (On the web)
- Jeremy Grace, Charles Kenny and Christine Qiang. "<u>Information and</u> <u>Communication Technologies and Broad-based Development: A Review of the</u> <u>Evidence</u>." February 2001. (On the web)
- Charles Kenny. "<u>Information and Communication Technologies and Poverty</u>." Techknowlogia, July-August 2001.

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Resources

Additional Resources on ICTs, Poverty Reduction and Economic Growth

- Reading some of Charles <u>Kenny</u>'s papers. <u>Kenny</u> has been one of the strongest voices of caution in this field, and referring specifically to the Internet, has argued that the impact of any particular technology is likely to be small.
- Exploring the DG ICT4D <u>Highlight on ICT for Poverty Reduction and Economic</u> <u>Growth</u>
- Reading Andrew Skuse. "<u>Information Communication Technologies, Poverty and</u> <u>Empowerment</u>. DFID Social Development Department, July 2001, Dissemination Note.

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Leapfrogging

Should we worry about the Digital Divide? If so, what exactly whould we worry about?

What do we mean by leapfrogging ?

Leapfrogging refers to the ability of developing countries to bypass certain stages of technological development. For example, some areas of the world are seeing spectacular increases in the use of cellular phones where copper-wire fixed lines are not available and may even never be deployed. Some countries that were very much behind in terms of telecommunications infrastructure have been able to modernize quickly because they did not have any substantial land-based infrastructure to upgrade.

More generally, the term is used to refer to countries that have successfully used modern ICTs to make rapid economic progress. The Asian Tigers and some isolated cases such as Estonia may be included in that group of successful ICT adopters.

What is the Risk that the Digital Divide will further Marginalize Developing Countries?

Beyond some of the skepticism found among economists such as Charles Kenny and others, which would still be considered within the mainstream, there are other critics who take a more radical approach.

Critics of mainstream optimistic perspectives argue that ICT dissemination is part of the expansion of global capitalism, cultural imperialism and an instrument of globalization, linking urban centers in developing countries to centers in capitalist economies and further marginalizing rural areas.

While the majority of the emerging literature on ICTs for Development sees ICTs as intrinsically beneficial to development, some are concerned that too much is being made of their potential positive impacts and not enough attention is paid to the fact that ICTs are tools. As with any tools, how they are used is what is really important.

The trouble with ICTs, however, is that although they offer the technical means for establishing channels, networks, and sites, they cannot by themselves ensure either that these are used for deliberation, that they promote participation, or that they provide access to needed information. The actual social uses of ICTs are to a large extent guided by the political-institutional arrangements within which they are embedded. Whether the potential to support social development will be realized depends much more on the institutional environment of the technology than on its technical features per se. Therefore analysis of the relation between ICTs and social development has to give ample attention to their policy context (Hamelink, 1998).

Manuel <u>Castells</u> argues, for example, that uneven development isn t about first world/ third world dichotomy so much as between dynamic segments of countries which form the global network society and switched off territories and people on the other hand. Furthermore, within this framework of the new informational economy, a fourth world is emerging. This fourth world consists of a significant portion of the world population that is shifting from a position of exploitation to a position of irrelevance (<u>Castells</u>, 1998).

Unless measures are taken to reform the current development model, <u>Castells</u> warns, this fourth world may become the source of increased criminal activity and violence across the globe.

The result is, as noted by Fernando Henrique Cardoso, that

&we are no longer talking about the South that was on the periphery of the capitalist core and was tied to it in a classical relationship of dependence& we are dealing& with a crueler phenomenon: either the South (or a portion of it) enters the democratic-technological -scientific race, invests heavily in R&D, and endures the information economy metamorphosis, or it becomes unimportant, unexploited, and unexploitable. (Cardoso, 1993)

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Hamelink

Hamelink, Cees. (1997). "New Information and Communication Technologies, Social Development and Cultural Change". UNRISD. The document can be ordered through the <u>UNRISD web site</u> but it is no longer available online.

See also <u>Hamelink's Keynote Address</u> at the opening session of the Civil Society Sector, WSIS PrepCom 1, July 2002.

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Castells

Castells, M. (1998). The Information Age: Economy, Society and Culture. Vols. 1-3. Blackwell: Oxford.

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Cardoso

Reference

Cardoso, F.E. (1993). North-South Relations in the Present Context: A New Dependency? In M. Cornoy, M. Castells and S. Cohen (eds.), The New Global Economy in the Information Age: Reflections on our Changing World, pp. 149-164. Pennsylvania State University, University Park, PA.

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eReadiness

Beyond measuring the digital divide itself in its complex dimensions, researchers and practitioners alike have been trying to find relevant measures of eReadiness to determine the extent to which individual countries were "ready" to take on the challenges of the information revolution and knowledge economy.

Different eReadiness studies may measure slightly different things. Bridges.org provides a <u>comparative analysis of different methodologies</u> (on the web) that have been used by organizations doing eReadiness surveys. The report comparing all the available methods concludes that 1) the methods that is selected must fit the user's needs; 2) while there are many different methods available, all have limitations.

eReadiness and other action oriented indices are important from the perspective of Governments and donor agencies. If the indices are specific enough, they allow Governments to see where they are leaders and where they are falling behind. As a result, they can better target their initiatives to catch in areas where they have weaknesses. For donor agencies, the indices provide a useful tool for prioritization of assistance among countries and it also helps them to determine what type of support is most needed in any specific country.

Those countries that are falling behind in general should be given priority in terms of extending assistance. What are also important are indicators that suggest a particular course of action.

See Charles Kenny, "<u>Prioritizing Countries for Assistance to Overcome the Digital</u> <u>Divide</u> ." (on the web) for a more detailed argument.

Resources

A comprehensive list of resources related to eReadiness methologies and links to actual eReadiness rankings can be found on the <u>infoDev web site</u>.

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2 - Readings

IDRC Mapping Study

- Mapping the Digital Divide in Africa, IDRC, 2002.
- <u>The Internet: Out of Africa</u> (PDF map), IDRC, 2002.

Development Gateway Interview

• <u>From Digital Divide to e-inclusion</u>, Development Gateway Interview with Alfonso Molina, October 2002.

For a longer report on the Digital Divide, I recommend the following:

• "<u>Spanning the Digital Divide : Understanding and Tackling the Issues</u>," by Bridges.org. Sections 1, 2 and 3 (pages 9-43) are most appropriate for this second module).

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2 - Exercises

Exercise A. ICTs and Development

Learning Objective

Understand the main arguments underlying the need for developing countries to actively pursue the development of their information and communication infrastructures.

Instructions

You are a member of a group of mid-level government officials from a range of ministries in country X (a developing country).

Six months ago, you all attended a workshop conducted by the World Bank on the relationship between ICTs and development. While the workshop was well attended and there seemed to be a lot of enthusiasm at the time among the participants, nothing has happened since then.

As a group, you ve had ad hoc meetings for the past six months to discuss the implications of the workshop in your various capacities as government officials. You re convinced that something must be done at the policy level. For anything to happen, however, you ll need the support of a number of key individuals within the government. Your task is to:

1) Identify the key individuals within the government that you will need to convince. Who would have to be involved in the process to make it successful?

- Key individuals within the Government (not names, just positions)
- Key arguments to convince key government officials
- 5-minute speech (don t write up a speech, highlight key points you want to make

You may want to specifically identify the Ministries that should be involved and you may select a specific country to make the exercise more realistic, preferably a country you are familiar with.

Exercise B. National ICT Survey

Learning Objective

The objective of this exercise is to have an in-depth look at the ICT situation in a

specific country.

Instructions

You may want to look at your own country (even if you are in a so-called "developed" country) or you may explore any other country of interest. Make sure that you can find sufficient data on this particular country to write a 3-5 page essay.

Tasks

- Select a country. If there is a specific reason for selection that country, explain in your essay.
- Research documents that provide statistical data as well as analysis regarding the ICT situation in the country you selected.
- Write a 3-5 page summary of what you've learned about this country's ICT situation.

See also Exercise B for Module 3. You might want to combine these two exercises into one project.

Resources for Exercise 2B

Exercise C: Domestic Digital Divide Profiles

Learning Objective

Understand how the domestic digital divide affects individuals in your own country.

Instructions

Imagine two individuals living in your country. One of them lives in an urban environment and the other lives in a rural area. Describe their respective access to information and communication technologies. You may also want to think about changes they have experienced in the recent past with regards to access to ICTs. Feel free to make it up entirely but it needs to reflect realities on the ground. You can also describe people you actually know and just change their names for the purpose of this exercise.

Tasks

Develop two "portraits" or "profiles" that highlight differences and similarities in terms of your two individuals' access to ICTs. Make sure to define access and talk about other obstacles they may be facing that go beyond "physical" access to ICTs.

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1. Teledensity is most often measured as....

the number of television sets per 100 inhabitants the number of television sets per 1000 inhabitants the number of main telephone lines per 100 inhabitants the number of main telephone lines per 1000 inhabitants none of the above

2. There are 187 million people online in the Asia/Pacific region and 191 people online in Europe. Does this mean that the Asia/Pacific region is catching up with Europe in terms of Internet access?

No Yes Not necessarily

3. What is the measure of Internet access and use that was most recently used by IDRC to map the digital divide in Africa?

Radio receivers per 1000 inhabitants Teledensity Bits per capita

4. Who invented the term "IsICTometrics"?

Al Gore Michel Menou Vincent Cerf Arun Mehta 2 - Quiz



2 - Resources

Monitoring the Digital Divide, George Sciadas, Orbicom 2002. (Report)

International Telecommunications Union (ITU) <u>Telecommunication Indicators Update</u> Free Statistics

World Bank World Development Indicators 2001

Information Infrastructure Indicators, 1990-2010 . infoDev Project.

ICTs at a Glance

United Nations Development Program (UNDP) Human Development Report 2000: <u>Access to Information Flows, Table 12</u>

Geographics: The World's Online Populations

HUBS and SPOKES : A Telegeography Internet Reader, April 2000.

Joint OECD/UNDP/UN/World Bank Global Forum of the OECD, March 2001: "Exploiting the Digital Opportunities for Poverty Reduction". Graphic illustration of the digital divide

Geo-Know.Net Geographical Knowledge Networks

Mike Jensen's Site: Internet Statistics for Africa:

Statistics of Cellular in South Africa

ICT Maps of Africa

US Digital Divide (in three different formats) <u>HTML</u> <u>PDF</u> <u>MS Word</u>

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2 - Resources



3 - Addressing the Digital Divide

This third module is meant to allow participants to

- Get a more complete understanding of the concept of leapfrogging (introduced in Module 2)
- Link their understanding of the various dimensions of the digital divide to actions taken to address the digital divide
- Learn about global, regional and national level initiatives and their respective roles in addressing the digital divide
- Understand the range of regulatory and policy issues that need to be addressed at the national level
- Explore the wide range of organizations supporting initiatives at different levels (global, regional, national, local) to address the digital divide

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3 - Notes

3 - Notes

*** YOU CAN ACCESS THIS NOTE AS <u>A SINGLE FILE</u> (PDF FORMAT) ** *

CONTENT OF THIS NOTE Leapfrogging

Global Initiatives Regional Initiatives Key Elements of National ICT Strategies Key Support Organizations

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Leapfrogging

" Davison, Robert, Doug Vogel, Roger Harris and Noel Jones. Technology Leapfrogging in Developing Countries: An Inevitable Luxury? EJISDC Vol. 1 (January 2000)

> Technology leapfrogging can exist, but leapfrogging alone does not guarantee, or even encourage prosperity. This depends on the policy environment, how leapfrogging is operationalized, who is involved and who undertakes to support initiatives.

The authors of this article in the Electronic Journal on Information Systems in Developing countries (EJISDC) argue that leapfrogging may not be that efficient.

- Through the development and use of successive generations of technologies, societies accumulate a significant amount of knowledge that allows people to use new technologies effectively and develop new technologies.
- The benefits of leapfrogging may not be automatic. Appropriate policies at the global and national level must be adopted.
- Leapfrogging will not be successful without training.
- One should not assume that there is only one way to leapfrog. Different social contexts will determine how people adopt and use technologies.

The authors cite the example of Malaysia s Multimedia Super Corridor (\underline{MSC}) as an example of a leapfrogging attempt.

The MSC will bring together, for the first time ever, an integrated environment with all the unique elements and attributes necessary to create the perfect global multimedia climate.

It is a geographic area 15 kilometres wide and 50 kilometres long. Two of the world's first Smart Cities are being developed in the Corridor: Putrajaya, the new seat of government and administrative capital of Malaysia where the concept of electronic government will be introduced; and Cyberjaya, an intelligent city with multimedia industries, R&D centres, a Multimedia University and operational headquarters for multinationals wishing to direct their worldwide manufacturing and trading activities using multimedia technology.

Another leader in terms of leapfrogging has been Estonia

Abstract from the Digital Opportunity Report, Estonia Case Study (on the web):

When Estonia regained independence in 1991, the government embarked on an ambitious project to bring the nation into the digital age. Estonia premised its IT strategy on providing broad-based connectivity, providing access to technology and information as a right, and on leveraging its human resources to expand economic growth. Today, Estonia boasts one of the most modern telecommunications networks in Europe, low connectivity costs and high rates of computer literacy, even by Western European standards. Twenty-eight percent of Estonia's population is connected to the Internet. Estonia's strategic investment in wiring the entire country has led to an explosion in ICT applications in banking, education, health, transport and public administration. Notwithstanding the recent economic slowdown, Estonia s period of independence has been characterized by significant improvements in living standards, in large measure because of its increased participation in the global network economy. Estonia also has been able to coordinate the efforts of dozens of associations dedicated to furthering the country as a whole, as well as its development as an information society.

Resources related to Estonia (on the web):

- ICT, Innovations and Innovation Policy in Estonia (PDF file)
- Estonia Woes the Computer Age (BBC, May 1, 2003 article)

See also the Development Gateway's <u>Highlight on Leadership and Innovation for a</u> <u>Connected World.</u>

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Global Initiatives

The DOT FORCE The UN ICT Task Force The World Summit on the Information Society

DOT-FORCE (on the web)

In the summer of 2000, as the G8 countries met in Okinawa for their annual meeting, they made the focus of their meeting the new information and communication technologies. With a large financial commitment from Japan, the summit followed through its commitment to set up a Digital Opportunity Task Force, otherwise known as the DOT Force. A highly unusual initiative for the G8, the DOT Force consisted in country task forces comprised of government, industry and civil society members. In addition, representatives from a small number of developing countries as well as international development agencies were invited. Following a series of consultations around the world, the DOT Force submitted its report in May 2001 and the report was adopted by the Genoa meeting of the G8 in the summer. The various parties involved are now working out the implementation details.

UN ICT Task Force(on the web)

From another front, the UN launched its own ICT Task Force, mandated by UN Secretary-General Kofi Annan to find ways to spread the benefits of the digital revolutions to those currently excluded from its opportunities. The members of the Task Force come from the public and private sector, civil society and the scientific community and provides a mix of leaders from developing and industrialized countries.

World Summit on the Information Society_(WSIS)

The most important event in the near future is the World Summit on the Information Society under the auspices of the ITU. The Summit will occur in two phases, first in Geneva in 2003 and then in Tunisia in 2005. The Summit is being preceded by a series of regional consultations and virtual processes.

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Regional Initiatives

The strength of regional organizations varies across regions but in the context of ICTs for Development, they can all take on important roles in building consensus at the regional level, promoting the development of the telecom infrastructure at the regional level, share scarce IT expertise at the regional level, etc... They can also serve to collect and analyze country specific and region-wide data to be used in policy making. Some issues need to be addressed at the regional level. For some regions (or sub-regions such as the Caribbean) a regional approach is essential.

Africa

 UNECA Promoting Information and Communication Technologies for <u>Development</u>
 Such a theorem is a bicking in the second se

See also the <u>regional initiatives</u>

• WSIS Regional Preparatory Meeting The meeting took place in Bamako, Mali, May 2002. See the <u>Conference Web site</u> for additional details.

Latin America & Caribbean

- Third Summit of the Americas: <u>Connectivity</u>
- WSIS Regional Preparatory Meeting The meeting took place in the Dominican Republic, January 2003. See the <u>Conference Web site</u> (in Spanish) for additional details.
- <u>Caribbean ICT Roundtable</u> (October 2002)

Asia/Pacific

- e-ASEAN Task Force
- WSIS Regional Preparatory Meeting The meeting took place in Japan, January 2003 See the <u>Conference Web site</u> for additional details.

Western Asia / Middle East

• WSIS Regional Preparatory Meeting The meeting took place in Beirut, February 2003. See the <u>Conference Web site</u> for additional details.



National Initiatives

The eReadiness assessments mentioned earlier are often a first step for governments to start discussing possible initiatives at the national level to address the digital divide and/or take on bold leapfrogging initiatives.

Even within a market-based development model, governments have an important role to play in terms of developing and implementing the appropriate mix of policies that will encourage private sector investment in telecommunications while taking measure to ensure universal access to telecommunications and enable individual users and enterprises to benefit from such telecommunication infrastructure.

A number of the initiatives supported by donors have paid significant attention to the necessary steps that governments must take in order to take advantage of digital opportunities and ensure that benefits of the digital revolution are distributed evenly within the population. Some countries have made significant efforts to develop national strategies related to ICTs and the information society. For example, Tanzania developed its own ICT Strategy in 2001 with assistance from the Swedish development agency (SIDA).

In Africa, the UN Economic Commission for Africa (UNECA), has implemented a special program to help national governments develop national policies and strategies regarding ICTs. The National Information and Communication Infrastructure (NICI) development process aims at developing national information and communication policies and strategies that could be used to enhance the role of Information and communication technologies (ICTs) in facilitating the socio-economic development process.

In many cases, the governments have sought partnerships with the private sector in order to address both key telecommunication infrastructure challenges and challenges in the application of technologies in various sectors of the economy. This has been the case most recently with Mexico s e-Mexico initiative and the involvement of Microsoft.

Enabling Policy and Regulatory Environment

Bridges. org's report entitled "<u>Spanning the Digital Divide</u> " highlights 25 key policies that affect the digital divide. These policies are broken down in 7 categories:

1. ICT Infrastructure and supporting systems

Policies that affect basic ICT infrastructure: telecommunications licensing and regulations, telecommunications privatization, spectrum allocation, Internet domain management, banking and financial sector, standards setting, customs standardization.

2. Trust

Policies that affect business, government and consumer trust in ICTs, and of each other online, including: Electronic signatures, data security, cybercrime, privaty, intellectual property, regulation of content, consumer protection.

3. Capacity building

Policies that build the necessary capacity to use ICTs effectively, including curriculum and materials, technical education.

4. Taxation and trade

Policies related to taxation, tariffs and trade barriers and foreign direct investment.

5. Employment and labor

Policies related to collective bargaining and other labor policies, brain drain counter-measures.

6. Technology diffusion

Policies related to Universal Access, E-Government, private sector and civil society ICT use.

7. General government environment

Policies related to government structure (democracy, transparency, independence of judiciary and regulatory authorities), and discriminatory policies.

Resources

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Resources

Malaysia's Multimedia Super Corridor (MSC)

Tanzania's ICT Strategy

e-Mexico

Are you looking for a specific country?

UNECA's National Information and Communication Infrastructure (<u>NICI</u>) Initiative National ICT strategies of countries across Africa are listed on the site

Check the list of resources for module 3...

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Resources for Module 3

Country Specific Resources

India 's Information Technology Sector: What Contribution to Broader Economic Development? by Nirvikar Singh. OECD Development Centre, Technical Papers No. 207. March 2003. ÿ

République Islamique de **Mauritanie**, Ministere de l'interieur des Postes et Telecommunications. <u>Plan de développement de l'infrastructure nationale d'information</u> <u>et de communication</u>, 1999-2002. September 1999. (in French)

See also http://www.uneca.org/aisi/mauritania.htm

Samuel Kinde Kassegne. "Responding to a New Challenge: The Case of Telecom Policy in **Ethiopia**." Paper presented at A Conference on Information Communication Technologies and Development, Addis Ababa, 18-20 June 2001. http://www.ethiopiaknowledge.org/

Information Superhighway

http://www.dwinfoserver.com/otto/highway.shtml Access to country specific information on telecommunication infrastructure and policy.

Kyrgyz Republic, Best Practices: A Process for Developing Internet Policy: The Model of the National ICT/Internet Summit. <u>http://www.gipiproject.org/practices</u> See the ICT summit web site, Feb. 2001 (English version): http://www.ict.kg/ict.php?lang=engÿ

Government of Pakistan, Information Technology Commission (ITC), IT Policy http://www.itcommission.gov.pk/itpolicy.htm

India, IT Action Plan, (Part I: Software), 1998

- IT Action Plan, (Part II: Hardware), 1998
- IT Action Plan, (Part III: Long-Term National IT Policy), 1999

Brazil, Information Society in Brazil, Green Book

Egypt, Information and Decision Support Center http://www.idsc.gov.eg

Egypt, National Plan for Telecommunication and Information, December 1999

Egypt, Ministry of Communications and Information Technology (MCIT) http://www.mcit.gov.eg

Egypt, National Plan for Communications and Information Technology, 2001-2002 <u>http://www.mcit.gov.eg/national_plan.html</u>

Malaysia, National Information Technology Council http://www.nitc.org.my/index.shtml - National IT Agenda http://www.nitc.org.my/nita/index.shtml - Strategic Thrust Areas http://www.nitc.org.my/5e/index.shtml - Strategic Priority Areas http://www.nitc.org.my/spa/index.shtml - Building Knowledge Societies Series: "Access, Empowerment and Governance in the Information Age." 2000. (Paper, 120 pages) http://www.nitc.org.my/resources/bkss.pdf

Malaysia, SJ2005, Smart partnership for Community Development http://www.sj2005.net.my/

Dinesh Nair, "Bringing a Horse to Water." August 15, 2001, MSC Times - An analysis of the results of the Multimedia Super Corridor in **Malaysia**, five years after its launch.

http://www.msctimes.com/article.cfm?id=250

Expatriate Bangladeshi 2000, Draft IT Policy of Bangladesh (not an official document)

Indonesia, Five Year Action Plan for the Development and Implementation of Information and Communication Technologies (ICT) in Indonesia, Government of Indonesia's Action Plan to overcome the Digital Divide, Information and Communication Technologies under Presidential Instruction NO. 6/2001.

Maldives, Ministry of Communication, <u>Science and Technology Science and</u> <u>Technology Master Plan</u>

Mexico, e-Mexico

http://www.e-mexico.gob.mx/

E-Mexico Initiative, a Global Development Gateway <u>Interview</u> with Alan Levy, May 2002.

SADC, SADC World Economic Forum Consultation Report on E-Readiness.

Singapore, Infocomm Development Authority http://www.ida.gov.sg/

Jason Dedrick & Kenneth Kraemer. "<u>China IT Report</u>". Center for Research on Information Technology and Organizations, University of California, Irvine. October 2001.

IT21 - **Philippines** - "Asia's Knowledge Center." I.T. Action Agenda for the 21st Century, October1997. http://www.neda.gov.ph/Subweb/IT21/

South Africa Telecommunications Green Paper of 1995

South Africa Policy Brief: Telecommunications Overview, commentary and statistics,

May 2001, Bridges.org

This report looks at the telecommunications sector of South Africa as of May 2001, focusing on existing and proposed government policy and describing the interests of the telecom businesses and other constituencies that influence government decision-making. It also provides analysis and recommendations for balancing the needs of ICT users and the concerns of the public and private sectors, while fostering competition and bringing down telecommunications costs.

South Africa

<u>Telecommunications and Universal Service</u> : International Experience in the Context of South African Policy Reform , IDRC, 1996

South Africa, New Telecommunications Policy Process (2001) http://docweb.pwv.gov.za/docs/telesubs/index.html

South Africa, White Paper on Telecommunications Policy (1996) <u>http://docweb.pwv.gov.za/docs/policy/telewp.html</u>

South Africa, White Paper on Broadcasting Policy, June 1998 http://docweb.pwv.gov.za/docs/policy/broadcastingwp.html

National ICT Policy of Tanzania , May 2002

Creating a Development Dynamic. Final Report of the Digital Opportunity Initiative Appendix 3: **National ICT Approaches Case Studies**

- Brazil
- Costa Rica
- Estonia
- India
- Malaysia
- South Africa
- Tanzania

NICI (National Information and Communication Infrastructure)

The NICI development process aims at developing national information and communication policies and strategies that could be used to enhance the role of Information and communication technologies (ICTs) in facilitating the socio-economic development process.

http://www.uneca.org/aisi/nici.htm

Ministry of Communications - **Ghana** - Economic Commission for Africa Forum for the Development of Africa, Plan for National Information and Communications Infrastructure of Ghana, 2000-2005, Accra, Ghana, December 2000.ÿ (<u>Word Document</u>)

Cameroon

Cote d'Ivoire

Plan de développement de l'Infrastructure national de l'Information et de la communication 2000-2005, Juillet 2000.ÿ (<u>in French</u>)

Ghana, Framework for the Design of a National IT Policy, August 2001. http://govt.ghana.gov.gh/story.asp?ID=81

Kenya, <u>Building Information Communities in Africa BICA</u> -Kenya Towards the realisation of Kenya Information Society: the status, the trends and a strategy for development (final version), February 2000.

Mozambique, Draft Policy for Information and Communication Technologies, 2000.

Mozambique, Commission for Information and Communication Technology Policy. <u>http://www.infopol.gov.mz/</u>

Senegal, <u>Plan National des Teleservices au Senegal</u>, (no date, in French)

Tunisia, Electronic Exchanges and Electronic Commerce Bill, (no date)

See also information on National Workshops sponsored by the UNECA for the following countries: Cameroon Mali Morocco Namibia Nigeria Rwanda

Nigeria's IT Policy http://www.jidaw.com/IT%20Policy.pdf

And the report of the Sub-regional Workshop for Southern African Countries

Vietnam-Canada Information Technology (VCIT) Project, Final Report, November 14, 1995 to March 31, 2001. Prepared for CIDA, July 31, 2001. http://www.gaia.ca/vcitfinalreport.htm

VCIT was a five year (1996-2001) 10 million dollar CIDA-sponsored project. The project was designed to build the capacity of the Government of Vietnam to plan and coordinate the management of the National Program on Information Technology (NPIT) implementation, which included an expected result of enhanced IT policy making. NPTI's goal was to "leapfrog" Vietnam's use of IT from none to globally comtemporary by the year 2020.

Junelee Pradhan. "<u>Information Technology in Nepal</u>: What Role for the Government ?" EJISDC, 2002, 8, 3 (1-11)

Information Technology Policy, 2057 (2000), Nepal

National Information Technology Policy of Sri Lanka

Somkiat Tangkitvanish (Thailand Development Research Institute). "**Regulating the Internet: Lessons from Thailand**." Presentation at "The Internet in South East Asia", Bangkok, Thailand, November 2001. PDF Format

PowerPoint Format

Other Resources

The World Telecommunications Regulatory Colloquium

http://www.regulate.org Sponsored by infoDev

Telecommunication Regulation Handbook, infoDev, World Bank

This is a series of large pdf files (300+ in total), organized in modules.

Module 1: Overview of telecommunication regulation

Module 2: Licensing telecommunications services

Module 3: Interconnection

Module 4: Price Regulation

Module 5: Competition Policy

Module 6: Universal Service

Shalini Venturelli, "<u>Inventing E-Regulation in the US, EU and East Asia</u>:
Conflicting Social Visions of the Internet & the Information Society."Presented at TPRC 2001, 29th Research Conference on Information, Communication & Internet Policy, Alexandria, Virginia, October 27-29.
(43 pages)

Michael Minges (ITU) "**Internet Policy in South East Asia** ". Presentation at "The Internet in South East Asia", Bangkok, Thailand, November 2001. <u>PDF Format</u> PowerPoint Format

VanessaGray (ITU), "**Silicon Valleys in Developing Countries** ." Presentation at "The Internet in South East Asia", Bangkok, Thailand, November 2001. Silicon Valley is a metaphor for geographic areas where computer companies cluster. Many developing countries are trying to develop such "silicon valleys", also referred to as camps, valleys, parks or corridors. <u>PDF format</u>

PowerPoint format

Regional Integration in Africa (The role of ICTs)

Guidelines for ICT Sectoral Policy and Planning, Comnet-IT

<u>Global Policymaking for Information and Communications Technologies:</u> Enabling Meaningful Participation by Developing-Nations Stakeholders, June 2002.

"Annex C: Regulation for Telecommunications ." Telecommunication in Action, 8

pages, pdf file.

David Souter and Guy Girardet, "<u>Regulatory Frameworks</u>." KnowledgeBank Paper 13, For Commonwealth Telecommunications Organization. 2000. Access on the web as multiple files. Summary: This paper looks at the role of regulation and regulatory agencies in promoting access to information and communication technologies in developing countries, particularly less developed countries (LDCs). It is aimed primarily at those with backgrounds outside the ICT sector, and therefore sets the specific issues affecting developing countries in the broad context of regulation policy and strategy. Part 1 is concerned primarily with telecommunications; Part 2 with Internet.

Global Internet Policy Initiative (GIPI)

http://www.gipiproject.org

Operating in nearly a dozen countries, GIPI serves as a resource to local stakeholders in the Internet policy development process. The project's goal is to promote: transparency and predictability in business regulation; competition, privatization, open networks and universal service in terms of telecomm policy; and market-driven solutions, user-control and human rights protection in terms of government control. The key people in GIPI are the country coordinators who help local stakeholders to develop the capacity to promote sound policies supporting an open Internet.

Telecommunications "Liberalization" (links to documents) <u>http://www.gipiproject.org/telco</u>

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Levels of Intervention

ADDRESSING THE DIGITAL DIVIDE AT DIFFERENT LEVELS

Examples of ISSUES	Examples of ORGANIZATIONS	Examples of ACTIVITIES
GLOBAL LEVEL		
Intellectual Property Rights (thought it's also an issue	Individual entities (ex: ITU)	<u>WSIS</u> (building consensus around
	Partnerships (ex: <u>GKP</u>)	
that individual governments	UN ICT Task Force	priority areas for action)
	(semi-permanent intra-UN coordination mechanism))	
REGIONAL LEVEL		
	UNECA (<u>AISI</u>)	WSIS (Regional meetings)
Intra-regional telecom infrastructure development	African Virtual University (<u>AVU</u>)	African Regional Conference
	African Connection	Pan European Regional Conf. Asia-Pacific Regional Conf.
	e-APEC Task Force	Latin America & Caribbean <u>Conf.</u>
Integrating ICTs into		<u>Western Asia Conf.</u>
regional development		
programs		SADC Information and Communication Technologies Policy and Regulatory Support Program (<u>SIPRS</u>), supported by USAID.
NATIONAL LEVEL		
Regulatory and Policy Environment Telecom Infrastructure Development	National Governments NGOs/Civil Society Organizations Private sector Ex: <u>Tanzania e-Secretariat</u>	Development of National ICT Strategies and Action Plans A national program to train teachers using ICTs A nation wide telecenter
---	---	--
sectors		network
LOCAL/COMMUNITY LEVEL		
Local Content Development Last mile connectivity	NGOs/Civil society organizations Local entrepreneurs	Kothmale Radio Browsing

Where do development agencies operate? Many development agencies operate at multiple levels. See examples of <u>UNDP Activities</u> at Different Levels

UNDP Activities

UNDP ACTIVITIES AT DIFFERENT LEVELS

GLOBAL LEVEL

UNDP's role in the WSIS

REGIONAL LEVEL

Asia Pacific Development Information Program (APDIP)

See more about UNDP's regional IT initiatives

NATIONAL LEVEL National Human Development Report on ICT (<u>Tajikistan</u>)

Helping countries development National ICT Strategies Ex: <u>Tanzania</u>

LOCAL/COMMUNITY LEVEL

UN Volunteers Use the Internet to boost business in Ecuador (short article)

There are many other examples of UNDP support to activities at all levels. See the <u>Networking and Information Technology Observatory</u> and <u>ICT for Development News</u>.

Read also an overview of what UNDP does in this field .

<u>Close</u>

Support Organizations

International Organizations

World Bank UNDP ITU UNESCO UN ICT Task Force

Regional Organizations

Asian Development Bank (ADB) Trust for the Americas APEC - <u>eAPEC Task Force</u> (web link) ASEAN - <u>eASEAN Task Force</u> (web link) Inter-American Development Bank Commonwealth Telecommunication Organization (<u>CTO</u>) (web link)

Bilateral Donor Agencies

United States - USAID Canada - CIDA Sweden - SIDA Japan - Ministry of Foreign Affairs (MOFA)

International NGOs/Foundations

IDRC Oneworld - <u>Digital Opportunity Channel</u> (web link) Bridges.org Digital Divide Network (DDN) The Markle Foundation The Communication Initiative Association for Progressive Communication (APC) Digital Dividend at WRI Comunica International Institute for Communication and Development (IICD) If this is not enough, go to the <u>CTO's Database of Organizations involved in ICT</u> programs .

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International Organizations

World Bank's Main Page

• Global Information and Communication Technology Department (GICT)

Through the GICT, the World Bank provides policy advice, loans, investment capital and small grants to support ICTs in developing countries.

See the <u>"Information and Communication Technology, World Bank Group</u> <u>Strategy"</u>, which highlights the World Bank's role in supporting ICTs.

- **infoDev** : infoDev is the small grants arm of the GICT.
- Global Development Learning Network (<u>GDLN</u>) A network of learning centers connected for videoconferencing and online training.
- <u>eGovernment web site</u>

The following programs were initiated by the World Bank and no longer under World Bank Umbrella (well... technically at least!)

- <u>Global Development Gateway</u> : A Global development knowledge portal and network.
- <u>World Links</u> : A program to connect and train teachers and kids in developing countries
- <u>Global Development Network:</u> A Global Research Network

UNDP's Main Page

ICT4D Practice (main page for links to ICT4D document/activities within UNDP)

ICT Trust Fund

This document is the equivalent to a policy statement about ICT4D activities)

Stories from the Field

Links to short articles about UNDP ICT related activities in various countries whre UNDP is active.

ICTD Observatory

Links to news items related to ICT4D. Searchable database. This is a good source of news to share with the class when you come across articles related to what we are discussing.

<u>APDIP</u> : Asia Pacific Development Information Program

UNDP/Cisco Networking Academies

A partnership with Cisco Networking Academies to provide IT training in developing countries.

<u>UNITeS</u> (United Nations Information Technology Service)

A UN program sending volunteers to assist developing countries with technology related projects.

<u>SDNP</u> (Sustainable Development Networking Program)

Program no longer active. Helped to set up telecenters and provide IT training in various developing countries.

SIDSnet (Small Island Developing States Network)

SIDSnet connects 43 Small Island Developing States (SIDS) in the Pacific, Caribbean, Atlantic, Indian Ocean, Mediterranean and African island nations. SIDSnet's main goal has been to utilize information and communication technologies (ICTs) for sustainable development.

International Telecommunication Union (ITU)'s Main Page

The most relevant section for the ITU web site for the purposes of this course is the <u>Telecommunication Development Program</u>.

See also the World Summit on the Information Society (<u>WSIS</u>).

Digital Divide Database

Provides links and description of programs to address the digital divide. The list is organized by type of organization (business, international agencies, NGOs, etc...). Looks pretty comprehensive!

ITU and Gender Issues

Working Group on Gender Issues

Free documents:

International Organizations

- <u>Telecommunication Indicators Handbook</u> Provides definitions for all indicators used in the World Telecommunication Indicators Database.
- Free Statistics
- Internet Case Studies

UNESCO's home page

Observatory of the Information Society

Communication and Information Programme

- Information for Community Developmen
- <u>Multipurpose Community Telecenters</u>
- <u>ICTs and People with Disabilities</u>
- Creative Content: Radio, TV, New Media

UNESCO also publishes the World Communication and Information Reports .

UN ICT Task Force Main Page

National and regional eStrategies Working Group ICT Policy and Governance Working Group Human Resource Development and Capacity Building Working Group Low Cost Connectivity and Access Working Group Business Enterprise and Entrepreneurship Working Group

Documents

- Contribution of UN ICT Task Force to WSIS. <u>Challenges and Partnerships:</u> Opening Up ICT to the World "
- Eduardo Gelbstein and Ahmad Kamal. <u>Information Insecurity: A Survival Guide</u> to the Unchartered Territories of Cyber-Threats and Cyber-Security . September 2002.
- Joseph O. Okpaku, Sr. <u>Information and Communication Technology for African</u> <u>Development: An Assessment of Progress and the Challenges Ahead</u>. 2003.

International Organizations

(Warning, this is 370 pages)

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Regional Organizations

Asian Development Bank's Main Page

Documents

- <u>Toward E-Development in Asia and the Pacific:</u> A Strategic Approach for Information and Communication Technology. (pdf file)
- Maurizio Bussolo and David O'Connor, <u>Technology's Contribution to Poverty</u> <u>Reduction</u> June 2001. (pdf file)
- Brahm Prakash, <u>Information and Communication Technology in Developing</u> <u>Countries of Asia</u>, June 2001. (pdf file)
- Yun-Hwan Kim, <u>Financing Information Technology Diffusion in Low Income</u> <u>Asian Developing Countries</u>, June 2001 (pdf file).
- Shangai 2002 ADB Seminar: <u>"Unlocking the ICT Potential in Asia and the Pacific.</u>" May 10, 2002.
- Clay G. Wescott, <u>eGovernment in the Asia Pacific Region</u>. (2001?)

Trust for the Americas Main Page

The **ICTD Initiative of the Trust for the Americas** was created as a result of the Quebec Summit "<u>Connectivity Agenda for the Americas</u> "

- Technology for People with Disabilities
- Small Business
- Women Leaders in Technology
- Empowering Youth through Technology

APEC - <u>eAPEC Task Force</u>

ASEAN - eASEAN Task Force

IADB (Inter-American Development Bank) Main Page

Note: Most documents are also available in Spanish

Inter-American Development Bank (IADB) IT dept., <u>Creating the Future</u> (video... you will need Real Player)

Information Technology

- Information TEchnology for Development Division
- Pilot Program for the Diffusion of Information Technologies in Social Programs
- <u>Geographic Information Systems</u>
- <u>E-Government</u>
- <u>E-Governance</u>
- Education
- <u>Health</u>
- Infrastructure
- Internet
- <u>Multimedia</u>
- Public Policies and Regulatory Frameworks
- <u>Telecommunications</u>

Commonwealth Telecommunication Organization (<u>CTO</u>)

UN ECA (United Nations Economic Commission for Africa) - African Information Society Initiative <u>AISI</u>

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Bilateral Agencies

Canadian International Development Agency (CIDA) - Main Page

CIDA's <u>Strategy on Knowledge for Development through Information and</u> <u>Communication Technologies.</u> Also available in <u>pdf format.</u>

See also <u>IDRC</u>. The International Development Research Centre (IDRC) is a public corporation created by the Canadian government to help communities in the developing world find solutions to social, economic, and environmental problems through research.

Japan Ministry of Foreign Affairs - Main Page

IT programs

Japan's Strategy for Enhancing Information Access in Developing Countries (January 2003)

Swedish International Development Agency (SIDA) - Main Page

ICT4D Initiatives

- SIDA's <u>IT Strategy</u>
- <u>Country ICT Surveys</u>
 - o Tanzania
 - o Mozambique
 - o Rwanda
 - o Sri Lanka
 - o Nicaragua
 - o Zambia

Reports

- Mozambique's Soft ICT Infrastructure
- ICTs Transforming the World by Transforming Universities
- Sida Supported ICT Projects at Universities and Research Institutions.

USAID (United States Agency for International Development) Main Page

- <u>Information Technology</u> at USAID
- DOT-COM Alliance (introduction by USAID)

The DOT-COM Alliance is a global network of partners that collaborates with USAID to increase digital opportunity for the under-served.

DOT-COM Alliance Site

The DOT-COM Alliance consists of three USAID funded Leader-with-Associates cooperative agreements (CAs), each with specific areas of ICT expertise:

dot-GOV: Promotes policy and regulatory reform to create enabling environments for ICT. Led by Internews Network with 21 Resource Partners.

dot-ORG: Extends ICT access to under-served communities and accelerates development-related uses of ICT. Led by the Academy of Educational Development (AED) with 63 Resource Partners.

dot-EDU: Strengthens education and learning systems through customized ICT interventions and content. Led by the Education Development Center (EDC) with 35 Resource Partners.

- Leland Initiative (Program is no longer active)
- <u>LearnLink</u> (Program managed by AED, no longer active)
- <u>AfricaLink</u>
- <u>Development Experience Clearinghouse</u> Serves as the institutional memory of USAID, searchable database of documents. Covers all areas of USAID activities, not only ICTs.
- <u>New Directions in US Foreign Assistance and the Role of Information and</u> <u>Communication Technology</u>. Report by the Markle Foundation. November 2002.

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Association for Progressive Communication (APC) - Main Page

- Internet Rights

- ICT Policy Monitor Project

The APC ICT Policy Monitor Websites gather legislation, policy information and valuable documentation to create easy access for campaigners and civil society organisations.

- ICT Policy: A Beginner's Guide, December 2003, APC. (zipped file on the web)

- <u>Involving Civil Society in ICT Policy</u> : The World Summit on the Information Society, September 2003, APC/CRIS.

- Capacity Building

A comprehensive set of training materials to help NGOs use ICTs effectively in their work.

- <u>Women and ICT</u> (APC Women's Networking Support Program)

Bridges.org's (<u>Main Page</u> on the web) mission is to empower people in developing and emerging countries to use technology for themselves, by:

- providing public education about technology use focused on training, business practices, and social issues, so that people are better able to work in the information economy and to participate fully in the information society.
- promoting policy-making that removes barriers to the use of technology by leading a local dialogue among all stakeholders to foster understanding of the social, economic, and political implications of the widespread integration of technology in society, so government officials can make informed decisions about technology use and technology policies.
- creating a body of knowledge about digital divide issues through research, analysis, and recommendations, and helping to spread the word about developments and activities in the field by participating in international policy discussions and disseminating information through our website and newsletter.

Reports

• <u>Spanning the Digital Divide</u> June 2001

INGOs

- Comparison of eReadiness Assessment Models March 2001
- Survey of eReadiness Assessments: Who is Doing What and Where? May 2001
- <u>Telecommunications Liberalization: What does it mean for the average citizen?</u> September 2001
- A series of reports focused on South Africa, including.... <u>Overview of ICT Policy in South Africa</u>

Other Resources on the site

- <u>The free IT guide</u> -- information on a wealth of free resources for individuals, NGOs, and businesses to use computers and the Internet. Includes where to get free or low cost computers, where to get free email accounts, how to develop and host your website for free, and where to get free software.
- <u>Telecentre resources</u> -- links to how-to guides, analyses, and other resources on telecentres and community technology centres.
- <u>E-Readiness resources</u> -- information on how to assess your community's or country's ability to benefit from ICT.
- <u>E-Literacy materials</u> -- training documents to help improve your ICT skills and knowledge.
- <u>Database of online resources</u> -- a detailed list of ICT organisations, reports, and other resources that you can find on the Internet.

The Communication Initiative - Main Page

The Communication Initiative is a partnership of development organisations seeking to support advances in the effectiveness and scale of communication interventions for positive international development.

The C.I. strategy includes provision of real-time information on communication and development experiences and thinking, facilitating horizontal linkages between people engaged in communication action, peer commentary on programmes and strategies and taking opportunities to promote strategic thinking on communication and development issues and problems.

See in particular...

The Drum Beat, an electronic newsletter.

The Communication Initiatives focuses on the "C" of "ICTs" and a lot of the work of the partner organization is not ICT focused.

Comunica explores and supports ways that local and independent media in less

developed countries are making use of information and communication technologies to strengthen efforts for development and democracy. <u>Main page</u> on the web.

- Bruce Girard & Jo van der Spek, <u>"The Potential for Community Radio in</u> <u>Afghanistan</u> ", 2002. (pdf file)
- The Challenges of ICTs and Rural Radio, 2001.
- <u>A Passion for Radio: Radio Waves and Community</u>, Edited by Bruce Girard, 2001.
- <u>Mixed Media</u> : Broadcasting and the Internet in the Caribbean and Latin America.

Digital Divide Network - Main Page

The Digital Divide Network combines a US-focus with a good amount of international content. See in particular the <u>International Issues</u> section.

Digital Dividend at the World Resources Institute (WRI) - Main Page

Digital Dividend Project Clearinghouse

The Digital Dividend Clearinghouse is an online platform tracking social enterprises that use ICTs to deliver critical tools and services to underserved communities in developing countries. Its twin goals are 1) to serve as a knowldgebase for those interested in developing sustainable business models to bridge the global digital divide, and 2) to facilitate networking among those stakeholders.

Resource Marketplace

Lists various opportunities such as prizes, awards, grants...but also a wealth of links to programs in a broad range of ICT applications in developing countries.

Knowledge Bank

The Knowledge Bank is a collection of materials that explore promising business models using ICT to deliver critical tools and services to underserved populations in developing countries, make the case for investment in such 'digital dividend' activity, and discuss sustainable ICT-for-development in general. The <u>What Works series</u> and <u>Project</u> <u>Spotlight</u> features are Digital Dividend's own creations; <u>Articles & Reports</u> includes pieces from external as well as Digital Dividend authors.

• Report: <u>"What Works: Serving the Poor Profitably."</u>

International Development Research Centre (IDRC) - Main Page

Information and Communications (<u>Connecting the Dots</u>) is one of several IDRC program areas. Within this program areas, IDRC supports the following activities:

- <u>Bellanet</u>
- Communities and ICT's for Africa (<u>ACACIA</u>)
- Institute for Connectivity in the Americas (<u>ICA</u>)
- Pan Americas
- Pan Asia

International Institute for Communication and Development (IICD) - Main Page

The International Institute for Communication and Development (IICD) assists developing countries to realise locally owned sustainable development by harnessing the potential of information and communication technologies (ICTs). IICD works with its partner organisations in selected countries, helping local stakeholders to assess the potential uses of ICTs in development.

IICD focuses on 'traditional' development sectors, such as education, good governance, health, livelihood opportunities (especially agriculture) and environment and is active in 9 countries: Bolivia, Burkina Faso, Ecuador, Ghana, Jamaica, Mali, Tanzania, Uganda and Zambia.

Reports

- Using ICTs to Generate Development Content
- Collecting and Propagating Local Development Content: Synthesis and Conclusions
- Collecting adn Propagating Local Development Content: The Case Stories
- eBusiness for NGOs
- Internet via Satellite in Africa: An Overview of the Options Available
- Wireless Communication: An overview of possibilities for wireless communication between computers
- Sustainable ICT-enabled Development: Practice Makes Perfect?
- Wireless Communication (2003)
- Helping Producers Make Money from Digital Information (2003)
- The Cultural and Political Environment of ICT Projects in Developing Countries (2003)
- Strengthening Local Capacities to Create and Adapt Healthcare Information (2003)
- From BeeDees to CDs: Snapshots from a Journey Through India's Rural

Knowledge Centers (2003)

Markle Foundation - Main Page

Key program areas:

- Policy for a Networked Society
 - Global Digital Opportunity Project
 - Internet Governance Project II
- <u>Information Technology for Better Health</u> (not focused on developing countries)
- **Opportunity Fund**

See also the Digital Opportunity Initiative (\underline{DOI}), a joint initiative of the Markle Foundation, \underline{UNDP} and $\underline{Accenture}$.

• <u>Creating a Development Dynamic: Final Report of the Digital Opportunity</u> <u>Initiative.</u>

The DOI report examines the experiences in the deployment of ICT to meet specific development imperatives as well as national ICT strategies in countries ranging from Tanzania, Estonia, India, and Bangladesh to Costa Rica and South Africa.

Telecommons Development Group - Main Page

Links to selected TDG documents on the web

- <u>Internet Use and Diagnostic Study East Africa</u> by ISG, CTA and TeleCommons Development Group - Final Report
- <u>Internet Use and Diagnostic Study Kenya</u> Country Report by ISG, CTA and TeleCommons Development GroupKenya Country Study Final Report
- <u>Internet Use and Diagnostic Study Tanzania</u> Country Report by ISG, CTA and TeleCommons Development Group Final Country Report Tanzania
- <u>Internet Use and Diagnostic Study Uganda</u> Country Report by ISG, CTA and TeleCommons Development Group Final Country Report Uganda
- <u>Towards Universal Telecom Access for Rural and Remote Communities</u> by Don Richardson
- <u>Multi-stakeholder Engagements for Rural Telecom</u>
- <u>Practical Reality of Knowledge Management in Development Projects</u> by Don Richardson
- Grameen Telecom's Village Phone Programme: A Multi-Media Case Study

WorldSpace Foundation is a nonprofit organization headquartered in Washington, DC, USA. Its mission is to help improve the lives of disadvantaged persons in developing regions of the world by providing access to education and other information broadcast directly to radios from satellites.

Endowed with 5% capacity on the satellites of the WorldSpace system, WorldSpace Foundation (WSF) works with local and international non-governmental organizations (NGOs), national and intergovernmental agencies, and a variety of community groups to produce and deliver social development and education programs to communities in the developing world that are disadvantaged by poverty, illiteracy, inadequate infrastructure, and geographical isolation. The foundation looks to grants, donations, corporate funding, other foundations, and government sponsored programs as sources of support.

[Source: WorldSpace Foundation web site]

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3 - Readings

Main Reading Spanning the Digital Divide

- Chapter 4: On the Ground Efforts to Bridge the Digital Divide
 - O Annex 4: On the Ground Initiatives in the Developing World
- Chapter 5: Policy and Digital Divides
 - Annex 5: Relevant Policies
 - Annex 6: Policy Organizations

Additional Readings

Development Gateway Interviews

1. <u>Questions and Answers with Mr. Sarbuland Khan about the UN ICT Task Force</u>, September 2002

2. <u>ICT as a Powerful Enabler for Development: Designing National e-Development</u> <u>Strategies</u>, Interview with Nagy Hanna, Senior eDevelopment Advisor, World Bank, January 2003.

UN ICT Task Force

<u>Summary of Informal Panel Discussion</u>: How can ICTs leverage development to meet the Millenium Summit Goals, building on multi-stakeholder partnerships for promoting digital opportunity?

<u>Summary of Informal Panel Discussion:</u> The UN's role in supporting efforts to promote digital opportunity, in particular in Africa and the LDCs: Challenge of Inclusion in the world economy through ICT

ADF 3: ICT Focus Group Summary Report

Final Report of the DOT-FORCE (longer PDF file)

World Summit on the Information Society : Brochure

Cees J. Hamelink. <u>Keynote at the Opening Session of the Civil Society Sector Meeting</u> <u>at the Prepcom 1 for the World Summit on the Information Society</u>, July 1, 2002, Geneva. O 2003 Knowledge for Development, LLC

3 - Exercises

Exercise A. The National ICT Roundtable

Learning Objective

Identifying priority policy areas related to ICTs to avoid marginalization and take advantage of leapfrogging opportunities

Instructions

Two months ago, a group of government officials made a presentation during a cabinet meeting and convinced senior government officials to hold a national ICT roundtable. The purpose of the roundtable is:

- To identify national ICT priorities
- To develop an action plan based on the outlined priorities

Your task includes:

- Identifying potential participants what will have to be invited identifying strategies for their effective participation in the process.
- Developing the outline of a national ICT policy paper that will be presented as a draft to be discussed during the roundtable. Focus on broad strategies and principles, providing a vision of what the country should do.
- Identifying potential priority initiatives. This part is more action-oriented.

Use a specific country of your choice if that helps you make the exercise more realistic. If you know of a country that has already undertaken a similar exercise, you may use it as an example, or provide an analysis of both the process and the results.

Resources for Exercise 3A

This exercise can be developed into a more comprehensive project and linked to Exercise B in Module 2.

Exercise B: "Free" Computers

Learning Objective : To understand the range of obstacles and opportunities offered by the recycling of old computers or donation of new computers to communities in

developing countries.

Scenario:

You are a volunteer (group of volunteers) working in a rural community in a developing country. You ve heard a lot about the digital divide and recently you ve learned about an organization that recycles old computers for redistribution in developing countries. The computers can be delivered to the community free of charge if the community is able to provide a statement of how the computers will be used. This statement should take the form of a short proposal to be sent to the organization providing the free computers.

Tasks

- Inform the community of the opportunity
- Get the community to develop a short proposal

Questions

- How would you go about informing the community and getting the community to work on a short proposal?
- If the community members ask for your advice, what would your advice be regarding the use of the computers.
- What could the community do with them?
- What possible obstacles or challenges would have to be addressed to ensure effective use? What other questions might arise?

Resources for Exercise 3B

Exercise C: What are the Donors Doing?

Learning Objective: To explore the donor agencies' approaches and rationale for supporting ICT projects and programs.

Instructions

- Explore the list of Support Organizations presented in the notes for this module
- Pick one donor organization or NGO working in ICT4D .
- Learn as much as you can about the organization's ICT strategy, its past, ongoing and planned activities
- Write a synthesis of what you have learned (2-3 pages).

Alternatively, you can look at two organizations and provide some comparison in terms of their strategies and activities.

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3 - Quiz

1. Which two countries have been leaders in ICT4D?

Nigeria and Russia Malaysia and Estonia Argentina and Russia Estonia and Nigeria Malaysia and Russia

2. Which is a more appropriate goal in most developing countries?

Universal access Universal service

3. When and where is the WSIS going to take place?

December 2003 Geneva & 2006 New York City November 2003 Geneva & 2005 Tunisia December 2003 Geneva & 2005 Tunisia November 2003 New York City & 2005 Geneva

4. "NICI" stands for... (check as many answers as necessary)

National Information & Communication Infrastructure Network Infrastructure & Communication Initiative an initiative of the UNECA Network Infrastructure & Communication Initiative

5. Mistica is an initiative of...

Hewlett Packard Funredes World Bank DOT Force

3 - Resources

Country Specific Resources

India 's Information Technology Sector: What Contribution to Broader Economic Development? by Nirvikar Singh. OECD Development Centre, Technical Papers No. 207. March 2003. ÿ

République Islamique de **Mauritanie**, Ministere de l'interieur des Postes et Telecommunications. <u>Plan de développement de l'infrastructure nationale d'information</u> <u>et de communication</u>, 1999-2002. September 1999. (in French)

See also http://www.uneca.org/aisi/mauritania.htm

Samuel Kinde Kassegne. "Responding to a New Challenge: The Case of Telecom Policy in **Ethiopia**." Paper presented at A Conference on Information Communication Technologies and Development, Addis Ababa, 18-20 June 2001. http://www.ethiopiaknowledge.org/

Information Superhighway

http://www.dwinfoserver.com/otto/highway.shtml Access to country specific information on telecommunication infrastructure and policy.

Kyrgyz Republic, Best Practices: A Process for Developing Internet Policy: The Model of the National ICT/Internet Summit. <u>http://www.gipiproject.org/practices</u> See the ICT summit web site, Feb. 2001 (English version): http://www.ict.kg/ict.php?lang=engÿ

Government of Pakistan, Information Technology Commission (ITC), IT Policy http://www.itcommission.gov.pk/itpolicy.htm

India, IT Action Plan, (Part I: Software), 1998

- IT Action Plan, (Part II: Hardware), 1998
- -<u>IT Action Plan</u>, (Part III: Long-Term National IT Policy), 1999

Brazil, Information Society in Brazil, Green Book

Egypt, Information and Decision Support Center http://www.idsc.gov.eg

Egypt, National Plan for Telecommunication and Information, December 1999

Egypt, Ministry of Communications and Information Technology (MCIT) http://www.mcit.gov.eg

Egypt, National Plan for Communications and Information Technology, 2001-2002 <u>http://www.mcit.gov.eg/national_plan.html</u>

Malaysia, National Information Technology Council http://www.nitc.org.my/index.shtml - National IT Agenda http://www.nitc.org.my/nita/index.shtml - Strategic Thrust Areas http://www.nitc.org.my/5e/index.shtml - Strategic Priority Areas http://www.nitc.org.my/spa/index.shtml - Building Knowledge Societies Series: "Access, Empowerment and Governance in the Information Age." 2000. (Paper, 120 pages) http://www.nitc.org.my/resources/bkss.pdf

Malaysia, SJ2005, Smart partnership for Community Development http://www.sj2005.net.my/

Dinesh Nair, "Bringing a Horse to Water." August 15, 2001, MSC Times - An analysis of the results of the Multimedia Super Corridor in **Malaysia**, five years after its launch.

http://www.msctimes.com/article.cfm?id=250

Expatriate Bangladeshi 2000, Draft IT Policy of Bangladesh (not an official document)

Indonesia, Five Year Action Plan for the Development and Implementation of Information and Communication Technologies (ICT) in Indonesia, Government of Indonesia's Action Plan to overcome the Digital Divide, Information and Communication Technologies under Presidential Instruction NO. 6/2001.

Maldives, Ministry of Communication, <u>Science and Technology Science and</u> <u>Technology Master Plan</u>

Mexico, e-Mexico

http://www.e-mexico.gob.mx/

E-Mexico Initiative, a Global Development Gateway <u>Interview</u> with Alan Levy, May 2002.

SADC, SADC World Economic Forum Consultation Report on E-Readiness.

Singapore, Infocomm Development Authority http://www.ida.gov.sg/

Jason Dedrick & Kenneth Kraemer. "<u>China IT Report</u>". Center for Research on Information Technology and Organizations, University of California, Irvine. October 2001.

IT21 - **Philippines** - "Asia's Knowledge Center." I.T. Action Agenda for the 21st Century, October1997. http://www.neda.gov.ph/Subweb/IT21/

South Africa Telecommunications Green Paper of 1995

South Africa Policy Brief: Telecommunications Overview, commentary and statistics,

May 2001, Bridges.org

This report looks at the telecommunications sector of South Africa as of May 2001, focusing on existing and proposed government policy and describing the interests of the telecom businesses and other constituencies that influence government decision-making. It also provides analysis and recommendations for balancing the needs of ICT users and the concerns of the public and private sectors, while fostering competition and bringing down telecommunications costs.

South Africa

<u>Telecommunications and Universal Service</u> : International Experience in the Context of South African Policy Reform , IDRC, 1996

South Africa, New Telecommunications Policy Process (2001) http://docweb.pwv.gov.za/docs/telesubs/index.html

South Africa, White Paper on Telecommunications Policy (1996) <u>http://docweb.pwv.gov.za/docs/policy/telewp.html</u>

South Africa, White Paper on Broadcasting Policy, June 1998 http://docweb.pwv.gov.za/docs/policy/broadcastingwp.html

National ICT Policy of Tanzania , May 2002

Creating a Development Dynamic. Final Report of the Digital Opportunity Initiative Appendix 3: National ICT Approaches Case Studies

- Brazil
- Costa Rica
- Estonia
- India
- Malaysia
- South Africa
- <u>Tanzania</u>

NICI (National Information and Communication Infrastructure)

The NICI development process aims at developing national information and communication policies and strategies that could be used to enhance the role of Information and communication technologies (ICTs) in facilitating the socio-economic development process.

http://www.uneca.org/aisi/nici.htm

Ministry of Communications - **Ghana** - Economic Commission for Africa Forum for the Development of Africa, Plan for National Information and Communications Infrastructure of Ghana, 2000-2005, Accra, Ghana, December 2000.ÿ (<u>Word Document</u>)

Cameroon

Cote d'Ivoire

Plan de développement de l'Infrastructure national de l'Information et de la communication 2000-2005, Juillet 2000.ÿ (<u>in French</u>)

Ghana, Framework for the Design of a National IT Policy, August 2001. <u>http://govt.ghana.gov.gh/story.asp?ID=81</u>

Kenya, <u>Building Information Communities in Africa BICA</u> -Kenya Towards the realisation of Kenya Information Society: the status, the trends and a strategy for development (final version), February 2000.

Mozambique, Draft Policy for Information and Communication Technologies, 2000.

Mozambique, Commission for Information and Communication Technology Policy. <u>http://www.infopol.gov.mz/</u>

Senegal, <u>Plan National des Teleservices au Senegal</u>, (no date, in French)

Tunisia, Electronic Exchanges and Electronic Commerce Bill, (no date)

See also information on National Workshops sponsored by the UNECA for the following countries: Cameroon Mali Morocco Namibia Nigeria Rwanda

Nigeria's IT Policy http://www.jidaw.com/IT%20Policy.pdf

And the report of the Sub-regional Workshop for Southern African Countries

Vietnam-Canada Information Technology (VCIT) Project, Final Report, November 14, 1995 to March 31, 2001. Prepared for CIDA, July 31, 2001. http://www.gaia.ca/vcitfinalreport.htm

VCIT was a five year (1996-2001) 10 million dollar CIDA-sponsored project. The project was designed to build the capacity of the Government of Vietnam to plan and coordinate the management of the National Program on Information Technology (NPIT) implementation, which included an expected result of enhanced IT policy making. NPTI's goal was to "leapfrog" Vietnam's use of IT from none to globally comtemporary by the year 2020.

Junelee Pradhan. "<u>Information Technology in Nepal</u>: What Role for the Government ?" EJISDC, 2002, 8, 3 (1-11)

Information Technology Policy, 2057 (2000), Nepal

National Information Technology Policy of Sri Lanka

Somkiat Tangkitvanish (Thailand Development Research Institute). "**Regulating the Internet: Lessons from Thailand**." Presentation at "The Internet in South East Asia", Bangkok, Thailand, November 2001. <u>PDF Format</u> PowerPoint Format

Other Resources

The World Telecommunications Regulatory Colloquium

http://www.regulate.org Sponsored by infoDev

Telecommunication Regulation Handbook, infoDev, World Bank

This is a series of large pdf files (300+ in total), organized in modules.

Module 1: Overview of telecommunication regulation

Module 2: Licensing telecommunications services

Module 3: Interconnection

Module 4: Price Regulation

Module 5: Competition Policy

Module 6: Universal Service

Shalini Venturelli, "<u>Inventing E-Regulation in the US, EU and East Asia</u>:
Conflicting Social Visions of the Internet & the Information Society."Presented at TPRC 2001, 29th Research Conference on Information, Communication & Internet Policy, Alexandria, Virginia, October 27-29.
(43 pages)

Michael Minges (ITU) "**Internet Policy in South East Asia** ". Presentation at "The Internet in South East Asia", Bangkok, Thailand, November 2001. <u>PDF Format</u> PowerPoint Format

VanessaGray (ITU), "**Silicon Valleys in Developing Countries** ." Presentation at "The Internet in South East Asia", Bangkok, Thailand, November 2001. Silicon Valley is a metaphor for geographic areas where computer companies cluster. Many developing countries are trying to develop such "silicon valleys", also referred to as camps, valleys, parks or corridors. <u>PDF format</u>

PowerPoint format

Regional Integration in Africa (The role of ICTs)

Guidelines for ICT Sectoral Policy and Planning, Comnet-IT

<u>Global Policymaking for Information and Communications Technologies:</u> Enabling Meaningful Participation by Developing-Nations Stakeholders, June 2002.

"Annex C: Regulation for Telecommunications ." Telecommunication in Action, 8

pages, pdf file.

David Souter and Guy Girardet, "<u>Regulatory Frameworks</u>." KnowledgeBank Paper 13, For Commonwealth Telecommunications Organization. 2000. Access on the web as multiple files. Summary: This paper looks at the role of regulation and regulatory agencies in promoting access to information and communication technologies in developing countries, particularly less developed countries (LDCs). It is aimed primarily at those with backgrounds outside the ICT sector, and therefore sets the specific issues affecting developing countries in the broad context of regulation policy and strategy. Part 1 is concerned primarily with telecommunications; Part 2 with Internet.

Global Internet Policy Initiative (GIPI)

http://www.gipiproject.org

Operating in nearly a dozen countries, GIPI serves as a resource to local stakeholders in the Internet policy development process. The project's goal is to promote: transparency and predictability in business regulation; competition, privatization, open networks and universal service in terms of telecomm policy; and market-driven solutions, user-control and human rights protection in terms of government control. The key people in GIPI are the country coordinators who help local stakeholders to develop the capacity to promote sound policies supporting an open Internet.

Telecommunications "Liberalization" (links to documents) <u>http://www.gipiproject.org/telco</u>

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4 - ICTs and Learning



More about the photo above....

Learning Objectives

This fourth module is meant to allow participants to

- Explore key applications of ICTs for learning through distance education
- Understand the potential and challenges associated with programs introducing computers in schools in developing countries
- Understand the broader implications of ICTs and learning in the context of the information society
- Learn about case studies from around the world illustrating the potential use of ICTs for learning at the elementary, secondary, tertiary level as well as for continuing/professional education purposes
- Explore the roles of various organizations at the international and national level in supporting the integration of ICTs in learning

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Photo

Maria



Maria sells lottery tickets near a bus terminal in Quito, Ecuador. When she is done with school and work, she comes to the Programa del Muchacho Trabajador (site in Spanish) located near the bus terminal. There, she can play games on the computers. Here, she is working on her typing skills by using a word processing software and copying text from a book. In this particular center, the children get to play/work with the computers once they have completed all other necessary tasks, during "recreation" time. Access to computers is used as a reward

for good behavior during the rest of the planned activities for the children.

The staff in charge of all activities at the center have received minimal training to integrate the computers into their teaching activities.

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Close

4 - Notes

*** YOU CAN ACCESS THIS NOTE AS <u>A SINGLE FILE</u> (PDF FORMAT) ***

"Technology is capable of revolutionizing the way education and training are delivered and the manner in which individuals learn, **if properly harnessed.**" Minda C. Sutaria, Former Undersecretary of Education, Philippines.

CONTENT OF THIS NOTE

Distance Education African Virtual University Telesecundaria Educatodos Teaching Teachers

Computers in Schools

World Links Enlaces Costa Rica's Computers in Schools Program

Skills for the Information Age

Global Development Learning Network CDs for Development Youths, Technology and Learning

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Distance Education

Distance education is not new and the use of ICTs within distance education programs is not new either. Radio broadcasting and television programs have been used for decades to reach a range of target groups with educational programs. In some cases, distance education using ICTs is an alternative to traditional classroom settings. In isolated regions where there are no schools, ICTs can bring much needed educational programs for children and adults alike.

In other cases, distance education programs are used in conjunction with traditional classroom settings, where ICTs are used to allow access to high quality materials and teaching methods and supplements poorly qualified teachers in the classrooms. Finally, with advanced technologies, many universities across the world are experimenting with virtual networks and online learning.

Three examples of ICT-enhanced distance education are briefly presented in the next pages.

1) The African Virtual University: The AVU is an example of a continent-wide collaboration among universities to deliver high quality content via videoconferencing of lectures from key institutions.

2) Telesecundaria: Telesecundaria is a television-based secondary education program in Mexico that has allowed many youths to continue their education in the absence of a secondary school in rural areas where they live.

3) Educatodos: Educatodos, or "Education for All", is a radio-based program in Honduras that provides basic education to out-of-school youths.

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African Virtual University

AVU's mission is to bridge the digital divide and knowledge gap between Africa and the rest of the world by dramatically increasing access to global educational resources throughout Africa. This is achieved through the integration of satellite and Internet technologies to allow for cost-effective and efficient delivery of educational programs throughout sub-Saharan Africa and to access educational resources globally as well as the best in sub-Saharan Africa. The AVU started out as a World Bank project and is now an independent organization.

AVU's delivery model combines satellite and Internet technologies that allows it to provide quality educational content from all over the world at an affordable cost, while taking into account the technological and infrastructure limitations that currently prevail in Africa.

World-class professors from universities around the globe deliver classes from a studio classroom. The course is transmitted to AVU's central uplink facilities in Clarksburg, Maryland and then beamed by satellite to its learning centers all across Africa, which are each equipped with an inexpensive satellite dish required to receive the signal.

The typical AVU classroom has between 25-30 students, sitting at their desks watching the broadcast on large screen projectors, television monitors or computers. During the class, students have the opportunity for real-time interaction with the instructor using phone lines or e-mail. This framework allows a student in Rwanda, for example, to pose a question to a professor in Togo or Paris that can be heard and commented upon by students in Benin and Senegal. At each participating AVU learning center, on-site moderators guide the students through the materials and act as liaison with course instructors. Each AVU learning center is equipped with at least 50 computers and Internet access.

Courses are taught in English and French. Portuguese language courses are being planned as well. The focus is on computer science, electrical and computer engineering, management, information technology and foreign languages. Degree programs will be offered beginning in October 2001 in electrical and computer engineering and computer science.

Find out more on the <u>AVU web site</u>.

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African Virtual University



Telesecundaria

Telesecundaria is a TV-based program developed in Mexico in 1968 that offers a complete junior secondary curriculum (grades 7-9) to rural populations where access to traditional secondary schools is not possible. It has been so successful that it has continued to expand both within Mexico where it now targets also grades 10-12 and junior high adult education, and within Central America where it is being used or adapted by all the other countries.

During the 1960s, the Mexican government had to face a shortage of trained teachers willing to work in remote rural areas and an inadequate supply of schools to accommodate secondary students. The Mexican government decided to use television to reach this target group and started broadcasting to 6,500 students in 1968. Today, more than 800,000 students in grades 7-9 are enrolled in the program.

Each lesson consists of a 15-minute televised program, followed by a 35-minute teacher-student dialogue, and a 10-minute break before the next TV lesson begins. After watching a televised segment, which introduces the subject concept and theme, students study the relevant material in a specially-designed textbook, followed by teacher-led discussions to help students consolidate and integrate the content and to address any unanswered questions or concerns.

This is followed by students engaging in activities designed to apply the lesson to a practical situation or experiment, and closes with an assessment of student understanding by the teacher, by individual students, and as a group (Jose Calderoni, Telesecundaria: Using TV to Bring Education to Rural Mexico).

Between 1998 and 2002, the Ministry of Public Education was planning to open 4,500 new Telesecundaria schools to address the needs of an additional 250,000 students. While many schools have requested video conferencing that would allow interaction between students and the television presenters, the high costs of this technology render its use unlikely anytime soon.

The program's success has spurred the government to initiate two new TV-based educational programs, including a three-year high school program for grades 10-12 and a 9-month junior high school program for adults. It is expected that a complete high school program will be distributed on a national scale by 2002.

Telesecundaria is broadcast through Mexico's educational broadcast system called Red EDUSAT, which is transmitted through Solidaridad 1, a government-owned satellite which reaches all of Mexico, the south of the United States, Central America, the Caribbean and part of South America. As a result, Telesecundaria has attracted the

interest of its neighbors.

In 1996, the Ministers of Education of the seven Central American countries signed a Cooperative Agreement with the President of Mexico to use the Telesecundaria system and the program's printed materials, broadcasting through EDUSAT. Mexico provided training in the preparation of TV scripts as well as media education for organizers and teachers.

Panama began broadcasting Telesecundaria programs in 1996, Costa Rica in 1997, and Guatemala in 1998. Honduras and El Salvador are taping and classifying the programs in order to broadcast them on their own.

In Panama, the World Bank is supporting the expansion of a similar program called Telebasica .

More **Educational TV Resources**

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Educational TV Resources

Telesecundaria & other Educational Television Programs

Read more about Telesecundaria

- "Mexico's Telesecundaria: Bringing Education by Television to Rural Areas." By Claudio de Moura Castro, Laurence Wolff and Norma García. <u>TechKnowLogia</u>, Sept/Oct. 1999.
- Jose Calderoni, "<u>Telesecundaria: Using TV to Bring Education to Rural Mexico</u>." World Bank Education and Technology Technical Notes Series, Vol. 3, No. 2, 1998. (On the web)

Read more about educational television...

- "Francisco El Matemático: A TV Miniseries for Teaching Values in Bogotá." By Clemencia Chiappe. <u>TechKnowLogia</u>, July/August 2001.
- Claudio de Moura Castro, "Is Education by Television just an Old Technology?" IADB, 2000. (<u>On the web</u>)
- Claudio de Moura Castro, "Information Technology for the Masses: Can it be TV?" IADB, 2001. (<u>On the web</u>)
- Claudio de Moura Castro, "Brazil's Telecurso 2000: The Flexible Solution for Secondary School Equivalency." IADB, 2001 (<u>On the web</u>)
- Sri Lanka Environmental Television Project (<u>Web Site</u>)
- Soul City South Africa (<u>On the web</u>)

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Close

Educatodos

Educatodos is a program supported by USAID in Honduras that has provided Interactive Radio Instruction for out-of-school youth. While primary school enrollments are relatively high in Honduras, repetition rates in early grades are very high, resulting in a large number of students dropping out by sixth grade if they have repeated some grades and are "too old" to continue studying in traditional schools.

Grades 1-6

Since 1995, Educatodos has provided IRI programs for the grades 1 through 6th. The program is managed by the Ministry of Education and is part of the formal education system, providing equally valid certificates of completion for each grade. Since 1995, there have been 312,141 participants in grades 1-6. 88,258 additional participants were enrolled in 2000 and an additional 90-95,000 in 2001. The programs, which combine broadcast or audio-taped lessons and text materials, are run at the local level by a total of about 4000 volunteer facilitators who are members of communities where the Educatodos groups meet. The cost of the program per participant, has proven cheaper than regular primary grades (US\$40 per participant per grade, compared to US\$90 for regular primary grades).

Grades 7-9

Since 1999, Educatodos has been implementing a pilot phase for grades 7 through 9. Out of 100 children born in Honduras, while 94 enroll in 1st grade, only 67 graduate 6th grade, only 43 enroll in 7 th grade and only 24 graduate 9th grade. By April 2002, it is expected that the program will have enrolled 3,000 participants in 7th to 8th and trained 220 facilitators. The costs, while higher than for the grades 1-6, are still much cheaper than the costs associated with traditional schools (US\$68 per participant per grade for Educatodos vs. US\$164 per student per year for traditional schools).

Poverty Reduction Strategy Goal

The Government's Poverty Reduction Strategy states a goal of reaching a 70% enrollment rate in grades 7-9 by 2015. To reach that goal through Educatodos, the program would have to enroll 193, 575 new students. While this is beyond the program's reach financially, Educatodos could significantly contribute to that goal in a very cost-effective manner.

Table: Educatodos: Cost Comparison for Addressing Enrollment Gap

New Students	Coverage	Annual School	Annual Cost
		Cost	Educatodos
100,000	55.5%	US\$ 16.4 m	US\$6.8 m
150,000	63.2%	US\$ 24.6 m	US\$ 10.2 m
193,575	70%	US\$ 31.7 m	US\$13.2 m

However, scaling up the program to reach this 70% coverage goal would be difficult. The financial resources are not available at this point. While the costs of developing the curriculum and materials themselves does not increase with the number of students enrolled, the costs of printing the materials for each additional student do add up. Another difficulty that would likely arise in scaling up the program is the sustainability of relying on volunteer facilitators. Finding the required numbers of volunteer facilitators within communities having the minimum skills to facilitate the grades 7-9 program may be a challenge. Another important assumption of the program is that the target group (out-of-school youth having completed 6th grade) wants to continue studies.

More educational radio resources

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Educational Radio

Educational Radio Programs

- Thomas D. Tilson & Demissew Bekele, "Ethiopia: Educational Radio and Television." TechKnowLogia, May/June 2000. (On the web)
- Irene Oujo, "Wiring the Schools with Wireless." TechKnowLogia, Sept/Oct. 1999. (<u>On the web</u>)
- "The Use of Educational Radio in Developing Countries: Lessons from the Past" (1987) (<u>On the web</u>)
- "What is Interactive Radio Instruction (IRI)?" (<u>On the web</u>)
- Andrea Bosch, "Interactive Radio Instruction: Twenty-Three Years of Improving Educational Quality." World Bank, 1997. (<u>On the web</u>)
- Nora Ghetea Jaegerman & Victor Vasquez R. "Interactive Mathematics for Basic Education: The Venezuelan Experiment with IRI." IADB, 2001. (On the web)

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<u>Close</u>

Teaching Teachers

The world needs more teachers and better teachers. One of the most effective ways to strengthen the teaching profession is to use distance education and use ICTs to train them.

Recruiting and retaining qualified teachers is a challenge in most developing countries. An additional challenge is that it is difficult to keep teachers away from their students and their families for extended periods of training.

Some countries use distance education to provide initial qualifications for future teachers as well as training for experienced but unqualified teachers. The China Television Teachers College and the National Teachers' Institute in Nigeria have followed this approach for a long time.

Initial teacher education is not enough though. Distance education is therefore also used to raise the skills, deepen the understanding and extend the knowledge of teachers.

Distance education can also have a role in curriculum reform. For example, in South Africa, the Open Learning Systems Educational Trust is using radio to improve the teaching of English and to support teachers in this work.

Finally, distance education has been used for teachers' career development.

Resources

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Resources

Teaching Teachers with Technology

- "Teacher Education Through Distance Learning: Technology, Curriculum, Cost, Evaluation, Summary of Case Studies." UNESCO, October 2001 (on the web)
- Teacher Education Guidelines: Using Open and Distance Learning, 2001. (on the web)
- The Use of Distance Education for Teachers, 2001. (on the web)
- AED. Training Teachers with Technology. (<u>on the web</u>)

• infoDev Project #248: Networking for Innovation in Technology and Teacher Training Case Studies

1. The Three Pomegranate Network: Online Education Through Cross-border Collaboration

Case Study by Robert Gabrielyan, Ministry of Education and Science of Armenia, Anoush Kacherian, Consultant, Artavazd Mamyan, Ministry of Education and Science of Armenia, Anoush Margaryan, American University of Armenia. Report by Anoush Kacherian, Anoush Margaryan. Cost Analysis by Marianne Bakia, Consultant 2000.

http://www.infodev.org/projects/248/armenia.zip

2. China's Use of Television to Train Teachers http://www.infodev.org/projects/248/china.doc

3. Les innovations technologiques dans la formation de l'enseignant de dans l'apprentissage des apprenants (Guinée). (in French) http://www.infodev.org/projects/248/guinea.doc

4. Case Studies of Innovations in Teacher Training and Technology: A Collaboration of the World Bank's infoDev Program and the Institute for International Education, IIE http://www.infodev.org/projects/248/singapore.zip

5. SHOMA: A private sector contribution to South Africa's Teacher Development A Case Study by Joanne Capper http://www.infodev.org/projects/248/southafrica.doc 6. Using technology to support both teacher professional development and curriculum development in southern Africa: A case study http://www.infodev.org/projects/248/cascadereport.zip

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Close

ICTs in Schools

There are five different rationales for using computers in classrooms

- To build a resource of people who are highly skilled in the use of information technology.
- To equip all students for a future in which technological awareness and basic computer skills will increasingly be important for greater numbers of citizens.
- To use the technology to enhance the existing curriculum and to improve the way in which it is developed.
- To promote change in education by moving towards a more relevant curriculum and a new definition of the teacher's role.
- To allow learners to seek information from databases, especially through the Internet, and use computer technology to communicate with other schools, colleges and learning communities.

A complex mix of factors can create barriers to change within educational systems and can frustrate efforts to integrate computers into education. Based on the experience of some of the pioneers in this area, strategies for success have been identified. These include:

- Focus on education, not technology
- Enable transparent, participatory decision-making
- Design projects with a critical mass of technology
- Integrate
- Building teachers' computer abilities and confidence
- Create teachers' user groups
- Cultivate community support
- Plan for sustainability from the start
- Use robust and participatory monitoring activities
- Demonstrate applications and new uses (Computers in Schools: Improving Teaching and Learning Through Computer and Communication Technologies, LearnLink)

A key element in the effectiveness of computers-in-school programs is the extent to which the teachers are prepared to make effective use of the technology. One example of an effort to support teachers in making effective use of computers in teaching and learning is the US/Brazil Learning Network (LTNet) that ran as a USAID funded project, managed by AED and in cooperation with a Brazilian government agency called ICTs in Schools

PROINFO. LTNet is now continuing its work as a Brazilian NGO (see <u>LTNet's web</u> <u>site</u>)

Three examples are briefly described in the following pages:

- The World Links Program for Development (WorLD)
- Enlaces Program in Chile
- Costa Rica's Computers in Education Program

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World Links

WorLD (World Links for Development) was created in 1997 as a pilot initiative of the World Bank. Its mission was to open a world of learning with the help of information technology (See the <u>World Bank web site</u>).

WorLD was building global, educational on-line communities for secondary school students and teachers around the world in order to expand distance learning opportunities, enhance cultural understanding across nations, build broad support for economic and social development and train teachers to integrate information technology into the classroom.

Forty developing countries from all regions of the world were initially targeted to participate in the WorLD program, with a goal objective of thirty to fifty schools participating per country. Assuming at least 100 participants per school, the WorLD Program will reach on average 160,000 teachers and students in developing countries each year, and at least that number in industrialized countries by the year 2000.

In 2000, a separate entity, an NGO called World Links was created to continue the program outside of the World Bank. (See the <u>World Links web site</u>)

"An estimated ninety-eight percent of all World Links schools connected during the past four years remain up and running. This high success rate is attributable to our organization's strategic approach involving Ministries of Education, schools, parents and private sector partners at every stage of our projects. World Links followed this approach in Senegal and expanded the initial 12-school pilot to 40 schools. Positive evaluation feedback and strong community support, along with general consensus about the downstream economic impacts of technology in education, have convinced the Government to introduce World Links in all 300 Senegalese secondary schools."

The program has also been linked to similar initiatives in various countries, including the *Enlaces* program in Chile which is described in the following pages and is operating in 26 countries.

Read more

- SRI independent assessment of World Links (On the web)
- Computers in Secondary Schools in Developing Countries: An Analysis of Costs (World Links) (<u>On the web</u>)
- Exploring the Gender Impact of the World Links Program (On the web)

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Enlaces

Chile's program, *Enlaces*, started as a pilot project in 1993. The goal was to create a telecommunications and computer network among 100 Chilean primary schools and associated institutions. By the end of 1995, Enlaces had surpassed its original targets and had incorporated computers into some 180 schools at both the primary and secondary levels. This still represented a very small percentage of schools. The program was then converted into a national program.

Learn more about Enlaces

- Learning Networks (Enlaces), Chile, UNESCO (on the web)
- Michael Potashnik, "Chile's Learning Network", World Bank 1996. (On the web)

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Costa Rica

The Costa Rican Computers in Education Program was created in 1988. It originated as a campaign promise of the former president and Nobel Peace Prize laureate, Oscar Arias. The program, which is a joint effort of the Ministry of Public Education and the Omar Dengo Foundation, has been designed to stimulate creativity, cognitive skills and collaborative work. The program is based on a constructivist approach to learning.

While many of these programs to introduce computers in schools are said to be "successful", few actually try to measure improved student learning.

Read more...

- Costa Rica: Are computers in school cost-effective? (On the web)
- Costa Rica: Teacher Training for Education Technology (<u>On the web</u>)

More about Costa Rica as a Leader in ICT for Development...

- Creating a Development Dynamic: Final Report of the Digital Opportunity Initiative, Appendix 3: National ICT Approaches: Selected Case Studies (Costa Rica) (<u>On the web</u>)
- Harvard Center for International Development, Global Competitiveness Report 2001-2002, Country Profiles: Costa Rica (<u>On the web</u>)

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Skills for the Information Age

In the Information Age, lifelong learning becomes a necessity. New technologies are providing new opportunities to pursue formal education as well as professional development opportunities beyond the traditional school years. One example of development-related professional development opportunity is briefly described below.

The <u>World Employment Report of 2001</u> (on the web), subtitled "Life at Work in the Information Age", emphasized that literacy and education cannot be leapfrogged, yet both are vital for reaping the greatest advantages from the emerging digital era. The promotion of education and literacy generally, and digital literacy in particular, is a challenge facing all countries. Educational differences underlie the different rates of penetration of ICT and Internet usage. For example, the ICT world is often depicted as a world of relatively young men, and the available evidence supports this depiction. Two-thirds of the world's illiterate are girls and women. Nor are girls sufficiently enrolled in the science curricula at the core of the technologies' innovation and use.

In the wealthiest countries, substantial progress has been made in ensuring access to the Internet in schoolrooms. Access alone is insufficient: teachers need to be trained in the substance of the new technologies and their most effective use. Even in the wealthiest countries, such training is far from thorough, and investments in the pursuit of this objective are often minimal. Obviously, for the majority of the world's people, this objective is distant from reality. In the poorest countries, the main objectives need to continue to be the promotion of literacy and access to general education.

Skills Shortages and Labor Migrations

With IT skills in shortage in industrialized countries, many qualified workers in developing countries are able to find well-paid employment in industrialized countries. The emigrant workers benefit from the greater experience and higher wages that migration can bring, and sending countries can benefit from the remittances their expatriates send home. It is also true that countries such as China, India and Viet Nam have all benefited from the networks their expatriates have created outside the country, and also from the skills and experiences they repatriate when they do return home.

For receiving countries, of course, reliance on foreign labor is a way of overcoming skill shortages in the short term.

On the negative side, however, the outward migration of the technically skilled can result in a brain drain, depriving developing countries of these scarce skills. Some efforts have been initiated to harness the skills of the diasporas of the world. For example, the <u>Digital Diaspora Network for Africa</u> (web site) was established to "build a

network of entrepreneurs from Africa living in North America and Europe who will contribute to promoting digital opportunities in Africa."

A related problem is facing development agencies' efforts to build IT capacity in developing countries. Once trained, NGO and government employees alike are able to find better paying jobs in the private sector. The brain drain is a phenomenon both at the international and at the national level.

The pages that follow highlight some examples of ICT applications for lifelong learning or out-of-school learning targeting a broad range of potential target groups.

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GDLN

Global Development Learning Network

GDLN is a partnership of public, private, and non-governmental organizations operating independently from but closely linked to the World Bank Institute.

GDLN's Vision is for decision makers across the developing world to have inexpensive and regular access to a global network of peers, experts and practitioners with whom they may share ideas and experience that will help them in their work. The GDLN's Mission is to harness modern technology – including interactive video, the Internet, and satellite communications – in a cost-effective way, so that people who know are brought together with those who need to know, to learn with and from each other about the full range of development issues.

GDLN's Goals are to:

1) Provide cost-effective interactive learning activities throughout the developing world, by reaching across geographic borders, time zones, and language barriers.

2) Improve decision making through interactive learning that is based on real-life experience shared by experts, practitioners, and decision-makers.

3) Facilitate regular exchanges among practitioners and experts across countries and regions, in a way hitherto restricted by the need for extensive travel and costs.

4) Provide the means to deliver cutting-edge knowledge to the development community on current issues, in real time, through virtual face-to-face events and activities.

The GDLN provides two types of services:

Courses and Seminars. These combine two-way multimedia videoconferencing sessions

complemented with print packages, CD-ROMs, interactive Web communications, or face-to-face tutorials. Some are fully Internet-based.

<u>Global Dialogues</u>. These short videoconferences allow participants to work together to address pressing issues that call for a common international agenda or require a local policy response.

Learn more on the GDLN web site.

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GDLN



CD-ROMS

The CD-ROM is a very powerful tool to disseminate information at relatively low costs. Below are two examples of CD-ROM projects in developing countries.

Uganda Rural Women's CD

Poor women of rural Uganda with limited literacy skills would not generally be perceived as ideal targets for a technology project. In this project, however, the technology was specifically adapted to fit the women's circumstances. The CD-ROM, titled, "Rural Women in Africa: Ideas for Earning Money", is the result of a partnership between the IDRC (Eastern and Southern Africa Office) and the International Women's Tribune Centre. The CD has been developed specifically for rural women of Uganda and is in both English and Luganda, the main local language in Uganda. The CD does not require much technical knowledge at all and uses a simple browser navigating system with graphic interface and spoken text.

The content itself is based on locally tested materials that are particularly relevant to the women's daily lives and help them.

Related Resources

Humanity Digital Libraries

The Humanity Libraries Project is a project involving more than 100 partners working together to produce and compile materials relevant for sustainable development in digital form so that they can be distributed as CD-ROM libraries to NGOs and other organizations in developing countries.

The CD-ROM libraries use the Greenstone software which includes a powerful search engine. The Greenstone Digital Library Software is open source software and it has now been used to develop a broad range of development-related CDs, including:

- the Human Development Library
- the Medical and Health Library
- the collection on critical global issues
- the World Environment Library
- the Food and Nutrition Library
- Agricultural Information Modules
- Virtual Disaster Library (some CDs are in French and Spanish)

See the full list of CD-ROMs as well as demonstration collections on the <u>Greenstone</u> web site .

For more information about the Humanity Library Project, see the <u>web site</u> and/or read the infoDev/IICD Story (on the <u>IICD web site</u>).

Note: This CD was developed using eClass, an open source software developed by the Payson Center for International Development and Technology Transfer, Tulane university. (eClass web site).

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Related Resources

Women, ICTs and Learning

- Rural Women in Africa: Ideas for Earning Money (CD)
 - View/listen to the contents of the CD on the web (Flash plug-in required)
 - Read more about the project... (<u>on the web</u>)
- Read about another project focusing on ICTs, education and women (<u>on the web</u>)
- Lyndsay Green & Lawry Trevor-Deutsch, "Woman and ICTs for Open and Distance Learning: Some Experiences and Strategies from the Commonwealth, Sept. 2002. (on the web)
- Gender and eLearning: A Presentation by Barbara Fillip for the Gender and Digital Divide Seminar Series at the World Bank. (Notes <u>on my web site</u>) (<u>Notes on this CD</u>)

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Close

Youths and ICTs

Hole in the Wall Experiment (India)

The Hole in the Wall experiment in India suggests that children can learn to use computers with very limited guidance. Experiments conducted by <u>NIIT</u>, one of the largest computer training and software services company, have shown that semi-literate poor children can quickly teach themselves the rudiments of computers and Internet. The key is that the the basic computing skills can be acquired by any set of children through incidental learning provided they are given access to a suitable computing facility with entertaining and motivating content and some minimal (human) guidance. This is referred to as "Minimally Invasive Education" (MIE).

"*Minimally Invasive Education (MIE)* is a pedagogic method, and derives its name partly from the medical term minimally invasive surgery. The idea of MIE crystallized over a period of time based on observations and educational experiments conducted at NIIT. It was observed that, even in the absence of any direct input, mere curiosity led groups of children to explore, which resulted in learning."

Computer kiosks were installed in the street, nearby poor neighborhoods. The computers were left unsupervised. Young people, in groups or by themselves, started exploring and basically learned how to use the computers using their own curiosity as incentive.

See "Children and the Internet" on the <u>IICD/infodev Stories web site</u> The experiment has been expanded to 48 kiosks and further expansion to 200 kiosks is planned.

And the project web site for more information..

ICTs for Disadvantaged Youths (Latin America)

During a two-week trip to Brazil and Ecuador in 2001, I was fortunate to meet many young people who were participating in a range of programs to help them learn and acquire employable skills. The following are some findings extracted from a short article I wrote for TechKnowLogia, which itself had been extracted from a larger study done for JICA-USA.

Children and youths in poor neighborhoods in developing countries are very likely to be on the wrong side of the digital divide. They are very unlikely to have access to computers at school or at home and their access to sources of information and knowledge of any kind is severely restricted. Yet the range of beneficial impacts of exposure to and training in ICTs on children and youths is extensive.

Key findings:

- For children and youths, computers offer unmatched opportunities to learn both within and outside of formal school settings. For children of disadvantaged backgrounds, often doing poorly in schools that fail to adequately address their educational needs, computers are powerful motivational tools. Children and youths learn through computers games, through exploration, through collaboration, but they also learn work-related skills.
- Children and youths are a very appropriate target group for ICT initiatives. The range of beneficial impacts of ICT exposure and training on children and youths is extensive. In addition, children and youths are generally very enthusiastic about new technologies and very quick to learn new skills.
- While the children and youths are motivated, it is important that their experience with ICTs be supported by competent and knowledgeable staff. While it can be argued that children and youths can teach themselves basic computer skills, this does not negate the need for qualified staff to guide and support the learning process. Indeed, this support and guidance are critical to the long-term success of these initiatives.
- The importance of effective training and ongoing support for educators cannot be underestimated. Finding second hand computers or obtaining donations of computers is not difficult compared to ensuring that computers are used effectively to teach, learn and expand horizons and opportunities. More generally, providing access to ICTs is only a first step. Making sure that this access is transformed into meaningful use remains a key challenge.

See the full <u>article on the CD</u>.

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4 - Readings

Select 3 articles from the list below. With the exception of the IMFUNDO paper, all articles are about 5 pages.

TechKnowLogia Articles (<u>on the web site</u>)

(You will need to register with the site to access articles, but registration is free)

- Zeynep Varoglu and Cédric Wacholz (UNESCO), "Education and ICTS : Current Legal, Ethical and Economic Issues." TechKnowlogia, January/Feb.2001 Issue.
- Irene Oujo, "Radio Wiring The Schools with Wireless ." (IRI in Costa Rica). TechKnowlogia, Sept/Oct. 1999.
- Claudio de Moura Castro, Laurence Wolff and Norma Garcia, (IIDB), "Mexico's Telesecundaria Bringing Education by Television to Rural Areas ." TechKnowlogia, Sept/Oct. 1999.
- Gregg B. Jackson (George Washington University), "Web-based Learning " TechKnowlogia, Sept/Oct.1999.
- Laurence Wolff and Norma Garcia (IDB), _Higher Education and Enterprise Training in Latin America : The Case of the Virtual Campus of Peru s Higher Technological Institute." TechKnowlogia, May/June 2001.
- Mary Fontaine (AED), High Tech/Grassroots Education : Community Learning Centers (CLCs) for Skill Building." TechKnowlogia, July/August 2000.
- Clemencia Chiappe (IDEP), "Francisco el Matematico : A TV Miniseries for Teaching Values in Bogota. TechKnowlogia, July/August 2001.
- Thomas D. Tilson (USAID), " Ethiopia: Educational Radio and Television ." TechKnowlogia, May/June 2000.

Other articles

• Sereen Juma. "<u>Bedoin Women Discover Distance Learning</u>." <u>Choices</u>, June 2001.

IICD/infoDEV ICT Stories (<u>web site</u>)

A 'Vaccine' of Educational Material - What the Doctor Orders (8/2000) Humanity Libraries Project.

Children and the Internet : an experiment with minimally invasive education in India (7/99)

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4 - Exercises

A Choice of Two Exercises

Exercise 4A: ICTs for Education Task Force

Learning Objectives

- Understand different perspectives and interests at stake as reflected in the contributions of various stakeholders represented in the task force.
- Identify key issues in trying to develop a policy or approach to the application of ICTs in education in the context of a specific country.
- Work with limited information to make "informed" decisions.

Instructions

You are members of the education task force set up in the context of a year long planning exercise called the National ICT Forum:

- 1. Teacher representative
- 2. School administrator
- 3. Member of parliament/former academic
- 4. Deputy minister of education responsible for infrastructure (schools)
- 5. Staff of ministry of education responsible for curriculum development....

As a group, you are well aware of the key problems facing the education sector in your country. These key problems have been identified as the following:

- Insufficient number of qualified teachers at the primary and secondary level.
- High drop out rate, especially after primary school.
- Lower levels of education among girls and women
- Lack of culturally appropriate and relevant materials for teaching
- Limited access to journals and other resources in the main university
- High levels of illiteracy

The Ministry of Labor has also sent you a note reminding you that the country does not have enough engineers and other technicians capable of dealing effectively with ICTs and requesting that you consider the training needs in that area as part of your discussions.

Your task is as follows:

• Draft a couple of paragraphs that highlight key principles for a national strategy regarding the use of ICTs in education.

- Identify specific programs that might address some or all of the educational challenges facing the country using ICTs.
- Identify potential constraints and obstacles and possible solutions.

Resources for Exercise 4A

Exercise 4B: ICTs for Learning in Your Country

Learning Objectives

- Learn about ICTs in education initiatives in your own country
- Identify weaknesses in the education system that could be addressed through the effective use of ICTs

Tasks

- Find out if your country already has a policy on the use of ICTs in education. If there is one, describe its key elements briefly.
- Identify 5 to 10 "ICT for learning" projects that have been undertaken in your country.
- Prepare a 15-minute presentation that will provide other participants with a broad overview of what your country has been doing in terms of ICTs for learning.

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4 - Quiz

1. A radio-based basic education program for out-of-school youths in Honduras

COL IMFUNDO WorLD Educatodos Telebasica

2. A program in Panama to replicate Mexico's experience with Telesecundaria

Educatodos COL WorLD Telebasica Enlaces

3. A computers-in-school program in Chile

Telesecundaria Enlaces WorLD Hole-in-the-Wall Experiment AVU

4. A World Bank program to link schools around the world through computer networks

Experiments conducted by NIIT in India

An intergovernmental organization created by the Commonwealth Heads of Government A program in Panama to replicate Mexico's experience with Telesecundaria WorLD

A radio-based basic education program for out-of-school youths in Honduras

5. An initiative of the Prime Minister of Great Britain within the activities of the Department for International Development (DFID)

GDLN COL IMFUNDO WorLD AVU

6. A global network of distance learning centers across the world meant to facilitate access to world class knowledge and knowledge sharing opportunities for decision-makers in the public and private sector

Enlaces
WorLD
Telesecundaria
GDLN
AVU

4 - Resources

Recent Documents

Missing the connection? Using ICTs in education February 2003 Insights Education Issue #1 http://www.id21.org/insights/insights-ed01/index.html

General Trends in the Use of ICT in Education

Technologies for Education: Potential, Parameters and Prospects

Wadi D. Haddad and Alexandra Draxler, EditorsPrepared for UNESCO by Knowledge Enterprise, Inc.@ 2002 by UNESCO and Academy for Educational Development

Key Organizations

Commonwealth of Learning (COL)

http://www.col.org

[Extracted from the web site] Access to education means access to a better future: The Commonwealth of Learning is an intergovernmental organization created by Commonwealth Heads of Government to encourage the development and sharing of open learning/distance education knowledge, resources and technologies. COL is helping developing nations improve access to quality education and training.

International Research Foundation for Open Learning http://www.col.org/irfol

World Bank Departments related to ICTs and Education

World Bank Institute http://www.worldbank.org/wbi

Education and Technology

Education and Technology Publications (links to World Bank publications on related issues)

Global Development Learning Network <u>http://www.gdln.org</u> See the video at <u>http://streaming-ext.worldbank.org:8080/ramgen/wbi/gdlnlow.rm</u> Networking for Innovation in Technology and Teacher Training, InfoDev Project 248, provides case studies from Armenia, China, Guinea and Southern Africa. <u>http://www.infodev.org/projects/248</u>

Regional Distance Learning Network for Information Technology (North Africa) InfoDev Project Final Report, <u>http://www.infodev.org/projects/25.pdf</u>

Innovating with Computers in Primary Education (Jamaica), InfoDev Project Final Report

http://www.infodev.org/projects/078jamaica/078final.pdf

Cyberschool Africa, InfoDev Project Final Report http://www.infodev.org/projects/205.pdf

African Virtual University (AVU)

http://www.avu.org

[Extracted from the web site] The African Virtual University (AVU) is a "university without walls" that uses modern information and communication technologies to give the countries of sub-saharan Africa direct access to some of the highest quality academic faculty and learning resources throughout the world. AVU is bridging the digital divide by training world-class scientists, engineers, technicians, business managers, and other professionals who will promote economic and social development and help Africa leapfrog into the Knowledge Age.

IMFUNDO

http://www.imfundo.org UK Based initiative focused on IT in education.

Imfundo: A Review of Experience with Information and Communications Technologies in Education Projects, IEC, Cambridge, May 2001. http://www.imfundo.org/iec/contents.htm

Imfundo KnowledgeBank paper 21 "Brain Drain", By Peter Williams. http://www.imfundo.org/brain/contents.htm

Imfundo KnowledgeBank paper 4 "Information and Communication Technology in Schools", By Michelle Selinger http://www.imfundo.org/Selinger/contents.htm

Journals

TechKnowLogia

http://www.techknowlogia.org

[Note: Access to the TechKnowLogia articles requires registration with the site. This is a free process that simply allows you to receive a notice with full table of contents when a new issue is available].

ICT Capacity Building

Capacity.Org

Avrill Crawford, "Building Sustainable ICT Capacities in Jamaica". In Capacity.org, Issue 10, July 2001 (Approaches to ICT Capacity Development). <u>http://www.capacity.org/10/editorial3.html</u>

(also in French, see additional articles as well.)

Arjan de Jager & Denise Clarke. "Building Local and Sustainable Capacities for ICT Development.", Issue 10, July 2001 (Approaches to ICT Capacity Development, also in French).

http://www.capacity.org/10/editorial1.html

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Marcel Werner and Johnson Nkuuhe. "Formulating Local Priorities, Owning Local Projects: The IICD Round-Table Process." In Capacity.org, Issue 10, July 2001 (Approaches to ICT Capacity Development, also in French). http://www.capacity.org/10/editorial2.html

The Technology Source http://horizon.unc.edu/TS

"Hole in the wall" Experiment

http://www.niitholeinthewall.com

Experiments in India showing that kids don't need formal training to learn how to use computers.

Bill Murray, Cathy Murray and Simon Brooks."Training Telecentre Managers, Staff and Users." Chapter 19 of the COL's Telecentre Study. http://www.col.org/telecentres

Kim Phaik Lah. "E-Learning and Human Resource Development in Bridging Digital Divide of countries in ASEAN Region: Recent Developments, Issues and Challenges" InfoSoc Malaysia, June 14-16, 2001. Document accessible from <u>http://www.infosoc.nitc.org.my/</u>

Hilary Perraton, "<u>Information and Communication Technologies for Education in the</u> <u>South</u>," Report prepared for the UK Department for International Development (DFID),
June 2000.

Paving the Way for Internet-Rich Environments in Developing Nations: The Internet Society?s Network Training Workshops, OTI, By George Sadowsky http://www.isoc.org/oti/printversions/0401sadowsky.html

Osei Darkwa and Fikile Mazibuko. "Creating Virtual Learning Communities in Africa: Challenges and Prospects." First Monday, Vol. 5, No. 5, (May 2000) <u>http://firstmonday.org/issues/issue5_5/darkwa/index.html</u>

This paper discusses the growing application of ICTs in Africa and other parts of the world. It examines the growing global information technology revolution and how it is transforming educational institutions. It then discusses the state of distance education in Africa, identifying the institutions offering distance education and the nature of the delivery platform used. The prospects and challenges in introducing distance education to Africa tertiary institutions is discussed. Finally, it offers suggestions to overcome the challenges confronting technology-based education in Africa.

John Abdul Kargbo, "The Internet in Schools and Colleges in Sierra Leone: Prospects and Challenges." First Monday, Feb. 2002. http://firstmonday.org/issues/issue7_3/kargbo/index.html

Regency Foundation "Telecommunications and Education" Telecommunication in Action, 32 pages pdf file http://www.regency.org/t_in_act/pdf/english/educate.pdf

Educ.ar An effort of the Argentine Ministry of Education to create a national educational Internet portal. <u>http://www.educ.ar</u> (In Spanish)

Derek Keats, "Collaborative Development of Open Content: A Process Model to Unlock the Potential of African Universities." First Monday, Vol. 8, No. 2 (Jan. 2003). <u>http://www.firstmonday.org/issues/issue8_2/keats/index.html</u>

Digital Libraries

African Digital Library West African Resources http://www.africandl.org/ NSF Grant to MSU

African Digital Library Project

http://AfricaEducation.org/adl

Online library with 8000 e-books available free of charge to residents of Africa.See related paper at <u>http://www.pqw.org/papers/adl200011.htm</u>

INASP, African Scientific Journals and Online Access

(International Network for the Availability of Scientific Publications) Neil Pakenham-Walsh <u>http://www.bireme.br/ifse-rio/present/Neil_Pakenham.pdf</u>

Why and for whom do Developing countries publish scientific journal. Lewis Joel Greene <u>http://www.bireme.br/ifse-rio/l/proceedings.htm</u>

Ian H. Witten, Michel Loots, Maria F. Trujillo, and David Brainbridge. "The Promise of Digital Libraries in Developing Countries." Communications of the ACM, May 2001, Vol. 44, No. 5 (pages 82-85).

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Mary Fontaine and Andy Lieberman (LearnLink/AED). "Back to the Future: IT for ECD Among the Maya". TechKnowLogia, Vol. 3, Issue 5, (September/October 2001) (pdf file, 3 pages)

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http://www2.unesco.org/wef/en-docs/findings/technofinal.doc

Andy Cawthera,"Computers in Secondary Schools in Developing Countries: An Analysis of Costs." (<u>Executive Summary</u>). (<u>Full 50 page report</u>).

Mitchel Resnick. "Rethinking Learning in the Digital Age." In The Global Information Technology Report 2001-2002: Readiness for the Networked World. <u>http://www.cid.harvard.edu/cr/pdf/gitrr2002_ch03.pdf</u>

Robert J. Hawkins. "Ten Lessons of ICT and Education in the Developing World." In The Global Information Technology Report 2001-2002: Readiness for the Networked World,

http://www.cid.harvard.edu/cr/pdf/gitrr2002_ch04.pdf

Technical Experts Meeting on the Use and Application of Information and Communication Technologies in Higher Education Institutions in Africa, 17-19 May, 2000. University of Dar Es Salaam, Dar Es Salaam, Tanzania. Report. September 2000. <u>http://www.aau.org/english/documents/aau-ictreport-toc.htm</u>

Distance Education Grants http://www.itcnetwork.org/grants.htm Grants for Distance Learning <u>http://www.technogrants.com</u>

FOTIM, Foundation of Tertiary Institutions of the Northern Metropolis (South Africa) ICT Challenges Project. http://www.fotim.ac.za/project.html Background information http://www.fotim.ac.za/docs/ictchallenges.doc FOTIM telecenter project: http://www.techpta.ac.za/study/telematic/fotim/index.htm

Sterlite Foundation

http://www.sterlitefoundation.com

The Sterlite Foundation is a non-profit organization offering services to the underpriviledged in India through IT education. The Sterliteracy Program trains 70,000 students at 250 Computer Training Centers every year. The Foundation also runs programs to assist disadvantaged people like the mentally retarded, poor women and young women.

The Power of the Internet for Learning: Moving from Promise to Practice, Report of the Web-Based Education Commission, December 2000. http://www.ed.gov/offices/AC/WBEC/FinalReport/WBECReport.pdf

(US focus)

Dr. Yoni Ryan, "Emerging Indicators of Success and Failure in Borderless Higher Education." February 2002, The Observatory of borderless higher education. http://www.obhe.ac.uk/products/reports/pdf/February2002.pdf

ÿ Africadotedu (africa.edu) http://www.kelp.org/africadotedu/

Same Language Subtitling for Literacy in India

<u>Computers in Schools in South Africa</u> : A national survey of Information and Communication Technologies in South African Schools, University of Western Cape, 2000.ÿ

I mproving Access to Education via Satellites in Africa: A Primer

An overview of the opportunities afforded by recent developments in satellite technology in meeting educational and development needs especially in Sub-Saharan Africa. (Date?), 131 pages pdf file.

Sri Lanka Environmental Television Project

The SLETP is a public interest, non-profit educational service promoting the use of television and video to raise awareness on environment and development. It is a joint initiative of the International Television Trust for the Environment (TVE) and the Media House of the Open University of Sri Lanka.

http://www.sletp.org/

infoDev Project #248: Networking for Innovation in Technology and Teacher Training Case Studies

1. The Three Pomegranate Network: Online Education Through Cross-border Collaboration

Case Study by Robert Gabrielyan, Ministry of Education and Science of Armenia, Anoush Kacherian, Consultant, Artavazd Mamyan, Ministry of Education and Science of Armenia, Anoush Margaryan, American University of Armenia. Report by Anoush Kacherian, Anoush Margaryan. Cost Analysis by Marianne Bakia, Consultant 2000. <u>http://www.infodev.org/projects/248/armenia.zip</u>

2. China's Use of Television to Train Teachers http://www.infodev.org/projects/248/china.doc

3. Les innovations technologiques dans la formation de l'enseignant de dans l'apprentissage des apprenants (Guinée). (in French) http://www.infodev.org/projects/248/guinea.doc

4. Case Studies of Innovations in Teacher Training and Technology: A Collaboration of the World Bank's infoDev Program and the Institute for International Education, IIE http://www.infodev.org/projects/248/singapore.zip

5. SHOMA: A private sector contribution to South Africa's Teacher Development A Case Study by Joanne Capper

http://www.infodev.org/projects/248/southafrica.doc

ÿ

6. Using technology to support both teacher professional development and curriculum development in southern Africa: A case study http://www.infodev.org/projects/248/cascadereport.zip

Regional Distance Learning Network for Information Technology (North Africa) Final Report

http://www.infodev.org/projects/25.pdf

ÿ

Jamaica: Innovating with Computers in Primary Education http://www.infodev.org/projects/078jamaica/078final.pdf

Cyberschool Africa

http://www.infodev.org/projects/205.pdf

ICTs AND YOUTH PROJECTS

IICD's Global Teenager Project http://www.iicd.org/virtualcampus

Youth Network on ICTs and Digital Opportunities http://ict.takingitglobal.org

Youth and ICT Projects funded by InfoDev - InfoCaffe (Senegal, Ecuador and India) <u>http://www.infocaffe.net</u> - Kidlink <u>http://www.kidlink.org/protuguese/brasil/index.html</u> - The Child Healthcare Telemedicine Network <u>http://www.rostropovich.org/project.htm</u> ÿ Up-Coming Youth and ICT Projects funded by InfoDev - CDI International Expansion http://www.cdi.br

YouthLearn Initiative by Education Development Centre (EDC) <u>http://www.youthlearn.org/guide/index.html</u>

kAYNet: The k-ASEAN Youth Network http://www.nitc.org.my/sdi/kaynet

Eustella Bhalalusesa, "Supporting Women Distance Learners in Tanzania." Open Learning, Vol. 16, No. 2 (June 1, 2001), pp. 155-169

This paper examines the kind of support women need to pursue distance learning successfully in a developing country context such as Tanzania. The paper shows that there are factors that make studying more difficult for women than for men. While the distance teaching institution has an important role to play in promoting learning, both the learner and the immediate social environment have a part to play in the student's success. A holistic approach is therefore necessary if effective support is to be realised. The paper ends with recommendations for improved practice. [Accessible online to subscribers to the full text version of the Taylor and Francis Online Journals, at http://taylorandfrancis.metapress.com/]

IN FRENCH

4 - Resources

Jean Valérien, Jacques Guidon, Jacques Wallet, avec la collaboration d'Etienne Brunswic, "<u>Enseignement à Distance et Apprentissage Libre en Afrique subsaharienne</u> <u>francophone</u> : Etat des Lieux fin 2001." RESAFAD, Janvier 2002. (121 pages, 571KB)

EDUSUD, Les TIC au service de l'éducation dans les pays du Sud. <u>http://www.edusud.org/index.html</u>

Cours - Nouvelles Technologies pour la formation http://www.edusud.org/ressources/ntic.html

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5 - ICTs for Better Health



More about the photo above...

Learning Objectives

This fifth module is meant to allow participants to

- Understand some of the terminology often associated with ICT applications in the health sector, including terms such as telemedicine and telehealth
- Explore 5 key applications of ICTs for better health
 - o Handling surveillance and epidemiological information
 - o Disseminating personal and community information
 - Managing health services
 - o Accessing knowledge and medical literature
 - Facilitating clinical decision-making

- Understand the potential and challenges associated with these applications
- Learn about case studies from around the world illustrating the potential use of a broad range of ICTs for better health
- Extract some key lessons learned about past and ongoing experiences with ICT applications in health

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Photo

Barrio 5 de Junio



This is the decorated wall of a community center in a very poor neighborhood of Esmeraldas, Ecuador. This neighborhood is on the edge of a river that is heavily polluted by a nearby oil refinery. Animals drink from the river. Residents bathe in the river. As a result, many residents now suffer from cancers. Chasquinet is planning to establish a telecenter within the community center that will focus particularly on the health needs of the community.

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<u>Close</u>

5 - Notes

*** YOU CAN ACCESS THIS NOTE AS <u>A SINGLE FILE</u> (PDF FORMAT) ***

CONTENT OF THIS NOTE

Context Definitions Applications Questions

Case Studies

Mapping Malaria Risk in Africa Electronic Resource Center Telemedicine in Ethiopia and Cambodia India Health Care Project and PDAs HealthNet and the Africa Learning Channel

Key Lessons

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Context

Most health care workers in developing countries operate in an environment where access to information is one of many problems: shortages of medical equipment sometimes as basic as rubber gloves, inadequate supplies of drugs, sometimes even basic medicines such as aspirin, lack of training and poor pay resulting in a brain drain of some of the best doctors to the West.

Access to information is appalling. Training textbooks are often out of date and access to information on latest drug developments or preventive treatments are limited. Doctors feel isolated because they cannot get advice on making a diagnosis.

How can ICTs help? How can ICTs address these challenges? To make this more specific, how can ICTs help to address the Millennium Development goals related to health?

Health-related targets from the Millennium Development Goals and Targets

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate.

Target 6: Reduce by two-thirds, between 1990 and 2015, the maternal mortality ration.

Target 7: Have halted by 2015, and begun to reverse, the spread of HIV/AIDS.

Target 8: Have halted by 2015, and begun to reverse, the incidence of malaria and other major diseases.

Learn more about the MDGs (<u>on the web</u>)

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Context



Definitions

Health informatics: An umbrella term covering the use of computing, networking and communications to support the health related fields of medicine, nursing, pharmacy and dentistry.

Telemedicine and telehealth: Terms used to refer to applications related to the practice of health or medical care using interactive audio, visual and data communications.

Health Telematics: Health telematics is a composite term for health-related activities, services and systems, carried out over a distance by means of ICTs, for the purpose of global health promotion, disease control and health care, as well as education, management and research for health.

Related Terms: Telematics for health research and Telematics for health management

Health informatics, telehealth and telemedicine have a major impact on how healthcare services can be provided, how healthcare knowledge and expertise is shared, how health literature is accessed and searched, how health education and training is delivered, how research is conducted and coordinated, how contacts and dialogue are established, and maintained between individuals and institutions.

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Applications

5 Key ICT Applications in Health

- Handling surveillance and epidemiological information
- Disseminating personal and community information
- Managing health services
- Accessing knowledge and medical literature
- Facilitating clinical decision-making

Handling surveillance and epidemiological information

Data on the patterns and trends of diseases and related health measures. ICTs can help to collect and transfer this kind of data more effective and quickly than before.

Disseminating personal and community information

Health care related information directly related to the general public. ICTs can help to disseminate key health messages to the general public.

Managing health service

ICTs can facilitate the management of health services by increasing efficiency in the handling of day-to-day data and information necessary for planning, budgeting and programming.

Accessing knowledge and medical literature

ICTs allow health workers to communicate with each other, sharing important knowledge and to access medical journals and reports from around the world.

Facilitating clinical decision-making

Finally, ICTs allow health workers in remote locations to have access to the knowledge and experience of doctors in urban hospitals. This is what is referred to most often as telemedicine.

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Questions

Appropriateness of Various applications

- What are the most pressing health, nutrition and population problems that need to be addressed?
- What is the geographical distribution and quality of health resources?
- What is the geographical distribution and quality of information and communication networks and technologies?
- Are there any specific geographical, climatic, cultural, or political factors to be taken into consideration in integrating ICTs in health care? What are they?
- What are the current uses of ICTs in health?
- Have there been any evaluations of the use of ICTs in health and what were the benefits produced and problems encountered?
- Are financial resources available to cover the present health plan? Would they be sufficient to integrate ICTs into health care?

Where to Start

- Evaluate the current infrastructure
- Share information and involve stakeholders and decision makers
- Evaluate costs and benefits of alternative approaches
- Prioritize projects and programs by their level of complexity, feasibility and cost-benefits, as well as their ability to enhance the overall effectiveness of health care systems and improve health status
- Support the development of small-scale implementation efforts.

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Case Studies

The case studies presented below are meant to illustrate the range of ICT applications in health. While 5 key types of ICT applications were highlighted earlier in these notes, the case studies provide specific examples of these applications.

The **Mapping Malaria Risk in Africa** Project is an example of the application of advanced technologies such as GIS (Geographic Information System) to help plan malaria prevention campaigns more accurately and to help target interventions so as to make the most of scarce resources.

The **Electronic Resource Center** is a good example a combination of email-based communication tools and web-based databases of materials meant to help health care professionals access the information they need.

The **telemedecine examples in Ethiopia and Cambodia** show how remote locations where medical expertise is lacking, can be connected to more advanced health facilities staffed with doctors who can help diagnose patients and suggest treatment.

The **India Health Care Project** illustrate the application of PDAs (handheld computers) in health care. Similar projects using PDAs are also mentioned.

HealthNet and the Africa Leaning Channel show how two key organizations, the WorldSpace Foundation and Satellife, have collaborated to create digital radio programming for Africa and to help health care workers communicate through email using WorldSpace's satellite system.

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MARA

Mapping Malaria Risk in Africa (MARA)

90% of the malaria burden in the world is in Africa. Almost everywhere that malaria occurs, the burden of disease and death falls mainly on two vulnerable groups: young children and pregnant women. While treatment and prevention methods have been refined over the years, it is still essential to be able to better target prevention and treatment programs so that those most at risk can benefit from them.

The MARA/ARMA project is a collaboration among a number of organizations to provide an Atlas of malaria in Africa containing relevant information for rational planning and implementation of malaria control strategies.

The objectives of the project are as follows:

- 1. To map malaria risk in Africa
 - a. Through collection of published and unpublished malaria data.
 - b. Through spatial modeling of malaria distribution, seasonality and endemicity.

2. To disseminate relevant information to national and international decision makers and other end users, in a range of useful formats.

3. To develop capacity in malaria / health GIS (Geographic Information Systems).

The project has been at the cutting age of applications of GIS for health purposes. GIS is used to integrate spatial malaria and environmental data sets to produce maps of the type and severity of malaria transmission. The project also had an important capacity building component with training provided on a sub-regional basis around Africa.

These maps have facilitated decision making regarding cost-effective and appropriate methods under different conditions. The maps have helped to rationalize the allocation of scarce resources for malaria control.

Additional Resources

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MARA

Additional Resources

Fighting Malaria with ICTs

Roll Back Malaria (on the web)

Background about a global campaign to fight malaria

More about the MARA project (on the web)

Slide show (<u>on the web</u>)

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ERC

Electronic Resource Center

Under the Family Planning Management Development (FPMD) project – a USAID-funded initiative – Management Sciences for Health developed the Manager's Electronic Resource Center (ERC). The ERC is a collection of management information products designed to meet the needs of health professionals around the world with varying levels of Internet access. The ERC provides access to both web and email products.

Web products include:

- 8 management modules offering practical tools and electronic versions of many popular MSH publications. The eight modules cover the following topics: community health services, human resources, financial management, information management, organizational planning, organizational sustainability, health policy and reform.
- The Health Manager's toolkit: An electronic compendium of management tools designed to help managers of health programs effectively plan and implement their management activities.
- A Member database; a searchable database containing profiles of health professionals around the world and their email addresses.
- An events calendar: a searchable database of management event listings around the world.
- The Guide for Managing for Quality: a comprehensive guide to quality improvement including field-tested tools, a step-by-step approach, and an illustrative case study.

Email products include:

- Decentralization-L: an electronic forum to deepen understanding of decentralization as a mechanism for improving the performance of the health sector
- Community-Health-L: an electronic forum to share resources on managing community health services, community participation and refugee and immigrant health.
- Fracnet-L: An electronic forum to support a network of reproductive health professionals from francophone African and the Caribbean.
- Management-Link: An informative e-mail newsletter on current management topics.

For additional information about the ERC, see the project's web site.

A similar initiative has focused on the CEE/NIS countries. See the ICT activities of the AIHA and the EurasiaHealth Knowledge Network (<u>web site</u>).

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Telemedicine

'en∢

If you're tired of reading, you have a good connection to the web and you understand French, see the video about a telemedicine project linking Geneva (Switzerland) and Bamako (Mali) (<u>on the</u> web).

Telemedicine in Cambodia

Robib is a small village in Cambodia that is serving as an experimental location for a range of ICT applications, including ecommerce, computers in schools and telemedicine. The telemedicine project is a collaboration with Harvard University Medical School doctors.

Since February 2001, a nurse and a technician from the main hospital in Phnom Penh travel once a month to the village of Robib with a digital camera. When the nurse is not able to diagnose a patient, the technical takes pictures. Those pictures are then sent via the Internet to Partners Telemedicine, a US-Based NGO working with staff from Harvard Medical School and the Massachusetts General Hospital. Internet access exists at the local school thanks to a satellite link. Once the pictures are examined by the doctors in the US, a diagnostic is offered and treatment is suggested. If treatment is not available locally, the patients are transported to the appropriate health facilities.

Additional Resources

T elemedicine in Ethiopia

This project tried to address a number of related challenges in Ethiopia. Ethiopia suffers from a severe shortage of healthcare professionals, especially in remote and rural areas. There is a need for improved communications to link remote clinics and hospitals with urban hospitals. There are 5-9 radiologists for almost 60 million people. There are 21 radiologist centers. As a result, the specialists must travel from center to center to examine the patients.

The project planned a teleradiology application. The medical equipment would be installed in one or two clinics in the Tigray region of Ethiopia. Two configurations were envisaged. The first one was to connect one health clinic with the main hospital in Addis Ababa. The second was to connect a doctor traveling from village to village with the regional hospital in Tigray.

More details about the project (<u>on the web</u>).

[Note: I could not find any new information regarding the status of this project or even if it was ever implemented]

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Additional Resources

e-Health in Cambodia

- Robib Project (<u>Web page</u>)
- More about the Robib Telemedicine Project in an article in Virtual Medical Worlds (on the web).
- From Cambridge to Cambodia: Experience with a Telemedicine Project in the Developing World. (PowerPoint presentation <u>on the web</u>)
- ITU, Khmer Internet: Cambodia Case Study, 2002. (on the web)

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India - PDAs

India Health Care Project

In this project, Personal Digital Assistants (PDAs) are used by rural health care workers with the following benefits:

- substantial time saving
- improved effectiveness of preventive programs (more time available)
- increased reliability of collected data
- more efficient work schedules

The India Health Project aims at providing the benefits of Information Technology to rural health workers. The use of computers, communication technology and personal digital assistant (PDA) for data collection in health care delivery systems will result in substantial time savings for health workers. This can be used to improve the effectiveness of preventive programmes, and provide timely information for monitoring, analyzing, planning and emergency response resulting in the improved efficiency of health service delivery.

The basic health care delivery system in India is through sub-centers of Primary Health Centres (PHC) by ANMs (auxillary nurse midwives) covering a population of 5000 each. These ANMs play a key role in providing necessary counseling, first aid, preliminary diagnosis for simple ailments, promotion of various family planning methods, pre-and post-natal care and distribution of common medicines. ANMs also collect various statistics about the population under their coverage, through a traditional system of diaries and registers which often contain erroneous data.

The project addresses the ANMs critical concern with the effective use of time which at present is mostly spent on maintaining registers and preparing reports rather than on delivering quality health care. The project proposes to extend the benefits of information technology to ANMs who are in direct contact with the rural population.

The approach is to train the existing ANMs in the use of PDAs which can process data with east. The PDAs are designed to cater to the semi-literate levels of the ANMs. The use of PDAs improves the reliability of collected data, thus ensuring data integrity and alleviating problems faced by ANMs in completing the paper work. The 40-60% reduction in time for the ANMs to process the data can be used in a more productive manner by delivering quality health care.

Capturing the data of an ANMs target population with the use of PDAs and a PHC

computer, the system generates work schedules, reminders for immunization, pre-and post-natal care information, family planning activities, etc.

Additional Resources

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Additional Resources

eHealth and PDAs

More about the India Health Care Project

- Handheld Computers for Rural Healthcare: Experiences from Research Concept to Global Operations (<u>on the web</u>)
- Mike Graves & Naresh Kumar Reddy, "Electronic Support for Rural Health-Care Workers." (<u>on the web</u>)

Readings on this CD about PDAs and eHealth

- Health Information Project: Using Handheld Computers for Surveys Ghana (<u>on the web</u>)
- Satellife's PDA Project (<u>on the web</u>)
- Hand-held computers provide useful solutions for health-care practitioners in developing countries, Interview with Holly Ladd, October 2002. (on the web)

More about uses of PDAs for Development

• Handheld computer technologies in community service/volunteering/advocacy (Database of applications on the <u>UNITes web site</u>)

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HealthNet - ALC

HealthNet (email)

HealthNet is the name of SATELLIFE's global communication network, which links healthcare workers around the world via e-mail. In its early years, HealthNet utilized SATELLIFE's low- earth-orbit satellite to establish e-mail connectivity in various locations throughout Africa. As one of Africa's first e-mail networks, HealthNet was a pioneer in providing viable solutions to information poverty among health professionals in the developing world. Through this new connection, doctors, nurses, researchers, medical students and other health care providers who had been working in isolation were finally able to communicate, share experiences and access information critical to their work.

Today, SATELLIFE makes its health information resources available to all health professionals in the developing world, regardless of whether or not they obtain their e-mail connection through HealthNet. So, the meaning of "HealthNet" has come to encompass SATELLFE's information resources, as well as the e-mail technology. With over 10,000 members worldwide, HealthNet is ultimately not just about technology or content, but about a network of people working together to build healthier communities.

Read more about HealthNet on the web.

Africa Learning Channel - WSF-Africare HIV/AIDS Initiative

WorldSpace Foundation (WSF) has formed a partnership with Africare to provide lifesaving information about various prevention and treatment measures than can help stem the tide of the HIV/AIDS epidemic in Africa. WorldSpace Foundation produces and broadcasts a 24-part series on HIV/AIDS on the Africa Learning Channel.

The Africa Learning Channel is a digital radio channel used by the WorldSpace Foundation to broadcast programs to more than 50 million people in Africa. (Learn more about the Africa Learning Channel <u>on the web</u>).

WorldSpace Foundation began airing one-hour documentaries dealing with different aspects of the HIV/AIDS epidemic in December 2001. The documentaries focus on issues such as stigmatization of people living with AIDS, voluntary testing and counseling, sexual violence against women, children affected by AIDS, and safe sexual practices. Africare's local offices in Uganda and Zambia coordinate focused listening groups around the programming and provide local staff to facilitate discussions following each show. WorldSpace Foundation's production team then incorporates feedback from the discussions in subsequent broadcasts.

Source: <u>WorldSpace web site</u>

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Key Lessons

There are a range of possible applications of ICTs with very different purposes, from helping to network researchers around the world, better manage information that helps rationalize decision making, provide essential health-related information directly to the population, etc....

Appropriateness of each application will depend on the circumstances in individual countries. Technology choices have to be made carefully.

- As with other applications of ICTs in other fields, costs (and who will pay) are a key issue.
- While lots of applications are possible, it is essential to focus on those applications that will have the greatest impact on key health targets such as the Millennium Development targets mentioned at the beginning of these notes.
- Given the important role that developing country governments play in the delivery of health care services, the integration of ICTs in health should be a part of a broader Government strategy to integrate ICTs in government operations (egovernment).

Note: The importance of an ICT policy for Health was not addressed in the notes. If you are interested in looking for more information, see how Ghana developed an ICT Policy Strategy for the Health Sector, with the help of IICD (on the web).

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5 - Readings

Development Gateway Interviews

- <u>Hand-held computers provide useful solutions for health-care practitioners in</u> <u>developing countries</u>, Interview with Holly Ladd, October 2002.
- <u>ICT for Health Care Delivery in Africa</u>, Interview with Mary Oakes Smith, October 2002.
- <u>Using ICT for Health Care in Bangladesh</u>, Interview with Shahid Uddin Akbar, November 2002.

Other Readings

- Andy Cramp and Cathy Needham. "<u>Can Information Technology Help Fight</u> <u>Disease</u> ?" Choices, June 2001. (pdf file, 2 pages)
- Jorn Braa et al... "<u>A Study of the Actual and Potential Usage of Information and</u> <u>Communication Technology at District and Provincial Levels in Mozambique</u> <u>with a Focus on the Health Sector</u>." EJISDC (2001), 5, 1, pp. 1-29.

Note: There were additional articles related to ICTs and health in this particular issue of the EJISDC journal. You can find the table of contents for Volume 5, Issue 1 at <u>http://www.is.cityu.edu.hk/research/ejisdc/vol5.htm</u>.

• <u>The African Development Forum '99</u>: Post ADF Summit: "Information and Communication Technology for Health Sector." (29 pages)

IICD/infoDev Stories

These are a maximum of 6 pages each.

- Healthinf-ethiopia and ethiohealth discussion forum, 4/2001 (Email discussion list)
- ICT for Health : Combating HIV/AIDS in Nigeria through the Nigeria-AIDS eforum project, 4/2001 (Email discussion list)
- Integrating Health and Technology through engaging local cultures : The Story of <u>Infocomm, 4</u>/2001 (Costa Rica and Dominican Republic). (Health services through telecenters)
- State-of-the-art training for healthcare providers in developing countries, 4/2001

(CD-ROM)

- Simple ICTs reduce maternal mortality in rural Uganda, 3/2001 (Walkie-Talkies)
- Harnessing ICTs for Community Health The AfriAfya Initiative, 4/2002 (Health networking for rural communities)
- Health Information Project: Using Handheld Computers for Surveys, 4/2002 (PDAs)

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5 - Exercises

A Choice of Two Exercises

Exercise 5A: Addressing the Malaria Challenge with ICTs Learning Objectives

The objective of this exercise is to better understand the potential impact and usefulness of different technologies in addressing a specific health problem (malaria). Feel free to use another disease, such as HIV/AIDS to do this exercise.

Instructions

The MARA Case reviewed in the lecture notes for this week was focused on the use of one particular technology, GIS, to help map malaria risk in Africa.

Can you think of other ICTs that can be used to combat malaria and what their specific roles could be?

- List information and communication technologies that may be used in addressing the treatment and prevention of malaria in developing countries.
- For each technology, specify how it is used and what the expected impacts are.
- For each technology, specify constraints and applicability in different circumstances, try to specify your assumptions.

You may want to present this exercise in a matrix.

Technology Use	Target Group	Expected Impact(s)	Constraints &Applicability	Assumptions
	<u> </u>			
add more				
rows as needed]				

Alternatively, you may decide to pick a different disease to focus on. It is slightly easier to do this exercise focusing on a disease you have some knowledge of. You might pick

HIV/AIDS or SARS.

Resources for Exercise 5A

Exercise 5B: Locating Health Information on the Web

You should select this exercise only if you can easily search the web.

Learning Objective

The purpose of this exercise is to realize how easy or difficult it is to find reliable, relevant health information on the web.

Instructions

1. Who are you?

Put yourself in the shoes of someone in a developing country. For example, you may decide that you are a rural medical doctor and you are looking for the latest approaches to drug resistant malaria. You may want to put yourself in the shoes of a medical student, a farmer, a mother of 5 in a poor urban area of the capital city. Use your imagination!

Describe who you are. For the purpose of this exercise, we are working under the assumption that your fictitious character has access to the web (perhaps through a telecenter). You may still want to talk about constraints that affect your search for information.

2. What's your problem/ question?

Define your character's health problem/question. What does your character want / need to know?

3. Look for answers

Try to find the answers to your character's questions on the web.

4. Show results

Detail your search and your findings. You may want to limit the time you search. If you do not find anything, just document what you searched for and how you searched for it. This exercise is as much about how to search as it is about finding the information.

Resources for Exercise 5B

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5 - Quiz

1. The MARA project is primarily meant to...

disseminate malaria information to the general public

make more informed decisions about the allocation of scarce resources to prevent and treat malaria

help health professionals provide more accurate diagnostics to patients develop new drugs to treat malaria

2. India's Health Care Project using PDAs shows...

how health professionals can use mobile ICTs to collect and analyze health related data how patients can use mobile ICTs to access health information

3. Which organization produces and broadcasts a 24-part series on HIV/AIDS on the Africa Learning Channel?

WorLD WorldSpace Satellife Healthnet


ICTs for Better Health

Lessons from the Field: ICTs in Healthcare

"<u>Facilitating Communications in response to HIV/AIDS in South-East Asia</u>." InfoDev, UNAIDS Case Study, July 2001. (53 pages, pdf file)

INASP-Health: towards universal access to reliable information for health professionals in developing countries <u>http://www.inasp.org.uk/health/index.html</u>

Afriafya - African Network for Health Knowledge Management and Communication <u>http://www.afriafya.org/</u>

Videophone Tele-medicine Project in Indonesia

infoDev Health Project Descriptions and Reports

- EHAS (Hispano-American Health Link) <u>Project description</u> Project web site http://www.ehas.org/
- Voice Portal for Health <u>Project description</u>

WHO - Public Health Mapping http://www.who.int/csr/mapping/en/

WHO - GIS Working Group

DOT FORCE Report

Insights, February 2003: Education Issue, "<u>The Health Benefits of Soap</u>"

Improving Health, Fighting Poverty: The Role of Information and Communication Technology, July 2001. <u>http://www.healthcomms.org/pdf/findings1.pdf</u>

Maternal Health Care in Rural **Uganda** : Leveraging Traditional and Modern Knowledge Systems. IK Notes, No. 40, January 2002. http://www.worldbank.org/afr/ik/iknt40.pdf

Satellife (<u>http://www.satellife.org</u>)

SATELLIFE is an international not-for-profit humanitarian organization employing satellite, telephone, and Internet technology to serve the health communication and information needs of countries in the developing world through a global computer-based

communications network, HealthNet. SATELLIFE's mission is to improve health by enhancing connectivity among professionals in the field via electronic communications and exchanges of information in the areas of public health, medicine, and the environment. A special emphasis is placed on areas of the world where access is limited by poor communications, economic conditions, or natural disasters.

"Telecommunications and Health", <u>Telecommunication in Action</u>, 32 pages pdf file. <u>http://www.regency.org/t_in_act/pdf/english/health.pdf</u>

Ann Séror. "The Internet, Global Health Care Management Systems, and Sustainable Development: Future Scenarios." EJISDC (2001) 5, 1, pp.1-18. http://www.is.cityu.edu.hk/ejisdc/vol5/v5r1.pdf

Abstract: Telecommunications technologies and the Internet offer a revolution in management of global healthcare systems and sustainable development. This paper explores emergent telecommunications infrastructures and their consequences for the future of healthcare management using a scenario methodology. A world systems view from evolutionary economics provides a unique perspective on sustainable development. System performance on the dimensions of universal access, equitable resource allocation and consumer participation are evaluated in light of ideological, political and cultural considerations of governance. Alternative scenarios vary according to market dynamics led by healthcare institutions (push) or by consumer demand (pull), and according to system control mechanisms that may be technologically embedded, institutional or behavioral. The scenario analysis suggests that telecommunications technologies and the Internet may contribute significantly to improve global healthcare system performance, to manage ideological diversity and to reduce the wide inequities that separate the industrialized nations from the developing world.

Jorn Braa, Esselina Macome,......" A Study of the Actual and Potential Usage of Information and Communication Technology at District and Provincial Levels in Mozambique with a Focus on the Health Sector." EJISDC (2001), 5, 1, pp. 1-29. http://www.is.cityu.edu.hk/ejisdc/vol5/v5r2.pdf

This article presents results from a study on the use and appropriation of information and communication technologies (ICT) in Mozambique with a focus on the health sector. The three provinces of Gaza, Inhambane and Niassa were surveyed and two questionnaires addressing 1) computer users and their ability to manage ICT; and 2) health workers and their handling of health information, were used. Based on this study appropriate strategies for developing an ICT-infrastructure with the needs of the health sector as points of departure are discussed. The study is born out of a program to strengthen and further develop the health information and management systems at district and provincial levels as part of a process to support decentralization of the health system in Mozambique. A main problem identified is the lack of ICT-skills and education and poorly developed infrastructure and networks of support. There are very few formal ICT companies providing hardware, and even less, software support. Maintenance and learning about ICT are to a large extent going on within informal networks of computer users in the provinces.

A main finding in this study is that development of ICT capacity and information systems at district and provincial levels in Mozambique needs to be an integrated effort across sectors. A district health information system cannot be developed in a void. A general recommendation is to develop educational programs ranging from training of ICT entrepreneurs and health workers and managers, to Masters and PhD programs in ICT and health information systems. A specific recommendation related to health information system development is to focus on the district level and to develop a strategy which encompasses and integrates all districts, both the advanced districts with computers and the majority of the districts where there are no computers.

HELP Health Library for People (India) http://www.healthlibrary.com/library.htm

About the **MARA/ARMA** Project (Mapping Malaria Risk in Africa) <u>http://www.mara.org.za/about.htm</u> See the slide show at <u>http://www.mara.org.za/SlideShow/index.html</u>

HID/IWSP (Health Information for Development/Information Waystations and Staging Posts) <u>http://www.iwsp.org</u> Global project launched in January 2000. See the article: "Documenting the divide in global health information – and doing something about it. From the front page <u>http://www.iwsp.org</u>, click on "More about the Project."

Tessa Tan-Torres Edejer, "Disseminating health information in developing countries: the role of the internet." BMJ: 2000:321 (797-800), 30 Sept. 2000. http://www.bmj.com/cgi/content/full/321/7264/797

H.S.F. Fraser & McGrath, St. J.D.. "Information Technology and Telemedicine in sub-Saharan Africa." BMJ: 2000:321 (19-26), 19 August 2000. (If you have some time, look at the discussion that followed the publication/posting of the articles).

Bytes for All Special Issue on Public Health. <u>http://www.bytesforall.org/</u> (7th issue, 2000), including an interesting articles "Health Goes Digital: Telemedicine" with some reference to Pakistan.

"WHO Boosts Health Information Via Internet" article from the Panafrican News Agency, Dec. 5, 2000, Dakar, Senegal. <u>http://allafrica.com/stories/200012050294.html</u>

David Wright. "Telemedicine and Developing Countries." A Report of the Study Group 2 of the ITU Development Sector, 1998. http://www.inmarsat.org/newsroom/telemed/tmrp-fin.pdf

PAHO. "Telecommunications in Health and Health Care for Latin America and the Caribbean." 1996. <u>http://165.158.1.110/english/hsp/hspitel.htm</u> (outdated)

Report on a Colloquium on Sustainability and Access to Health Information: Critical Assessment of Practical Uses of IT in the Developing World. Harvard School of Public Health, May 31, 2000. <u>http://www.hsph.harvard.edu/proto/report.htm</u>

<u>Use of Electronic Communication in Management of The Dengue Epidemic in</u> <u>Bangladesh</u>, January 2001 Internet 2001 PHMWG Conference.

UNDP SexDex Presentation (Romania)

Telemedicine Project in Pakistan

Midjan Group, a European Association promoting telemedicine in developing countries <u>http://www.ehto.org/midjan/</u> Examples of activities:

1. Teleradiology and Rural Consultations in **Ethiopia**

http://www.ehto.org/midjan/regions_Ethiopia.html

2. Telemedicine in **Senegal** http://www.ehto.org/midjan/regions_Senegal.htm

IICD Sector Roundtables

ICT Roundtable Workshop on Healthcare Provision in Ghana - Summary Report

Electronic Health Information Village - The e-Health Village (**Philippines**) <u>http://www.pchrd.dost.gov.ph/e-Health/inside.htm</u>

Tobib and Telemedicine (Cambodia)

Report on a Colloquium on Sustainability and Access to Health Information: Critical Assessment of Practical uses of IT in the Developing World, Harvard School of Public Health, May 31, 2000. <u>http://www.hsph.harvard.edu/proto/report.htm</u>

Other resources:

Child survival 2000 CD-ROM, a product of the Population Leadership Program... http://www.popldr.org

Population and Health Materials Working Group, INTERNET 2001 PHMWG Conference, "The Web and Beyond: Harnessing the Potential of IT for Improving Health," Johns Hopkins School for Advanced International Studies. http://www.med.jhu.edu/ccp/2001.html

Online Health Training Opportunities http://www.healthtraining.org/online.html

Visit the web sites of

SatelLife: http://www.healthnet.org

Management Sciences for Health (MSH) http://www.msh.org

Reproductive Health Gateway, <u>http://www.rhgateway.org</u>

United Nations Population Information Network (POPIN) <u>http://www.undp.org/popin</u> or <u>http://www.popin.org</u> (check their electronic resource guides).

ICTs for Health Information Management (<u>http://erc.msh.org</u>)

HealthNet Egypt (<u>http://www.health.egnet.net</u>)

Telehealth Links (<u>http://tie.telemed.org/links/international.asp#24</u>)

IICD/infoDev Stories (search the database for more)

- Healthinf-ethiopia and ethiohealth discussionforum 4/2001 Ethiopia
- ICT for Health: Combating HIV/AIDS in Nigeria through the Nigeria-AIDS eForum project 4/2001 Nigeria
- Integrating Health and Technology through engaging local cultures: The Story of InfoComm 4/2001 Costa Rica and Dominican Republic
- State-of-the-art training for healthcare providers in developing countries 4/2001
- Simple ICTs reduce maternal mortality in rural Uganda 3/2001 Uganda
- Health Information Project: Using Handheld Computers for Surveys 4/15/2002
- Harnessing ICTs for Community Health The AfriAfya initiative 4/5/2002

LINKS RELATED TO HIV/AIDS provided by Samantha Fleming

- Health Systems Trust SA <u>http://www.hst.org.za</u>
- Aids Information Dissemination Site <u>http://www2.wn.apc.org/sahivaids</u>
- Aids Action for 20 Years http://www.aidsaction20.org
- African Development Forum Aids Links <u>http://www.uneca.org/adf2000/links.htm</u>

- Africare at Work on HIV/Aids in Africa <u>http://www.africare.org/at_work/</u>
- <u>SA News24.com Aids Focus</u>
- Zackie Achmat, Head of Treatment Action Campaign (TAC) on health-e: <u>http://www.health-e.org.za/view.php3?id=20001029</u>
- African Summit on HIV/Aids 2001: <u>http://www.oau-oua.org/afrsummit/index.htm</u>
- SAFAids <u>http://www.safaids.org.zw</u>
- Aids.Org-Information site: <u>http://www.aids.org/immunet/home.nsf/page/homepage</u>
- Aids Link: <u>http://www.aidslink.org.za</u>
- HIV Infoweb <u>http://www.infoweb.org</u>
- Health-e.. South Africa <u>http://www.health-e.org.za</u>
- Aids Alliance <u>http://www.aidsalliance.org</u>
- <u>Population Council Aids Site:</u>
- The River...Aids :
- The Body -HIV Aids Resource: <u>http://www.thebody.com/credits.html#mission</u>
- Aids Online: http://www.aidsonline.co.za
- The Treatment Action Campaign: <u>http://www.tac.org.za</u>
- Aids Resource List: <u>http://www.teleport.com/~celinec/aids.shtml</u>
- SA Health Info....Including SA Aids Directory
- World Bank Aids Site:ActAfrica http://www.worldbank.org/afr/aids/about.htm
- UNAids <u>http://www.unaids.org</u>
- Online Health Training Opportunities
 <u>http://www.healthtraining.org/online.html</u>

 Post-graduate training programs in international health
- Enhancing Access to Relevant Health Information

Science Panel on Interactive Communication and Health. (1999). Wired for Health and Well-Being: the Emergence of Interactive Health Communication. Eng, TR, Gustafson DH, editors. Washington, DC: US Department of Health and Human Services, U.S. Government Printing Office.

• Voxiva's Health Project

http://www.voxiva.net/solut_health.htm

Voxiva provides health institutions with easy-to-use business solutions that bring significant benefits to populations without ready access to the Internet.

- ITU Report on <u>Telemedicine in Arab region</u>
- Telemedicine in Pakistan <u>http://www.telmedpak.com/telemedicine.asp</u>
- Health Internetwork <u>http://www.healthinternetwork.net/</u>

The *Health InterNetwork* was created to bridge the "digital divide" in health, ensuring that relevant information - and the technologies to deliver it - are widely available and effectively used by health personnel: professionals, researchers and scientists, and policy makers.

Launched by the Secretary General of the United Nations in September 2000 and led by the World Health Organization, the *Health InterNetwork* has brought together public and private partners under the principle of ensuring *equitable access to health information*. The core elements of the project are *content, Internet connectivity* and *capacity building*.

EN FRANÇAIS

La Santé Tropicale sur Internet http://www.santetropicale.com

Mission expérimentale de la télémédecine spatiale en janvier 2002 au Sénégal

L'Afrique a-t-elle besoin d'Internet ?

Des diagnostics médicaux au Sénégal, de l'eau au Burkina Faso, un zébu à Madagascar, le Réseau offre à des populations souvent enclavées une réponse à des des besoins concrets et une ouverture sur le monde. Dossier Le Monde Interactif (août 2001)

Centre de Coopération Internationale en Santé et Développement (CCISD) - Canada <u>http://www.ccisd.org/fra/index2h.html</u>

Projet d'appui à la surveillance épidémiologique intégrée, utilisation des TIC

Caducee.net : <u>Réseau Santé au service des professionnels</u> Lettre Santé Afrique

Catalogue et index des sites médicaux francophones (CISMeF) <u>http://www.chu-rouen.fr/cismef/</u>

FORST

Formation à distance pour la recherche en santé au travail en Afrique <u>http://www.refer.fr/benin_ct/edu/forst/accueil.htm</u>

Projet Pilote d'observatoire de la santé utilisant un système d'information géographique (SIG) Région de Sikasso, Sud-Mali <u>http://www.anais.org/SITES/IMSP/DEFAULT.HTM</u> <u>http://www.imsp.unige.ch/bamako2000</u>

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6 - ICTs and Agriculture

Learning Objectives

This sixth module is meant to allow participants to

- Understand the challenges and opportunities that rural communities and in particular farmers face with regards to access and effective use of information and communication technologies;
- Understand the value of local/indigenous knowledge, the potential of ICTs in capturing and sharing such local knowledge and the opportunities that may emerge to combine local knowledge and advanced spatial technologies to improve agricultural and natural resources management through participatory processes;
- Explore a broad range of possible applications of ICTs to address the information and communication needs of farming communities, from mobile phones, to radio, geographic information systems and the Internet;
- Understand the special challenges that women farmers and women in rural areas in general are facing with respect to access to and effective use of ICTs;
- Extract key lessons learned from ICT applications for agriculture.

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6 - Notes

6 - Notes

*** YOU CAN ACCESS THIS NOTE AS <u>A SINGLE FILE</u> (PDF FORMAT) ***

CONTENT OF THIS NOTE

Farmers' Information Needs Knowledge Systems for Food Security - India Weather Information

Farmers' Knowledge

(Local Knowledge, Local Content Development and Advanced (Western) Technologies)

Women's Challenges

Extension Services Internet for Extension Services -East Africa

VERCON - Virtual Extension Research Communication Network (Linking Agricultural Research and Extension Services)

PETIS - Mauritius

Other Case Studies

Cell Phones for Fruit and Vegetable Producers in Senegal

Geographic Information System (GIS) for Agriculture and Natural Resources Management

ENRAP - Asia/Pacific Region (Using ICTs to Learn from/across rural Development Projects)

Agricultural Software

Key Lessons

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Back

Farmers' Information Needs

Assessing the Information and Communication Needs of Farming Communities

What Farmers Need to Know

Farmers who understand market trends and market opportunities are in a better position than those who do not.

Farmers need to know:

- 1. What to grow;
- 2. When to grow;
- 3. How to grow more;
- 4. How to store and preserve;
- 5. When to sell;
- 6. Where to sell;
- 7. What price to sell at.

Farmers need to know about:

- 8. Government policy and programs regarding agriculture
- 9. Usage of fertilizer for higher productivity

10. Crop diseases, preventive measures, and in case of disease, methods to limit damages

11. Irrigation details, information on water conservation through advanced irrigation technology

12. High Yield Variety (HYV) seeds

13. What needs to be done at the pre-harvest and post-harvest stage to ensure productivity adn quality with minimum losses.

14. How to rotate crops to maintain soil quality

15. Advice on special crops such as fruits and vegetables that are highly perishable but often very profitable

Some of the farmers' information needs are much more specific to the geographic area and ecology surrounding them. For example, farmers planting in areas where water is scarce would need specialized advice regarding irrigation techniques, water conservation, etc... Farmers may also need advice regarding special (not necessarily well known) seed varieties and plants that would be particularly good to plant in their plots. Most farmers can also benefit from improved knowledge of appropriate technologies that can be particularly useful to small farmers.

To what extent is this information available to them? How can ICTs help disseminate such information to them?

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Knowledge Systems for Food Security

In 1998, a program was launched in the Pondicherry region of India to determine the manner in which ICTs make an impact on rural livelihoods. First, a survey covering 10% of the families in the project's area of coverage was conducted to get a clear picture of the state of existing communication habits and channels in the rural areas. They found that a predominant source of information are the local shopkeeper, the market place and the agricultural input supplier. A lot of information is shaped among the rural households themselves. Television reaches a large number of families, but there are not more than 5 telephones (half of which are private) in each village of about 500 people.

Through the project, village knowledge centers (information shops) have been set up in three villages outside of the main project center. Prior to setting up the knowledge centers, participatory rural appraisal was carried out to help identify a location for the knowledge centers and 2 to 4 volunteers. The community agrees to provide quality space rent-free and to compensate the volunteers when needed. In turn, the project provides all the equipment, training and data. A memo of understanding is signed and renewed every quarter. A gender expert was invited to participate in the initial stages to ensure that gender sensitivity was built in all the operations. Local volunteers are being training in basic computer use and more advanced software. Content creation to suit local needs is the key element of the project. Prior to commencing content-building activities, extensive consultations were held in the village communities in small groups. Important information needs emerged out of these meetings.

Content was created in the local language and made available in the village centers. This is not making use of the Internet per se but rather of a wireless network connecting the knowledge centers.

Additional **Resources** to learn more about this project....

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Resources

Knowledge System for Sustainable Food Security - India

- Toward a Knowledge System for Sustainable Food Security : The Information Village Experiment in Pondicherry, By V. Balaji, K. G. Rajamohan, R. Rajasekara Pandy, and S. Senthilkumaran. http://www.isoc.org/oti/printversions/0401balaji.html OTI (OntheInternet) March/April 2001 Special Issue on Internet and Emerging Nations http://www.isoc.org/oti
- Information Village (8 pages) http://www.mssrf.org/informationvillage/britannica.pdf

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Close

Weather Information

Communicating Agrometeorological Information

Critical questions

- How can diverse types of agrometeorological data be integrated into useful information that responds to the often-dissimilar application needs of farming communities?
- What types of information are needed by diverse groups of end-users and, given their different farming, socio-economic and cultural systems, which are the appropriate communication technologies to reach them?
- Given diminishing public support for agricultural advisory services, what alternatives exist for the communication of agrometeorological information and under which circumstances can it be provided on a fee basis?
- What are the training needs of end-users and of the various intermediaries that provide them with advisory services?

Find out more in this article on the web... "Communicating Agrometeorological Information" (FAO, 1999)

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GIEWS

Global Information and Early Warning System

The FAO web site, the Global Information and Early Warning System on food and Agriculture (GIEWS) provides agricultural and climatic information for most of the countries in Africa, including crop production areas, crop calendars, and satellite images.

The GIEWS also has its own email list:

GIEWSAlerts-L

The FAO Global Information and Early Warning System on Food and Agriculture has set up a mailing list, called GIEWSAlerts-L, to disseminate its "Special Reports" and "Special Alerts" on countries facing food supply shortages. These reports are often the result of rapid evaluation missions in the countries and give information on the crop production, the food supply situation at national and sub-national level, and the food aid needs. On average, about 30 "special alerts" and "special reports" are published a year. Find out more on the <u>GIEWS</u> web site.

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RANET

Radio and Internet Technologies for the Communication of Weather and Climate Information for Rural Development

RANET is an international collaboration to make weather, climate, and related information more accessible to remote and resource poor populations to aid day-to-day resource decisions and prepare against natural hazards. The program combines innovative technologies with appropriate applications and partnerships at the community level to ensure that the networks created serve the entirety of community information needs and is therefore more sustainable.

RANET uses digital radio technology. Broadcast capacity is provided to RANET through the WorldSpace Foundation.

RANET identifies and trains partners in the use of technologies that are most appropriate for their specific information needs and adapted to their specific environment. Rather than developing new networks, RANET works to integrate existing networks, reinforcing existing local capabilities.

The program started in Africa and has later been expanded to Asia. In Africa, one of the most successful systems has been the integration of new an existing analogue (FM/AM) radio stations with new digital satellite technologies. By combining and successfully integrating technologies, RANET is able to make the most of existing networks, infrastructure and local capacity.

Find out more on the **<u>RANET</u>** project's web site.

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Farmers' Knowledge

Local Knowledge, Local Content Development, & Advanced (Western) Technologies

Using ICTs to collect and propagate local biodiversity content

The IPGRI (International Plant Genetic Resources Institute) has been using a mix of ICTs to help farmers promote the documentation and sharing of indigenous knowledge within and across local communities. In the IK (Indigenous Knowledge) Journal, farmers write papers in collaboration with visiting scientists. ICTs used the the projects include taper recorders and video cameras to record traditional technologies, radio to disseminate knowledge within and outside the communities, computers to store and provide access to local information, and the Internet to market their indigenous projects and share their knowledge. These activities mediated by technologies are complemented by social gatherings within and across communities.

"While traditional knowledge is under threat from economic, social and technological change, it is encouraging to see that some technologies like ICTs can actually be used to maintain traditional practices and knowledge that are essential to conserve the biological and cultural diversity that rural households use to improve their livelihoods. The key to using ICTs effectively in biodiversity conservation is to link them to local cultural practices and languages, including the traditional forms of communication such as social gatherings and festivals."

(See the full article in the June 2002 INASP Newsletter on the web)

Mobile Interactive Geographic Information System (MIGIS) - China

MIGIS is an approach to community-based planning that uses a Mobile Interactive Geographical Information System (GIS) in conjunction with Participatory Rural Appraisal (PRA). It is designed to bring the best of indigenous knowledge and scientific information together to optimize planning. MIGIS works by transferring graphic information gathered in Participatory Learning and Action exercises in computer program format. With MIGIS, the emphasis is on the visual presentation of information.

You can read a <u>short case study</u>, or a <u>longer document</u> about this project on the web or go directly to the <u>MIGIS web site</u>.

A related resource on the web....

• Gernot Brodnig & Viktor Mayer-Schonberger. "Bridging the Gap: The Role of Spatial Information Technologies in the Integration of Traditional Environmental

Knowledge and Western Science." Electronic Journal on Information Systems in Developing Countries, Volume 1, January 2000. (on the web)

This paper reviews some case studies where spatial information systems (including GPS and remote sensing) are used to collect, manipulate and distribute data on a variety of environmental factors, in order to inform and encourage sustainable resource management practices. Some initiatives have adopted grassroots and participatory approaches, whereby local communities map their territories and resources with the help of information technologies.

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Women's Challenges

One Woman's Day in Sierra Leone (on the web)

Two-thirds of the world's illiterates are women, most of them live in rural areas of developing countries. In most developing countries, women make up the majority of the population working in agriculture.

The following statement was prepared by the participants of the first-ever meeting on gender, ICTs, and agriculture in Africa, the Caribbean, and the Pacific, held at CTA, September 11–13, 2002, in Wageningen, the Netherlands.

Actions that empower the poor, broaden their social and economic opportunities, and reduce their vulnerability to disease, hunger, and disasters are key to eradicating poverty, which is also the primary focus of the millennium development goals agreed by the international and national development communities.

The advent of the information society offers increased scope for ICTs to be used to address poverty and enhance rural livelihoods. ICTs can empower rural people by amplifying their voices. They are "enabling" tools that can help poor rural women and men to capitalize on emerging opportunities, especially in education and income generation. Moreover, they can be used to help to cushion shocks and disasters such as disease and hunger.

However, gender disparities mean that these opportunities are not immediately available to the poorest of the poor—who are mostly women. This is compounded by the dwindling attention given to rural development itself.

To address these disparities, concerted action needs to be taken in two broad areas:

- enabling rural women to use ICTs, to improve their livelihoods and those of their families and communities and to amplify their voices in local and national fora;
- ensuring that development actors systematically adopt gender sensitive approaches in their programs, especially those in agriculture and rural development.

To achieve such action, five priority areas need to be addressed by all stakeholders, including rural communities, governments, civil society and the development community.

Priority areas for gender, ICTs, and agriculture

Mainstreaming. Gender must be mainstreamed in all development activities, from formulation and design through to implementation and evaluation. Ensuring the participation of poor rural women in these processes is key.

Policy. National policy on rural issues and ICTs should give high priority to actions that promote gender equity and provide an enabling environment for rural women to improve their livelihood opportunities.

Access. Affordable ICT infrastructure and support services must be brought to rural areas. Access to this infrastructure should be based on community priorities as well as local gender-sensitive principles.

Content. The knowledge of rural women is a valuable resource and driver of local livelihoods. Women have specific information and communication needs that should be explicitly recognized—and acted upon. The creation and exchange of local and locally

relevant content by rural women themselves or customized to their needs (in local languages for example) should be top priority.

Human capacities. Education and learning opportunities should be made available to all rural women and men to realize the "education for all" principle. Girls and women should receive priority in ICT and related skill-development schemes, to ensure their

active participation in rural development and in the information society.

The real challenge is to converge efforts on gender, ICTs, and agriculture for rural development. By adopting these actions and priorities, poor rural women will finally be able to use ICTs in ways that improve food security and provide sustainable livelihoods and ultimately the quality of life in rural areas.

Source: ISNAR <u>Briefing Paper # 55</u> (on the web)

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Extension Services

Extension Officers play an essential role as intermediaries between agricultural researchers, government offices, and farmers. Ideally, this should be a two-way or three-way communication flow whereby the farmers' ideas and concerns are valued and taken into account. For this to happen, however, the proper communication channels and technologies must be put in place.

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Internet for Extension Service- East Africa

A Case Study: Internet Use and Diagnostic Study –East Africa

This diagnostic study looks in detail at the context and means through which modern information and communication technology (ICT) could be used to support innovation in agricultural extension and rural development practice in East Africa.

The Linked Local Learning (LLL) process is a way of helping farmers, NGOs, government ministries, departments and donors in dealing with the massive changes being imposed on the district and village levels through policies of decentralization.

Enhanced communication processes are at the core of this Linked Local Learning process and ICTs have been recognized as having an important role to play in these processes.

This diagnostic study had the following objectives:

- To understand the constraints and opportunities faced by potential clients at local, district and national levels in accessing and using information made available through the Internet and accessing the Internet for communication purposes;
- To assess client skills and capacity for using the Internet and developing material for the web;
- To identify with Internet Service Providers (ISPs) how to move ahead with the provision of Internet access; and
- To identify appropriate opportunities to integrate the Internet with other local media and extension services.

Based on the findings of the study, the report recommended using email, rather than the World Wide Web as the primary means of communication between national and district levels because:

- Email is affordable
- Email is appropriate and effective

For more information, see the full study on the web "Internet Use and Diagnostic Study", Telecommons Development Group

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VERCON

Virtual Extension Research Communication Network Linking Agricultural Research and Extension Services

This is a project of the FAO's Research, Extension and Training Division and World Agricultural Information Center. The idea is to improve linkages between agricultural research and extension institutions.

The Internet allows network members to capture and develop local content, share, store, retrieve and disseminate information and connect geographically dispersed people from research and extension institutions, faculties of agricultural education, NGO workers and agricultural producers.

The virtual network can also facilitate communication, sharing information and supporting improved agricultural production and can further broaden and strengthen collaboration through facilitating co-ordination of rural, local, national and regional development programs.

Learn more on the VERCON project's web site.

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PETIS-Mauritius

Potato Extension and Training Information System

- Overcoming illiteracy: Use audio files in two local languages on a web site
- Content: Advice on potato growing
- User-friendly: icons developed and tested to represent cultural practices in potato production.

The Faculty of Agriculture at the University of Mauritius has set up a prototype Agricultural Information System for use by the rural community of Mauritius. They are testing the use of audio files in two local spoken languages on a web site that offers advice on potato growing, as a means of overcoming the illiteracy barrier and adding user-friendliness for a rural community. The big question they are trying to address is "How can the non-computer-literate farmer benefit from the empowering tool that the Internet is through access to information?"

They first carried out a survey of the information needs of the growers themselves and also the main information required by extension officers dealing with the potato industry. One of the first interesting challenges has been to develop icons representing cultural practices in potato production. A series of icons were drawn and have been tested with the agricultural community, as we expect them to be able to navigate through the use of graphics rather than clicking on text hyperlinks and through accompanying audio files that will tell them what clicking on the icons will do. The results of the assessment of the appropriateness of the icons are reasonable but we would like to suggest further investigation of global icons through the creation of such a clip-art collection, targeting the agricultural community, world-wide if possible. Information, which is usually available in print form or in technical reports have been placed onto a website with additional graphics to facilitate communication.

Get a better idea of what it looks like and listen to the audio files on the PETIS web site .

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Case Studies

Additional Case Studies

Cell Phones for fruit and Vegetable Producers in Senegal Geographic Information System for Agriculture and Natural Resources Management ENRAP - ICTs to Learn Across Rural Development Projects Agricultural Software

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Mobile Phones in Senegal

WAP-Enabled Mobile Phones

Senegalese fruit and vegetable producers use their WAP-enabled mobile phones to get real-time information on the prices of their produce on the markets in Dakar.

While most of the farmers are illiterate, they are able to quickly learn to use the technology. Getting accurate information about market prices enables them to negotiate more effectively with the middlemen. Previously, the farmers had no alternative but to rely on the information provided by the middlemen.

The service is provided by Manobi, a mobile services operator and Internet specialist in Dakar, Senegal. Manobi has developed a system that collects data in real time and uses Internet and mobile technologies to follow market fluctuations and trends. Since the data is also of value to the middlemen, everyone benefits.

Read more on Manobi's web site (French and English versions).

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GIS for Agriculture

GIS for Rice Crop Monitoring

Rice is a vital crop in Asia, providing the daily food stable for most of the population. Given expanding urbanization and increased land degradation, it has become extremely important to carefully monitor rice production.

Until recently, monitoring practices were limited to interviews of farmers and collection of post-harvest statistics. New technologies such as the RADARSAT satellite system can provide a cost-effective solution for more comprehensive rice crop monitoring.

Read more about how this technology was applied in Vietnam (on the web).

Kumasi Information Database (KUMINFO) - Ghana

KUMINFO is an integrated geographical information system for peri-urban natural resource research. The goal of KUMINFO is to make data available and accessible to stakeholders in natural resources management, such as lecturers, researchers, district planners and farmers.

You can read a short case study, or a longer document about this project on the web.

For more examples of GIS and satellite-based agricultural applications, see the CGIAR's Consortium for Spatial Information and its list of GIS-related activities (<u>web site</u>). You can also check a special Issue of the FAO's SDdimensions magazine, which focused on "<u>Remote Sensing for Decision-Makers</u>" and provides links to several case studies.

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ENRAP

ENRAP (Electronic Networking for Rural Asia/Pacific Projects)

ENRAP is an initiative funded by IFAD (International Fund for Agricultural Development). The initiative supports Internet use and knowledge sharing amongst rural development projects in the Asia/Pacific Region. It uses a participatory approach to develop local ICT applications that respond to the needs of rural communities and the projects funded by IFAD.

A number of IFAD-sponsored projects in India, Sri Lanka, Pakistan and the Philippines were identified to participate in ENRAP activities. ENRAP activities include the development of local applications for electronic networking and knowledge networking.

The term "local applications for electronic networking" refers to ICTs which fit the communicational or informational needs of users in response to specific development issues. Such local applications for electronic networking will allow IFAD project staff to better communicate and share relevant information not only with their project co-workers, but with stakeholders, beneficiaries and other IFAD project staff members.

The Local Applications which are developed by IFAD project stakeholders to meet their information and communication needs may or may not be linked with the Internet. This depends on the specific needs and contexts of the stakeholders.

Description of the participatory process

The initial step involves gaining an understanding of the actors in the region and the diverse communication and information challenges which face them. To do this, a series of mini-workshops are held in which IFAD stakeholders work with ENRAP facilitators to generate a clearer picture of the electronic networking situation within their region. Once the facilitators have gained an understanding of the electronic networking context within the ENRAP region, they can begin to plan for one larger workshop which will assist stakeholders to develop ICT project proposals to help them meet their rural development needs. At the end of the regional workshop, participants are left with the tools they need to further develop their ideas into concrete proposals that can be submitted for ENRAP funding. Once the proposals have been sent to ENRAP, the ENRAP team will select the appropriate applications for funding support.

The first phase of the project ran from 1998 to 2001. Following a one-year interim period, Phase II of the project started in 2002.

Visit the **ENRAP** web site for additional information.

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Agricultural Software

FAO-Agrimarket

FAO-AgriMarket automates the entry, processing, transmission, reporting and electronic diffusion of market data (mostly prices and quantities of agricultural products and inputs). It thus reduces the time and effort required to manage large volumes of data handled by a market information unit or similar, and increases the accuracy and speed with which various operations are performed. (Web site)

(web site)

AWhere-ACT

AWhere Spatial Information Systems software is an integrated set of geographical data and query tools targeted for use in agricultural and natural resource management activities. AWhere Spatial Information Systems provides easy-to-use tools to help decision makers quickly summarize large and cumbersome data layers into information rich, visually appealing maps, charts, and tables. (Web site)

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Key Lessons

Although the Internet is not a panacea for rural development, it can open new communication channels that bring new knowledge and information resources to rural communities. Traditional communication channels have been used successfully but they have not allowed for much interaction with users. Some examples of areas where ICTs could play a catalytic role in developing rural areas include:

• Decision-making processes

Sound decision making is dependent upon availability of comprehensive, timely and up-to-date information. Food security problems facing developing countries demonstrate the need for informed researchers, planners, policy makers, development workers and farmers.

• Market outlook

Farmers could promote their products and handle simple transactions such as orders over the web while payment transactions for the goods can then be handled off-line.

• Empowering rural communities

ICTs can empower rural communities and give them a voice that permits them to contribute to the development process.

• Creating employment

Through the establishment of rural information centers, ICTs can create employment opportunities in rural areas, by engaging telecenter managers, subject matter specialists, information managers, translators and information technology technicians. Such centers help bridge the gap between rural and urban communities and reduce rural-urban migration.

• Facilitating access to information and knowledge for farmers, including distance education

Facilitating knowledge sharing within research networks across the world and between research, extension services and farmers.

- Old or new, ICTs have an important role to play for farming communities, for food security and for rural development in general.
- Identifying the **information and communication needs** of rural communities and the organizations that serve them should be a first step.
- **Intermediary organizations** are likely to play an important role in the transfer and repackaging of information to end-users at the community level. Illiteracy within the community should not be a barrier to the flow of information and

knowledge. A judicious combination of technologies can overcome illiteracy.

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6 - Readings

- If you are more interested in ICT applications for the environment, there are a few readings suggested in the list of additional resources.
- Select ONE document from the list of general readings and TWO or THREE case studies. Pick case studies to read based on your regional area of interest.

General Readings

Odame, H. A. and Kassam , A. 2002. <u>Linking Agricultural Research and Rural Radio</u> . ISNAR, Briefing Paper No. 48.

H. Hambly Odame, N. Hafkin, G. Wesseler, I. Boto, Gender and Agriculture in the Information Society, Briefing Paper No. 55, ISNAR, 2002. Also online at <u>http://www.isnar.cgiar.org/publications/pdf/bp-55.pdf</u>

Munyua, H. 2000. <u>Application of ICTs in Africa's agricultural sector: a gender</u> <u>perspective</u>. In Rathgeber, E.M.; Adera, E.O, ed., Gender and the information revolution in Africa. International Development Research Centre, Ottawa, ON, Canada. (30 pages)

Future Directions in Agriculture and Information and Communication Technologies (ICTs) at USAID, prepared for USAID/Economic Growth, and Trade/Agriculture and Food Security, for USAID, by Winrock International under the dot-ORG program, February 2003.

Case Studies

IICD/infoDev Stories

Go to <u>http://www.iicd.org/stories</u> on the web to search the full database

1. TaniNet : An Intemet-Based System for the Agricultural Community (8/2000) (Malaysia)

2. The Gobi News and Information Triangle (8/2000). (Mongolia)

3. Closing the Gap : Multi-media price information service gives competitive edge to Mongolian nomads 4/2001 **Mongolia**

3. Making Waves : Agricultural Science and Rural Radio (4/2001)

4. Akashganga - ICTs in the lives of rural dairy producers in India (4/2001)

Case Studies from the Sustainable ICT Initiative

Go to the main web site of the Sustainable ICT Initiative to find out more about the initiative <u>http://www.sustainableicts.org</u>

- 1. KUMINGO: Ghana : Information for Natural Resources Management
- 2. MANAGE: India: Local Information to Disadvantaged Communities
- 3. MINGIS: China/Cambodia : Using ICTs for Strengthening Participatory Approaches

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6 - Exercises

A Choice of Three Exercises

Exercise 6A: Identifying Information and Communication Needs

Learning Objectives

Understand the information and communication needs of farming communities

Instructions

- Put yourself in the shoes of **two** of the following individuals and organizations who all live in a rural community in a developing country. Pick a country you are familiar with.
 - O A small farmer growing indigenous crops for local consumption
 - A farmer cooperative growing export crops
 - An agricultural extension agent working 100 miles from the nearest extension office
 - An agricultural researcher/lecturer working at the College of Agriculture in the capital city

Try to answer the following questions

1. What are their current sources of information? What are their current means of communication?

2. What are their information and communication needs? (what can you guess to be their information and communication needs?)

3. How would you go about determining their information and communication needs?

4. How could they get the information they need? What communication tools would be most appropriate?

Exercise 6B: Local Knowledge

Learning Objective

Explore the potential and danger of capturing local knowledge using ICTs.

The Scenario

You are a United Nations IT Volunteer stationed to Country X. Initially, you were sent to help the Ministry of Agriculture set up an agricultural information portal on the Ministry's web site, but that project has been delayed and you have been spending a lot

of time trying to figure out what productive use you could make of your time. While exploring the Main University Campus you have come across a local agricultural researcher who has dedicated his life to studying indigenous knowledge of seed varieties and traditional cultivation techniques. He is as enthusiastic about capturing this valuable indigenous knowledge as you are enthusiastic about the potential of information technology, and you start thinking about how you could help him.

Instructions

Develop a plan to help your new friend make effective use of information and communication technologies to capture and disseminate indigenous knowledge. You will need to develop a strong argument to convince both your friend the researcher and your supervisor that this is a worthwhile endeavor. Make sure to mention possible obstacles and challenges and how you propose to address them.

Exercise 6C: Reading Log

- Pick one of the assigned readings.
- Write a summary of the document.
- Provide your own analysis or commentary:

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6 - Quiz

1. The national literacy rate in Mongolia is very high, close to 90%. This makes print media much more popular and effective than in many other developing countries. True or false?

True False

2. An approach to community-based planning that uses a Mobile Interactive Geographical Information System (GIS) in conjunction with participatory Rural Appraisal (PRA)

ENRAP MIGIS RAGIS FOOD RANET

3. A project of the FAO's Research, Extension and Training Division and World Agricultural Information Center. The main purpose of the project is to improve linkages between agricultural research and extension institutions.

RANET MIGIS VERCON Market Watch FOOD

4. Senegalese fruit and vegetable producers use their [_____] to get real-time information on the prices of their produce on the markets in Dakar.

Internet-enabled computers WAP-enabled mobile phones digital radio receivers PDAs



ICTs for Agriculture

- Future Directions in Agriculture and Information and Communication Technologies (ICTs) at USAID, February 2003. USAID/AED/WINROCK, under the dot-ORG project of the DOT-COM Alliance. <u>http://www.dot-com-alliance.org/documents/AG_ICT_USAID.pdf</u>
- Linkages between Agricultural Research and Rural Radio, ISNAR, February 2002. <u>http://www.isnar.cgiar.org/activities/radio.htm</u>
- Gender and Agriculture in the Information Society, Workshop, September 2002. <u>http://www.agricta.org/observatory2002/index.htm</u>

See the workshop papers at http://www.agricta.org/observatory2002/documents.htm

• International Workshop on Farm Radio Broadcasting http://www.fao.org/docrep/003/x6721e00.htm

Includes many excellent papers on a range of topics related to farm radio around the world.

• G. Kranjac-Berisavljevic & A.B.T. Zakariah. "Creating Awareness about Soil and Water Conservation Through Radio Programs: Experiences from Northern Ghana." ODI/UDS, March 2002.

http://www.odi.org.uk/rpeg/maps/CKP/radio1.pdf

• Lessons from the Field: ICT in Agriculture (on the Digital Dividend Web site) List of resources.

http://www.digitaldividend.org/marketplace/marketplace_01.htm

- CIEA (Centre International d'Etudes Agricoles) 2002 Seminar http://www.ciea.ch/document.htm#sem2002
- The Importance of Managing Agricultural Knowledge Systems, by Gérard Viatte, OECD. August 2002.

http://www.ciea.ch/documents/s02_viatte.pdf

CTA ICT Update: a current awareness bulletin for ACP agriculture on new information and communication technologies (ICT) and their relevant applications for the agricultural and rural development http://ictupdate.cta.int/

Issue 12, July 2003: Water Management

- Putting the Dominican Republic on the Map: GIS and Water Resources management
- CLIPS: A Radio Project to Turn the Tide in Africa (HAM Radio)
- Reducing the Vulnerability of Pacific ACP States (GIS for Water Risk Management)

- WorldWater: Putting the Community in Charge (Philippines - Prepaid Water Smart Card, the AquaCard)

Issue 12, May 2003: Pest Management

- PestNet: An Asian Pacific Pest Management Email Network (email)
- Awhere-ACT: Predicting Pest-Outbreaks in Africa (GIS)
- The CPC: A Multimedia Tool to Identify Pests (CD-ROM)
- Using ICTs to Eradicate the Carambola Fruit Fly

Issue 10, March 2003: Rural Connectivity

- People First Network: Radio Email for the Solomon Islands, by David Leeming.
- Improving Rural Connectivity, by Mike Jensen
- Email: A viable alternative to the web, by Tobias Eigen
- Can Satellite Technology Bridge the Digital Divide? by Michiel Hegener

Issue 9, December 2002: Market Information Services

- Multi-modal phones revitalize markets in Senegal, by Daniel Annerose
- The Kenya Agricultural Commodity Exchange, by Abraham W. Okolla
- Mali's Agricultural Market Watch, by Niama Demélé
- Setting up a Market Information Service, by Bridget Poon

"Electronic Delivery of Agricultural Information to Rural Communities of Uganda." <u>http://www.agricinfo.or.ug/</u>

Changing Information Flows (Online Magazine of LEISA - Low External Input Sustainable Agriculture), July 2002 issue <u>http://www.ileia.org/2/nl18-2.html</u>

Bringing the Farming Community Into the Internet Age: A Case Study (TaniNet) <u>http://www.informingscience.com/Articles/Vol3/v3n4p207-214.pdf</u>

Report of the 4th Consultative Expert meeting of CTA''s Observatory on ICTs. Wageningen, 31 May-1 June 2001. Wireless: a help line for agricultural development? <u>http://www.agricta.org/observatory/report.pdf</u> (36 pages, pdf file). Also available as html file from <u>http://www.agricta.org/observatory/documents.htm</u>

Paul Mundy and Jacques Sultan. Information Revolutions: How Information and communication Management is changing the lives of rural people . CTA, 2001. (pdf chapters available from http://www.agricta.org/pubs/inforev/index.htm) Complete document is 1,901 kb or 232 pages)

Radio Soap Opera on Disaster Reduction ý Central America http://www.comminit.com/pds5-2001/sld-2179.html

USDA, Production Estimate and Crop Assessment Division (<u>http://www.fas.usda.gov/pecad/pecad.html</u>)Text from the web site: The Production

Estimates and Crop Assessment Division (PECAD) of USDA's Foreign Agricultural Service (FAS) is responsible for global crop condition assessments and estimates of area, yield, and production for grains, oilseeds, and cotton. The primary mission of PECAD is to target, collect, analyze, and disseminate timely, objective, useful, and cost-effective global crop condition and agricultural production information. Since the early 1980's, our division's unbiased commodity estimates and forecasts have created a marketing edge for U.S. producers in world markets, and also contributed to an international pricing mechanism that accurately reflects real-world circumstances.

Geo-informatics for Jamaica

http://www.jamaica-gleaner.com/gleaner/20010423/business/business1.html Article of April 23, 2001 in the Jamaica Gleaner about the use of geo-informatics for agriculture, natural resource management and environmental control in Jamaica.

PACT's Programs in Madagascar

(http://www.pactworld.org/Global/Madagascar.html)

Use of GIS technologies in combination with participatory methods for information sharing and decision-making for improved management of natural resources, protection of the environment and improved livelihoods in Madagascar.

Toward a Knowledge System for Sustainable Food Security : The Information Village Experiment in Pondicherry, By V. Balaji, K. G. Rajamohan, R. Rajasekara Pandy, and S. Senthilkumaran. <u>http://www.isoc.org/oti/printversions/0401balaji.html</u>

OTI (OntheInternet) March/April 2001 Special Issue on Internet and Emerging Nations http://www.isoc.org/oti

Information Village (8 pages) http://www.mssrf.org/informationvillage/britannica.pdf

Telecommunications and Environment, Telecommunication in Action, 32 pages pdf file. <u>http://www.regency.org/t_in_act/pdf/english/environ.pdf</u>

Telecommunications and Agriculture, Telecommunication in Action, 32 pages pdf file. <u>http://www.regency.org/t_in_act/pdf/english/agri.pdf</u>

GeoAnalytics (http://www.geoanalytics.com)

An IT company providing software products and consulting in geographic and land information systems, relational database design and development, systems integration, collaborative project management, and internet and intranet based applications. Link provided by Jim Cory.

Down to Earth: Geographical Information for Sustainable Development in Africa (2002) Board on Earth Sciences and Resources (BESR) Online book. Livestock and Environment toolbox http://www.fao.org/lead/toolbox/Index.htm

Strategy for Development of Information Technology in Agricultural Research (ITAR), August 1999. <u>ftp://ftp.cgiar.org/isnar/publicat/cr61.pdf</u>

Trade Point Senegal Onion Growers of the Gandiolais Take on the World Cheikh Thiam (WARO) July 5, 2000 http://www.idrc.ca/reports/read_article_english.cfm?article_num=722

(Le même article, en français) Les producteurs d'oignons du Gandiolais à l'assaut du marché mondial Cheikh Thiam (WARO) Le 5 juillet 2000 http://www.idrc.ca/reports/read_article_french.cfm? article_num=722_

RBI-AGRO: The Brazilian Journal of Information Technology in Agriculture http://www.sbiagro.org.br/journal.htm

A quarterly publication of SBI-AGRO, as non-profit organization whose objectives include fostering dissemination of research results and technological developments in the area of information technology applied to the agribusiness sector.

"Bridging the Gap: The role of spatial information technologies in the integration of traditional environmental knowledge and western science." <u>http://www.is.cityu.edu.hk/research/ejisdc/vol1/v1r1.pdf</u>

A. B. Deraman & A. K. Shamsul Bahar. Bringing the Farming community Into the Internet Age: A Case Study. Informing Science, Vol. 3, No. 4, 2000. http://www.informingscience.com/Articles/Vol3/v3n4p207-214.pdf

INFOAGRO (in Spanish) Costa Rican Farm Sector Information System <u>http://www.infoagro.go.cr</u>

See also INFOAGRO (in Spanish) Covers Spain, Mexico, Chile and Argentina http://www.infoagro.com

Farm Radio Script http://www.farmradio.org/english/published_scripts.html Links to scripts of radio programs for farmers Read more about Farm Radio's Program at http://www.farmradio.org/english/program.html

Media communication has created new attitudes among farmers in an FAO project in Nicaragua <u>http://www.comminit.com/Danida/sld-1947.html</u>

Kenya Agricultural Commodity Exchange (KACE) <u>http://www.kacekenya.org</u>

A private sector firm whose objective is to link buyers and sellers of agricultural commodities in the Eastern and Central Africa region, and provide them with timely and relevant market information to help them make better buying and selling decisions.

South African Government Agricultural Portal <u>http://www.nda.agric.za/</u> - Agricultural Geo-referenced Information System (AGIS) <u>http://www.agis.agric.za/agisweb/?MIval=agis_s.html</u>

The goal of AGIS is to make South Africa's agricultural information available on the Internet.

CGIAR Consortium for Spatial Information (CIS) http://www.spatial-info.org/v3/CSI.htm - GIS Related Activities http://www.spatial-info.org/v3/gis-activities.htm

Pittayapol Nattaradol, "Harnessing ICT Potential for the Benefits of Farmers and the Rural Poor: Experience and Vision of Bank for Agriculture and Agricultural Cooperatives", (BAAC), Thailand, May 10, 2002. http://www.adb.org/AnnualMeeting/2002/Seminars/presentations/ nattaradol_presentation.pdf

eLearning and Agriculture

Robert T. Raab, Jonathan Woods, Buenafe R. Abdon. "The Role of eLearning in Promoting Sustainable Agricultural Development in the GMS: Educating Knowledge Intermediaries." Closing Gaps in the Digital Divide: Regional Conference on the Digital GMS, February 2003, Thailand. <u>http://www.ait.ac.th/digital_gms/Proceedings/</u> D32_ROBERT_T_RAAB.pdf

Asia Pacific Regional Technology Center - agLearn <u>http://www.aprtc.org</u>

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7 - eCommerce



More about the photo above...

Learning Objectives

This seventh module is meant to allow participants to

- Understand the range of challenges that developing countries face when attempting to take advantage of eCommerce opportunities
- Identify a broad range of opportunities brought about by the application of ICTs to business and commerce and discuss the extent to which these applications are relevant for all developing countries
- Understand that eCommerce means more than selling crafts on the Web
- Explore a range of eCommerce applications that are of particular relevance to developing countries

• Extract key lessons learned from eCommerce applications in developing countries

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Photo

Esmeraldas Cybercafé



This cybercafé in downtown Esmeraldas, Ecuador, is managed by former street children who are now educators in Ninos de la Calle Program of Chasquinet (http://chasquinet.org/ninosdelacalle/). It is operated as a microenterprise and seems to be self-sustainable. However, as the cybercafé is making profits, the question of how to distribute the profits is now arising. Some of the educators simply want to distribute the profits among themselves.

Others argue that the profits must be reinvested into social projects within the community.

The cybercafé competes with the 20 similar internet access places in town, but it has one clear advantage. It benefits from a subsidized Internet connection from Esmenet. Esmenet is currently the only local ISP provider. It was established by a coalition of organizations with a social mission and provides Internet connectivity at subsidized prices. The cybercafé charges 2ϕ per minute during off-hours (1-3 pm) and 3ϕ per minute during regular hours. They could not charge more because incomes are very low in the region.

A couple of "problems" can be noted:

1) access to the Internet is "probably" used to access pornographic materials. A sign prohibiting such activity in the cybercafé is clearly visible to all;

2) access to the Internet has allowed some of the children using the telecenter to download music, burn CDs and sell the CDs on the local marketplace (even though few people have CD players).

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Close

7 - Notes

*** YOU CAN ACCESS THIS NOTE AS <u>A SINGLE FILE</u> (PDF FORMAT) ***

CONTENT OF THIS NOTE

Definition of eCommerce

eCommerce Activities

Obstacles to eCommerce

Potential of eCommerce

Case Studies

Key Lessons

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Definition of eCommerce

Electronic commerce is a generic term to describe the way organizations trade electronically. It uses technologies such as the Internet, intranets, electronic data interchange (EDI) and smart cards to communicate with customers or other companies, to carry out research or information gathering, or to conduct business transactions.

E-commerce is often considered as a process in which on-line buying is enabled through the Internet.

A broad definition of E-commerce would include things such as electronic fund transfers and credit card transactions. A narrow definition would include only electronic transactions between businesses and consumers with electronic payment (e.g., buying something on the web).

There are variations in between these two ends of the spectrum... Many electronic transactions occur between businesses and there are business processes facilitated by electronic communication that do not involve a financial transaction

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eCommerce Activities

There are actually four types of activities involved:

- Information services applications (collection of information such as market prices)
- Promotion support applications (distribution of information on a product)
- Sales support applications (ordering, delivery, after sales)
- Payment applications

When introducing e-commerce, a phased approach is probably most appropriate, starting with information collection services and/or promotion support services. In a later stage sales support and payment applications can be implemented.

The Internet is dramatically changing the way goods and services are produced, delivered, sold and purchased. Internet technologies have the potential to empower small and medium size business enterprises (SMEs). E-commerce is gradually permeating economies of developing countries.

The potential benefits of e-commerce for the developing world are immense. Any company can enter global markets where size and location have become rather irrelevant. Obstacles still exist for actors from developing countries.

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Obstacles to eCommerce

- Awareness
- Infrastructure and access
- Human capacity and skills
- Legal and regulatory frameworks
- Taxation
- Financial institutions and intermediaries

Awareness

There is currently a lack of awareness and knowledge in developing countries about e-commerce. Among the private sector in particular, regional differences in the level of awareness have been observed. Surveys in Asia show a greater awareness of the potential of the Internet for business, while surveys in Latin America show some confusion and ambiguity in the use of the Internet for business.

Infrastructure and access

One of the major bottlenecks to the expansion of e-commerce to the developing world is the lack of telecommunications and Internet connectivity and access to the necessary hardware and software.

Human capacity and skills

E-commerce requires a different mix of capacities and skills, which is another major constraint in developing countries. It should become one of the priorities of developing countries to promote computer literacy and Internet-related skills among the workforce at large and especially among the SMEs. This should be complemented by programs to train and retrain skilled IT professionals.

Legal and regulatory framework

A proper regulatory framework must be in place for e-commerce to prosper. Existing laws and regulations might not be applicable as some online services do not exist in the physical world and boundaries between services as well as industries have become blurred. (One example of a problem has been the illegal sale of prescription drugs over the Internet across boundaries.)

Taxation

Taxation is another issue of concern and contention. If there will be a dramatic shift from physical transactions, normally subject to sales and other taxes, to virtual online transactions, free from any transactional tax, the tax base of local, state and federal governments might become eroded.

Financial institutions and intermediaries

Financial institutions and banks in developing countries are hesitant to take an active role in promoting e-commerce. However, merchants need the involvement of banks to broaden the reach and appeal of e-commerce and to help prevent fraud and potential losses attributable to credit card fraud. Beyond credit card fraud, banks and other financial institutions need to develop alternative modalities for secure and reliable online transactions in environments where credit cards are not common place.

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Potential of eCommerce

- B2B: LDC commodity producers can link up with appropriate portals
- B2C: not viable at the national level, opportunity for B2C for the
- LDC diaspora (target LDC expatriates); and for teleservices.

Business to business (B2B) e-commerce is emerging as the most important form of e-commerce. B2B portals are linking buyers and suppliers around the world. Commodity producers in developing countries could gain from the trade efficiencies by linking up with the appropriate portals.

Business to consumer B2C e-commerce has had quite a few casualties. For developing countries, it is unlikely that B2C will be viable at the national level because of the large amount of capital required and the critical mass of domestic online customers required to make it viable. There are opportunities for creating B2C portals for the developing country diasporas.

These enterprises are succeeding in operating profitable online businesses by serving the Ethiopian and Ghanaian diasporas respectively.

Another opportunity is in the teleservice industry where developing countries have low cost human resources advantages. The Internet allows quick and cost-effective on and offline servicing from any location. Many digital services such as desktop publishing, video editing, etc, can be done by people living in developing countries for clients in the US and Europe.

Success in e-commerce does not depend on access and connectivity alone.

E-commerce opens up new markets, but new customers also mean new problems. Orders are often small, widely dispersed around the world, and the e-commerce culture has created a buyer that expects quicker service and delivery.

Governments in developing countries also have a role to play. Beyond their role in providing the appropriate environment for the development of the ICT infrastructure, governments must set up a legal framework for e-commerce that promotes trust.

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Case Studies

Comparing Ethiopia and Tanzania's Successes with eCommerce

eCommerce Software and Portals

eCommerce for Agricultural Products (Burkina Faso and Ghana)

> Microbanking (India)

Kiskaya eTourism (Haiti & Dominican Republic)

Foundation of Occupational Development (FOOD) (India)

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Ethiopia & Tanzania

- Tanzania: Greatly improved access and connectivity but little e-commerce
- Ethiopia: Late with connectivity and access but thriving e-commerce

Tanzania's telecommunication sector is quite ahead of Ethiopia's. When comparing the telecommunications policy of Tanzania, Ethiopia is still centrally controlled and one must assume that in the absence of competition, the physical e-commerce infrastructure is more inefficient. The local call costs are almost double that in Tanzania. The IT infrastructure in Ethiopia is inferior to that of Tanzania and Internet access came later in Tanzania. The per capita income of Ethiopia is half that of Tanzania and telephone line density is far lower. Yet, Ethiopia seems to be doing much more in terms of e-commerce. Why?

What's the difference?

A well defined and large diasporas living in Europe and the US and a very strong tradition of gift giving during the holidays (in Ethiopia).

People sell their products online from outside their countries.

You can listen to and see a lot of African art on the Internet and buy music products online, and in many cases, the web site is hosted in the US or Europe and not in the African country. The products are not stocked in the African country either. Example: Africassette.com.

Ethiogift is an online gift shop based in Addis Ababa enabling Ethiopians in the diasporas to buy and deliver traditional gifts to their families in Ethiopia. The service receives gift orders from all over the world through the Internet and delivers the gifts to their families in Ethiopia within 48 hours.

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Software/Portals

ViaSebrae: Private sector - Non-profit partnership

ViaSebrae is an eCommerce solution for small businesses in Brazil. It is an eCommerce platform developed as a joint venture between a private sector software company and a non-profit organization.

B2C activities are subsidized by the more profitable B2B activities. The model serves social objectives by enabling companies operating in the B2C segment to participate in eCommerce initiatives they could not otherwise afford.

One of the biggest barriers to eCommerce is human capacity. ViaSebrae addresses this constraints because it is easy to use even for people who are unfamiliar with digital technologies.

ViaSebrae proves that the private sector can play a decisive role in social initiatives. The objectives of the two partner organizations are different, but the partnership works.

For more information, read the <u>full ViaSebrae case study</u> on the Digital Dividend web site.

PeopLink

PeopLink is a non-profit organization focusing on helping producers (small artisans) in remote communities around the world to market their products on the Internet. PeopLinks works with Trading Partners (TPs) who provide services to community-based artisan producer groups.

In the early phases, PeopLink equipped the TPs with digital cameras and trained them to capture images and edit in a compressed format for transmission via the Internet. The images of the crafts were then placed on the PeopLink web page and promoted to retail and wholesale buyers in the industrialized world.

In addition to the images of products, potential buyers learned about the communities producing the crafts through educational materials on the site.

More recently, PeopLink's emphasis has turned to the development and deployment of CATGEN, a catalog software that enables local artisans to develop their own catalogs and sell directly, eliminating the need for PeopLink to act as an intermediary.

You can learn more about <u>PeopLink</u> on the web, and visit the <u>Catgen</u> web site.

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Software/Portals

Agricultural Products

Burkina Faso

- Project meant to address the socio-economic exclusion of small-scale farmers by promoting access to market information and the training required for information retrieval and analysis.
- National center in the capital city + four regional centers with trained staff to assist farmers in accessing relevant agricultural and market information.

In Burkina Faso, small scale agricultural producers and exporters do not have access to national and international information on agricultural products, prices and trade. Nor do such producers have available to them the tools for product promotion and the necessary training to make optimal use of such information. Rather, such information is controlled and monopolized by intermediaries and large traders at the central market in the capital city of Ouagadougou. The Business Intelligence Trade Point for the agro-business sector is a project designed to address the socio-economic exclusion of small-scale farmers in Burkina Faso.

The Business Intelligence Trade Points will promote both the access to market information – via the Internet – and the training in capacity building required for information retrieval and analysis – via computer software applications. The Business Intelligence Trade Point will be run from a national information center in the Capital city. This central site will be connected to four regional centers, each situated in a different agricultural area of Burkina Faso. Well-trained regional staff or information officers will assist agricultural producers to access, retrieve, analyze and disseminate market information.

The complete service package offered by the custom-made local centers will include

- 1) information services (market information),
- 2) business services (company start up and legal advice);
- 3) Production promotion; and
- 4) ICT supported training (in agro-business marketing.

Read more on the <u>IICD web site</u>.

Ghana's non-traditional Exports

- Lack of access to information on international markets and on demand and prices.
- Currently using telephone and fax connections.

• Project proposes to establish a web site that will facilitate information flows and allow more rapid response to market changes.

Ghanaian producers and exporters of non-traditional exports (such as fruits and fish) depend heavily on the promotion of their products on international markets and on information about demand and prices. Unfortunately, there is a lack of access to such information and there are limited possibilities to promote Ghanaian trade.

Currently, small and medium size producers and exporters are linked to potential markets through telephone and fax connections. This is time consuming and not cost-effective.

In the context of an ICT Roundtable, a number of projects were identified. One of these projects was meant to deal with this situation. The E-commerce project aims to remedy this situation. It will introduce a website and an e-commerce application that will make Ghana's exporters of non-traditional exports more competitive. In addition, the increased information flows will allow Ghanaian producers to more effectively update their products to match global demand.

In the recent past, concerted government efforts, led by the Ministry of Food and Agriculture to promote non-traditional exports, have led to increased production. However, expansion could have been even greater with improved communication flows between producers and exporters, and with foreign importers.

Through the project, there will be better market information available to producers, easier access to importers, and the possibility of electronic transactions. This will improve efficiency, increase commercial benefits and eliminate excessive travel.

The Ministry of Food and Agriculture will set up a Special Business Development Unit to manage the project, working with a number of cooperating agencies. Eventually, it is expected that the Special Business Development Unit will become an independent agency.

Read more on the <u>IICD web site</u>.

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Microbanking

Swayam Krishi Sangam (SKS)

SKS is modelled after the Grameen Bank. It operates in Medak, a very poor region of the state of Andhra Pradesh in India and provides micro-loans to small groups of women. Groups of 5 women form a unit and up to 8 such units are grouped in a sangam (women's banking cooperative). Once a week, an SKS staff member, a Sangam Manager, meets with the women as a group to disburse new loans, manage savings withdrawals, collect due payments and hear proposals for new loans.

Until recently, all transactions were done manually. This was very time consuming and limited the number of women that were able to participate and the number of groups that each Sangam Manager could handle, especially since the time window during which the Sangam Manager can meet with the women is very short. Women can meet with the Sangam Manager only in the early morning before going to work.

SKS has now introduced handheld computers and smart cards to transform the process of recording transactions. Each group of women is given a smart card which stores information about their loans and savings transactions with SKS. The Sangam Manager comes to meetings with a handheld computer to record the transactions. A representative from each of the women's groups brings the smart card, the card is inserted into the handheld computer, transactions are recorded once and stored both in the handheld and the card. Once the Sangam Manager is back in the regional office, the data can be uploaded into the office's computer and transferred automatically to the central databank.

- Transactions are recorded more efficiently and more accurately, giving more time to the Sangam Managers to address other issues;
- There is still a need for awareness raising to increase the confidence level and trust in the new system;
- The overall cost-effectiveness of the system, given the investments in hardware and software remains to be determined. The cost-analysis of the pilot project is being undertaken.

Read more about the <u>SKS Handheld / Smart Card Project</u> on the Digital Dividend web site or directly on the <u>SKS web site</u>.

See also the pages on ICTs and Microfinance on the Digital Dividend web site .

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Microbanking

Kiskaya - eTourism

A pilot project on ICTs applied to alternative and/or sustainable tourism

Goals include:

- Developing new promotional and commercialization channel
- Direct communication and interaction between consumers and producers
- Greater awareness and consciousness of tourism impacts

This is a pilot project that uses ICTs to promote sustainable tourism and e-commerce in Haiti and the Dominican Republic. It has three basic components:

- Internet promotion and marketing;
- electronic commerce;
- and cooperative network development.

Internet marketing and promotion is done through a web gateway with resources on alternative, ecological and sustainable tourism on the island.

E-commerce will be done through agreements with partners to promote and sell sustainable tourism products; online reservations and payments, interactive journey design...

They will also establish a network of like-minded organizations collaborating to promote sustainable tourism on the island.

The project is made possible by the Research Consortium on Electronic Commerce and Sustainable Tourism which is funded by IDRC.

Read more on the <u>Kiskaya web site</u>.

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FOOD

Foundation of Occupational development (FOOD)

IndiaShop Project - Internet Bazaar

FOOD is a 20-year old non-profit organization based in India . The organization conducts research on social development and implements welfare programs in the field of employment generation, poverty alleviation, cost effective housing, education, health, water and sanitation, energy conservation, ICTs, NGO networking, e-commerce and institutional and capacity building for women networks.

With the IndiaShop project, FOOD has established an on-line supermarket that specializes in the sale of local products made by village crafts people. Through the creation of this online story, new markets were opened up to local artisans and local groups for the sale of their products.

The project is now funded by CAPART (an autonomous body coordinating partnerships between the Government of India and voluntary organizations).

The FOOD staff advise producers on marketing, pricing and packaging. The organization is also experimenting with the concept of tele-marketing using the internet to bring IndiaShop to the notice of potential customers (foreign customers). Purchases are transacted through major credit card companies. A novel means of rewarding tele-marketeers that is being tested is to share with them the commission that the credit card companies charge. Tele-marketeers can operate from their own computers, and in their own time. IndiaShop offers market outlets for indigenous craftspeople as well as marketing opportunities for marketeers who can work from any networked computer.

Check also the <u>Internet Bazaar</u> (on the web), and read the IndiaShop Project Case Study (<u>4-page</u> or <u>full version</u> on the web).

Inner-City Marketing Network for Women Microentrepreneurs Using Cellphones

Read the <u>full report</u> on the web.

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Key Lessons

- It is important to look at eCommerce and eBusiness in a broad sense, defining it as applying ICTs to a broad range of business processes rather than just the buying and selling process.
- For eCommerce and eBusiness to have a significant impact on economic growth and development, an "enabling environment" must be in place. Such an "enabling environment" includes awareness, training and education, legal and regulatory reform to build trust, infrastructure, connectivity and access, policies targeting the development of specific sectors.
- eGovernment can also play an important role in supporting eCommerce and eBusiness. By becoming model users of modern ICTs, governments can facilitate the diffusion and effective use of technologies and build trust that is necessary for successful eCommerce.
- All countries can benefit from eCommerce applications. Developing countries that already have a certain level of telecommunication infrastructure, human capacity and the appropriate regulatory and policy framework are likely to benefit more. Even for those countries that have limited telecommunication infrastructure, some niche eCommerce markets can be developed and benefit local communities.
- Many case studies of eCommerce for developing countries focus on supporting small artisans and selling local arts and crafts over the Internet. While these eCommerce applications have some value for local communities, it is important to look beyond these and explore a broad range of products and services within local and global markets that can benefit from eCommerce. This module looked at eTourism, and microbanking applications for example. Each country will need to look at its own comparative advantage.

7 - Readings

General Reading

- UNCTAD eCommerce and Development Report 2002 (<u>on the web</u>)
- Development Gateway Interview <u>iDevelopment not eDevelopment: ICTs and Micro-/Small Enterprise</u>, Interview with Richard Heeks, June 2002.

Case Studies

Sustainable ICT Initiative Case Study

http://www.sustainableicts.org

• FOOD: India: eCommerce and Handicrafts (<u>4-page summary or full case study report</u>)

IICD/infoDev Stories

http://www.iicd.org/stories

Search for "eCommerce" or look up the following stories.

- Computers and Cakes give Confidence and Cash to Peruvian Housewives (8/2000)
- The Virtual Souk, E-Commerce for unprivileged Artisans (10/99)
- Sole Comfort Dot-Com: Bridging the global income gap through hard work, quality sandals and ICTs (4/2002)
- Star Project : Remote Business Advisory Service (4/2002)

Check also the list of additional resources.

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7 - Exercises

A choice of 2 exercises

Exercise 7A: Compare and Contrast

Visit the web site of Peoplink (<u>http://www.peoplink.org</u>) and visit the web site of Greenstar (<u>http://www.greenstar.org</u>).

These organizations are both involved in facilitating e-commerce in "cultural" products from developing countries. Compare and contrast the two approaches.

Food for thought

What are each of the two organizations providing? What services and products are they offering?

Who are the two organizations working with at the community level in each case? Who are the "partners"?

What are the partners expected to do in each case? What are their roles and responsibilities?

How are the activities expected to become sustainable in each case?

Task

Write up two pages answering the questions above and providing some analysis of your own regarding the long term benefits of these two approaches to e-commerce.

Exercise 7B: eCommerce Opportunities in Your Country

Learning Objective

Identify niche markets where developing countries may have a good chance of being successful with e-commerce.

Tasks

1. Select a specific developing country (whether your own or not) and provide some background information regarding aspects of the infrastructure and policy environment that may affect e-commerce.

2. Identify specific products and services for which e-commerce applications would have significant positive development impacts.

3. Elaborate on how these products or services could be delivered with e-commerce

applications.

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7 - Quiz

1. Even if the telecommunications infrastructure bottlenecks were overcome and access prices were more affordable in developing countries, what kinds of other policy challenges must be met for e-commerce to thrive?

legal norms and standards (contract enforcement, consumer protection, liability assignment, privacy protection, intellectual property rights)

process and technical standards (regarding the way payments are accepted on the Internet and products are delivered to the final user; security, authentication, encryption, digital signatures, connectivity protocols)

Both

2. FOOD (Foundation for Occupational Development) is a project in which country?

Pakistan India Sri Lanka Bangladesh None of the above

3. Ethiopia has experienced more growth in ecommerce than Tanzania. True or false?

True
False

7 - Quiz

4. An eCommerce platform developed as a joint venture between a private sector software company and a non-profit organization.

eBrazil
ViaCom
ViaSebrae

5. A project modelled after the Grameen Bank. It operates in Medak, a poor region of the state of Andhra Pradesh in India and provides microloans to small groups of women.

e-Microfinance eMedak SKS (Swayam Krishi Sangam) None of the above



eCommerce

Development Gateway: eCommerce for Arts & Crafts http://www.developmentgateway.org/node/161523/

Inter-American Development Bank: ICT Innovation Program for eBusiness and SME Development (ICT-4-BUS) http://www.iadb.org/ict4bus/

eCommunity Link to Bridge the Digital Divide eComlink is to support <u>Economic and Social Entrepreneurs</u> to develop E-Commerce related industry and utilize ICT for socially valuable activities. <u>http://www.ecomlink.org/</u>

PEOPLink http://www.peoplink.org

Catgen <u>http://www.catgen.com/</u> (ecommerce software application development by PeopLink for artisans

Ecom4D (Ecommerce for Development) The Ecom4D shop is a not-for-profit e-commerce site to serve the development community in the Asia and Pacific Regions. <u>http://www.panasia.org.sg/mos/</u>

Artisan Enterprise Network

http://www.artisanenterprisenetwork.org/

PlaNet Finance Case Study http://www.digitalpartners.org/planet.html

African Crafts Online http://www.africancrafts.com

The Virtual Souk http://www.elsouk.com

Tortas Peru http://www.tortasperu.com.pe

ShopAfrica http://www.eshopafrica.com/acatalog/index.htm

Aid to Artisans http://www.aidtoartisans.org

AgriWatch http://www.agriwatch.com

Trade Information Network http://www.g77tin.org

UNDP, INFO21 section on e-commerce at http://www.undp.org/info21/e-com/e-main.html
ITU – Electronic Commerce for Developing Countries (ECDC) <u>http://www.itu.int/ITU-D-ecdc</u>

List of national projects supported by ITU's ECDC program http://www.itu.int/ITU-D/ecdc/activities/nationalprojects/index.html

ILO. World Employment Report 2001: Life at Work in the Information Age. <u>http://www.ilo.org/public/english/employment/strat/stwer/</u> (the full report is not available online but a table of contents and chapter outline are online).

UNCTAD <u>http://www.unctad.org/ecommerce</u>

- UNCTAD. "Building Confidence: E-commerce and Development. (180 pages) February 2000. <u>http://www.unctad.org/ecommerce/docs/building.pdf</u>
- UNCTAD. "E-Commerce and Development Report 2002." http://www.unctad.org/en/docs//ecdr2002_en.pdf (272 pages)
- The Digital Economy: Integrating the LDCs into the Digital Economy, Brussels, 18 May 2001. Organized by UNCTAD, Electronic Commerce Branch. <u>http://www.unctad.org/ldc3/parevents/digital.en.htm (all presentations are in PowerPoint format)</u>.
- "<u>E-Commerce and LDC</u> s: Challenges for Enterprises and Governments." Paper prepared by Shaun Lake, Executive Director, AGN, South Africa, for the E-Commerce and LDCs Round Table, Kathmandu, Nepal 30-31 May 2000. UNCTAD.

Telecommunications in Action "Telecommunications and Business" http://www.regency.org/t_in_act/pdf/english/business.pdf

Electronic Commerce and Sustainable Development in the Americas, <u>http://business.unbsj.ca/ecsda/ecsda.htm</u>

Project funded by IDRC from 1997 to 2000. The web sites provides links to a number of case studies and reports on e-commerce in South America, including:

Sears, Donna. "Uses of Electronic Commerce to Facilitate Sustainable Tourism." July 1999 (PDF files, close to 100 pages, accessible from http://business.unbsj.ca/ecsda/ecsda.htm in separate files).

Horton, Andrea. "Sustainable Tourism and Electronic Commerce in Mexico: Current Perspectives and Future Potential." June 2000. (Word Perfect file downloadable from http://business.unbsj.ca/ecsda/ecsda.htm).

Richard Heeks and Richard Duncombe. "Information, Technology and Small Enterprise: A Handbook for Enterprise Support Agencies in Developing Countries." 2001. IDPM, University of Manchester, UK. <u>http://idpm.man.ac.uk/idpm/esahndbk.html</u>

Information and Communication Technologies (ICTs) and Small Enterprise in Development (ICTSME)

- <u>Handbook for Enterprise Support Agency Staff</u> : practical summary for staff from agencies, donors and governments (link to page with two download options in English, French and Spanish)
- <u>Handbook for Entrepreneurs</u> : practical summary for entrepreneurs (link to page with two download options in English, French and Spanish, and one in Arabic)

Andrea Goldstein & David O'Connor, "E-Commerce for Development: Prospects and Policy Issues." OECD Development Centre, Technical Paper 164. September 2000. http://www.oecd.org/pdf/M00006000/M00006196.pdf or http://www.oecd.org/dev/publications/tp1a.htm

Policies and Institutions for eCommerce Readiness: What can Developing Countries Learn from OECD Experience? by Paulo Bastos Tigre and David O'Connor. OECD Development Center Technical Paper 189. April 2002. http://www.oecd.org/pdf/M00028000/M00028358.pdf

Solo Pittard (Program advisor to the Papua New Guinea Ministry and Office of Rural Development), "ICTs for Opportunities to the Poorest People Through Microenterprises". Speech for Session 5. http://www.oecd.org/dac/digitalforum/docs/DO_Session5_Pittard.pdf

"Kiskeya Alternative: Project Presentation, Genesis and Antecedents." (E-commerce and sustainable tourism in the Dominican Republic and Haiti). March 1999. http://kiskeya-alternative.org/descrip-eng.html

Robert Schware and Paul Kimberley. "<u>Exploiting Information Technologies for</u> <u>Electronic Commerce and Better Public Sector Management.</u>" Prepared for the Global Conference on the Development Agenda for Small States, London, Feb. 17-18, 2000.

Measuring and Managing eBusiness Projects through the Balanced Scorecard, Proceedings of the 35th Hawai International Conference on System Sciences, 2002. http://dlib2.computer.org/conferen/hicss/1435/pdf/14350258.pdf

<u>The Business Model Handbook for Developing Countries</u>, by Alexander Osterwalder, Mathias Rossi and Minyue Dong. (2000?)

E-commerce in Rural **Cambodia**n Village <u>http://www.washingtonpost.com/wp-dyn/articles/A16336-2001May11.html</u> Link suggested by Sam Fleming.

Resources for Electronic Commerce and ICT Policy in **Bangladesh**, IRIS, University of Maryland.

7 - Resources

http://www.iris.umd.edu/adass/proj/ecomresources.asp

The E-Commerce Debate in South Africa

http://www.ecomm-debate.co.za/greenpaper/index.html

"E-Commerce Green Paper", Link Center, Witwatersrand University, March 2001. (South Africa) 15 pages PDF file.

"Engendering E-Commerce: A Policy Brief." http://www.ecomm-debate.co.za/docs/polbrief.html

"Green Paper on E-Commerce: A Gender Policy Analysis." http://www.ecomm-debate.co.za/docs/polanlysis.html

Some academic perspectives at <u>http://www.ecomm-debate.co.za/greenpaper/academics/index.html</u>

See also the site's LINKS collection http://www.ecomm-debate.co.za/links.html

Regional High-Level Workshop on Electronic Commerce and ICT for Central Amercia and the Caribbean

http://r0.unctad.org/ecommerce/event_docs/curacao.htm

Egypt E-commerce ITN (Information Technology Node) http://www.egypt-ec.egnet.net Ecommerce and the environment http://www.green-ecommerce.com/publications.html

Oddanchatram market in Tamil Nadu, India

http://www.oddanchatrammarket.com/

This site provides you with daily price list of vegetables, fruits and dairy products sold at Oddanchatram market. The purpose of this site is to improve the agriculture by improving the market condition for the farm products produced in the region through ICT.

International Trade Center (ITC) http://www.intracen.org/itcinfo/itcinfo.htm

ITC Executive Forum on National Export Strategies (lots of papers on Trade in the Digital Economy) http://www.intracen.org/execforum/docs/ef2000/d_brief2000.htm

e-Discussions on Electronic Commerce http://www.intracen.org/execforum/docs/ef2000/df1_main.htm

Export Development in the Digital Economy

7 - Resources

The World's First Internet Coffee Auction: A Success - and some "lessons learned". 2000, ITC Executive Forum on National Export Strategies http://www.intracen.org/execforum/docs/ef2000/db5ms.htm Ecommerce: Business models and grassroots experiences http://www.intracen.org/execforum/docs/ef2000/db18eberhard.pdf The Southern Province E-commerce Initiative; (Sri Lanka) http://www.intracen.org/execforum/docs/ef2000/db9titeke.htm E-commerce and Export Development in Latin America and the Caribbean http://www.intracen.org/execforum/docs/ef2000/db15latame.htm An E-commerce strategy in Bangladesh: Are we ready in Bangladesh http://www.intracen.org/execforum/docs/ef2000/db16bgd.htm APEX-WEB: APEX-CI's Web Access Strategy for Small Businesses (Cote d'Ivoire) http://www.intracen.org/execforum/docs/ef2000/db10bengue.htm E-Competency and E-commerce Capability in Ghana http://www.intracen.org/execforum/docs/ef2000/db29ghana.htm The Guatemalan Experience (with e-commerce) http://www.intracen.org/execforum/docs/ef2000/db10guat.htm India: From Software to E-commerce: India's Success in the Digital Economy - Some lessons for the South http://www.intracen.org/execforum/docs/ef2000/db23india.pdf Facilitation of e-commerce in Kenya http://www.intracen.org/execforum/docs/ef2000/db31kenya.htm Nigeria: Strategies for creating the right environment and developing e-competencies in Nigeria http://www.intracen.org/execforum/docs/ef2000/db8boyede.htm Chomage des diplomes et delocalisation de centres d'appel telephonique au Maroc (French) http://www.emergence.nu/events/budapest/belghazi.pdf Call Centers as an enterprise opportunity in South Africa http://www.emergence.nu/events/budapest/naidoo.pdf Medical transcription in Bangalore http://www.emergence.nu/news/bangalore.html **Trade Point Senegal**

Onion Growers of the Gandiolais Take on the World, Cheikh Thiam (WARO) July 5, 2000 <u>http://www.idrc.ca/reports/read_article_english.cfm?article_num=722</u>

(in French) Les producteurs d'oignons du Gandiolais à l'assaut du marché mondial Cheikh Thiam (WARO) Le 5 juillet 2000 http://www.idrc.ca/reports/read_article_french.cfm?article_num=722

Analyzing E-commerce for Development, Heeks, 2000. http://idpm.man.ac.uk/idpm/diecomm.htm

Foundation of Occupational Development (FOOD India)

http://www.xlweb.com/food/

Teleservices in Togo

Jacques Rostenne & Jean-Marie Noagbodji. "Étude de Faisabilité Relative à l'Exportation de Téléservices à Partir du Togo." Rapport Final (to the World Bank), Septembre 1998. (in French) http://www.perwit.com/ebiz/port/Teleservices_export_from_Togo.pdf

Connectivity and Commerce in Tanzania and Uganda

Jeffrey C. Fine & Jacques Rostenne. "Connectivity and Commerce: Accelerating Diffusion of the Internet in Uganda and Tanzania." Final Report (to the World Bank), August 1999.

http://www.perwit.com/ebiz/port/Connectivity_and_Commerce.pdf

Electronic Commerce in Nepal

By Larry Press, Seymour Goodman, Tim Kelly, and Michael Minges, OTI, March/April 2001 http://www.isoc.org/oti/articles/0401/press.html

http://www.isoc.org/oti/printversions/0401press.html (print version)

Hassoumi Zitoun. "How to Adapt Electronic Commerce to the Needs of a Developing Country: The **Tunisian Case**." INET 2000. http://www.panasia.org/sg/news/inet2000/tn7c_4.htm

National eCommerce Secretariat of **Trinidad and Tobago** <u>http://www.ecommerce.gov.tt/default.asp</u>

FINCA

http://www.villagebanking.org

The Reality of eCommerce with Developing Countries http://www.gapresearch.org/production/Report.pdf

eBusiness Guide: An Australian Guide to Doing Business Online <u>http://www.e-businessguide.gov.au/site/page.cfm</u>

8- eGovernance



More about the **photo** above.....

Learning Objectives

This eighth module is meant to allow participants to

- Understand different terminologies associated with the use of ICTs for governance and government;
- Explore the range of applications of ICTs beyond eGovernment itself;
- Explore the potential of ICTs in linking local and global coalitions to address human rights issues;
- Learn about the natural evolution of eGovernment initiatives, from simple web sites to tools and mechanisms that are changing the way the governed interact with their governments;

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Photo

E-Ciudadania



This telecenter is located in the very poor and very violent Tiradentes neighborhood of Sao Paulo. It is a pilot project of the Sao Paulo municipal government which is part of a large program to be expanded all over the city called "e-cidadania" or e-citizenship. This center was opened in June of 2001. A second and third center were to be open in November 2001 and a total of 20 by the end of 2001. 1000 such centers are being planned for the next four years in the city of Sao Paulo. The equipment consists in 20 computers. 5 computers are kept for free use. 15 computers are used for computer classes. All computers are connected to the Internet at a special, low rate. Computer maintenance is provided by a para-governmental company managing the

program city-wide. At the moment, only basic courses are being provided because of the heavy demand.

(see http://www.prefeitura.sp.gov.br).

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8 - Notes

CONTENT OF THIS NOTE

Definitions ICTs and Participation Phases of eGovernment ICTs and Corruption ICTs and Human Rights

Case Studies

Government eProcurement - Chile Radio and Conflicts - Africa Local Government in India

Success Factors

Definitions

eGovernance

eGovernance is the application of electronic means in

(1) the interaction between government and citizens and government and businesses, as well as in
(2) internal government operations to

(2) internal government operations to

to simplify and improve democratic, government and business aspects of Governance.

eGovernment

eGovernment is a form of e-business in governance and refers to the processes and structures pertinent to the delivery of electronic services to the public (citizens and businesses), collaborating with business partners and conducting electronic transactions within an organizational entity.

eDemocracy

eDemocracy refers to the processes and structures that encompass all forms of electronic interaction between Government (elected) and the Citizen (electorate). It's more than just electronic voting.

The two main objectives of e-democracy are:

1. to provide citizen access to information and knowledge about the political process, about services and about choices available

2. to enable the transition from passive information access to active citizen participation by:

- informing the citizen
- representing the citizen
- encouraging the citizen to vote
- consulting the citizen
- involving the citizen

Source of these definitions: Michiel Backus, "<u>E-governance in Developing Countries</u>." IICD Research Brief, No. 1, March 2001. (on the Web)

For a more elaborate argument about the difference between eGovernment and eGovernance, see the paper by Thomas B. Riley entitled "<u>E-Government vs.</u>

<u>E-Governance: Examining the Differences in a Changing Public Sector Climate</u>," May 2003. (on the web)

ICTs and Participation

ICTs alone cannot empower people

Making governments more responsive to citizens by introducing ICT applications involves changing ways of governing and major changes in the political culture. Political will and vision are needed to transform government styles in ways that will empower people. The implication is that ICTs are neutral. They're neither good or bad. It's how they are used or not used, who controls them?

This could lead to a transformation in the nature of the political process and a change in the representatives' role. There are two basic views of elected representatives:

1. Representative as someone who is elected to represent constituents by considering the facts and making carefully reasoned decisions.

2. Representative as proxy, adding up constituents' input and voting accordingly. Electronic communication gives a larger percentage of constituents the ability to easily and quickly transmit their opinions on public policy issues to their representatives. This may lead to representatives acting increasingly as proxy.

This seems to apply equally to all countries. How would the implications be different in developing countries?

Some other implications

Electronic communication could erase disparities of distance and geography, minimizing the urban-rural distinction that has often had important political implications. Electronic communication may increase the role of citizens in the policymaking process at the expense of the political middlemen (parties, labor unions, civic associations, press).

What are the political implications of the urban-rural distinction? In Africa, politically relevant actors are primarily found in urban areas. The results have often been policies that favor such actors at the expense of rural areas. What's the assumption here? The assumption is that ICTs will be equally accessible in urban and rural areas, which is not the case currently.

The assumption here is also that citizens have achieved educational levels that allow them to make significant contributions to the policymaking process (or that there are appropriate intermediaries to convey the needs and wishes of the less literate).

ICTs and Participation

Phases of eGovernment

The Three Phases of eGovernment

This framework was developed by the CDT for a project funded by infoDev.

Phase 1: Publish - Using ICT to Expand Access to Government Information

One of the first things that Governments do within eGovernment initiatives is to set up web sites to disseminate information. This often includes the publishing of rules and regulations, documents and forms online.

Example 1

Phase 2: Interact - Broadening Civic Participation in Government

eGovernment has the potential to involved citizens in the governance process by engaging them in interaction with policymakers throughout the policy cycle and at all levels of government. Interactive eGovernment involves two-way communication.

Example 2

See also the one of the readings listed for this week: "Revistazo" - Honduras (<u>short</u> <u>version</u> - <u>full version</u> both on the web)

Phase 3: Transact - Making Government Services Available Online

Further along, governments can create websites that allow users to conduct transactions online. Just as the private sector is increasingly making use of the Internet to offer eCommerce services, governments can use the Internet for their services.

Example 3

Source for additional details and case studies

The E-Government Handbook for Developing Countries, A Project of InfoDev and The Center for Democracy and Technology, November 2002.

Another useful framework was developed by Vikas Nath, which highlights 5 Digital

Governance Models.

Example 1

Your Lawyer, is a CD-ROM making Vietnam's laws and information on citizens' rights readily accessible, spelling out in simple language how to start a business, protect land rights and get a divorce. As a first step, the Office of the National Assembly (ONA) is distributing copies of the CD-ROM to offices of delegates to the National Assembly in all 61 provinces, offices of provincial People's Councils, and media organizations.

Read more about this project (<u>on the web</u>).

Example 2

The Namibian Parliament web site invites citizens to participate online in their national government. Bills for consideration by the Parliament are posted online and citizens can send comments directly to their parliamentary representatives.

Find out more on the Namibian Parliament's web site .

Example 3

Chile's Government Procurement System

Chile's government procurement system is often presented as a success story, making business opportunities with the Chilean government more transparent, reducing firms' transaction costs, increasing opportunities for feedback and cooperation between firms and public agencies, and sharply reducing opportunities for corruption. By conducting public transactions electronically through portals, it is possible to eliminate the physical presence (waiting in line, going to multiple offices) that is often required when conducting business with the government.

On-line transactions reduce the amount of time needed to complete these transactions and the expenses incurred. Transparency and probity are increased by publishing government transactions online, thereby providing access to anyone, anywhere, at any time. This reduces opportunities for discretionary use of public funds, increasing the impartiality and integrity of such operations. Additionally, having a traceable electronic record of transactions reduces the opportunities for corrupt practices and increases the accountability of public officials.

Read more about this case study on the World Bank's eGovernment web site

5 Digital Governance Models

Introduction to Vikas Nath's Digital Governance Models

Broadcasting - Wider Dissemination Model

The model is based on dissemination of governmental information already available in the public domain into the wider public domain through the use of ICT and convergent media.

Critical Flow Model

The model is based on the principle of dissemination/ channelising of information of critical value to targeted audience or in wider public domain through the use of ICT and convergent media. This model requires a foresight and understanding of the "use value" of a particular information set and locating users to whom the availability of a particular information set would make a critical difference.

Comparative Analysis Model

The Comparative Knowledge Model is one of the least-used but a highly influential model that is gradually gaining acceptance. The model, if used innovatively, can fully harness the potential and capacity offered by the rapidly expanding Information and Communication Technologies and aim it towards better governance. The model is based on exploring information available in the public or private domain and comparing it with the known information sets to derive strategic learnings and arguments. Essentially, the model continuously assimilates new Knowledge Products and uses them as a precedence or benchmark to evaluate, influence or advocate changes in current policies and actions. The comparison could be made over a time scale to get a snapshot of the past and present situation or could be used to compare the effectiveness of an intervention by comparing two different situations.

E-Advocacy / Mobilization and Lobbying Model

The e-Advocacy / Mobilization and Lobbying Model is one of the most frequently used Digital Governance model and has often come to the aid of the global civil society to impact on global decision-making processes. The model is based on planned, directed, strategic flow of information to build strong virtual allies to complement action in Real World. It takes up a pro-active approach of forming virtual communities which share similar values and concerns, promoting active sharing of information within and between these communities, and linking them with real-life groups/ activities for concerted action. The model creates synergies between real-world processes, and opinions and concerns expressed by virtual communities.

Interactive - Service Model

The Interactive-Service model is a consolidation of the earlier model and opens up avenues for direct participation of individuals in the governance processes.

Fundamentally, ICT have the potential to bring in every individual in a digital network and enable two-way / interactive flow of information amongst them. The potential of ICT for the governance is fully leveraged in this model and leads to greater participation, efficiency and transparency in functioning of the government as well as savings in time and costs relating to decision-making.

Read more case studies on the Digital Governance web site .

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ICTs and Corruption

- 1. What impact does information technology have on corruption?
- 2. What determines the impact of information technology on corruption: the technology itself or something else?
- 3. Can information technology stop corruption?
- 4. Can information technology cause corruption?

Resources on the web

• Richard Heeks, "Information Technology and Public Sector Corruption." 1998. (<u>on the web</u>)

This paper offers five short case studies of IT and public sector corruption. The conclusion is that while IT sometimes detects and removes corruption, it can also have no effect or even provide new opportunities for corruption for some public servants. Management of corruption, the author argues, is ultimately shaped more by management decisions and by broader organizational and environmental factors than it is by technology.

• eGovernment to Combat Corruption in the Asia Pacific Region, May 2003. (<u>on</u> <u>the web</u>)

The introduction of ICT can reduce corruption by improving the enforcement of rules, lessening the discretion of officials, and increasing transparency. Yet, while ICT eliminates many opportunities for corruption for those who do not understand the new technology fully, it opens up new corruption vistas for those who understand the new systems well enough to manipulate them. Proper safeguards are needed. In addition, ICT specialists and public managers need to work together to ensure that e-government systems are coordinated with other reform processes, including business process re-engineering. The paper will examine the experience of Asia-Pacific countries in this area.

• Bathnagar, Subhash. "Administrative Corruption: How Does eGovernment Help?" (<u>on the web</u>)

E-government reduces corruption in several ways. It takes away discretion, thereby curbing opportunities for arbitrary action. It increases chances for exposure by maintaining detailed data on transactions, making it possible to track and link the corrupt with their wrongful acts. By making rules simple and more transparent, E-Government emboldens citizens and businesses to question unreasonable rules and procedures and their arbitrary application.

ICTs and Human Rights

Web sites can be used as a tool for information sharing, awareness raising activities, and collecting signatures for international campaigns.

Discussion lists can be used to keep large and dispersed groups of people informed, to organize campaigns and build alliances across organizations and across countries.

Many human rights organizations have web sites which are powerful tools for increasing human rights awareness, collecting signatures for international campaigns and making available documents. ICTs can enhance human rights advocacy by strengthening the virtual presence and networking capabilities of human rights organizations.

In addition to providing information on human rights violations around the world, human rights organizations are able to use their web sites to encourage people to take action (write letters, participate in demonstrations) and provide electronic mailing figs for people to keep in touch and keep informed. For example, Derechos Human Rights is an organization that is committed to creating and providing channels of communication between human rights organizations, activists and the public. In pursuing this goal the organization has created a number of mailing lists.

Information is Power

If information is power, what incentives do governments have to allow the free flow of information and access to the latest ICTs facilitating communications across the world? Do you think that governments perpetrating human rights violations see the Internet as a threat?

Resources

Kregs, Viola. <u>"The Impact of the Internet in Myanmar."</u> First Monday, Vol. 6, No. 5 (May 2001). (on the web)

Case Studies

Case Studies

eProcurement - Chile

Radio and Conflicts - Africa

Local Government Kiosks - India

eProcurement

Chile's Government Procurement System

Chile's government procurement system is often presented as a success story, making business opportunities with the Chilean government more transparent, reducing firms' transaction costs, increasing opportunities for feedback and cooperation between firms and public agencies, and sharply reducing opportunities for corruption. By conducting public transactions electronically through portals, it is possible to eliminate the physical presence (waiting in line, going to multiple offices) that is often required when conducting business with the government.

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Read more about this case study on the World Bank's eGovernment web site

Radio and Conflicts

"Hate Radio"

Within thirty minutes of the shooting down of the airplane containing Rwandan President Juvenal Habyarimana and Burundian President Cyprien Ntaryamira on its approach to the Kigali airport on April 6, 1994, barricades went up in the Rwandan capital and the killing began. In the genocidal frenzy that would ensue over the next four months, Hutu Presidential Guards and semiprivate Hutu youth gangs butchered an estimated eight hundred thousand people, mostly minority Tutsi but also moderate Hutu who had supported reconciliation between the two groups.

Despite the inadequacies of Rwanda's information infrastructure, the killings were carried out in a highly systematic and synchronized manner, the result of careful advance planning. One central feature of this planning was the use of radio, particularly the semiprivate station, Radio-Television Libre des Milles Collines (RTLM). RTLM was founded by leading Hutu extremists in the Rwandese Government in mid-1993 in response to reforms that had allowed moderates to take positions in the administration, including the Ministry of Information, which controlled Radio Rwanda, the official governmental station.

"Peace Radio"

In 1995, Search for Common Ground established Burundi's first independent radio studio, Studio Ijambo. This was a time when hate radio was promoting fear and mistrust, and had fueled the massacre of hundreds of thousands in neighboring Rwanda.

Studio Ijambo (web link) ("wise words" in Kirundi) employs Hutu and Tutsi staff to produce about 15 hours a week of news, public affairs, and cultural programming. Entitled Umubanyi Niwe Muryango (Our Neighbors, Ourselves), the main radio drama describes the trials and tribulations of neighbors and how they overcome the problems common to both families; drought, lack of food, a pregnant daughter, division in the village, rumour-mongering neighbours etc.

Studio Ijambo reaches an estimated 12 million people throughout the Great Lakes region.

Read more about "hate radio" and "peace radio" on the web site of <u>Radio Netherlands</u>.

Local Government in India

Gyandoot, Madhya Pradesh (India)

The Gyandoot project received the Stockholm Challenge IT Award 2000 in the Public Service and Democracy category. The goal of the Gyandoot project has been to establish community-owned, technologically innovative and sustainable information kiosks in a poverty-stricken, tribal dominated rural area of Madhya Pradesh.

Each kiosk caters to about 25-30 villages. The entire network of kiosks (about 31), covers more than 300 Panchayats (village committees), over 600 villages and a population of about half a million. User fees are charged at the kiosks for the services provided. Local youths act as entrepreneurs, manning the kiosks along commercial lines.

The following services are offered at the kiosks:

- 1. Agricultural produce auction center rates
- 2. Copies of land records
- 3. Online registration of applications
- 4. Online public grievance redress
- 5. Village auction site
- 6. Transparency in government

Some kiosks have added other services such as photocopying, online matrimonial advertisements, etc...

The kiosks have encountered challenges in their initial phase of deployment. Lack of reliable connectivity has made it difficult for the kiosk managers to make a profit and has discouraged some. While senior politicians have supported the initiative, local bureaucrats have not always been in favor. The long-term sustainability of the kiosks is uncertain.

For more information

- 1. Read the Sustainable ICTs Case Study on this CD (short version full version)
- 2. Read the <u>case study</u> on the World Bank's eGovernment web site.

Success Factors

The E-Government Handbook for Developing Countries identifies five elements of successful E-Government Transformation.

1. Process Reform

E-Government is not just about the automation of existing processes and inefficiencies. It is about creating new processes and new relationships between the governed and those who govern.

(See the Chile eProcurement case study).

2. Leadership

To achieve eGovernment transformation, elected officials and administrators are needed at all levels of government who understand the technology and the policy goals and who will push reforms.

Estonia's Tiger Leap Initiative helped to mobilize the bureaucracy with a unifying concept and strong Presidential leadership.

(Read more about the <u>Tiger Leap Initiative</u> on the web)

3. Strategic Investment

Governments need to prioritize some programs over others to maximize available funds. Developing countries always face limited budgetary resources. It is therefore essential for these countries to carefully select projects. Selected projects must have clear value.

4. Collaboration

Governments need to look at new relationships among government agencies as well as partnerships with the private sector and NGOs to ensure quality and accessibility of e-government.

5. Civic Engagement

Efforts to foster civic engagement are critical. E-Government is not just about cutting costs and making the delivery of government services more efficient. It is also about keeping ordinary citizens in mind when designing systems and engaging ordinary citizens in developing a common vision of what e-government should accomplish.

Read The E-Government Handbook for Developing Countries for specific examples of initiatives that illustrate these five key success factors.

Success Factors

8 - Readings

General Readings

- <u>The E-Government Handbook for Developing Countries</u>, A Project of InfoDev and The Center for Democracy and Technology. November 2002.
- <u>ICTs in Support of Human Rights, Democracy and Good Governance</u>, by Audrey N. Selian, ITU, August 2002.
- <u>Digital Governance Models</u> : moving towards good governance in developing countries, by Vikas Nath.

Case Studies

IICD / InfoDev Stories

Search the database by sector (governance):

- Promoting Social Justice Through ICTs (4/2001) South Africa
- The Case of the Smart Card Driving License (12/1999) India
- Electronic Governance in the Indian Rural Sector: Integrated Dairy Information System, Collection of Intelligent Societies (5/2000), India

Sustainable ICT Initiative Case Studies

- GYANDOOT: India: Local Government and Information Access Using ICTs (<u>4-page summary</u> or <u>full case study report</u>)
- REVISTOZA: Honduras: A Web Site for Social Justice (4-page summary or full case study report)

8 - Exercises

Exercise 8A: ICTs and Politics

Learning Objective

- Understand the possible negative and positive uses of ICTs in the political process
- Understand the need for a certain balance between freedom of expression and political stability

Instructions

You are a group of representatives from the local media, human rights organizations and other civic organizations located in the capital city of country X (low income country). Two weeks ago, a political opponent of the current government was arrested for encouraging political upheaval through his personal web site by providing information about (alleged) atrocities committed by members of the political group currently in power.

Although it is widely acknowledged that the political opponent in question has been known to use extreme tactics to try to win support, and there is no evidence of his allegations, you, as members of the press, human rights and civic organizations, are concerned that this abuse of ICTs in the form of a web site and the government s reaction could lead to further negative impacts on freedom of the press, freedom of expression and human rights in general.

Your task

1. Discuss your concerns (try to look at this situation from a range of perspectives, not just one point of view)

2. Draft a letter to the president expressing your concerns and suggesting a course of action to avoid further abuses on either side.

Exercise 8B: eGovernment in Your Country

Learning Objective

- Understanding the range of opportunities that exist for eGovernment applications
- Prioritizing eGovernment applications

Instructions

- 1. Learn more about any existing egovernment projects or initiatives in your country (or any developing country of your choice).
- 2. Identify 5-7 eGovernment applications that would be particularly useful in your

country

- 3. Identify criteria for prioritizing eGovernment initiatives in your country
- 4. Identify challenges that eGovernment initiatives are likely to encounter.

Your task

Write a 3-5 page essay that highlights the environment for eGovernment in your country, existing initiatives and three (3) possible initiatives that you have identified based on your prioritization analysis.

Resources for Exercise 8B

Resources for Exercise 8B

- Enabling eGovernment in Developing Countries
- Roadmap to eGovernment in the Developing World
- Cultural Barriers to eGovernment (UK)
- eGovernment Handbook for Developing Countries
- See also the list of additional resources for Module 8

8 - Quiz

1. The goal of the [______] project has been to establish community-owned, technologically innovative and sustainable information kiosks in a poverty-stricken, tribal dominated rural area of Madhya Pradesh.

eChoupal SKS Gyandoot

2. The terms "egovernance", "egovernment", and "edemocracy" are interchangeable. True or false?

True False

3. In Chile, the [______] program has become a worldwide example of effective eGovernment.

eDemocracia eProcurement Online Elections None of the above

4. Radio broadcasting can be used both as an instrument of peace and hate. Which radio station became infamous for instigating genocide in Rwanda?

Radio Paix Radio Milles Collines Radio Hirondelles Radio Rwanda 1 8 - Quiz



8 - Resources

eGovernment for Development

(Excellent web site with case studies and methodologies for analyzing eGovernment initiatives, as well as a discussion list) http://www.egov4dev.org

Digital Governance (home page)

http://www.digitalgovernance.org

Case Studies <u>http://www.cddc.vt.edu/digitalgov/gov-cases.html</u>
Publications <u>http://www.cddc.vt.edu/digitalgov/gov-publications.html</u>

World Bank s E-Governance Site

http://www1.worldbank.org/publicsector/egov/about.htm

- Enabling eGovernment in Developing Countries
- Administrative Corruption: How does eGovernment Help? by Subhash Bhatnagar, January 2003. <u>http://www1.worldbank.org/publicsector/egov/Corruption%</u> 20and%20egov%27t%20TI%20Paper%20Subhash.doc

Development Gateway's eGovernment pages

http://www.developmentgateway.org/node/130619

International Journal of eGovernment

http://www.ijeg.org/default.asp

Case Studies on the Use of ICTs for Good Governance from the Global Development Research Center http://www.gdrc.org/icts/gug-ict.html

UNPAN (United Nations Online Network in Public Administration and Finance)

- Global Portal of e-Government http://www.unpan.org/egovernment.asp
- Global Survey of e-Government <u>http://www.unpan.org/egovernment2.asp</u>

Organizations

Center for Democracy and Technology

8 - Resources

http://www.cdt.org/

- See The Internet and Human Rights: An Overview . http://www.cdt.org/international/000105humanrights.shtml
- eGovernment Handbook http://www.cdt.org/egov/handbook/

Global Internet Liberty Campaign

http://www.gilc.org

Center of Open Source and Government

http://www.egovos.org/

Human Rights Connections

http://www.hrconnection.org

Events

Third Global Forum Fostering Democracy and Development through e-Government <u>http://www.globalforum.it</u> March 2001, Naples, Italy.

- Findings and Recommendations

http://www.globalforum.it/htm/frame/inglese/inglese.htm (6 pages)

- Themes

http://www.globalforum.it/htm/frame/englese/sessioni_ing.htm

Conference on the Internet and Governance, May 30, 2000. John F. Kennedy School of Government, Harvard University, Cambridge, Mass. <u>http://www.ksg.harvard.edu/iip/governance</u>.

Asia

Madanmohan Rao. E-governance services take off in India . <u>Information Technology</u> <u>in Developing Countries</u> (Newsletter) Vol. 11, No. 1, April 2001. <u>http://www.iimahd.ernet.in/egov/ifip/apr2001/article4.htm</u>

Government of Andhra Pradesh, E-Government Initiative <u>http://apts.gov.in/twins</u>

Monica Raina & Shilpa Kedar, The Case of the Smart Card Driving License (India), IICD ICT Stories, 1999. <u>http://www.iicd.org/base/show_story?id=4082</u> (5 pages)

Prashant Halari & Monica Raina., Electronic Governance in the Indian Rural Sector: Integrated Dairy Information System, Collection of Intelligent Societies. IICD ICT Stories, 2000. <u>http://www.iicd.org/base/story_window_print?id=4229</u> (3 pages)
Milk and money: Rural cooperatives in Gujarat are computerising all operations on their own steam (India) Down to Earth, Vol. 9, No. 18, February 15, 2001. http://www.cseindia.org/html/dte/dte20010215/dte_analy.htm (short article and pictures)

Note: For those interested in India, the Digital Governance web site provides many case studies of e-governance in India.

Shanthi Kalathil. <u>The Internet and Asia: Broadband or Broad Ban?</u> Information Revolution and World Politics Project, Reprinted from Foreign Service Journal, February 2001.

Good reading for ICTs and governance/democracy

William J. Drake, Shanthi Kalathil and Taylor C. Boas. <u>Dictatorships in the Digital</u> <u>Age: Some Considerations on the Internet in China and Cuba</u>. IMP: The Magazine on Information Impacts (October 2000)

Nina Hachigian, China s Cyber-Strategy. Foreign Affairs, March/April 2001

A. Lin Neumann, The Great Firewall. CPJ (Committee to Protect Journalists) Briefings (date?) <u>http://www.cpj.org/Briefings/2001/China_jan01/China_jan01.html</u> (also in PDF format <u>http://www.cpj.org/Briefings/2001/China_jan01/Great_Firewall.pdf</u>).

Open Source and eGovernment (PPT), 2002 Conference. "Capacity Building for sustainable eGovernment in Africa." <u>http://www.infodev.org/presentations/OpenSource02/ouedraogo.pdf</u>

Developing eGovernment in the Asia Pacific <u>http://www.egovaspac.org/index.html</u>

Singapore

- Tampines New Town in Singapore: Webtown project http://www.tampines.org.sg
- Singapore e-Government Action Plan: <u>http://www.ida.gov.sg</u> (follow link to Infocomm 21 and then Singapore e-Governmet Action Plan)
- E-Citizen Centre http://www.ecitizen.gov.sg

Latin America Democracia Digital <u>http://www.democraciadigital.org</u> Project to use ICTs for democracy in Costa Rica.(in Spanish)

Gomez, Ricardo. Nostalgia of Virtual Community: A Study of Computer-Mediated Communications Use in Colombian Non-Governmental Organizations. <u>Information</u>

<u>Technology and People</u> Vol. 11, No. 3, Special Issue on Information Technology in Latin America. <u>http://www.laspau.harvard.edu/it-eco/gomez.htm</u>

Claudio Orrego, with Carlos Osorio and Rodrigo Mardones, Chile s Government Procurement System .(Case Study) December 2000. <u>http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm</u> Also written as a PREM Notes No. 50, January 2001 Technological Innovation in Public Sector Reform: Chile s Public Procurement e-System . (4 pages)

Africa

Bridges.org: Case Study Series on ICT Enabled Development: The Kubatana Project in Zimbabwe.

<u>http://www.bridges.org/iicd_casestudies/kubatana/index.html</u> See the project web site as well at : <u>http://www.kubatana.net</u>

Shanyisa Anota Khasiani, Enhancing Women s Participation in Governance: The Case of Kakamega and Makueni Districts, Kenya, Chapter 8 in Gender and the Information Revolution in Africa, IDRC, 2000. http://www.idrc.ca/books/focus/903/11-chp08.html (also in French)

Aida Opoku-Mensah, ICTs as Tools of Democratization: African Women Speak Out in Gender and the Information Revolution in Africa, IDRC, 2000. http://www.idrc.ca/books/focus/903/10-chp07.html (Also in French)

Paul Shaw, Asif Kassam and Kevin Newman, Building an E-Government: A Toolkit for Malawi, (Date?) <u>http://www.africa-online.net/e-government.pdf</u>

Power To The People: The Role Of Electronic Media In Promoting Democracy In Africa , Ott, Dana - First Monday 1998 (old!) Abstract:

This paper presents an analysis of the role of electronic media in promoting the formation of democratic political regimes in Africa. With the dramatic expansion of various forms of electronic interchange, including electronic mail and the Internet, opportunities for communication across national boundaries, and cross-fertilization of ideas are greater than ever before. This article argues that access to electronic information can have a positive impact in promoting democracy in Africa, by providing civil society with greater leverage vis-à-vis the state and political elites. However, without parallel efforts to insure that access to the Internet is not restricted to urban, elite populations, political instability may result. The paper is structured as follows: Section I makes the theoretical case for the role of increased information access and communication in the promotion of democratic political regimes. Section II presents an overview of the state of electronic access in Africa, including indigenous and international donor supported initiatives to promote African connectivity. Section III

presents an empirical analysis of the relationship between access to electronic media and political participation and democratization in Africa. Section IV considers methods to increase usage of electronic media as a tool for increased participation and democratization in Africa.

Manji, Firoze, Murtaza Jaffer & Emmanuel Njenga Njuguna. Enhancing the Capacity of Human Rights and Advocacy Organizations In Southern Africa. IDRC/Acacia Study, December 1998. <u>http://www.idrc.ca/acacia/04053/sum.html</u>

Samantha Fleming, Promoting Social Justice Through ICTs , (South Africa). IICD ICT Stories, 2001. <u>http://www.iicd.org/base/story_window_print?id=76</u> (2 pages)

Arab Countries

Sam Atallab, E-Government: Considerations for Arab States , SURF-AS, UNDP, April 2001. <u>http://www.surf-as.org/Papers/e-gov-english.PDF</u> (14 pages)

The Internet in the Middle East and North Africa : Free Expression and Censorship. » Human Rights Watch, June 1999.

http://www.hrw.org/advocacy/internet/mena/index.htm

Other Papers & Studies

Richard Heeks, Building e-Governance for Development: A Framework for National and Donor Action . i-Government Working Paper Series, Working Paper No. 12, 2001. http://idpm.man.ac.uk/idpm/igov12.htm

Abstract:

As noted in a related paper (Understanding e-Governance for Development), information and communication technologies have a valuable potential to help meet good governance goals in developing countries. Yet that potential remains largely untapped to date. Why? Because of poor human, organisational and technological infrastructure and because of the inappropriate approaches taken by donors, vendors and governments. This paper hopes to point the way forward by describing the contents of a National e-Governance Initiative (NeGI) for developing countries that would address the problems of the past and would grasp the opportunities provided for governance by the new connectivity. Over a short- to medium-term timeframe, an NeGI aims to help deliver the following outcomes:

1. Awareness and commitment to e-governance at a high level.

2. A set of key e-governance institutions that can strategically plan and facilitate e-governance projects.

- 3. New laws and regulations that enable e-governance.
- 4. A national e-Governance Strategy.
- 5. The operational capacities to implement e-governance pilot projects.
- 6. A set of e-governance pilot projects focused on 'networked government'.

The paper places a particular emphasis on the potential contribution of donor agencies to such an Initiative. Principles, impacts, risks, priorities and other issues relating to

e-governance initiatives are also described.

Richard Heeks, Understanding e-Governance for Development. i-Government Working Paper Series, Working Paper No. 11, 2001. http://idpm.man.ac.uk/idpm/igov11.htm (also in pdf format) (23 pages)

Abstract

New information and communication technologies can make a significant contribution to the achievement of good governancegoals. This 'e-governance' can make governance more efficient and more effective, and bring other benefits too. This paperoutlines the three main contributions of e-governance: improving government processes (e-administration); connecting citizens(e-citizens and e-services); and building external interactions (e-society). Case studies are used to show that e-governance is a current, not just future, reality for developing countries.

However, most e-governance initiatives fail. Countries therefore face two challenges. First, the strategic challenge of e-readiness: preparing six identified pre-conditions for e-governance. Second, the tactical challenge of closing design-reality gaps: adopting best practice in e-governance projects in order to avoid failure and to achieve success. A vision for change is therefore outlined of which more details are given in a related paper.

Michael Kahn and Russell Swanborough, Information Management, IT and Government Transformation: Innovative Approaches in the new South Africa . Information Systems for Public Sector Management Working Paper Series. Working Paper no. 8, 1999. <u>http://idpm.man.ac.uk/idpm/ispswpf8.htm</u> (also in pdf format) (22 pages)

Abstract

Governments worldwide are faced with the challenge of transformation and the need to modernise administrative practices and management systems. South Africa presents an archetypal example, given its need to transform a state apparatus that was not only racist but arguably dysfunctional as well. This paper considers problems with existing government processes in South Africa, and presents a generally-applicable framework for analysis of existing government information systems prior to transformation. It argues that a central theme of government transformation is development of a culture of information management to ensure that information systems fit the task for which they are procured. Two innovative solutions are described that address obstacles to this transformation: the Swanborough Information Grid that helps senior public managers control user requirements specification, and the Request for Solution approach to public information technology (IT) procurement. The paper concludes by analysing the pressing need for such innovations given the broader context of structural responsibilities for Government IT in South Africa and the recommendations of the recent Presidential Review Commission.

Heeks, Richard. Information Technology and Public Sector Corruption. Information Systems for Public Sector Management Working Paper Series. Working Paper No. 4, 1998. <u>http://www.man.ac.uk/idpm/isps_wp4.htm</u>

Abstract

8 - Resources

Corruption is a major problem for many parts of the public sector. One dominant vision of corruption restraint - the 'Panoptic vision' - sees information technology (IT) as a key enabler of management control. This paper presents five short case studies of IT and public sector corruption to test the realities of this Panoptic vision. From these it is concluded that, while IT sometimes does detect and remove corruption, it can also have no effect or even provide new corruption opportunities for some public servants. Management of corruption is ultimately shaped more by management decisions and by broader organisational and environmental factors than it is by technology. Put simply, IT-based systems guided by the Panoptic vision affect symptoms of a corrupt system rather than causes. Public managers must therefore adopt a more holistic vision of corruption control. They must also recognise the link between IT and corruption in the planning of some public sector information systems.

More papers from this series are accessible at http://idpm.man.ac.uk/idpm/idpm_dp.htm#ig

O Neill, Kelly. Internetworking for Social Change: Keeping the Spotlight on Corporate Responsibility. UNRISD Discussion Paper 111, September 1999.

Democratic Divide? The Impact of the Internet on Parliaments Worldwide . Norris, Pippa - John F. Kennedy School of Government, Harvard University - 2000 <u>Abstract</u>

How will the Internet affect the function of representative institutions and linkages between elected members and citizens? Part I sets out the core theoretical framework and Internet Engagement model for this study. Part II goes on to examine evidence by comparing the role of parliaments on the Internet in 179 nations around the world, focusing on establishing which parliaments are online, how far democratization drives this process, and using content analysis to see how far parliamentary web sites function to provide comprehensive information about their activities and interactive communications to encourage public feedback. The conclusion considers the implications for understanding the role of the Internet within representative democracy.

Internet World: Parties, Government and Online Democracy , Norris, Pippa - John F. Kennedy School of Government, Harvard University - 2000 <u>Abstract</u>

The study draws on evidence from 179 nations worldwide to focus upon four core questions: (i) which parties and governments are currently online? (ii) What explains this pattern and, in particular how far does democratization drive party and government use of the Internet? (iii) Does use of the web vary systematically according to the size of parties and their position across the ideological spectrum, and (iv), how far do party web sites provide comprehensive information about their activities and opportunities for interactive communication between voters, members and leaders?

Information Management, IT and Government Transformation: Innovative Approaches in the new South Africa , Kahn, Michael and Swanborough, Russell -

Institute for Development Policy and Management University of Manchester - 1999 <u>Abstract:</u>

Governments worldwide are faced with the challenge of transformation and the need to modernize administrative practices and management systems. South Africa presents an archetypal example, given its need to transform a state apparatus that was not only racist but arguably dysfunctional as well. This paper considers problems with existing government processes in South Africa, and presents a generally-applicable framework for analysis of existing government information systems prior to transformation. It argues that a central theme of government transformation is development of a culture of information management to ensure that information systems fit the task for which they are procured. Two innovative solutions are described that address obstacles to this transformation: the Swanborough Information Grid that helps senior public managers control user requirements specification, and the Request for Solution approach to public information technology (IT) procurement. The paper concludes by analysing the pressing need for such innovations given the broader context of structural responsibilities for government IT in South Africa and the recommendations of the recent Presidential Review Commission.

IT, conflicts and advocacy

USIP Virtual Diplomacy Project http://www.usip.org/oc/virtual_dipl.html

Environmental Monitoring of Refugee Camps Using High-Resolution Satellite Images. <u>http://www.enviref.org</u>

Einar Bjorgo. Digital Imagery in Global Disaster Information. Bulletin of the American Society for Information Science. Volume 26, NO. 1, November 1999. http://www.asis.org/Bulletin/Oct-99/bjorgo.html

Jamie Frederick Metzl, Rwandan Genocide and the International Law of Radio Jamming. American Journal of International Law, Volume 91, No. 4, October 1997. <u>http://www.asil.org/radio.htm</u>

Burma vs. PepsiCo. http://www.usip.org/oc/vd/vdr/vburma

Harry Cleaver, The Zapatista Effect: The Internet and the Rise of an Alternative Political Fabric. 1997. http://www.eco.utexas.edu/homepages/faculty/Cleaver/zapeffect.html

Harry Cleaver, The Zapatistas and the International Circulation of Struggle. Feb. 1998. <u>http://www.eco.utexas.edu/homepages/faculty/Cleaver/lessons.html</u>

The Public Voice and the Digital Divide: A Report to the DOT Force. March 2001. <u>http://www.thepublicvoice.org/dotforce/report_0301.html</u> (A project of the Electronic Privacy Information Center that seeks to promote the participation of NGOs in international decision-making bodies that address Internet policies).

Samantha Fleming E-government models and NGO cooperation: Civil society s use of information and communication technologies (ICTs) to strengthen public participation. http://www.itcd.net./itcd-2001/papers/doc_pdf/doc_37.PDF

Government, ICT & Civil Society in Central America January 2002 Working Paper #3: Defining E-Governance and E-Democracy in Central America for Action Katherine Reilly http://katherine.reilly.net/e-governance/e-governance.pdf

Kalathil, Shanthi & Boas, Taylor C. "Open Networks, Closed Regimes: the Impact of the Internet on Authoritarian Rule". First Monday, Vol. 8, No. 1, January 2003. http://www.firstmonday.org/issues/issue8_1/kalathil/index.html

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9 - Telecenters



More about the photo above...

Learning Objectives

This ninth module is meant to allow participants to

- Understand the role of telecenters
- Explore the diversity of telecenters around the world
- Understand the key issues to be addressed in order to establish sustainable telecenters
- Learn from the existing experience of telecenters in Africa, Asia and Latin America.

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Photo

Telecenters in Africa and Latin America

ADCOME CENTER IN BUEA, CAMEROON







Photos provided by Roland Kwemain, Director of ADCOME

Association for Development Communication and Environment (ADCOME) is an NGO, which is out to contribute to poverty alleviation, institute sustainable development and food security by bringing the necessary technology to the community. This NGO is specialized on information and communication technology and its implication to all aspects of development.

ITCHIMBIA, QUITO, ECUADOR

This is the telecenter of the Itchimbia neighborhood in Quito, Ecuador. This community of 200 people lives on top of a hill without access to water. They actually fought for many years to obtain the right to live there after occupying the land illegally for years. The telecenter is located in the second room of a two-room house. This is one of very few brick houses in the neighborhood. Most are made out of wood, cardboard and metal sheets. The home owner gave up her living room to allow the telecenter to exist there with three computers. New housing is now being built for the community and the telecenter will be relocated with the community into apartment building lower down the hill. This telecenter is supported by Chasquinet (http://www.chasquinet.org



). Notice the dog at the bottom of the picture. Dogs seem to be the most effective security system for telecenters and residences alike.

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Close

9 - Notes

*** YOU CAN ACCESS THIS NOTE AS <u>A SINGLE FILE</u> (PDF FORMAT) ***

CONTENT OF THIS NOTE

What is a Telecenter? Why Telecenters? Approaches to Telecenters

Case Studies

Africa Asia Latin America

Key Issues People & Participation Services Sustainability

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What is a Telecenter?

A telecenter can be defined as

a physical space that provides public access to ICTs for educational, personal, social and economic development.

Other names include: telecottages, community technology centers, community communication shops, village knowledge centers, networked learning centers, multipurpose community telecenters, digital clubhouses, community access centers& and variations in local languages.

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Why Telecenters?

By providing public access to telecommunication services, telecenters offer a realistic solution to the problem of access in rural and isolated areas (as well as in urban centers).

Telecenters are a means of providing universal access.

Universal service, defined as one telephone per household is a goal that is not attainable in the near future for most developing countries and in particular in rural areas. Therefore, universal access, defined as access to telecommunication services within reasonable distance of where you live is more realistic.

There are of course different ways of defining a reasonable distance.

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Approaches to Telecenters

There are wide variations across telecenters around the world.

First, telecenters vary greatly in the mix of services they provide. Some are mostly phone shops, providing access to telephones. The truly multipurpose centers provide a mix of access to telecommunication services such as telephone, fax, email, etc, and access to government information systems, the Internet, facilities and equipment for distance education, training, and even telemedicine.

Some telecenters are community based, others are managed by the government, still others are entirely private enterprises and finally some are NGO-based.

Some are stand-alone organizations while others are attached to existing institutions such as cooperatives, local businesses, schools, libraries, post offices, etc. When such telecenters are attached to a school, they can be used by the students during the day and by the rest of the community in the evening.

Some telecenters are thematic, they focus on a particular issue such as health or education or agriculture, while others are universal and address a broad range of community issues.

Some are independent and other are networked. A telecenter can be part of a national network or entirely owned and operated by a single individual or organization. Networks allow economies of scale in the purchase of equipment and supplies and in the sharing of resources (including human resources) and the sharing of acquired experience and knowledge.

Some are rural and some are urban (cybershops).

Finally, some are commercial (fee-based) and some are free.

This wide range of experience has made it quite difficult to evaluate telecenters and come up with one-size-fits-all models. Each country, each community will have different needs, a different way of communicating and seeking information and the particular set-up that will work in one community may not work in other settings. If you re interested in learning more about telecenters, IDRC has done a lot of work in that area and I would recommend their web site and in particular their work in evaluating the telecenter experience around the world and trying to come up with lessons learned (see list of resources at the end of this document).

Approaches to Telecenters

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Case Studies

Africa Telecenter Cookbook for Africa Songhai Telecenters (Benin)

Asia

Jhai Telecenters (Laos) Drishtee Telecenters (India)

Latin America

Somos@Telecentros

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Africa

The Community Telecentre Cookbook for Africa: Recipes for Self-Sustainability

Small private telecentres have become very common in urban areas of many African countries. Universities and school have also often established telecentres meant to provide access to students, but some of them also provide access to the general public, for a fee, in order to recover some of the costs.

Some members of the international development community and some national governments have also invested in telecentres, with the goal of providing access in rural areas. A key factor in facilitating the deployment of rural access points is the regulatory environment. In some countries, only the national telecommunication operators are allowed to seel access to telephone and Internet services to the public. In other countries, even if competition does exist, tariff policies are often discouraging the development of public access services.

While telecenters have become widespread in Africa, there is still a lot that we need to learn to make them sustainable. The Telecentre Cookbook was commissioned by UNESCO to help guide those in Africa who are interested in establishing and operating telecentres.

For details, see the <u>short article by Mike Jensen</u> in the Development Gateway's Highlight on Telecentres or the full <u>Community Telecentre Cookbook</u> on the web.

The Songhai Telecentres

The three Songhai Telecentres were established by an NGO in Benin. They were established in mostly rural areas with limited infrastructure. For the telecentres to succeed, it became very important to engage in awareness raising activities so that the population could learn about the types of services that were available at the telecentre and become familiarized with the technology.

Initially, 95% of services provided were non-Internet related services. Each of the three telecentres has increased the number of Internet connected computers available as demand as increased. The activities of the telecentres have also changed over time. Small fees are being charged to cover the running costs of the telecentres.

For details, see <u>the short article by Morenike Ladikpo</u> in the Development Gateway's Highlight on Telecentres, or visit the <u>Songhai Telecentres web site</u>.

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Jhai Telecenter Model (Laos)

Starting with the right question, "what do you need?", rather than "how can we (donors) help?" is a first step in making sure that the focus is on the needs and priorities of the community and not the priorities of the organization or individual offering to help.

If ICTs can be part of the solution to the community's needs, then ICT tools developed for the air conditioned environments of developed countries are not likely to work in the harsh environment of Laos. The Jhai PC, however, was specifically developed to work in such a harsh environment. It is a low-cost, low-power, voice/email/web communications systems with word processing and spreadsheet capabilities. This is what the community asked for... and that is the most important thing.

For details, see the <u>short article by Earl Mardle</u> in the Development Gateway's Highlight on Telecenters and/or visit the <u>Jhai Foundation Remote IT Village Project web site</u>.

Drishtee Telecenters (India)

Drishtee is a franchise-based platform for IT services in rural and semi-urban populations of India. The services provided include access to government records, services and programs, market-related information, private information exchanges, business-to-business transactions and computer training for local businesses.

The initial focus of Drishtee was on egovernance-related services, but today the network can provides a range of ecommerce, banking, insurance and telemedicine services and the range of services offered at any specific kiosk can be customized based on the demand in particular villages where the kiosks are located.

In two years, Drishtee established more than 285 kiosks across five Indian states. Drishtee believes that it can establish as many as 50,000 such kiosks across India within 6 years. These kiosks would serve 500 million people.

For details, see the <u>short article by Justin Thumler and David Feige</u> in the Development Gateway's Highlight on Telecentres or visit the <u>Drishtee web site</u>.

Drishtee was the winner of the 2002 IICD/infoDev ICT Stories Competition.

Another interesting example in India is the **Information Village** established by the MS Swaminathan Research Foundation

The M.S.Swaminathan Research Foundation has built an Intranet between ten villages in Pondicherry (South India). The village centers can communicate with each other as well as to the Internet to share information about local agricultural costs and produce prices, market potential, government programs, health care, transport and weather. The programme is implemented by the M.S.Swaminathan Research Foundation, Chennai, India and supported by the International Development Research Center (IDRC), Canada. Find out more about the Information Village on the web.

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Latin America

Somos@Telecentros

In Latin America, a regional community-based network of telecenters has emerged. The Somos@Telecentros Network is working to strengthen digital inclusion initiatives in Latin America and the Caribbean.

Community-based telecenters are important examples of digital inclusion initiatives. While there are many forms of telecenters that have emerged in Latin America (as in other developing regions), from the private sector cybercafés to the non-profit telecenter, the "community-based telecenters" aim to provide training and a space for community interaction, are born from expressed needs of the community itself, and are conceived, implemented, maintained and managed with the participation of the community.

They are more than access providers. Some have become agents of social change and have developed community programs that address local needs.

For more information

- For details about Somos@Telecentros, see <u>the article by Klaus Stoll</u> in the Development Gateway's Highlight on Telecenters (on the CD), or visit the <u>Somos@Telecentros</u> web site.
- The IDB Study titled "<u>Telecenters for Socioeconomic and Rural Development in</u> <u>Latin America and the Caribbean</u> " provides detailed case studies of telecenters in Latin America and the Caribbean.
- <u>Telecenters in Latin America Videos</u> (all the videos are in Spanish)

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Key Issues

People and Participation

Services

Sustainability

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People & Participation

People are the key to success or failure in telecenters. The people who work in the telecenters really serve as facilitators of innovation and early adoption in communities which would otherwise be late adopting and lagging in their approach to information and network technologies.

It is not enough to staff these telecenters with technically qualified people. They need to have excellent communication skills. There is a need for local champions, individuals or organizations who will spend a lot of time convincing others of the value of the project and the benefits everyone can derive from it. They do this by providing demonstrations. People need to be able to visualize the benefits of the services offered.

Telecommunication services cannot be dumped into rural areas. Telecommunication technicians must work with communication professionals who can facilitate concerted action, dialogue and planning among groups of rural development stakeholders.

Ideally, local rural telecommunication applications for development purposes will be managed and maintained by the participants involved in the development efforts in question.

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Services

The mix of services provided should be based on the real needs of the community. This requires a careful needs assessment exercise. However, it is difficult to ask people if they need the Internet unless they have a reasonable understanding of what the Internet can (and cannot) do for them.

To what extent do you need to increase the awareness of the community (and perhaps build false expectations) before you can do a needs assessment?

Where does the confusion start between needs and wants. What everyone has been doing is trying out different mixes and approaches and seeing what works and what does not work. To do that effectively, however, you need to have a strong monitoring and evaluation component to identify which services are being used, why other services are not being used, etc&

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Sustainability

There is a clear tension between the need to ensure sustainability by operating the telecenters along business lines and charging fees to make them profitable, and the need to ensure that access is universal and not constrained by financial resources. If it is proven that telecenters are profitable, entrepreneurs will be found to invest. Telecenters could be started through microcredit programs, by forming community cooperatives, or by local businesses. However, it is still very difficult to find financing to implement telecenters on a national scale.

Finding the appropriate mix of services and charging appropriate fees is key to sustainability.

Finding and keeping qualified staff is also an issue. Location of the telecenter and its integration within existing institutions and communication processes is also important. The existing culture and institutional history must be respected.

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9 - Readings

General Readings

If you want to read some broad analysis of telecenter issues, you might want to pick one or two of the readings below.

- FAO Telecenter Study : <u>Telecenter sustainability: Myths and Opportunities</u> (pdf)
- IDB Telecenters : Telecenters for Socio-Economic and Rural Development (pdf) <u>Full Report</u> (140 pages) <u>Executive Summary</u>

Development Gateway Highlight on Telecenters

A mix of short analyses and case studies

If you want to read a mix of short analyses of telecenters and case studies in a collection of articles from the Development Gateway's ICT for Development Pages (February 2003), read the following:

- <u>A Project to Reduce Poverty through Access to Information and Communication</u> <u>Technologies (ICTs) in Rural Areas of China</u>, by Paul Ulrich
- Drishtee Telecenters: A Sustainable E-Government and Market Development Solution, by Justin Thumler and David Feige. (India)
- <u>The Jhai Telecenter Model: Founded on Human Relationships, Supported by</u> <u>Communication and Assisted by Technology</u>, by Earl Mardle
- <u>Somos@Telecentros: The Story So Far and Lessons Learned</u>, by Klaus Stoll
- Sustainable Telecentres? Two Cases from India , by Roger Harris
- <u>Telecentres: How Did We Lose the Plot?</u>, by Earl Mardle
- <u>The Community Telecentre Cookbook For Africa: Recipes For Self-Sustainability</u>, by Mike Jensen
- <u>The Songhai Telecentres</u>, by Morenike Lanikpo

If you want to look at a unique approach to providing community access to ICTs through

a business/e-commerce model, check out Greenstar and read the two documents below.

- <u>Greenstar Introduction</u> (pdf)
- <u>Sweatshops and Butterflies</u> (pdf)

Other case studies from the Sustainable ICT Initiative

- Digital Village : South Africa (Soweto): Community Access to ICTs
- <u>UDS</u> : Uganda: NGO offering information services

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9 - Exercises

Exercise 9.1

This is a rather challenging exercise about asking the right questions, identifying all the issues that need to be addressed in the process of planning a telecenter.

A successful, sustainable telecenter project is the result of a careful planning process, which involves the development of the following:

- Clear objectives
- An initial plan
- A market plan
- A technical plan
- A finance plan
- An implementation plan that can be presented to donor organizations
- Partners and funding

You will come up with a list of questions that need to be answered in order to develop all the above items.

For example, when looking at the objectives of the telecenter, you would need to decide whether the objectives were primarily development-related or business-related. Formulated as a question, this would be:

Is this telecenter meant to provide development-related services or is it meant strictly as a business proposition?

Another way of putting it would be?

To what extent is this telecenter going to operate along business lines or to what extent is it going to be subsidized in some form to provide development related services that are not necessarily profitable?

Exercise 9.2

Read all the articles from the Development Gateway Highlight on Telecenters listed in the readings section.

Extract 5 key telecenter success factors based on these case studies. Write a short (2-4 page) essay highlighting these key success factors and referring to the specific case

studies.

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9 - Quiz

1. What is the more common name for a community access center?

multipurpose community center telecottage telecenter village knowledge center information kiosk

2. Telecenters are a means of providing...

universal access universal service

3. Songhai telecenters are in....

China Cameroon Benin Brazil

4. Jhai telecenters operate in....

Laos India Vietnam Philippines

5. A franchise-based platform for IT services in rural and semi-urban populations of India.

Gyandoot eChoupal Songhai Drishtee

9 - Resources

Key Recent Documents

- <u>Telecenter Highlight on the Global Development Gateway</u>, February 2003
- <u>Sustainable Telecenters</u> : A Guide for Government Policy, by Bjorn Wellenius, Public Policy for the Private Sector, Note Number 251, January 2003.
- <u>Ten Steps for Establishing a Sustainable Multipurpose Community Telecentre</u>, UNESCO, 2003.
- Digital Opportunities for Africa: Community Multimedia Centres: A pan-African Symposium on forging strategies for larger-scale CMC development in Africa, June 12-17, 2003, Dakar, Senegal, <u>Concept Paper</u>, and <u>Final Report</u>.

Other Key Documents

Literature Review for the Telecenter 2000 Study, CommunITy http://www.communitysa.org.za/T2000LitRev.htm

Mike Jensen and Anriette Esterhuysen. The Community Telecenter Cookbook for Africa: Recipes for Self-Sustainability. 2001. UNESCO. (Check for French version, 136 pages)

http://unesdoc.unesco.org/images/0012/001230/123004e.pdf

Telecenters for Socioeconomic and Rural Development in Latin America and the Caribbean. An ITU, FAO and IADB Study. February 2001. Three versions downloadable from <u>http://www.iadb.org/sds/itdev/telecenters/index.htm</u> 1) Executive Summary (17 pages in pdf format);

- 2) Full report (pdf format);
- 3) Presentation (slides in pdf format)

Francisco J. Proenza, FAO Investment Centre, FAO-IADB Cooperative Program, November 2001. "Telecenter Sustainability: Myth and Opportunity". (Link)

Colin Latchem and David Walker (eds). Telecenters: Case Studies and Key Issues. http://www.col.org/telecentres (250+ pages, including large resource appendix)

* Ghana's Community Learning Centers

- * Telelearning and Telelearning Centers in India
- * Daimlerchrysler Distance Learning Support Center in Maseru, Lesotho
- * A Pilot Telecenters Project in Mozambique
- * The Nakaseke Multipurpose Community Telecenter in Uganda

- * The Amic@s <mailto:Amic@s> in the Municipality of Asuncion, Paraguay
- * The Gaseleka Telecenter, Northern Province, South Africa

Does "Telecenter" Means the Center is far away?: Telecenter Development in South Africa, by Peter Benjamin, Southern African Journal of Information and Communication, Vol. 1, No. 1, 2001. <u>http://link.wits.ac.za/journal/j-01-pb.htm</u>

Multilaterals and Other Actors

AED

Steve Dorsey (AED), Jaqueline Hess with Richard Fuchs. "Information, Communications and Educational (ICE) Technologies for the Development of Accelerated Participation in the Information Economy." (39 pages, pdf) <u>http://www.futureworks.ca/reports/icetclc.pdf</u>. (date?)

UNESCO

Global Community Telecenter Resources Website http://www.unesco.org/webworld/build_info/gct/index.shtml

This is a new webiste launched by UNESCO in May 2002, aiming to facilitate networking among community telecentres worldwide through the sharing of information, experiences and resources related to practical telecentre implementation and management The new online service contains an annotated and classified inventory of resources of potential use to community telecentres, multimedia centres and other local information and informatics initiatives.

Community Multimedia Centers (UNESCO brochure) http://www.unesco.org/webworld/news/pdf/telecentre-us.pdf

"Integrating Modern and Traditional Information and Communication Technologies for Community Development"

An International Seminar Addressing the digital divide in some of the poorest communities of the developing world. January 22-27, 2001, Kothmale, Sri Lanka. Organized by UNESCO, the Ministry of Information and the Media of the Government of Sri Lanka and the Sri Lanka Broadcasting Corporation in association with the Kothmale Internet Project of Kothmale Community Radio. http://www.unesco.org/webworld/public_domain/kothmale.shtml

Kothmale FM Community Radio <u>http://www.kothmale.net</u>

ITU ITU's Telecentre Web Site 9 - Resources

http://www.itu.int/ITU-D/univ_access/telecentres/

Telecenter Training Manual (~100 pages, pdf).

Johan Ernberg. "<u>Universal Access for Rural Development from Action to Strategies</u>." First International Conference on Rural Communications, 1998.

ITU Pilot Telecenter Project in Honduras (Web site in Spanish) http://www.itu.hn/cpt/vang/

Telecenter of Tombouktou (Mali) (Web site in French) <u>http://www.tombouctou.org.ml/</u>

Overview of MCT Pilot Projects http://www.itu.int/ITU-D/univ_access/mcts/

Reference Materials regarding the telecenter in Jaka, Bhutan. <u>http://www2.itu.or.th/telecenters/jakar/</u>

Telecentres for developing countries: The Mali Case Study: Tombouctou (12 page Word document) http://www.itu.int/ITU-D/univ_access/pilots/Malicasestudy.doc

Evaluation Studies / Telecenter Evaluations (not all ITU documents) http://www.itu.int/ITU-D/univ_access/evaluation/

USAID

Africa Link- Upper West Commerce Association Telecenter Experiment - Ghana <u>http://www.usaid.gov/alnk/reports/trip0499/trip5.htm</u>

IDRC

IDRC's main page for Telecenters THE Best and most up-to-date resource on the web in English. http://www.idrc.ca/pan/telecentres.html

List and links to individual IDRC Telecenter Projects <u>http://www.idrc.ca/pan/teleproj.htm</u>

Telecenter Evaluations http://www.idrc.ca/pan/evaluation.html Telecenter Experiences: Links to non-IDRC Telecenter sites in Latin America http://www.idrc.ca/pan/telelink.html

Telecenter Applications in Distance Education, Electronic Commerce and Telemedicine http://www.idrc.ca/pan/teleapps.html

Links to Conferences and Seminars on Telecenters <u>http://www.idrc.ca/pan/confs.html</u>

Anne Whyte, Assessing Community Telecenters: Guidelines for Researchers, 2000 <u>http://www.idrc.ca/books/focus/916/</u>

"Success Stories of Rural ICTs in a Developing Country." Report of the PANAsia Telecenter Learning & Evaluation Group's Mission to India, involving visits to the Foundation of Occupational Development and the M.S. Swaminathan Research Foundation, November 1999.

http://www.idrc.ca/pan/telsuccstories_e.htm

A large number of articles not listed here.

Gomez, Ricardo, Patrik Hunt and Emmanuelle Lamoureux (IDRC). "Focus on Telecentres: How can they contribute to social Development?" <u>http://www.idrc.ca/pan/chasqui.html</u>

Gomez, Ricardo, and Patrik Hunt (Eds.) "Telecentre Evaluation: Global Perspective" <u>http://www.idrc.ca/telecentre/evaluation/html/main.html</u>

<u>Telecenters in Latin America Videos</u> (all the videos are in Spanish)

IDRC's Acacia Initiative (Africa) http://www.idrc.ca/acacia/

Note: Most Acacia studies are 3-4 years old.

Fuchs, Richard. "If you have a lemon, make lemonade: A Guide to the start-up of African Multipurpose Community Telecenter Pilot Projects." Fall 1997. http://www.idrc.ca/acacia/outputs/lemonade/lemon.html

Fuchs, Richard. "Little Engines that Did: Case Histories from the Global Telecentre Movement." June 1998.

http://www.idrc.ca/acacia/engine/index.html

PICTA (Partnership for Information and Communication Technologies in Africa) Telecenter Work Program <u>http://www.bellanet.org/partners/picta/tele.html</u>

Other Articles

Rethinking telecenters: Knowledge Demands, Marginal Markets, Microbanks, and Remittance Flows, By Scott S. Robinson <u>http://www.isoc.org/oti/printversions/0401robinson.html</u>

Esselina Macome and Carlos Combana. "Assessment Study of the Manhiça and Nammacha Pilot Telecentres." Eduardo Mondlane University, Faculty of Science, Department of Mathematics and Informatics, Maputo, March 2001.

"Achieving Telecenter Sustainability: What Have We Learned?" InfoChange Roundtable Background paper, April 12, 2001. (+ annotated bibliography)

Patrik Hunt. "True Stories: Telecentres in Latin America and the Caribbean." EJISDC (2001) 4, 5, 1-17. http://www.is.cityu.edu.hk/research/ejisdc/vol4/v4r5.pdf

Papallacta Manifesto: Tele-centros.org proposes policy recommendations to reduce inequalities. OnTheInternet, March/April 2001. http://www.isoc.org/oti/printversions/0401papallacta.html

Robinson, Scott S. "Telecenters in Mexico: The First Phase." Paper presented at the UNRISD Conference on Information Technology and Social Development, Geneva, 22-23 June 1998.

http://www.unrisd.org/infotech/conferen/papers.htm

Owen, Wilfred Jr. & Osei Darkwa. "Role of Multipurpose Community Telecenters in Accelerating National Development in Ghana." First Monday Issue 5, (January 2000). http://firsmonday.org/issues/issue5_1/owen/index.html.

LINCOS

http://www.lincos.net/

The telecentre concept developed by the Costa Rica Foundation for Sustainable Development - founded by former Costa Rican President Jose Maria Figueres - and the Massachusetts Institute of Technology offers more than connectivity. It provides health care, learning technology, government services, banking, soil and environmental testing, as well as culture and entertainment in one package. LINCOS Foundation partnered with HP e-Inclusion on two projects in Costa Rica.

Themes and Issues in Telecentre Sustainability
http://idpm.man.ac.uk/idpm/di_wp10.htm

Based on data collected from Australia and South Africa to Hungary and Canada, this paper focuses on the management training required to improve the chance of success and the sustainability of telecentres.

Other Sites

CommUnity http://www.communitysa.org.za

Unity for communities through communication: a Website for community Information and Communication Technology projects in South Africa.

Community Access Program (Canada) <u>http://cap.ic.gc.ca/english/hub.htm</u>

Chasquinet (Quito, Ecuador) http://www.chasquinet.org/

Network of telecenters in Latin America <u>http://www.tele-centros.org</u>

Fundacion Acceso (Costa Rica) http://www.acceso.or.cr

MIT Media Lab's Cost Model for Telecenters http://web.mit.edu/~hshakeel/www/research.html

Hani Shakeel,"Barriers to Telecenter Implementations in Sub-Saharan Africa.", MIT Term Paper, May 2000 http://ksgwww.harvard.edu/iip/stp305/Shakeel.PDF

Multipurposes Community Telecenter in the Philippines http://www.barangay-mct.org

Information Village

http://www.mssrf.org/informationvillage/informationvillage.html

The M.S.Swaminathan Research Foundation has built an Intranet between ten villages in Pondicherry (South India). The village centers can communicate with each other as well as to the Internet to share information about local agricultural costs and produce prices, market potential, government programs, health care, transport and weather. The programme is implemented by the M.S.Swaminathan Research Foundation, Chennai, India and supported by the International Development Research Center (IDRC), Canada.

Slums Information Development and Resource Centers (SIDAREC) <u>http://www.sidarec.or.ke/html/telecenter.html</u>

See how the community owned organisation SIDAREC tries to bridge the knowledge gap by providing access to IT to the poorest of the poor in the slums in Nairobi (Kenya).

Gender and the Digital Divide - Assessing the Impacts of Telecenters http://www.worldbank.org/gender/digitaldivide/telecenterpanel.htm

In honor of International Women's Month 2002 the World Bank Group presented on March, 7 a panel on the topic "Gender and the Digital Divide - Assessing the Impacts of Telecenters". Participants shared their experience with telecenters in Africa, Asia, Latin America, and Middle East & North Africa and discussed such issues as public access to telecenters, targeting women's participation, and assessment of the business models used by telecenters. Here you can view also presentations and reports of the participants.

The Internet, inequality and exclusion in Peru: the social impact of the cabinas publicas

Victoria Holmes thesis for a masters degree in Area Studies from the University of London. The "cabinas publicas" program is one of the larger and better known telecenter projects, certainly in Latin America. This is a relatively brief and accessable introduction to the program and its likely impacts. (This is a PDF file)

Rudi Rusdiah (**Indonesia** Internet Kiosk Association). "Internet Cafés: Bridging Divides through Cooperatives" Presentation at "The Internet in South East Asia" Workshop, Bangkok, Thailand, November 2001. <u>PDF</u> <u>PPT</u>

In French/En français Cherchez dans les sites canadiens, en particulier IDRC, cités au dessus.

Les sites de référence sur les télécentres en Amérique du Nord, Canada et Amérique du Sud

http://www.aedev.org/fichiers/telecentre/amerique.htm

Télécentre-Songhai"

http://www.geocities.com/songhaiafrica/fr/telecentre-fr.htm

L'organisation non gouvernementale de développement rural, Songhai, a mis en place trois télécentres dans les zones rurales du Bénin (Porto-Novo, Parakou et Savalou). L'organisation a également produit des CD-ROM sur l'entreprenariat agricole, la production végétale, la production animale, le financement en Afrique, le tourisme au Bénin, la femme dans le développement et santé et développement.

9 - Resources



10 - Knowledge Networking

This tenth and last module is meant to allow participants to

- Understand the difference between data, information, knowledge and wisdom
- Understand the concepts of tacit and explicit knowledge and their implications for the effective use of ICTs for knowledge networking
- Explore basic concepts associated with Knowledge Management and Knowledge Networking

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10 - Notes

CONTENT OF THIS NOTE

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What is Knowledge?

What is "knowledge"? How is it different from data and information?

- **Data**: bits of information such as lists (e.g. phone list) or records in a database or spreadsheet
- Information: organized data that can be communicated
- **Knowledge**: information (i.e., organized data) that can be used to achieve some result
- Wisdom: selection of appropriate knowledge for a specific task

These are mental constructs and it is not always easy to clearly see the differences. In particular, there is a tendency for many to use the words "information" and "knowledge" interchangeably. The simplest way to see the difference is to realize that while we can easily suffer from information overload, there is no such thing as an overload of knowledge. We may have too much information because much of it is not what we are looking for. It is precisely when we find the specific information that we are looking for that we are able to transform it into knowledge.

If you would like to look into these distinctions a little further, check this short list of web-based resources.

web-based resources

Thomas Davenport, "From Data to Knowledge ."

Gene Bellinger, Durval Castro, Anthony Mills, "<u>Data, Information, Knowledge and</u> <u>Wisdom</u> "

"The Difference Between Data, Information and Knowledge ."

"Data, Information, Knowledge and Wisdom ."

Tacit & Explicit Knowledge

What is the difference between tacit and explicit knowledge? Why is it important?

The tacit and explicit dimensions or knowledge are very important because focusing on one or the other leads to very different knowledge management approaches and the use of different tools. The table below highlights the main differences between tacit and explicit knowledge, the knowledge management approaches associated with each and some of the tools that are most useful for each.

Tacit Knowledge	Explicit Knowledge
Implicit, or tacit knowledge - found in the heads of an organization's employees. Far more difficult to access and use - for obvious reasons	Explicit knowledge - the obvious knowledge found in manuals, documentation, files, and other accessible sources.
Process Approach	Product Approach
The process approach mainly understands knowledge management as a social communication process. In this approach, knowledge is closely tied to the person who developed it and is shared mainly through person-to-person contacts. Also referred to as the "personalization" approach.	The product-centered approach focuses on knowledge documents, their creation, storage and reuse in computer-based corporate memories. Also referred to as the "codification" approach.
Toolkit Communities of Practice (CoPs), discussion lists, shareware and other tools facilitating collaborative work.	Toolkit Publications, best practice databases and lessons learned archives, expert systems and formal knowledge structures

To explore tacit and explicit knowledge further, see this short list of <u>web-based</u> <u>resources</u>.

web-based resources

Tacit and Explicit Knowledge

Apostolou, D., Mentzas, G. Young, R. & Abecker, A. "<u>Consolidating the Product</u> <u>Versus Process Approaches in Knowledge Management: The Know-Net Approach</u>." 2000.

Knowledge Management

What is Knowledge Management?

There are probably many definitions of Knowledge Management. The definition below emphasizes that the ultimate goal is to make the ORGANIZATION more effective, successful, etc... The focus is at the organizational level.

"Knowledge (experience-based know-how) is a key resource in any organisation. The more you know, the better you perform. Knowledge Management is about systematically and routinely making use of knowledge in the organisation, and applying it to key activities; tapping into 'What you collectively know' to help deliver your goals, objectives and mission. It aims towards never making the same mistake twice, and making every decision in the light of the full knowledge base of the organisation." (Bond, 2002, http://www.bond.org/uk/guides/5km.pdf)

Knowledge Management (KM) started in the business sector with a focus on improving the performance of companies. It was then adopted by some public sector organizations and even some non-profits to some extent. After all, knowledge is not just relevant to the private sector.

KM has also been adopted (and I would hope "adapted") by a range of international development organizations. There are also many organizations that place a strong emphasis on learning, monitoring and evaluation (M&E) and related processes, and do not necessarily call it KM.

Related terms include: Learning organizations, organizational learning, intellectual capital.

Knowledge Networking

What do we mean by Knowledge Networking?

Within the international development community, the term knowledge management is used primarily by some of the larger international and bilateral organizations that have developed internal KM initiatives. The World Bank has been a pioneer in this field but quickly shifted from using the term knowledge management to using the term "knowledge sharing". The main purpose of switching to "knowledge sharing" was to highlight the external dimension of the Bank's strategy and the obvious need for the World Bank's knowledge to be shared with clients and partners in developing countries (and perhaps less obvious to some, the need for the World Bank to listen and learn from others as well).

The only problem with the term "knowledge sharing" is that it gives the impression of focusing exclusively on one aspect of the knowledge process. Sharing knowledge is only part of the process. Knowledge needs to be created, captured, shared and used.

Keeping all this in mind, I prefer to use the term knowledge networking. Adding new terms to the mix is not necessarily helpful but it serves a specific purpose in the context of this module.

Knowledge networking is about highlighting the different levels where learning in development occurs and facilitating linkages between these different levels. See the diagram:

See more resources on:

- Personal Knowledge Management (<u>PKM</u>)
- Learning at the Project Level
- Learning at the Organizational Level
- Learning at the Community Level

Personal Knowledge Management (PKM)

Knowledge Management starts with individuals, but individual knowledge management does not automatically result in good knowledge management at the organizational level.

Here are some resources to start with:

- Steve Barth's Personal Knowledge Management site : <u>Self-Organization</u> See in particular the toolkit. Here tools do refer to technology, and more specifically software that can help individuals handle information and knowledge tasks.
- Peter F. Drucker, "<u>Managing Knowledge Means Managing Oneself</u>"
- Jason Frend and Carol Hixon, "<u>Personal Knowledge Management: Who, What,</u> <u>How, When, Where, How?</u>" This is written in the context of learning in an academic environment, or PKM for students.
- <u>Personal Knowledge Networking</u>, by John Sidoli A series of articles on leveraging your personal intellectual capital.

Learning at the Project Level

Z. Mikolajuk. "Knowledge Management in Development Projects." 2002. (See a <u>short</u> <u>version here</u>)

C. J. Anumba & Dr. M. S. Khan. "<u>Knowledge Management in Development Projects</u>, 29th WEDC International Conference, Towards the Millennium Development Goals, 2003.

Learning at the Organizational Level

You can find a series of Organizational KM profiles on the K4D web site .

The World Bank has been a leader in Knowledge Management within the international development community, and has been recognized as such even beyond the international development community.

To learn more about the World Bank's KM initiatives, see:

- World Bank's <u>Knowledge Sharing web site</u>
- E. Carayannis & B. Laporte, "<u>By Decree or By Choice? A Case Study:</u> <u>Implementing Knowledge Management and Sharing at the Education Sector of the</u> <u>World Bank Group</u>." WBI Working Paper.
- B. Laporte, "<u>Knowledge is Currency at the World Bank</u>." World Bank, 2002.
- K. King, "<u>Becoming a Knowledge Bank? The World Bank's Emerging Approach</u> to Knowledge and Development in the time of globalization," 2000.

SIDA

• S. McGrath & K. King. "<u>Sida, Learning and Capacity</u>."

DFID

• S.McGrath. "<u>The British Department for International Development and</u> <u>Knowledge-Based Aid.</u> "

Learning at the Community Level

- O.J.H. Bosch, W. J. Allen, J.M. Williams, and A.H. Ensor. "<u>An integrated</u> <u>approach for maximizing local and scientific knowledge for land management</u> <u>decision-making in the New Zealand high country</u>." The Rangeland Journal 18 (1), 1996.
- W. Allen, O. Bosch, M. Kilvington, J. Oliver & M. Gilbert. "<u>Benefits of</u> <u>Collaborative Learning for Environmental Management: Applying the Integrated</u> <u>Systems for Knowledge Management Approach To Support Animal Pest Control</u> ." 2001.
- Monika Jaeckel, "<u>Advancing Governance Through Peer Learning and</u> <u>Networking - Lessons Learned from Grassroots Women</u>."
- E. Bolt, M. Espejo, and M. Lammerink. "<u>Action Research on Community</u> <u>Managed Water Supply: Knowledge more Valuable than Gifts</u>." IRC, June 1999.
- E. Bolt, M. Lammerink & P. Bury. "<u>An Introduction to Participatory Action</u> <u>Development</u>." PLA Notes 35.

10 - Readings

• Barbara Fillip, "New Technologies and Knowledge for Sustainable Development: The Empowerment Challenge." Research in Science and Technology Studies." Vol. 13 (2002). (<u>ON THE CD</u>)

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10 - Exercises

Exercise 10.A: Knowledge Mapping for Development Organizations

A knowledge map is a tool for representing what knowledge resides where (e.g. people, media, organizational units, sources of knowledge outside the organization) and what are the patterns of knowledge flow (access, distribution, learning). ... The most common way of presenting a knowledge map is a simple diagram in which nodes represent knowledge repositories or sources and connections represent the flow of knowledge (in physical or mental sense).

Learning Objective

The purpose of this exercise is to get a better understanding of where knowledge is located within an organization and how it is shared (or not).

Instructions

Within the organization you work for, knowledge of various kinds is everywhere.

- Identify different types of knowledge that are important to your organization's mission and specify where these particular pieces of knowledge are located.
- Identify knowledge transfer mechanisms within the organization. Depending on the size of the organization, this can be quite complex. You may want to limit yourself to a particular department or section to start with if this makes it a little more feasible. If possible, identify knowledge transfer mechanisms with the outside world as well.
- Map "knowledge" and knowledge transfer mechanisms.
- What factors enhance and/or prevent knowledge creation and knowledge sharing within the organization?

If you're looking for a real challenge, try to do a knowledge map for the World Bank, UNDP or any other large international development organization!

Exercise 10.B: Knowledge Mapping for the Individual

- What are your existing main areas of knowledge? (these can come from academic backgrounds and experience).
- How do these areas of knowledge match the knowledge requirements of your current job?
- How do you share your knowledge? Who do you share it with? Do ICTs play a

role?

- How do you learn and create new knowledge? Do ICTs play a role?
- How could you improve your own knowledge management processes? Could ICTs play a more important role?

Exercise 10.C: Knowledge Management for Development Projects

- Pick a project that you are familiar with, whether completed, ongoing or planned. Describe it briefly in terms of objectives, key activities and timeline.
- Describe processes that are facilitating the creation, capture, storage and sharing of knowledge within the project. What is the role played by ICTs (if any)?
- What are the key obstacles to knowledge management? How could knowledge management processes be enhanced? Could ICTs play a more important role?



10 - Quiz

1. This kind of knowledge is found in the heads of an organization's employees and is difficult to access.

explicit knowledge tacit knowledge global knowledge local knowledge

2. The [______] approach focuses on knowledge documents, their creation, storage and reuse in computer-based corporate memories. Also referred to as the "codification" approach.

product-centered approach process-centered approach

3. Communities of Practice (CoPs), discussion lists, shareware and other tools facilitating collaborative work are often included in which kind of approach to KM?

product-centered approach process-centered approach

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Stiglitz, J. "<u>Scan Globally, Reinvent Locally: Knowledge Infrastructure and the Localization of</u> <u>Knowledge</u>." Keynote Address, First Global Development Network Conference, December 1999, Bonn, Germany.

Stillman, L. "Knowledge Management: Disorienting Reorientations for Third Sector Organizations." Paper for Global Networking 2001, Buenos Aires. December 2001. http://home.vicnet.net.au/~larrys/papers/ba/

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Van der Velden, M. "<u>The End of Diversity: Knowledge, ICTs and the Development Gateway</u>." Paper presented at the Third International Conference on Cultural Attitudes towards Technology and Communication 2002. Montreal, Canada.

Wenger, E., McDermott, R. & Snyder, W.M. "<u>Seven Principles for Cultivating Communities of</u> <u>Practice</u>." Excerpts from *Cultivating Communities of Practice: A Guide to Managing Knowledge*, Harvard Business School Press, 2002.

Willard, T. "Helping Knowledge Networks Work." International Institute for Sustainable Development, 2001. http://www.iisd.org/pdf/2001/networks_teamwork.pdf

World Bank. "<u>What is Knowledge Management?</u> " October 1998.

Knowledge Management for Development web site (KM4DEV)
http://open.bellanet.org/km/index.php

Storytelling: Passport to Success in the 21st Century (tools and methodologies) http://www.creatingthe21stcentury.org/

BOND (Networking for International Development, UK) . "KM" (A 4-page introduction to KM) (example of networked learning?) http://www.bond.org.uk/guides/5km.pdf

LEAP (Learning and Evaluation Action Program) http://www.bellanet.org/leap/

Knowledge Sharing at the World Bank (Web site) http://www.worldbank.org/ks

Total Knowledge Management (for the social sector) - Bangalore, India <u>http://www.totalkm.com/social.html</u>

KM at the Royal Tropical Institute (The Netherlands) http://www.kit.nl/specials/html/km_knowledge_management.asp

IISD - Knowledge Networks Home http://www.iisd.org/networks/

IICD - Knowledge Sharing http://www.iicd.org/ks

Alliance for Health Policy and Systems Research. "Health Research for Policy, Action and Practice: Training Modules." (2002). Module 2: Knowledge Management Overview

- Unit 1 : Information and Communication Technologies in Knowledge Management
- Unit 2 : Knowledge Translation: Using Knowledge for Policy, Practice and Action
- Unit 3 : Skills for Knowledge Managers
- <u>Unit 4</u> : Going Local: Using Knowledge at the Local Level
- Unit 5 : Knowledge Networks

Knowledge Networking in the Public Sector http://www.ctg.albany.edu/projects/kn/kn_facts.html

Knowledge Networking for Empowerment and Development <u>http://www.knownetasia.org/</u> (More about ICTs than Knowledge Networking)

Learning Histories (tools & methodologies) http://www.learninghistories.com/

Knowledge Mapping (tools and methodologies) http://www.voght.com/cgi-bin/pywiki?KnowledgeMapping

Outcome Mapping (tools and methodologies) http://www.idrc.ca/evaluation/outcome.html

Knowledge Board: the European KM Community (web site & resources) <u>http://www.knowledgeboard.com/index.html</u> See in particular <u>KM & NGOs</u>

Global Development Group (NGO services) http://globaldevelopmentgroup.org/i2k.htm

eNRICH: Knowledge Management Software http://www.enrich.nic.in/

Pact - Knowledge Networking Services (NGO KM services) http://www.pactworld.org/services/ikn/index_ikn.htm

IRC, MANAGE Dissemination Project (Participatory Action Research & Community management of improved water supplies in rural areas) <u>http://www.irc.nl/projects/manage/index.html</u>

Water Portal of the Americas (Water Sector Case Study) http://www.waterportal-americas.org/

Africandrum: A Knowledge Management System to disseminate lessons learned and share knowledge across several initiatives supported by the W. K. Kellogg Foundation Program in Africa.

http://www.africandrum.org/

exchange (A Networking and Learning Program on Health Communications for Development) -Mapping Health Communication (Mapping exercise across organizations - Health sector) <u>http://www.healthcomms.org/networking/index.html</u>

AfriAfya: A Partnership for Health Knowledge and Communication

<u>http://www.afriafya.org/</u> (link not working on 6/4/03), see information at <u>http://www.healthcomms.org/AfriAfya/afriafya.html</u>

Knowledge Management at **USAID** http://knowledge.usaid.gov/whoisdoingit.html

Tearfund (UK) - Interactive Learning

- Questions about Communities of Practice
- Shared Learning
- Becoming a KM Organization
- Techniques for Capturing Knowledge at Tearfund
- How to Conduct a Learning Review

Participatory Learning and Action (PLA) (Community level learning) http://www.iied.org/sarl/pla_notes/index.html

Regional and International Networking Group (RING) (South-South and South-North network around environmental issues) http://www.ring-alliance.org/background.html

InfoBridge (Knowledge and Information Management for Agricultural Research for Development & Natural Resource Management) http://www.infobridge.nl/

WISARD (Web-based Information Platform for Sustainable Agriculture and Rural Development) http://www.wisard.org

Knowledge Management Organizational Profiles (posted on the Knowledge Management for Development - KM4DEV site)

CIDA (Canadian International Development Agency)

DFID (UK Department for International Development)

IRC (International Water and Sanitation Centre)

SDC (Swiss Agency for Development & Cooperation)

World Bank

10 - Resources



Games

In this section, you will find a couple of printable word games. The first is a <u>wordsearch</u> puzzle and the second is a <u>criss-cross</u> puzzle. The two files are in PDF format, for easy printing.

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Feedback

Your feedback is very important!

This is the first self-paced version of this course and I expect to make improvements based on your suggestions and comments.

What were the best aspects of the CD-ROM?
 What were some of the weaknesses of the CD-ROM?
 What suggestions do you have for improvements?

Email your answers to me at <u>barbara.fillip@verizon.net</u>.

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