Step-by-Step Guide
For ICT Learning Initiatives

Based on the experience of:

‘Developing Open Learning Communities for Gender Equity with the Support of ICTs

Implemented in South Africa and Mozambique

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June 2004
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Foreword

Information and communication technologies (ICTs) have potential applications in all of UNESCO’s fields of competence. These represent vast new opportunities for accomplishing the Organization’s core missions: to promote the free exchange of ideas and knowledge, and to maintain, increase and share knowledge. From education and communication to social sciences, natural sciences and culture, ICTs open new horizons to exchange knowledge, promote creativity, and facilitate intercultural dialogue.

However, the growing ‘digital divide’ has been leading to greater inequality between those with, and those without, access to ICTs. Paradoxically, those with the greatest need - disadvantaged groups, rural communities, illiterate populations - have the least access to information tools which could help them become full members of the knowledge society.

UNESCO recognizes that education, sciences, and culture are at the heart of the transition to a knowledge society. It has become increasingly clear that the Organization’s core objectives require support in information, media, and communications technologies. Thus, among its ICT activities, UNESCO launched 13 projects in 2001 on how ICTs can be applied to the development of education, science and culture.

These included interdisciplinary projects that brought together people with knowledge and skills representing a wide range of academic and technical fields, as well as different life experiences. They addressed such issues as how to use ICTs to enhance learning opportunities, social participation and transformation; to promote educational change; and to strengthen local knowledge systems for community development.

One of these initiatives, a two-year project called Developing Open Learning Communities for Gender Equity with the Support of ICTs, exemplifies the Organization’s intent to explore uses of ICTs for emerging learning societies. This was a joint endeavour by the UNESCO sectors of Education, Communication and Information as well as the Social and Human Sciences, in Paris, Maputo and Windhoek, and local project teams in Mozambique and South Africa.

Acknowledging the value of cultural diversity in today's drive towards globalization, the project focused on locally developed content, using ICTs as tools to enable local communities to contribute to and benefit from the knowledge society. The initiative consisted of two pilot projects based in multi-purpose community centres that were previously established with UNESCO support in Manhiça, Mozambique, and Alexandra Township, South Africa.

A central goal of these pilot projects was to develop reference tools that would assist and inspire similar projects at learning centres throughout the developing world. The resulting Reference Kit includes two CD-ROMs produced by the communities, a video, and this Step-by-Step Guide, which presents the lessons learnt in a practical format. It is hoped that the Guide, and the Reference Kit as a whole, will encourage decision-makers to promote computer-based development of local content for lifelong learning and community development.

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Abbreviations

AODL: American Overseas Digital Library, USA
CAL: Local Management Committee, Manhiça Telecentre, Mozambique
CMC: Community Multimedia Centres
CAORC: Council of American Overseas Research Centre, USA
CI: Concept Interactive, South Africa
CIDA: Canadian International Development Agency
CIUEM: Information and Content Development Department of the Eduardo Mondlane University Informatics Centre, Maputo, Mozambique
GCIS: Government Communication Information Systems, South Africa
ICTs: Information and Communication Technologies
IICBA: International Institute for Capacity Building in Africa, Ethiopia
IDRC: International Development Research Centre
IWTC: International Women's Tribune Centre
MPCC: Multi-Purpose Community Centres
NGO: Non-Governmental Organization
CSO: Civil Society Organization
UEM: University of Eduardo Mondlane, Maputo, Mozambique
UNESCO: United Nations Educational, Scientific, Cultural Organization
USAID: United States Agency for International Development
VR: Virtual Reality
WARC: West African Research Centre, Senegal
PART I: Introduction

I.1: Background

From 2001 to 2003, UNESCO conducted a pilot project on the use of ICTs to enhance learning and community development at traditional tele- and resource centres in southern Africa. The project, Developing Open Learning Communities for Gender Equity with the Support of ICTs, involved multiple UNESCO sectors, and was conducted at two UNESCO-supported Community multimedia Centres in Mozambique and South Africa.

1. Objectives:

- To promote community-building and learning for gender equity using ICTs, with content focused on specific local concerns;
- To show and explore how user groups' involvement in ICT-based content development inter-relates with their learning processes;
- To build and share knowledge on ICT uses for meaningful learning and community building through local and global action research.

The project facilitated participation in content development for individual and community learning, and skills training for local project networks. The applications developed by the country teams addressed the local issues of malaria in Mozambique and youth unemployment in South Africa, with gender equity as a major concern in both.

2. The Reference Kit: While the projects produced two applications on CD-ROM, the main purpose was to draw lessons from the process itself, with emphasis on learning and community involvement, to assist similar projects. Therefore, the final phase in both countries focused on documenting the experience. The resulting Reference Kit, produced for wider dissemination, has three components:

- The two CD-ROMs produced by the project teams, one in each country;
- A video documenting the implementation process in South Africa; and
- This Step-by-Step Guide, which takes the user through the process of developing computer-based content for lifelong learning and community development.
This Reference Kit has several purposes:

- To consolidate the experiences of the two pilot projects and help guide similar exercises;
- To inspire and assist other tele- and resource centres in developing their own computer-based content;
- To encourage decision-makers to promote local computer-based content development for lifelong learning and community development in various contexts and settings.

3. Potential users: The Reference Kit is intended for a wide range of users. The most likely group will be users of tele- and resource centres, particularly young people and women ‘newcomers’ who will most likely use the CD-ROMs. Additional users, especially of the Step-by-Step Guide and video, may include interest groups, NGOs, students, and other community members. Decision-makers, institutions and organizations will find the Reference Kit a useful model for promoting content development.

4. Motivation: The Reference Kit can be used in different ways. Those wishing to learn about the issues addressed on the CD-ROMs can simply search for information. The Reference Kit as a whole will be of interest to those who are curious about how a pilot project in this area went, and what came out of it. These users may include project managers at institutions and organizations, telecentre managers, and people interested in community learning initiatives.

There are many possible reasons to start an ICT content-development initiative:

Convey a message: a group may want to disseminate a message to a larger group or multiple groups, such as several communities, youth groups or pupils. While CD-ROM is the most convenient format to disseminate the information, the question remains:

How to go about working with ICTs?

Be creative with ICTs: A group may wish to use ICTs creatively as a means to help community members become more confident with the technologies. This may also help raise awareness about an issue that is relevant to the community. In this case, the question remains:

How to get ideas for the content?

Enrich a larger initiative: The desire to stimulate change on a specific issue in a given context may also inspire an ICT learning initiative. This can add value to on-going processes by providing both an efficient means of communication and a tool for learning. This leaves the question:

How to combine the goals of communication and learning?

The Reference Kit can be used in all of these contexts, and the Step-by-Step Guide is designed to answer all of the questions posed above.

Although the community projects underlying this Step-by-Step Guide had similar goals as experiments in developing content locally and translating this into a computer-based format for further learning, the experiences and processes in the two communities turned out to be very different, as summarized below.
I.2: Summary of the Initiative in Mozambique

The context: Mozambique embraced modern ICTs as a means to provide information and communication facilities in remote areas. In the late ‘90s, two pilot telecenters were established in cooperation with UNESCO and other international agencies. The centres’ experiences in applying ICTs to development influenced the national ICT policy adopted in 2001, and the implementation strategy adopted in 2002. Mozambique is now establishing new centres in more communities.

Under the national ICT strategy, the University of Eduardo Mondlane in Maputo plans to establish Mozambique’s first ICT institute. It will aim to enhance the ICT skills of secondary school graduates and contribute to the development of computer-based content.

The UNESCO response: The UNESCO pilot project, conceived in line with national ICT policy, addressed challenges facing the country’s emerging telecentres. It contributed to the planned ICT institute by identifying skills and testing strategies for creating ICT applications in response to specific needs. The project also explored ways to involve the community directly in content identification and development, aiming to expand potential user groups by stimulating local interest in ICTs.

The set-up: The initiative was implemented at the local telecentre in Manhiça, a rural town in Maputo Province. The core community project group consisted of twelve people, assisted when necessary by additional local resource persons. The core group was responsible for developing all audio and visual content. The members participated in training workshops in Maputo and locally, as required to execute their tasks. In collaboration with the telecentre, the group also organized community workshops to involve and get feedback from the broader community.

The Centre for Informatics at the University of Eduardo Mondlane provided project management and monitoring of the Manhiça project, as well as technical application development, through a team that worked closely with the content groups in Manhiça. The team consisted of a project coordinator and five young people who received training in computer programmes, management and story-boarding, plus regular technical back-up from an external technical counterpart.

The approach: The emphasis was on the process, rather than the final product. The underlying principle was that everybody involved should experience their contribution as a learning process. Training, dialogue, participation and learning-by-doing were key elements. This was the first experience of this approach for most of the participants, so it was time-consuming and challenging. Ultimately, however, the process created a sense of local ownership and pride in the result.

The result: The initiative in Mozambique produced a CD-ROM on malaria, a multimedia application with simple animation, sound and video designed to be usable on older and basic computers. Standard multimedia tools were used because the University had the necessary equipment, and this level of technology was considered most appropriate for the purpose. Much information came from the Internet, with its relevance and accuracy verified by local institutions and specialists, such as medical doctors. Additional content relevant to future users was generated by individuals and groups in the community. The team used a digital camera to illustrate the content and reflect real life in Manhiça, as well as video snap-shots to animate parts of the content. To make it more user-friendly, especially for the non-literate, voice-over was provided in the local language and Portuguese.
1.3: Summary of the Initiative in South Africa

The context: In South Africa, Multi-Purpose Community Centres (MPCCs) containing multimedia centres are major vehicles providing access to information and services in remote and disadvantaged areas. The country's Department of Communication originally promoted the MPCC model, emphasizing the development of technical solutions that could be rolled out on a larger scale. In recent years, additional government agencies and civil society have joined in. The Centres have thus evolved from traditional telecentres to more dynamic community centres.

The Government Communication and Information Systems (GCIS) in South Africa coordinate information from all line ministries, using the MPCC model as a platform to serve communities with information and services. The GCIS also coordinates a cross-sectoral group of researchers and practitioners who seek to develop the MPCC concept further.

The UNESCO response: The UNESCO pilot project applied a bottom-up approach that aimed at empowering the communities themselves to contribute to the services of the Centres. This included creating content in response to individual and community learning needs. This first foray into local content development enriched the dynamics of well-established centres and provided a model for other centres interested in settings and opportunities for lifelong learning.

The set-up: The initiative was implemented in Alexandra Township, a suburb of Johannesburg, through the local community Resource Centre, which provides a wide range of services and activities. The centre helped recruit youth groups to participate in identifying content areas, testing and validating the prototype application, and promoting the end product to community groups.

The application technology required highly trained specialists to perform technical functions, and that content be developed simultaneously with the programming. Therefore, content and application development was entrusted to a small technical team that worked with specialists from its resource base and the community centre, as needed. The project was managed and monitored by a coordinator closely connected to the Resource Centre.

The approach: In contrast to the Mozambique project, the emphasis here was less on the process and more on the quality of the end product because the team wanted a solid application that could strengthen the Resource Centre's professional services to youth groups. The community was involved at strategic stages, while a professional team handled the production itself. The project was nonetheless experimental in nature, using a pilot technique, as few applications have yet been developed with this technology for the direct benefit of communities and community development.

The result: The initiative in South Africa produced a CD-ROM on youth unemployment. It is a three-dimensional Virtual Reality (VR) application with multimedia functions. While VR technology is restrictive during the production phase, requiring high-level skills that exclude broad community involvement, the final product stimulates the user to interact and engage intuitively. With VR technology, content is translated into a visual and accessible application, helping to bridge literacy and knowledge gaps and overcome language barriers that can hinder learning in developing communities.
I.4: Use and Structure of the Step-by-Step Guide

a. How to use the guide

The Step-by-Step Guide is a practical handbook or reference tool for projects using ICTs in community development. While not exhaustive, the Guide uses the experiences in Mozambique and South Africa to identify many common issues and challenges of ICT learning initiatives, and to suggest specific approaches and activities that can guide and inspire groups pursuing similar projects. It also warns against typical pitfalls and suggests ways to address them. The Guide aims to enrich and facilitate all stages of ICT-based community development projects.

The Guide can be used in two ways:

- It can be followed systematically chapter by chapter, as a guide on how to involve the community in developing ICT-based content adapted to local needs. Used this way, the Guide can facilitate all the various processes, from beginning to end. It can help users produce content on a subject and translate it to a computer-based format, providing options and advice at each step. It does not propose a ready-made initiative, but provides suggestions that can evolve according to the situations and contexts.

- The Guide may also be used as a general reference tool for community development initiatives. Used this way, it may inspire alternative approaches and activities for mobilizing and involving the community in project activities, and developing a place for community learning. It can guide general project management, as well as suggest participatory approaches and ideas for integrating elements that can add value to processes.

b. Content structure

Following Part II: The Concept behind the Pilot Project, the step-by-step process chapters in Parts III and IV have similar structures for ease of reference and flexible use, as follows:

- The introduction identifies the key challenge addressed in the chapter;
- The core content details the issues in the chapter under subheadings and scenarios;
- The summary of the chapter can serve as a check list during implementation;
- Country examples from South Africa and Mozambique illustrate the respective choices made at specific stages of implementation.

The country examples highlight the similarities and differences between the two projects at each stage of implementation, illustrating how different two projects can be despite being based on similar ideas. The examples show how responses to different community choices and needs can lead to differences in the approach to the project as well as the content of the end product.

Part II: The Concept behind the Pilot Initiative - This part briefly describes the approach and reasoning behind the pilot project carried out in Mozambique and South Africa. It explains the idea and principles of open learning communities; the potential of ICTs in local development; and the challenge of applying a gender perspective in ICT learning initiatives. It further describes UNESCO’s involvement in developing community learning centres, and its concern that
communities of the developing world participate interactively in today’s knowledge society. Finally, it explains the limitations of ICTs in poor, remote areas, and why local content development has been identified as an option and alternative in promoting community development.

**Part III: Step by Step** - This is the core of the guide, separating the ICT Learning Initiative into ten stages of implementation from counterpart arrangements and planning through community mobilization, content development and production, ending with promotion and dissemination of the ICT-based product. Issues that affect more than one stage of implementation are addressed in full under the most relevant stage, and referred to when necessary in other chapters.

**Part IV: Key features** - This section addresses general issues, those which must be considered in many or all stages of an ICT learning initiative:

- How to consider gender perspective and contribute towards gender equity;
- Capacity-building, or making the ICT Initiative a learning experience for all involved;
- Evaluation mechanisms for monitoring and improving project management, extracting lessons from the experience, and promoting ICT learning initiatives;
- ICT technology options to facilitate appropriate choices of software and techniques for each purpose, considering the target groups as well as the available means/capacities.

While the Step-by-Step Guide can stand alone, the other components of the Reference Kit complement and enrich the material. The video provides a sound-and-image portrait of the project implementation process in South Africa, and the CD-ROMs produced in Mozambique and in South Africa give examples of concrete products from ICT learning initiatives.
This chapter traces the reasoning behind the pilot ICT Learning Initiative, and some principles underlying the shared understanding that guided it. These concepts gained further shape and meaning through dialogue that arose during the implementation process (Part III).

The initial approach focused on the active use of technology by and for communities and individuals:

- **ICT use should be needs-driven, serving learners and communities, rather than technology-driven.** - How can ICTs support meaningful learning for building community and gender equity?

- **ICTs should stimulate active participation rather than passive consumerism in emerging information societies.** - How can local communities, especially women and adolescent girls, critically use and actively shape ICT-based content to support their learning processes?

- **ICT programmes should go beyond mere service, to shape a new landscape of learning opportunities.** - How can conventional community centres become spaces of community learning, creating synergy between local and global knowledge systems?

In response to these concerns, the Initiative focused on the following concepts.

### II.1: Open Learning Communities

The term ‘open learning communities’ refers to visions and practices in education and development that build on local knowledge systems, dialogue, interactive learning, sharing experiences, and the creation and exchange of knowledge. In this context, the term <<development>> refers to positive transformation that goes beyond traditional notions of economic development to encompass social, political, cultural, and other dimensions.

Similarly, open learning communities go beyond narrow notions of schooling or literacy, emphasizing informal and group learning as well as creative engagement with day-to-day challenges. The goal is to facilitate interaction among people and their cultures, languages and environments as a dynamic, lifelong process for positive change.
Open learning communities can thus be understood as spaces where learners interact and work together on issues that they themselves define in relation to individual needs as well as the social, political and cultural contexts. Learners construct and create in a process of interplay and transformation of the self and the surroundings, improving individual lives and societies at large.

The concept is further shaped by those who interact with open learning communities from outside. At UNESCO, the idea of open learning communities emerged from the Learning Without Frontiers Initiative. This was set up to empower individuals to participate in learning communities, and to counteract circumstances such as space, time, and age that may block individuals and communities from learning opportunities.

II.2: The Search for Gender Equity

In this context, concerns about equity and justice require analyzing social processes from both male and female perspectives in order to better understand existing gender relations and overcome inequities. International organizations define gender equity as fair treatment for women and men according to their respective needs, which includes identical treatment as well as different treatment that is equivalent in rights, benefits, obligations and opportunities.

Women and men are becoming more aware that hierarchical structures such as patriarchy lead to cultures of dominance rather than solidarity. This can be reflected in all spheres of life, public and private. Most women today cope with triple workloads and many also cope with so-called structural violence. At the same time, women have shown great capacity to interact and organize to promote positive change. However, women still account for two-thirds of the world’s illiterate adults and 70% of those living in poverty.

Among the signs of progress in gender equity, women’s approaches to communication, relationship-building and work have recently received greater public acknowledgement and rewards in the worlds of work and politics. The Internet is a new empowering tool for women who have access to it, helping them to discuss gender issues, empowerment, how to influence global and local realities, and strategies for promoting equity and justice. Men also show more interest in gender equity, and are involved in some of the networks that address gender issues.

Gender equity and lifelong learning can be promoted around any theme that is relevant to the lives of a group of people. Open learning communities intend to provide new spaces for women, men, adolescent girls and boys to engage in meaningful learning and knowledge sharing to promote gender equity by addressing issues which are relevant to their daily lives.

II.3: ICTs as a Learning Tool

Open learning communities intend to lower barriers and create access to learning. ICTs provide tools and modalities to exchange local knowledge, culture and languages, and build bridges among local, national, regional, and even global contexts. This initiative defines ICTs as tools and processes for disseminating information and facilitating communication, skills acquisition, knowledge exchange and knowledge creation, locally, regionally, and internationally. In this context, ICTs include not just new technologies, but all older information and communication modalities such as radio, pen and paper, music, dance, etc.

Today’s societies are known as knowledge societies because creating, sharing and using knowledge is crucial for citizens’ full participation, prosperity and well-being. The notion of knowledge societies is closely associated with ICTs and the new opportunities they offer. Citizens’
participation and development opportunities are thus linked with their ability to use various technologies to transmit, manipulate, interpret, create and store information.

This new context leads to new understandings of competencies such as literacy. Concepts of literacy no longer rely exclusively on written language, but also on sounds and images. Visions of open learning communities therefore assume that a new understanding and practice of literacy is critical in advancing meaningful learning, diversifying the contents on the Internet, and increasing the links in the World Wide Web. New local content and Web links are expected to help more people participate in today’s learning societies.

Open learning communities consider the critical use of ICTs an opportunity for learning, especially interactive learning, but that cannot be taken for granted. Finding information, uploading, downloading, constructing or consulting should always be linked to a meaningful purpose. Open learning communities should intend to promote critical and analytical ways of using ICTs. To this end, the following questions should be explored:

- What types of relevant and empowering learning can be supported by ICTs?
- What uses of ICTs promote development and continued individual and collective learning?
- How does using ICTs affect educational change and development?
- To what extent can the critical use of ICTs foster synergy between traditional and new forms of learning?

Local and indigenous knowledge systems can be defined as embedded systems of understanding, interpretation and meaning that provide bases for local decisions about fundamental aspects of daily life. These systems are embraced within the concept of open learning communities, both to empower local communities and as integral parts of today’s knowledge societies, even if they are not (yet) connected to the World Wide Web. ICTs can support the production, adaptation, translation and sharing of such knowledge and local contents. The potential of ICTs to facilitate low-cost translations into local languages promises to bring content to global audiences while strengthening local cultures and fostering diversity.

So far, however, the potential of ICTs in creative and innovative learning, knowledge creation and community development has only been explored to a limited extent. Even given the infrastructure, conventional notions of ICT use can hinder user groups from benefiting fully from the potential of ICTs in learning. Open learning communities therefore seek to transform the understanding of ICTs, education, and development in order to promote social change.

II.4: Community Multimedia Centres

Communities world-wide look increasingly to traditional telecentres for access to information and communication technologies. UNESCO has over the past seven years supported the creation of community multimedia centres to facilitate creative and innovative uses of ICTs for community development, and to transform traditional centres into multi-purpose community centres. Many such centres run successfully in Africa, Asia and Latin America, showing how various ICTs such as community radio and the Internet can combine to create access to information and stimulate community learning. These new ways of learning continue to develop and find forms of broader community participation in the knowledge society.

Step-by-Step Guide for ICT Learning Initiatives
By Janne Kjaersgaard Perrier, June 2004
What are Community Multimedia Centres?

Accessing ICT:
Offering access to information in some of the world’s poorest communities
Community Multimedia Centres (CMCs) innovatively combine low-cost, low-power community FM radio stations with telecentres offering services ranging from basic telephony to scanning, fax, Internet access, and computer training. The combination of local radio in local languages with Internet and other ICTs enables all community members at all educational levels to identify, access, and exchange information relevant to their needs. CMCs thus act as gateways to active membership in the global knowledge society.

Transmitting information:
A continuum of information transmission in national and international languages, spoken and written
CMCs have pioneered an effective approach to bridging the digital divide: ‘radio-browsing’ programmes in which radio presenters visit Web sites in response to listeners’ queries and discuss the sites’ contents on-air with studio guests. The whole community receives access to on-line information which is explained, discussed and contextualized in local languages.

Sharing knowledge:
Knowledge sharing and community participation: tools that empower people to improve their lives.
CMC users are actors in the development process. A community with a CMC can build its own information base to meet its specific needs. The illiterate can participate actively, creating and accessing voice files in the community database, using special multimedia applications, following radio browsing programmes and attending literacy classes. The more a community is in charge of its access to information, the more meaningful the knowledge generated by this information becomes.


In other cases, however, the infrastructure has not yet produced broad-based and active community involvement. Despite providing traditional information services (copy, fax, Internet) and services such as finding, reproducing and transmitting information, these centres have yet to become places of collective learning for the development of the larger communities they serve.

II.5: Content Development - An Option
The World Wide Web as a publishing and communication medium makes information widely accessible to groups including potentially and formerly marginalized communities. ICTs can empower people by giving access to information that was previously hard to obtain. Access to information through technological tools can enable communities to solve development problems, challenges and needs, and reverse trends towards marginalization. Individuals connected through ICTs can work to create new organizations, develop new partnerships, influence policy, change approaches to governance, and publicize development issues.

However, Web access may not be a reality for many community members, even in communities with telecentres or information hubs, if connection costs are too high for the individual to afford.
Even without connection to the World Wide Web, communication technologies can help communities address daily problems. Software applications on CD-ROM, for example, offer a wide range of information and typically require little in the way of operating costs and computer skills. The CD-ROM can thus be a cost-effective communication medium for poor communities.

Much of the local knowledge and wisdom in rural and peri-urban communities may be useful for other communities locally, nationally or internationally, but most local lore has not yet been processed into ICTs and thus remains inaccessible to the larger public.

For this reason, UNESCO chose ICT-based content development as one option to transform traditional telecentres into places of open community learning. ICT-based content tends to facilitate learning for individuals, which can also be meaningful for the groups that they belong to. Content development adds a dimension by making local knowledge available outside the community, if desired. ICTs can thus go beyond one-way communication.

Through this pilot project, UNESCO and its local partners explored processes for local ICT-based content development. Those involved in this initiative and those using this Reference Kit are taking the first steps towards active participation in the knowledge society, while co-creating open learning communities.
PART III:

Step by Step

The following chapters are based on the lessons learnt during project implementation in South Africa and Mozambique. While the example boxes illustrate actual project development in each country, the content of the chapters is a synthesis of project developments and lessons learnt in both countries. The chapters highlight the most successful approaches, while also considering the less successful experiences, in developing the recommendations. This Step-by-Step Guide, along with Part IV, are thus at the same time part of the project's learning process and an effort to assist future ICT learning experiences.
Arrangements with counterparts must be part of the initial phase of an ICT learning project, regardless of who initiates it (e.g., the community, its telecentre, an outside organization, etc.). This is the time to work out the prerequisites and lay the cornerstones for success, during the evolution from an idea to a project with a strategy as well as human, technical and financial resources. Once the parameters for implementation are set, the possibilities and limitations become clear.

### a. Setting the stage

Getting off to a sound start requires more than just the necessary resources for the project at hand. To ensure that the initiative does not remain an isolated event requires conceiving an approach and mechanisms that will bring broad participation and build capacity for similar undertakings in the future. This kind of beginning usually requires many different skills and resources, so several counterparts will likely be needed. One entity may have the ideas, another the funds. A third may have the technical know-how, and another may be interested in dissemination and promotion. Counterpart arrangements are about combining and sharing various capacities and interests in one common endeavour.

Counterpart arrangements include several core objectives:

- Define a project approach that will attract key counterparts;
- Identify and establish cooperation with counterparts, so as to reach a common understanding of respective roles and responsibilities in project implementation;
- Gain insight into the counterparts’ realities, conditions and interests;
- Assess and ensure the necessary human, technical and financial resources;
- Establish schedules and budgets for project activities and phases;
- Plan in detail the immediate follow-up and launching activities.

It may be tempting to skip these preparatory activities if one is impatient to start the project. However, spending sufficient time to secure the resources and stakeholders for the entire process will minimize the risk of unpleasant surprises such as ambitions overmatching resources; lack of significant effect because key stakeholders were not committed from the start; or malfunction due to lack of technical know-how.

Proper counterpart arrangements and planning will anticipate and prevent many of these challenges. Depending on the specific context, this can be done through addressing some basic parameters in the very beginning of an initiative, as suggested in the following.
b. Ensuring community involvement

If the initiative does not stem from a community, one must be selected in the initial phase. This is central to the undertaking and will heavily influence the project parameters, as well as the participation of counterparts. This issue is addressed fully in III.2: Identifying a Community.

The next step is to establish a community profile, to ensure that a solid basis exists for implementing the initiative. Guidelines for community profiles are in III.2. The profile may lead to ideas for activities to help ensure proper community involvement. While such activities need not be planned in detail at this stage, they should be defined sufficiently for the provisional work plan and budget. This will help specify the necessary human, technical and financial resources.

Several questions will help assess community involvement and strengthen it as a counterpart:

- Who is the driving force of the initiative in the community?
- Does this entity or group have the legitimacy to act and make decisions for successful implementation? If not, how can this entity get the necessary back-up?
- Is there political support in the community for the initiative? If not, are the influential entities and concerned stakeholders informed of the initiative? How could they be further mobilized?
- Have potential interest groups and partners been consulted? How can they be?
- Based on the above, what should be the main activities to ensure broad community involvement?
- Are there outstanding community members (e.g., chiefs, activists, artists, speakers) who could add value to the project?
- What community resources and inputs can strengthen the initiative? (ref: findings of the community and centre profiles, III.2).

c. Securing a resource base

The project should use community resources and skills as much as possible for two basic reasons: the project is a community initiative, and this will help ensure that similar activities can be replicated in the future. The community profile (see III.2.) will help assess available and potential resources. The community is unlikely to have all the resources and skills necessary for the project, especially in remote or rural areas or if the initiative is the first of its kind. The organizers must ensure that the missing resources are available through other counterparts. If no counterparts are associated with the project, the organizers should seek technical, human or financial partners.

The telecentre community movement has spread greatly since it began in Africa in the mid 1990s, and telecentres offer many possibilities for networking and resource sharing. As a result, more and more organizations are committed to ICTs for community development. The profiles and interests of potential partners differ from country to country, so the possibilities and strategies for mobilizing resources also vary. Several options for exploring potential partners have come to the fore:

- Ministries and ministry departments at local and national levels;
- Local and national NGOs and associations;
• Local and regional resource centres;
• Local educational institutions (teacher colleges, training institutes);
• Universities - groups interested in action-research from informatics and other relevant departments such as science, engineering, education, health, and agriculture;
• National and international organizations at local, regional or national levels;
• National and international ICT research initiatives and networks;
• Telecommunication representatives;
• Private companies and commercial organizations for sponsorship;
• Consultancy firms.

It may not be possible to secure some of the resource base from the very beginning, particularly if the focus of the Initiative has not yet been identified. Content experts, for instance, may thus be approached later. To ensure achieving the learning objectives as well as the final product's quality, however, this is the proper stage to create room for managing collaborations with such specialists and resource persons.

The resource base depends on the nature and scope of the project, and vice versa. The necessary resources and possibility of mobilizing them should be assessed during the counterpart arrangements, so that activities can be adapted to the available human, technical and financial resources. This could mean gearing down the ambitions, or an unexpected partner may join and expand the initiative.

d. Coordinating mechanisms

When several partners collaborate on a project, it is important to define roles and responsibilities. Each counterpart needs a clear picture of who is doing what, why, how and when.

Clear communication channels and procedures should be established at the start to ease interactions and information flow among the counterparts. Efficient, transparent, reporting mechanisms must be established to track project activities and make it easier for the project team account to the counterparts that contribute in kind or with funds. Efficient coordination also depends on good team-building, which develops over time through project activities. This issue is addressed separately in III.5: Establishing and Building a Team.

When counterpart arrangements are international, differences in values and approaches may create additional potential for misunderstandings and challenges during implementation. In such cases, it is even more important to develop a detailed agreement on counterpart collaboration.

1. Basic parameters: To ensure fruitful collaboration, some issues can be discussed and agreed upon during the counterpart arrangements:

• What are the interests of the counterparts? Have measures been taken to meet those interests, so that everyone gets the maximum out of the project?

• If it is not possible to meet those interests, does everyone know why it is not possible?

• Are the conditions for collaboration on project activities acceptable to all parties? What are the roles and responsibilities of each counterpart? Are they clear to each counterpart?

• Is it clear to all that the counterparts’ responsibilities may not always be equal?

• What are the reporting channels among counterparts?
• What should be the interval and format for reporting?

• Do the financial flow mechanisms support smooth project implementation in the community?

2. Tools and instruments: To facilitate collaboration, some basic documents should be developed and agreed upon during the counterpart arrangements, as well as during project implementation. Depending on the situation, these may include:

• A project document specifying clear objectives and strategies;
• Concept brief specifying the reasoning behind the initiative, to facilitate a common understanding of the project approach and the ideas behind it;
• Information brief on the project, to hand out to potential partners for a quick overview;
• Memorandum of understanding between counterparts, to specify roles and responsibilities;
• Terms of Reference, to specify roles and responsibilities at activity levels;
• Contracts between counterparts, to specify activities and guarantee funds;
• Email list of all counterparts, to ensure smooth communication and sharing of information;
• An overall work plan. To allow for flexible planning, rolling work plans can be made and revised, for instance, every six months;
• Budget, detailing costs of all planned activities;
• Brief activity reports, for instance every three months, in an agreed format.

SUMMARY:
• The necessary time and energy should be spent on counterpart arrangements: it is rewarding in the long term and part of proper planning.
• Counterpart arrangements should help define, secure and adapt the human, technical and financial resources.
• A sound and solid community counterpart is crucial to the success of the undertaking, and should therefore be backed up as necessary.
• As many community resources as possible should be used and developed during the initiative (e.g., experience, funds, knowledge, skills, know-how, networks).
• Each counterpart should have a clear picture of who is doing what, why, how and when.

Country examples
Before this initiative was launched, UNESCO sent a mobilization mission to Mozambique and South Africa to identify project partners, sites and counterparts. Local structures were set up to implement, identify and mobilize technical counterparts, and define the content of the two projects. The team could thereafter begin to develop a detailed work plan and engage in activities with the confirmed counterparts. The following examples show the counterpart arrangements, roles and responsibilities in both countries.
Counterparts of the Initiative in Mozambique
Four main counterparts were involved in the project in Mozambique: 1) the UNESCO team; 2) the team at the University of Eduardo Mondlane, CIUEM; 3) the team and the Telecentre in Manhiça; and 4) the technical partner, Concept Interactive. Each entity assumed specific roles and responsibilities. While the respective coordinators and their core teams followed the project from the beginning to the end, the counterparts also included persons who worked on well-defined tasks at specific stages of the project.

UNESCO managed the initiative in Maputo. Its responsibilities included planning activities with CIUEM, back-up assistance through the technical counterpart, and channelling funds. The overall management also included proactive and reactive monitoring according to the needs of the project.

Implementation activities were delegated to CIUEM through a series of short contracts and work plans. It reported to UNESCO on all activities. CIUEM was selected because it was already engaged in telecentre projects and had technical skills that could provide a starting-point for CD-ROM production. CIUEM was responsible for working with the Manhiça Telecentre staff, the local committee and the local team of volunteers. It carried out the needs assessment, organized workshops, provided local technical support and back-up, and purchased and delivered equipment. CIUEM also organized technical training sessions in Manhiça and Maputo, edited the content developed by the Manhiça team, and was responsible for technical production of the CD-ROM, which involved training its own staff.

The key local partner, the Manhiça Telecentre, provided a base for the volunteer project team, including space, equipment, communications, management of funds and materials, and coordination of activities. The telecentre staff had the local knowledge required to organize the first workshop and involve potential participants in the activities. Although the telecentre provided basic computer training to all local team members, the most important precondition was the local interest and enthusiasm towards the initiative.

Under contract to UNESCO, Concept Interactive provided technical assistance through a combination of training workshops for the whole group (CIUEM and Manhiça), back-up visits, and on-line assistance to the technical team. The training sessions constituted milestones for the project, and gave the team direction and confidence.

Counterparts of the initiative in South Africa
Three main counterparts were involved in the project in South Africa: The UNESCO team, the Alexsan Kopano Educational Trust (Resource Centre), and the technical partner, Naled3d Factory.

While the UNESCO team took on similar project management responsibilities as in Mozambique, the Alexsan Kopano Trust coordinated the technical partner’s interventions, provided links to youth groups in the community through its Resource Centre services, and facilitated the involvement of additional resource persons for research and training through, for instance, Wits University.

The Alexsan Kopano Educational Trust provides daily management of the Resource Centre. Based on its long experience in project management, the trust took a central role in organizing the project. Scheduling of the counterparts’ contributions was very specific, with little overlap in time, because each counterpart was selected and involved according to the skills and knowledge needed to complete specific tasks.
At the beginning of the project, the Alexsan Resource Centre was responsible for organizing the needs assessment and for involving youth groups in identifying the content. At the end, it was responsible for involving youth in testing and validating the CD-ROM. The Resource Centre was also responsible for editing the content and producing a video on the project for the reference kit. It made media briefings and promoted the launching of the CD-ROM. Additionally, it was in touch with public institutions and other resource centres, which were interested in both the final CD-ROM and the approach used in the project.

Naledi3d Factory handled the production phase and all technical aspects of the project. This counterpart was involved in four areas: 1) a community planning workshop, where the topics and approaches for the application were developed; 2) analysis, planning, system design and production of the application; 3) validating and revising the application and; 4) training in use of the application. It also made good use of the project to train a student in programming and simulation. Naledi3d was involved because it has been involved in other ICT learning projects and has for several years promoted ICT learning to serve community development (see textbox in III.3: Rural Hygiene in Africa).
III.2: Identifying a Community

If the ICT Learning Initiative stems directly from the community, it already has a sound basis with motivated and committed community members. In this case, identifying the community is naturally superfluous. However, if a community, or several, must be identified for an ICT learning initiative, the criteria for selection will vary from project to project, and are important for the success of further activities. The community centre, its history, equipment and environment, and of course the human element, are important too.

a. The basic criteria

To host an ICT learning initiative, a community will generally require a convenient telecentre, resource centre, or community centre to provide the framework for the initiative. Apart from physical infrastructure and equipment (computers, electricity,....), the centre should be assessed for management and traditions of transparent decision-making, so that the initiative has a sound basis. Its activities and general role in the community should also be examined for existing or potential assets as a pool for community development (III.1.b: Counterpart Arrangements).

A second step is to gauge the centre and community's level of interest in and understanding of ICT learning initiatives. This is one of the mobilizing activities that the initiative should start with to ensure participation (III.3: Mobilizing the Community). An initial grasp of community needs and issues is crucial for selecting communities that would both benefit from, and provide a good basis for, an ICT learning initiative.

b. Establishing a community and centre profile

A community profile helps place the initiative in an overall development context. Whether the community was selected or the initiative stems from it, a community profile of general facts and figures, as well as special characteristics, should be completed before launching the Initiative. At a later stage, this can help to assess the relevance of proposed themes (III.4: Selecting a Topic), as well as help to orient and focus appropriate gender strategies for the initiative (IV.1: Applying a Gender Perspective).

Similarly, a brief profile of the tele- or resource centre can be useful for measuring its credibility and role in the community. It can also help identify the centre's strengths and weaknesses in general and take stock of centre activities before and after the ICT Learning Initiative. This is interesting when assessing whether the initiative made a difference in the centre's activities and outreach. The initial community and centre profiles can thus serve as baselines both before the initiative, and for evaluation at the end (IV.4: Evaluation).

Establishing the community profile should not be a cumbersome process. It can be done in a one- to two-hour question/answer session with a group of community members who have a fair knowledge of the community. The telecentre profile can be done with the help of the manager and a small group of regular users. If the community and centre profiles are part of a broader needs assessment, the identified issues can be explored and analyzed further, slightly extending the exercise (III.4: Selecting a Topic).
The questions in the first box below are to help guide the community profile; the questions in the second box concern a centre profile. These combine fact-and-figure with subjective questions: while accurate data tells a lot about a community, a snapshot of how people view their community, and what seems most important to them is also interesting.

The questions thus do not look exclusively for objective data, but seek opinions and issues. Not all questions need to be answered to construct a complete profile. One can pick and choose relevant questions for the community, as well as get inspiration for formulating new ones in order to reach issues that concisely describe the specificity of the community.

### Questions for establishing a community profile

#### Geography:
- In which province/district is the community located?
- How far away is the nearest larger agglomeration?
- How are the transport facilities?
- How many people live there?
- What languages are most spoken? By men? Women?

#### Education:
- How many primary schools and secondary schools exist in the community?
- What is the enrolment rate in primary school? Secondary school?
- What are dropout and repetition rates for boys and girls?
- What percentage of the students are orphans?
- What is the literacy rate for women? For men?
- What kinds of non-formal education programmes exist?
- What and how do people learn outside formal and non-formal programmes?

#### Health:
- What are the major health problems in the community?
- What is the average age? Among men? Among women?
- Does the community have access to a hospital or a public clinic?

#### Social issues:
- What are the major income-generating activities? For men? For women?
- What are the major social issues perceived by the young? Old? Men? Women?
- What are the religions and beliefs in the community?
- What is the typical household structure? Are many headed by females?
- How many orphans are in the community?
- Who takes decisions in a family?

#### Development:
- What are the major public institutions in the community?
- What are the general characteristics of local governance structures?
- Who takes decisions in the community? In what modes?
- What kind of civil society organizations exist in the community?
- Who are the major development partners in the community?
- Which development areas receive most attention? Which are neglected?
- What are the main tensions (political or other) in the community?

#### Information:
- Who uses written communication and for what purpose?
- What kind of information is available in the community?
- How many libraries exist in the community, including school libraries?
- How many bookshops or book outlets exist in the community?
- How many newspapers are sold in the community?
- Who owns/has access to radio and TV? Public/private? Women/men?
- Do women use ICTs differently from men?
- How many Internet providers and access points are present in the community?
Questions for establishing the profile of a tele- or resource centre

<table>
<thead>
<tr>
<th>History:</th>
<th></th>
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<tbody>
<tr>
<td>• When was the centre established?</td>
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<tr>
<td>• Who established it and for what purpose?</td>
<td></td>
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<tr>
<td>• How has the centre developed since its inception (e.g. facilities, capabilities)?</td>
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<tr>
<td>• Where is it located in relation to the community it serves?</td>
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<tr>
<td>• Has the community helped define the centre’s mission?</td>
<td></td>
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<tr>
<td>Capacity:</td>
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<tr>
<td>• How many employees does the centre have? How many volunteers?</td>
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<tr>
<td>• How many computers are there? What kind? Old, new, recycled?</td>
<td></td>
</tr>
<tr>
<td>• Do all the computers have Internet access? What kind (satellite, wireless, phone)?</td>
<td></td>
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<tr>
<td>• Do the computers have CD-ROM players?</td>
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<tr>
<td>• What other equipment does the centre have?</td>
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<tr>
<td>• How big is the centre in floor space?</td>
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<tr>
<td>• How many users come to the Telecentre daily? Men? Women?</td>
<td></td>
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<tr>
<td>• Is the Telecentre secure against theft?</td>
<td></td>
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<tr>
<td>General services:</td>
<td></td>
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<tr>
<td>• What services does the telecentre provide?</td>
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<tr>
<td>• Which services are most popular?</td>
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<tr>
<td>• What are the modalities for Internet connection for telecentre users?</td>
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<tr>
<td>• What computer training does the telecentre offer? Kind? Level?</td>
<td></td>
</tr>
<tr>
<td>• Other training?</td>
<td></td>
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<tr>
<td>• How many people does the telecentre train annually?</td>
<td></td>
</tr>
<tr>
<td>• Does the centre have a library?</td>
<td></td>
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<tr>
<td>Management:</td>
<td></td>
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<tr>
<td>• How is the management of the centre organized?</td>
<td></td>
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<tr>
<td>• How is the community involved in the management?</td>
<td></td>
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<tr>
<td>• Does the telecentre have its own development strategy?</td>
<td></td>
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<tr>
<td>• Who takes the decisions concerning the telecentre and how?</td>
<td></td>
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<tr>
<td>• Does the centre keep statistical records on number of visitors, services used etc.?</td>
<td></td>
</tr>
<tr>
<td>• How can the leadership dynamics be described?</td>
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<tr>
<td>• How is the centre financed?</td>
<td></td>
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<tr>
<td>• Is the centre mobilizing external funding to support its own development?</td>
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<tr>
<td>Community development:</td>
<td></td>
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<tr>
<td>• What are the links to other institutions and organizations in the community?</td>
<td></td>
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<tr>
<td>• What are the links between the centre and education programmes in particular?</td>
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<tr>
<td>• What is the role of the centre in national and local events?</td>
<td></td>
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<tr>
<td>• Does the centre have connections to similar centres in the region/country?</td>
<td></td>
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<tr>
<td>• Does the centre organize or host activities other than ICT-based ones?</td>
<td></td>
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<tr>
<td>• Does the centre lead innovative initiatives for the community?</td>
<td></td>
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<tr>
<td>• Who have been the partners of the centre (support in funds and in kinds)?</td>
<td></td>
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<tr>
<td>• How do telecentre users perceive the centre?</td>
<td></td>
</tr>
<tr>
<td>• How is the ownership feeling of the centre in the community?</td>
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</tbody>
</table>
Country Examples

The following examples outline the profiles of the two communities where the pilot ICT Learning Initiative was implemented. As the profiles illustrate, the communities and their centres differ greatly. The centre in South Africa is in a semi-urban area with a long history and a wealth of activities, and can be qualified as a true multi-purpose community centre. The Telecentre in Mozambique serves a rural area, is relatively new, and its services are gradually expanding from traditional telecentre activities.

Profile of the Manhiça community and its Telecentre: Mozambique

Manhiça is a district capital about 80 km north of Maputo, where the national highway from Maputo crosses the Nkomati River. The town is a busy traffic junction for people and goods. The local telecentre is at the main road by popular roadside rest places and restaurants.

The Telecentre of Manhiça, established in 1999 with the support of IDRC, UNESCO and the Centre for Information and Communication at the University Eduardo Mondlane (CIUEM), has developed into a dynamic centre with a full-time manager. The local management committee (CAL) has representatives from all major governmental and non-governmental stakeholders in the community, from youth organizations and women’s groups to local council representatives, schools and cultural/religious groups.

Services and equipment: The Telecentre has four PCs for public use and one for administration, an Internet hub for Internet sharing, a telephone modem, a photocopier, a telephone, a fax machine, and a very modest library. It offers basic computer courses, photocopying, telephone and fax services, access to computers and Internet, as well as document binding services. The town of Manhiça has a repeater station for microwave communication, which should guarantee good phone lines. A suitcase community radio station at the telecentre has been broadcasting since August 2003.

The telecentre serves some 100 users per day, but is not yet financially or technically sustainable. Prices charged for Internet access are below cost. The CIUEM team services the PCs every three weeks, provides emergency subsidies for the centre’s phone bills, and plans to install a leased line in Manhiça to reduce costs and increase the speed of service. Sustainability is a main concern, but no viable solution has been found. The small size of the Telecentre building is also a growing concern. The local management committee is discussing solutions with different partners; it may move to another building in town.

Gender divide of users: There is a gender-divide in the use of different services: girls and women mainly use the telephone, while boys are the main computer users. Girls tend not to complete computer courses, a problem that the local management committee has not yet been able to tackle.

Educational institutions: Manhiça has five primary schools and one secondary school. The language of instruction is Portuguese, while the local languages (Shangaan and Ronga) are widely spoken and used. There is one teacher training college and free literacy programmes are offered for adults, especially women.

The Telecentre has signed agreements with the local secondary school and the teacher training college to compile information on selected topics and prepare a weekly news-wall with information downloaded from the Internet. The agreement includes providing an e-mail account and arrangements for teachers to develop worksheets for their classes. So far, the telecentre is not used to support literacy or other non-formal education programmes, although the CAL has identified this as a possible activity.
Youth: Two youth groups engage in cultural activities in Manhiça, one supported by the governing party (FRELIMO) and one created by secondary school students. The secondary school group has experience in theatre, and uses the telecentre to write plays and to design, print and photocopy their leaflets. So far, the telecentre is not involved in specific youth programmes or activities.

Additional characteristics of the community: The main sources of income are based on agriculture, sugar cane production in particular, and informal trade. Many males are migrant workers in South Africa. Women tend to be heads of households and in charge of income-generating activities.

A large majority of the community is religious. Catholics are the largest religious group, Muslims the second largest. Manhiça faces many of the problems typical for small towns in Southern Africa, such as unemployment, malaria, HIV/AIDS, lack of relevant learning opportunities, illiteracy, male migration, and lack of access to information and communication facilities.

Profile of Alexandra and its Resource Centre: South Africa

Alexandra Township lies 13 km northeast of the centre of Johannesburg and covers 7.6 km². Of the 350,000 – 500,000 inhabitants, 70% are under 35 years old and 65% are unemployed. The average family has five members and many are headed by single parents. The language and cultural backgrounds are very diverse, Zulu being the main language (30%).

There is a great need for housing, infrastructure, toilet facilities and renewal of the sewage system. The provincial government in 2002 initiated an urban renewal project of 1.3 billion Rands (about US$120 million) to improve living conditions in Alexandra.

Education: Alexandra has 13 primary schools, five secondary schools, and one technical college. Some 49,000 students are enrolled in primary school, but 20,000 school-age children remain unenrolled. The primary schools use a mother tongue for instruction, and gradually introduce English. Each classroom contains diverse age groups due to repeating and returning students. Some 50% of the population is illiterate. Literacy classes are offered at the Resource Centre and the Catholic School.

Alexsan Kopano Resource Centre began in 1986 as a project within the community’s effort to initiate community-led development. It kept growing, and officially opened as a multi-purpose community centre in 1992. Today it has 5,000 to 10,000 visits per month. In addition to a significant volunteer base, it has 25 employees: five management staff, four computer trainers, three youth desk employees, two in administration, five in cleaning and maintenance, and six in security. The Educational Trust manages general administration and programmes, and the local government sponsors 50% of facility maintenance.

The centre has been very successful compared to similar centres in the region. One reason for this is the strong sense of community ownership. The community has been involved in all aspects of its development from conceptualization to current activities. Theft, a common problem for such centres, has never been a serious problem. The Alexsan Kopano Resource Centre has activities in several areas:

The Youth Development Desk focuses on entrepreneurship and creating jobs for youth. It provides capacity-building through training in life skills, carpentry, building, welding, hospitality, mechanics and computer literacy. It also assists in starting up businesses and preparing CVs. Each day 25-35 people visit the Youth Desk for inquiries and information. Each week a job club meets to assist job seekers, who study advertisements and are allowed two telephone calls each from the centre.
The Women's Cafe Programme has some 15 regular members aged 17-35 who meet every week at the
centre to discuss issues and exchange information.

Three Computer Studios: Two are used for the eight-week computer skills training and business
fundamentals course, and one is rented out to a private agency. The computer training includes basic,
intermediate, and advanced levels, and the latter includes training on email and Internet. The course fee
of 900 Rands (US$80) includes study materials.

The Alexsan Community Library provides, free of charge, six Pentium II computers connected to the
Internet via one shared modem and telephone line, Microsoft Office 98, plus TV and video facilities. The
holdings (25,000 books in the adult and children's sections) depend on donations. Members may borrow
two books at a time for two weeks. Some 700-800 people visit the library per month.

ALXFM: Community Radio broadcasts music and community news mainly, 24 hours a day, to some
200,000 listeners. Most radio staff is trained by radio stations outside the community. A management team
plans the programmes, with a producer responsible for the entire programme.

Space for community activities is used by many groups: e.g., the Department of Welfare distributes
pensions, theatre groups practice, and churches hold services. Four rooms are available for meetings and
training. In addition, the centre rents space to 11 entities that provide community services, including a
health clinic, the Chamber of Commerce, and political parties.
III.3: Mobilizing the Community

A key prerequisite for project success is to ensure that the stakeholders are involved from beginning to end. Their involvement must start with the conception phase, carry through the implementation and evaluation phases, and include a central role in management and general decision-making. This will promote a sense of ownership among project participants and ensure that the project meets the community’s needs. To keep community members mobilized, they must clearly understand what they are going into, their roles in community development, and how the ICT Learning Initiative can benefit them.

Some project phases tend to be better than others for stimulating community involvement. The ideas below on how to mobilize the wider community focus on the initial stage, as a means to engage broad participation and reach those who might not be interested at first.

a. Breaking the first barriers of dialogue about ICTs

The first way to mobilize broader community involvement is to show and explain ICT applications and what they can serve. This approach has succeeded in open community workshops with invitations extended to all interested persons regardless of age and gender, as well as community institutions, groups and associations. With publicity to ensure broad participation, these can attract potentially interested parties and build support among key community figures and institutions.

1. Demystify ICTs: The workshop can help dispel fears and misconceptions about new technologies. Many community members, organizations, and institutions may have never used the local tele- or resource centre. Therefore, in addition to introducing ICTs and inviting participation in the ICT initiative, attendees should be invited to use the centre. If possible, the workshop should occur at or near the centre and include a brief introduction to the centre, its capacities and services.

Typically, many participants lack experience with computers and thus find them abstract and removed from daily life. This often generates fear of using computers. To bridge this gap, it is important to explain and discuss the purposes of computers, the Internet and CD-ROMs.

Similarly, it is worth explaining how CD-ROMs differ from other means of communication and technologies. One might point out their advantages compared to the Internet, a diskette, a computer, a newspaper, or a book (see box below: The advantages of CD-ROM compared to other means of communication). Sharing basic information in larger meetings will make those unfamiliar with computers more at ease and break the first barrier in the dialogue about ICTs. Visual supplements will help convey the purposes this technology can serve, and its limitations.

2. Adapt the purpose: While examples of content can help build understanding, the uses of ICTs should be mentioned for the community’s chosen purposes, such as local development, pleasure or lifelong learning. Local content could contain information in many areas:
3. View examples: In introducing ICT applications, the central point is to show selected examples of CD-ROMs. This can be done through show-cast projections of a few applications developed by (or with) local communities on a big screen or light-coloured wall. These examples should illustrate how ICTs can address needs of the community or individual members, and how this has been done in other communities. A few local-content applications now exist (see textbox below: Examples of CD-ROMs developed for community learning). The idea is to choose examples that give a broad idea of issues and possibilities in application development.

As with concrete demonstrations in general, demonstrating CD-ROMs has the benefit of stimulating curiosity and interaction. It is essential to show that a well-conceived CD-ROM can be handled by anyone, regardless of educational or skill level, so demonstrations should be made by local community members, men and women, girls and boys. Presentations should show how to browse and access the CD-ROMs' content, preferably with various CD-ROMs that require different techniques. Each demonstration could end with the presenter's opinion on the CD-ROM's ease of use.

It is important to keep the presentation realistic. High-technology solutions and stunning or breath-taking presentations should be avoided if they cannot be applied in the community project. Showing what communities in similar ICT learning initiatives produced gives a more realistic picture of what is possible and helps base the project on community demand.

4. Discuss the relevance: After the first introduction, it is natural to set up a dialogue among the participants on what topics are relevant to the community. Choosing a topic that is relevant to the individual and the community is a pillar for mobilizing initial participation.

After this first brainstorming on possible topics for the project, a final choice may be reached immediately through prioritizing or voting. However, to ensure that the choice responds to the general community and not just the participants at the first workshop, it is usually advisable to follow up with a broader needs assessment, or undertake such an exercise prior to the initial workshop. The processes for participatory needs assessments and validating the results are covered in detail in the next chapter - III.4: Selecting a Topic.

5. Level expectations: The community workshop should inform participants on what to expect from the initiative, who is behind it, and the idea of the initiative. The participants, in turn, should express their opinions and expectations on the initiative and the future ICT application. A quick round allowing each participant to talk will give a snapshot of the initial expectations, ideas, fears, challenges, etc.

From the outset, it is important to prevent unrealistic expectations for Information and Communication Technologies, which can lead to disappointment and disillusionment towards the entire project. ICTs cannot solve all problems. They are simply efficient means of communication that can facilitate learning and interaction. It should also be stressed that ICTs are not applicable in all domains. For instance, traditional ways of learning are in some cases more effective. Realistic expectations are essential for a sound basis for the initiative.

Step-by-Step Guide for ICT Learning Initiatives
By Janne Kjaersgaard Perrier, June 2004
b. During implementation: - keeping the momentum

A mobilized community and committed team members provide the best support for an initiative to get off the ground. The challenge is to keep the sense of mobilization alive in the longer term in an endeavour that is challenging, innovative, and not always easy. Ideas for ensuring continued involvement of team members and the broader community during various project stages are listed below. Some points are developed further in later chapters, as indicated.

Team members can be mobilized in many ways:

- **Training activities** are generally the most mobilizing aspect for volunteers. Training provides direct and immediate benefits, even though it is not remunerated. It also helps ensure skills transfer and continuity in similar initiatives. Training can be more or less intensive, and can occur at various levels. It should be adapted to the project's needs and to different stakeholders according to their roles in the initiative (IV.2: Integrating Capacity-building).

- Community involvement in **management** is essential. Even if an institution outside the community is leading the initiative, community members should be at the heart of major decisions and involved in assigning specific tasks.

- A realistic **schedule** can build motivation if it is tight enough to maintain momentum between activities, and loose enough to allow for unavoidable delays. The team should revise and endorse the schedule regularly, keeping in mind that repeated postponements can undermine motivation.

- Clear **milestones** should be set to measure the project's progress, and celebrated with the team when they are reached.

- After intensive group work or community workshops, **social events** such as short informal gatherings with food and drink strengthen the ties among team and community members.

There are also many ways to mobilize the broader community:

- **Listening** to the opinions of individual community members is powerful motivation. People who feel that they are heard are more willing to share their opinions next time.

- Regular **feedback** to the community through workshops at different project stages should demonstrate and discuss mid-term and final results, and also explain choices, especially those stemming from the community's suggestions during previous workshops.

- The **needs assessment** should involve the community either through individual interviews and questionnaires, or by organizing small groups for discussions and brainstorming exercises around selected topics (III. 4. Selecting a Topic).

- Involve the community in **data collection**. With pertinent subjects, community members can provide information, and relevant organizations can verify its accuracy (III.6. Content Development). As verification sometimes requires considerable time, a partnership agreement should be established beforehand (III.1. Counterpart Arrangements).

- Connect the **community radio** to the ICT initiative by hosting discussions on the selected topic(s) with a facilitator and community members as radio guests. Community radio can also publicize community workshops and telecentre services in general.
- Call for **volunteers to test** the prototype application. This concrete and rewarding step requires the participation of potential users. Special user groups can also be selected from NGOs and associations whose members may be key users of the ICT application (III. 9. Testing and validation).

c. After production: - Reaching out

The project's life truly begins after the application is developed. Its success will depend on how much the application is used, and whether it makes a difference to individual users and the general community. Mobilizing the broader community at this stage is therefore of utmost importance for the success of the ICT application, and for all of the previous efforts to be worthwhile in the longer term. This mobilization depends largely on how the ICT application is promoted and disseminated by the centre and its partners, locally and nationally. This issue is covered in Part III.10: Dissemination and Promotion.

**SUMMARY:**
- The community should be involved in design, implementation and evaluation.
- Open community workshops of projections and illustrations should be organized to mobilize the broader community.
- The open community workshop can also bring new users to the telecentre by promoting and explaining its services.
- The expectations of all parties involved should be clear before starting.
- The community radio can be used in content development to reach out to community members who do not use the centre.
- Participation should not be assumed: the team and the broader community should be stimulated continuously.
- Training activities, in particular, should be integrated to motivate team members and make it a true learning initiative.

**Project Examples**

The first textbox below outlines the advantages of CD-ROMs versus other means of communication and technologies. It is an extract from a presentation made in Manhiça, Mozambique, during the first community workshop, which was organized to introduce the initiative to the broader community and mobilize youth and others to participate.

The second textbox below is an extract from a survey on existing CD-ROMs. The survey was developed for community learning and local development, and undertaken by UNESCO at the initial stage of the project to assess progress in this area.
The advantages of a CD-ROM compared to other technologies

It is different from the Internet and Websites, because:
• it does not require communication costs via telephone or cable;
• it does not take time to download information;
• it contains much information which is quickly available on-screen.

It is different from a regular diskette, because:
• it has the capacity of approximately 450 diskettes;
• the files are better protected;
• it is easier to hold large amounts of information.

It is different from a computer, because:
• it is easier to transport a CD-ROM than a computer with files;
• it takes up little space;

It is different from newspapers and journals, because:
• it can contain various types of information at the same time, e.g., on agriculture, sports and health;
• it can be used by several people without losing its quality;
• it is easy to carry a lot of information in a small volume.

It is different from a book, because:
• It can contain about 100 books of approximately 1000 pages each;
• It is easier to consult and search for information on a CD-ROM than among several books;
• It is less expensive for the information it can contain.

Examples of CD-ROMs developed for community learning

The CD-ROMs below are either available on-line or can be requested through the contacts indicated. Together with the two applications from South Africa and Mozambique, included in the Reference Kit, they can be projected at community workshops as examples of products made by other ICT learning initiatives. They can thereby provide the participants with a first impression of what ICT learning initiatives are about and even assist new ICT learning initiatives in selecting the appropriate technology and method for application development.

Over 25 applications ranging from agricultural databases for livestock and crop production to banking software for micro-credit operations were identified during the UNESCO survey. The six CD-ROMs below were selected to illustrate some ‘good practices’, produced in and for contexts in Africa and Latin America. The review considered aspects such as:

• Level of literacy required;
• Use of local languages;
• Use of context specific sounds and images;
• Possibility to learn individually and collectively;
• Types of technology used;
• Interactivity and user group(s).

The examples illustrate various methods of electronic information and training modalities, such as web-based, interactive, 3D, graphical/audio/text-based applications, including the use of local languages, images and traditions.

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Step-by-Step Guide for ICT Learning Initiatives
By Janne Kjaersgaard Perrier, June 2004
## Enlace Quiche Project

<table>
<thead>
<tr>
<th>Regional focus</th>
<th>Santa Cruz de Quiché, Guatemala.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages</td>
<td>Spanish (Castellano), K’iché, Ixhil.</td>
</tr>
<tr>
<td>Target groups/</td>
<td>Pre- and in-service teachers.</td>
</tr>
<tr>
<td>literacy levels</td>
<td>Literacy: literate people.</td>
</tr>
<tr>
<td>Topics/themes</td>
<td>Education, culture.</td>
</tr>
<tr>
<td>Aim and content of</td>
<td>The Enlace Quiche Project created educational technology centres in four teacher-training schools in Guatemala, to assist in the preservation and learning of two Mayan languages, K’iche and Ixhil. The objectives were to:</td>
</tr>
<tr>
<td>the applications</td>
<td>- Incorporate the use of technology tools into the learning process;</td>
</tr>
<tr>
<td></td>
<td>- Facilitate Mayan language learning, spoken and written;</td>
</tr>
<tr>
<td></td>
<td>- Enable pre-service teachers to create instructional materials;</td>
</tr>
<tr>
<td></td>
<td>- Strengthen Mayan language and cultural content in school curricula;</td>
</tr>
<tr>
<td></td>
<td>- Provide access to ICTs for the community.</td>
</tr>
</tbody>
</table>

The four partner schools carried out various material creation projects that unite Mayan language and culture with technology. The resulting five CD-ROMs and four books contain stories written and illustrated by the students.

**CD-ROM 1**: Florezcan las palabras de los hombres de maz: This contains audio files of stories based on local and oral tradition. The CD-ROM is packaged with a teacher’s guide for enhancing activities.

**CD-ROM 2**: El pensamiento de nuestros abuelos: This contains a series of multimedia presentations created by the students. It gathers a wealth of historical, cultural and linguistic information about the four towns that participated in the project. It also includes the four storybooks in PDF format.

**CD-ROM 3**: Engrandezcamos nuestro pensamiento: This is an interactive CD-ROM geared towards K’iche and Ixhil speakers, who need to improve their ability to read and write the language. A teacher’s guide is also included on how to integrate this CD-ROM into Mayan language courses.

**CD-ROM 4**: Así se ilustra mi palabra: This CD-ROM is a collection of 3000 Mayan clip art images. It can be used as a teaching tool and to support material creation.

**CD-ROM 5**: Conociendo nuestro idioma: This CD-ROM includes HTML versions of six books that support bilingual education. It shows that the CD-ROM can make a large quantities of information available inexpensively.

**Technology**: • HTML (for the books in CD-ROM n°5); • Database (for CD-ROM n°4); • Visual Basic (for the language games and exercises in CD-ROM n°3); • Sound editor (for CD-ROM n°1, n°2, n°3, n°5); • Microsoft Power Point (for CD-ROM n°2); • Images (CD-ROM n°2, n°3, n°4, n°5).

**Self/ group learning**: Can be used individually or during group working sessions.

## ALMA- African Language Material Archives

<table>
<thead>
<tr>
<th>Regional focus</th>
<th>Dakar, Senegal, West Africa.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages</td>
<td>Senegambian languages: Wolof, Pulaar, and Mandinka. Other: English, French.</td>
</tr>
</tbody>
</table>

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*Step-by-Step Guide for ICT Learning Initiatives*

*By Janne Kjaersgaard Perrier, June 2004*
| **Target groups and literacy levels** | • School and university students.  
• Non-formal education and literacy programs for youth.  
• Non-African students and scholars of African languages, teachers of African languages. |
| --- | --- |
| **Topics/ themes** | • Education, health/sanity, literature, business from a wide range of materials:  
• Post-literacy materials (e.g., booklets on small enterprise activities, health, human rights, etc.).  
• Newspapers for (and sometimes edited by) the newly literate.  
• Religious materials (e.g., texts from the Koran and the Bible).  
• Poetry.  
• Information on AIDS awareness and prevention.  
• Folk tales and epics.  
• African language translations of the Universal Declaration of Human Rights, articles on oral history and culture. |
| **Aim and content** | This application is a multilingual digital library of electronic West African publications. It aims at increasing the dissemination of and access to materials published in indigenous African languages, thereby supporting the retention of literacy in Africa.  
• For each publication a first introductory page is available, presenting a brief bibliographic entry and three summaries.  
• The database of publications can be searched by titles, authors, languages and through the use of keywords (12 documents in Wolof, 10 in Pulaar and 10 in Mandinka).  
• It clearly demonstrates that African languages have an important role to play in responding to regional information needs. Its greatest benefit is probably to inspire and encourage similar and even more ambitious projects. |
| **Technology** | • Developed with File Maker Pro 5.5.  
• Adobe Acrobat and File Maker Pro plug in are included in the application.  
• Publications were scanned and are presented in PDF format.  
ALMA is also available on the Internet on the AODL Website: aiys.org/aodl |
| **Individual / group learning** | This application is suitable for individual consultation, but teachers could incorporate it as a learning resource in the lessons, for instance as a handout. |
| **Developers/ Contacts** | • **WARC**  
West African Research Centre, Senegal:  
director@mail.ucad.sn Website: warc-croa.org  
• **UNESCO**  
Information Society Division:  
j.rose@unesco.org Website: unesco.org/webworld  
• **AODL**  
American Overseas Digital Library, USA  
Website: aiys.org  
• **CAORC**  
Council of American Overseas Research Centre, USA:  
caorc@caorc.si.edu Website: caorc.org |
## Digital Development Anthologies: 
**East African Development Library**

| **Regional focus** | Sahel: Burkina Faso, Chad, Guinea, Mali, Mauritania, Niger, Senegal. 
East Africa: Kenya, Tanzania, Uganda. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Languages</strong></td>
<td>Sahelian documents: French. Eastern African documents: English or Swahili.</td>
</tr>
</tbody>
</table>
| **Target groups/ literacy levels** | Information centres serving grass-roots users, public libraries, multi-purpose community telecentres, community multimedia centres, media centres, direct use, librarians and information officers. 
Literacy levels: Some documents are accessible to basic readers, but most of them target readers at the lower secondary level. |
| **Topics/ themes** | Education, business, agriculture, governance, health/ sanity, environment, livelihoods. |
| **Aim and content of the applications** | These anthologies present electronic publications focusing on development issues. They aim to facilitate access to public-domain information in sub-Saharan African countries, where this information is neither widely available nor well distributed. 
- The documents were collected at national and international levels, from national publishers in the public service or commercial sectors (governmental information, scientific and technical information, cultural heritage and public archives). 
- The applications present the information under a web browser interface combined with powerful search facilities. The topics can be searched by keyword, subject, title (alphabetical order), language (for the East African Library only), organization, country. 
- The user just needs to click on a book to read it. The table of contents is then displayed, so that the user can easily navigate through the headings and subheadings, and then access to the full text. The information can also be printed. 
- A user guide is available to get started in 5 minutes. |
| **Technology**     | The applications have been developed with: 
- Greenstone Digital Library Software (open source software). 
- HTML. 
- Images. 
Netscape browser is included in the package along with the Greenstone application. The applications can be used directly from the CD-ROM or copied to the hard disk. |
| **Individual/ group learning** | This application can be used individually or on a multi-user network. The applications are intended for users that are familiar with web browser environments, but could also be used as an introduction to computers. |
| **Developers/ contacts** | **UNESCO**  
Information Society Division:  
j.rose@unesco.org  
Website: unesco.org/webworld  
**New Zealand Digital Library Software**  
University of Waikato (Greenstone software), New Zealand:  
lhw@rata.cs.nz  or  greenstone@cs.waikato.ac.nz  
**Human Info NGO**  
Antwerp, Belgium (digitisation and library building):  
mloots@humaninfo.org  
Website: humaninfo.org |
<table>
<thead>
<tr>
<th><strong>Electronic Library Series</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional focus</strong></td>
</tr>
<tr>
<td><strong>Languages</strong></td>
</tr>
<tr>
<td><strong>Target groups/ literacy levels</strong></td>
</tr>
<tr>
<td><strong>Topics/ themes</strong></td>
</tr>
</tbody>
</table>
| **Aim and content of the applications** | The IICBA Electronic Library Series have been developed to provide additional resources for teachers, educators of non-formal education and teacher trainers in Africa, in order to improve the quality of the teaching and learning processes.  
- The Primary School Mathematics and Science Electronic Libraries aim to assist teachers, educators of non-formal education and teacher trainers to improve the teaching and learning of mathematics and science in primary schools.  
- It introduces and improves the use of technology in schools and teacher training institutes, updating teachers' training in computer technology.  
- It encourages the establishment of networks for disseminating the electronic library series.  
The application provides practical materials, lessons, research and ideas, divided into five sections:  
1. Articles and texts on Maths and Science, with listings searchable by topic or methodology.  
2. Lesson plans, with listings searchable by topic, methodology or grade.  
3. Practical guide to education: This discusses basic educational methodologies and teaching techniques, including lesson plans and teaching tips. The resources are very useful in all schools, particularly those with limited resources. The materials would be a useful complement to teacher training and for teachers and administrators at the primary level.  
4. Sample test questions: this section groups questions into categories use in classroom evaluations, or as examples of test-question writing.  
5. Frequently asked questions: This is a list of common questions about the Science/ Mathematics Electronic Library Series. |
| **Technology** | HTML.  
The content, largely text-based, is presented in a simple graphic environment, and does not require any particular computer skills to be used. The Mathematics and Science series are also available on-line: unesco-iicba.org |
| **Individual/group learning** | This application can be used individually and also in a multi-user network system, depending on the educational purpose. |
| **Developers/contacts** | UNESCO-IICBA  
International Institute for Capacity Building in Africa, Addis Ababa, Ethiopia: f.chung@unesco-iccba.org  
Website: unesco-iccba.org |
### Rural Hygiene in Africa: Nakaseke Virtual Reality

<table>
<thead>
<tr>
<th><strong>Regional focus</strong></th>
<th>Nakaseke, Uganda.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Languages</strong></td>
<td>English, Luganda</td>
</tr>
<tr>
<td><strong>Target groups/ literacy levels</strong></td>
<td>Children and youth.</td>
</tr>
<tr>
<td></td>
<td>Literacy: Illiterate and literate people.</td>
</tr>
<tr>
<td><strong>Topics/themes</strong></td>
<td>Water sanitation.</td>
</tr>
<tr>
<td><strong>Aim and content of the applications</strong></td>
<td>This is a computer-based training and awareness-raising tool promoting water sanitation practice for rural communities in East Africa.</td>
</tr>
<tr>
<td></td>
<td>• It simulates a traditional homestead in Nakaseke with houses, bathing areas, kitchens, pit latrines, water collection, and domestic animals in a 3-D interactive environment.</td>
</tr>
<tr>
<td></td>
<td>• The user moves in the simulated environment to activate the areas of interest (e.g., the bathing area) and investigates objects (e.g., picks up a fruit).</td>
</tr>
<tr>
<td></td>
<td>When an item is activated, a voice tells the user about good sanitation practices connected to the item. In some cases, video clips show how to perform specific tasks. The images, sounds and local languages enhance the impact of the message.</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>• 3D Studio Max software</td>
</tr>
<tr>
<td></td>
<td>• EON Studio software</td>
</tr>
<tr>
<td></td>
<td>• Video editor</td>
</tr>
<tr>
<td></td>
<td>• Sound editor</td>
</tr>
<tr>
<td></td>
<td>• Text editor</td>
</tr>
<tr>
<td></td>
<td>• HTML editor</td>
</tr>
<tr>
<td>Video footage and sounds were captured with a JVC digital video camera. The application requires at least 100 MB of hard-disk storage space.</td>
<td></td>
</tr>
<tr>
<td><strong>Individual/group learning</strong></td>
<td>The 3-D and multimedia techniques allow individualized, non-linear learning. The application can also be used as a first introduction to computers, as it creates a familiar local environment in images and sounds.</td>
</tr>
<tr>
<td><strong>Developers/contacts</strong></td>
<td>• UNESCO Information Society Division: <a href="mailto:j.rose@unesco.org">j.rose@unesco.org</a> Website: Unesco.org/webworld</td>
</tr>
<tr>
<td></td>
<td>• Naledi 3D Factory <a href="mailto:dlockwood@naledi3d.com">dlockwood@naledi3d.com</a> Website: naledi3d.com</td>
</tr>
<tr>
<td></td>
<td>• ITEK, Institute of Teachers, Kyambogo.</td>
</tr>
<tr>
<td>Regional focus</td>
<td>Uganda.</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Languages</td>
<td>English, Luganda.</td>
</tr>
<tr>
<td>Target groups/literacy levels</td>
<td>Women with minimal education and local or English language fluency.</td>
</tr>
<tr>
<td></td>
<td>Literacy: illiterate and literate people.</td>
</tr>
<tr>
<td>Topics/themes</td>
<td>Small enterprise development.</td>
</tr>
<tr>
<td>Aim and content of the applications</td>
<td>• This CD-ROM responds to the demand for on-line content when rural women gain access to computers.</td>
</tr>
<tr>
<td></td>
<td>• It systematically guides users through the process of establishing small, self-structured businesses, identifying business opportunities and risks within the community, and ways to benefit from the user’s experience.</td>
</tr>
<tr>
<td></td>
<td>• Case histories illustrate various concepts and serve as a launching pad for ideas and discussion.</td>
</tr>
<tr>
<td></td>
<td>• The application is designed as a visual computer book divided into three chapters; the user navigates by pointing and clicking the mouse.</td>
</tr>
<tr>
<td></td>
<td>• The information is presented in cartoons illustrating scenes of everyday life.</td>
</tr>
<tr>
<td></td>
<td>• Illiterate users can follow the application with the help of an audio track that gives the instructions that are written in the illustrations.</td>
</tr>
<tr>
<td></td>
<td>• In the CD-ROM cover is a booklet explaining the structure of the Computer Book, providing the user with a preview of the application. It also lists addresses of groups and organizations in Uganda that might help women find resources for their activities.</td>
</tr>
<tr>
<td>Technology</td>
<td>• Flash</td>
</tr>
<tr>
<td></td>
<td>• Graphics</td>
</tr>
<tr>
<td></td>
<td>• Sound</td>
</tr>
<tr>
<td></td>
<td>The application is available on CD-ROM and on the Internet.</td>
</tr>
<tr>
<td>Websites:</td>
<td>wougnet.org or iwtc.org</td>
</tr>
<tr>
<td>Individual/group learning</td>
<td>The application is intended for a single user, or to animate a group discussion. It could also be a useful introduction to computer technologies.</td>
</tr>
<tr>
<td>Developers/contacts</td>
<td>• International Women’s Tribune Centre (IWTC)</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:Wink@womenink.org">Wink@womenink.org</a></td>
</tr>
<tr>
<td></td>
<td>Websites: iwtc.org or womenink.org</td>
</tr>
<tr>
<td></td>
<td>• International Development Research Centre</td>
</tr>
<tr>
<td></td>
<td>(IDRC/ ESARO):</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:chunja@idrc.org.ke">chunja@idrc.org.ke</a></td>
</tr>
<tr>
<td></td>
<td>Website: idrc.ca/earo</td>
</tr>
</tbody>
</table>
III.4: Selecting a Topic

Closely linked to the previous chapter on mobilizing the community, selecting a topic is the first stage at which the broader community takes an active role in shaping the ICT Learning Initiative to respond to its own needs. A participatory needs assessment is useful for this purpose, because it helps create an open discussion. By analyzing local needs and priorities, it is a means for the community to agree on, and collectively accept, the selected topic. It is important to select the topic carefully, because it determines the usefulness of the ICT application to the community. The ICT application to be developed should be aimed at making ICTs more relevant for community members, attracting more people to the tele- or resource centre, and encouraging them to use ICTs for learning.

a. Assessing information and learning needs

Needs assessments can use various methodologies. They can be more or less comprehensive depending on the context, scope and pre-definitions of the initiative, as well as the available information. They can be limited to the information and learning needs of a smaller group, collected for instance in a group exercise. However, broad participation is key to ensure that the identified needs correspond to the actual needs in the broader community. Most in-depth needs assessments will build on the community and centre profiles for background information, as mentioned in III.2: Identifying a Community. The assessment will extend and analyze the findings, where relevant, to get a full picture of local development issues and the perceptions of community members.

The main objective of the needs assessment is to identify topics that are considered important, but where either a lack of knowledge or a lack of access to information hinders understanding of the issues, as well as the reasons for their importance to the community. This information is necessary to provide a sound basis for a collective, relevant choice of a topic to work on.

b. Methodology

In a broad exercise, the needs assessment addresses information needs as well as a general assessment of ICT use at the community centre, to assess the gap between actual service delivery and the needs of present and potential users.

The following methods and instruments can be used in whole or part to assess the information and learning needs of different groups:

1. Needs of present users: A questionnaire for centre users could seek information on their characteristics, services requested, frequency of use, level of satisfaction, and perceived quality of various services. The centre’s records can provide information about users’ sex, age, and frequency of using each service. The results of the questionnaire should be compiled and synthesized for further analysis.

2. Needs of potential users: A questionnaire for the general public, given to a random sample of people in local gathering places (markets, bus stops, churches, shops, etc.), would aim to
define the information or service needs of potential users and their likelihood of going to the
centre to satisfy these needs. The results should be compiled and synthesized for further analysis.

3. Needs of specific groups: Discussions with focus groups (e.g., women, elders, young school
children, heads of families, health workers, school teachers, etc.) would aim to identify specific
information needs of these groups for formal or non-formal education, within the family, or at
work. These smaller groups can be organized if the initiative has pre-defined target areas and
groups. People can be divided into separate groups by age and sex, which often helps
participants express themselves freely and helps reveal their differences and similarities in
information and learning needs. Notes should be taken during these discussions, and
subsequently be typed and synthesized for further analysis.

4. Needs of public and private sectors: Semi-structured interviews with key informants in local
businesses, institutions and associations, including governmental institutions, schools, public and
private companies, hotels, shops, post offices, banks and NGOs would aim to provide
information about the evolution of telecentre activities. This includes the quality of the services,
the usefulness of the centre for the interviewees' activities, the centre's strengths and weaknesses,
interviewees' information needs, and suggestions. The interviews may also ask if and how the
centre has affected individual or organizational behaviour. The interviews should be conducted
by appointment, at the interviewees' offices, follow predetermined guidelines, and take some
30-60 minutes each. Notes should be taken by the interviewers, and should subsequently be
typed and synthesized for further analysis.

5. Centre activities: Semi-structured interviews following prepared guidelines would seek
telecentre managers' opinions on the current state of centre activities. This includes perceived
trends in the use of services and constraints encountered in daily management. Notes should be
taken by the interviewers, and should subsequently be typed and synthesized for further analysis.

The above approaches will provide a basis for pre-selecting candidate topics according to the
needs of the various target groups, and the results can be shared with the larger community for
validation.

c. Validating the identified needs

It may be convenient to combine the validation and selection of a final topic with the
community workshop introducing ICTs (III.3: Mobilizing the Community), because it is not always
easy to draw many community members together at the same time. In addition, choosing a
topic would give a concrete result to the first community workshop, and help build a sense of
local ownership from the outset of the initiative.

After viewing examples of ICT applications as described in the previous chapter, the participants
at the community workshop can smoothly proceed to the following activities:

- Feedback on the results of the needs assessments;
- Establishment of a prioritized list of topics;
- Selection of the topic for the ICT application.

It is important to encourage every participant to contribute to the discussion on the selection of
the topic. While the examples of ICT applications and the needs assessment will provide a solid
springboard for opening the discussion, it is also important to adopt an approach that stimulates
the active participation and engagement of community members who tend to be silent. This will
lead to a collective agreement on the choices made during the workshop and help avoid
discontent with further activities.
Participation can be increased by using smaller groups led by group facilitators. They should help keep the discussions fluid and constructive, and let each participant express his or her opinions and ideas. The first discussion and exchange on information needs should be through a collective brainstorming inspired by, but not limited to, the results of the needs assessment. After the group exercises, each group should present its short list of topics, for instance five, to the other groups in plenary and explain why these topics have been selected.

Similar or related topics from different groups can be merged to produce a list of prioritized topics that can be voted on. Depending on the number of topics, the first round of votes could allow several votes per participant, preferably half the number of topics. The second and final round could allow one vote per participant.

Selecting the topic for the ICT application marks an important step and effectively launches the ICT Learning Initiative. At this stage, the participants should be asked to volunteer if they are interested in participating, and to suggest the names of other possible team members even if they are not present. They should be asked to indicate their levels of knowledge and specific skills, time availability, etc. This could be done at the end of the workshop, where those interested would sign up and give the details to the organizers. The starting point for volunteering should be interest in participation and/or relevant experience. This would give a fair indication of how many people would support and participate in the initiative. The volunteers should be called for a follow-up gathering to establish the team and specify the topic in more detail.

**SUMMARY:**
- The community should collectively select the topic that it considers most relevant based on a broad, informative assessment of learning and information needs.
- The broader needs assessment should build on the community and centre profiles.
- Participatory communication methodologies should be used to ensure that the selected topic is generally endorsed and accepted.
- One community workshop is sufficient to introduce ICTs to the community and select the topic for their ICT application.
- Immediate follow-up after the first community workshop is needed to keep the momentum.

**Country Examples**
The following examples show how the topics were selected in Mozambique and South Africa. Although the procedures differed, both were based on the principles of the community itself making an informed, participatory, collective choice of a relevant topic.
Selection of the topic ‘employment’ in South Africa

In selecting a topic, the team in South Africa went by the book. First, they compiled a background report on Alexandra Township and its community centre. This detailed the initial community and centre profile, assessing and analyzing the centre's services in information and learning needs. Secondly, they performed a participatory and gender-sensitive needs assessment with focus groups from intended user groups. Finally, a broader community workshop presented and validated the results and selected the final topic.

1. Background report: The background report on the community centre's existing activities provided particularly good insights and overview, including reasons for its successes and failures. It described the centre's role in community development and placed the ICT Learning Initiative in a general development context. Exploring the needs of the users and the general community, it indicated what the new initiative could focus on. It also explained notions that the initiative would work on, such as gender, youth, open communities and lifelong learning, and put the notions into the context of the centre's activities.

2. Participatory needs assessment: The above information provided the basis for a two-part participatory needs assessment with youth groups: 1) focus-group discussions with youth age 12-30 divided into three age categories; and 2) a questionnaire, completed by 137 centre users, which used ranking exercises to prioritize the previously identified information needs. The focus groups were conducted by six facilitators from the community who were specifically trained for the purpose. The result was a short-list of topics: 1) Employment; 2) Life skills; 3) Education; 4) Abuse and crime; 5) Health.

3. Community workshop: The above results were presented at a community workshop during the launch of the ICT Initiative. The workshop also validated the short list of topics and made a final choice of topic through a collective brainstorming where each participant's responses were noted on a flip chart, and then a vote (one per person) determined the topic.

The chosen subject, EMPLOYMENT, is of prime concern for the entire community, as unemployment is extremely high in Alexandra Township. Two thirds of the unemployed are women and one third are men. It was also taken into account that several other identified topics were relevant to employment.

Selection of the topic ‘malaria’ in Mozambique

In Mozambique, the needs assessment was combined with a broader exercise evaluating the telecentre and its services after three years of operation. It addressed information needs and options to develop new services that could contribute to the community, such as community radio and local content development. This occurred at the same time as the workshop launching the ICT Learning Initiative, so the results did not affect the topic selection. However, the exercise provided valuable information on community concerns, particularly of women and youth, and fed into the content-development stage. The combined assessments were also applicable to other projects on the centre's activities, eliminating potential duplicated efforts.

The topic for the ICT application was collectively selected during a broad community workshop with about 75 participants representing the telecentre, local institutions, associations, religious bodies and a broad range of the youth. The process was conducted in various steps:

1. Brainstorming and discussion in three smaller groups to bring up ideas;
2. Selection of each group's priorities;
3. Presentation and merging of the proposals in plenary;
4. Two rounds of voting to select a short list;
5. Final voting.

The groups suggested 40 topics, which were narrowed to 15 in the plenary session. The first round of voting allowed three votes per person, and resulted in a short list of five topics: 1) malaria; 2) HIV/AIDS; 3) cleanliness in the hospitals, schools and the town in general; 4) sugar production; 5) the production and excessive consumption of alcohol. In the final round of voting, with one vote per person, an overwhelming majority selected malaria.

The chosen subject, MALARIA, is of prime concern for the community, as it is the biggest killer disease in the Manhiça district and the country as a whole. The most vulnerable groups are children and pregnant women, so the disease and its consequences particularly affect women.
A good project team does not arise instantly; it must evolve over time through interaction and collaboration. The success of any project, particularly a community learning initiative, depends largely on the nature and composition of the team and how the members cooperate. In the early stages, constructive teamwork can be fostered by sharing decisions on roles and responsibilities, on how to work together, and by clarifying general expectations regarding the initiative.

a. Getting the interested together

While some tasks and responsibilities may already be assigned to counterparts (III.1: Counterpart Arrangements), as much responsibility as possible should now be delegated to the community. The leaders should ask community members and institutions, including the tele- or resource centre, to assume as many technical and management roles and responsibilities as possible, particularly if the initiative aims to produce ICT-based content for community learning while developing the relevant skills within the community.

Immediately after the launching activities (III.3 & III.4), a working session should gather together community members who want to participate in developing the ICT application. ICT initiatives usually involve a wide enough variety of activities that all interested parties in the community should be able to find ways to contribute. Skills that are unavailable in the community, together with necessary back-up, should be handled through counterpart arrangements.

Various interests can motivate and mobilize people to become involved:

- To know more about the selected topic;
- To develop their own computer skills;
- To contribute to community development;
- To further specific professional goals;
- To benefit from the general capacity-building opportunities;
- To hear more about the initiative in general;
- To become familiar with the centre;
- To socialize through activities.

The initiative should be designed to reward voluntary participation with clear benefits. These are usually in skills development and useful experience, not remuneration.

While participants will hope to benefit from their involvement, their skills and experience will also help the project. These need not be in ICTs; various professional and organizational skills, life experience, personal interests, personality, and roles in the community can all be valuable. The community volunteers should not be seen as a homogeneous group, but rather as a diverse set of people with different backgrounds, interests and skills.

The first follow-up meeting should include a general introduction where each team member is invited to tell his or her name, occupation, workplace or organization, local place of residence,
level of computer skills, areas of interest, and expectations about the initiative. In addition to giving a sense of the team's assets, this will help break the ice among people who do not know each other.

b. Getting started

A good way to pull the team together at first is to engage briefly in hands-on tasks relating to the topic. Then the team should proceed to practical matters of planning and organization:

1. Specify the topic's sub-topics and target groups;
2. Assess skills and interests;
3. Define roles and responsibilities;
4. Agree on mechanisms for interaction and communication;
5. Set a provisional work plan.

Suggestions on how to go about these tasks are described below.

c. Specifying the selected topic

The selected topic will become much more concrete when the sub-topics and specific target groups are specified. These questions should be discussed in smaller groups so that everybody can have a say. The discussions can be divided under three main headings:

- The main issues of the selected theme;
- Which groups in the community they most concern;
- How an ICT application can address these issues.

Afterwards, the groups can explain their conclusions to each other, identifying similarities and differences. The main issues will likely be repeated in all the groups, but important ones may also emerge that not all groups had thought of. The important thing is that, in the end, the whole group endorses the choices that are made. This exercise will also give the group a first impression of how it will be to participate in the initiative.

d. Assessing skills and interests

The team's general profile would already have emerged during the first working session (point a. above). Individual skills, experience, and aspirations should be considered while defining individual roles and responsibilities. This should be part of all activity planning, so as to get the most benefit from individual skills while accommodating their expectations as much as possible. Finally, it is important to have a mix of ages and genders on each activity team to provide a wider set of perspectives, perceptions and ideas.

While a core team will follow the project from beginning to end, some members may participate only in specific phases where they are required. Typically, these would be experts, researchers, or data collectors from within the community or not, depending on the available skills. Community members' time constraints may also result in temporary participation.

Regardless of their perceived importance or technical level, all team members deserve fair treatment and recognition of their contributions. Members of each team, including community members and counterparts, should cover a basic set of functions:
• A general coordinator, responsible for general management of the initiative;
• A community coordinator, responsible for all activities with and in the community;
• A technical coordinator, responsible for the technical team;
• A communication manager, responsible for promoting the initiative;
• A content coordinator for each sub-topic;
• Regular team members for the content groups;
• Workshop facilitators.

This is just a list of functions; naturally, an individual can carry out more than one of them.

The skills necessary for the project must be available or be built into the team through capacity-building activities. The precise skills will depend on the technical level of the ICT application (IV.3: Technology). While a single technician may carry out more than one function, ICT projects typically require the following standard set of ICT skills:

• A technician for graphics and colour;
• A technician for art and image;
• One or two technicians for programming and website design;
• A technician to integrate multimedia content including sound.

More sophisticated applications, such as three-dimensional applications, require solid skills in Web design and software for manipulating images, sound, and video. These advanced skills are too sophisticated to be attained through capacity-building during project implementation, even for those with basic programming skills. Therefore, before embarking on application development, the team should ensure the availability of sufficient skills or funds to meet the requirements. (III.8: Production).

Although the team's composition may seem clear from the beginning, especially if it is a pre-existing technical team from the telecentre or a technical counterpart, it is important to keep all options open and remain flexible. Additional hidden skills within the group may greatly benefit the initiative.

e. Defining roles and responsibilities

Efficient teamwork requires starting with clear roles and responsibilities. Each participant needs to understand his or her role within the overall initiative. The duties of the coordinators and participants in a content group should be clear before defining the group's structure and choosing its coordinator. It should also be clear from the start how different outside entities such as counterparts will participate in and interact with the initiative.

1. The telecentre: One objective of an ICT Learning initiative is to create ways of transforming tele- and resource centres into multi-purpose community centres. If a centre builds a habitat, tradition, and skills for activities beyond ordinary computer and telecentre services, the community will develop expectations and demand in these directions. Over time, it will become easier for the centre to organize alternative and innovative activities. And little by little, it can expand into a true centre for community development.

The ICT Learning Initiative should therefore be organized around the telecentre as much as possible. While not all activities occur at the telecentre, the centre will be linked to the activities through people, and because it is the organizing body behind the initiative. Involvement in the ICT Learning Initiative will also help the centre to promote itself and attract new users. The telecentre will have a particularly central role in many aspects of the initiative:
• Organizing logistics for workshops, team sessions and content development;
• Providing computer training;
• Providing access to computers and Internet;
• Providing and administering additional equipment;
• Coordinating the work of the initiative;
• Being the initiative's local focal and meeting point.

2. Counterparts: Initiatives with multiple counterparts will have proportionately more to consider regarding the counterparts' interventions, contributions and, in some cases, conditions. While each counterpart should be appreciated, their actions should be flexible and adapted to the needs of the initiative. The most efficient way to monitor the progress of a diversified team with many members is through a team leader. This means that each counterpart should have a team leader who provides it with information from the project. The team leaders interact with each other to ensure that the project is on track.

3. The coordinators: The different coordinators (of content groups, the technical team, the entire team, etc.) naturally are central in monitoring activities and making the team work well. In addition to being well organized, the coordinators should be particularly skilled in helping the team evolve as the work progresses. Some pointers include:

• Allow for creativity by giving team members space to think for themselves;
• Assign team members tasks that are a little above their skill levels, so the work is challenging but feasible;
• Provide opportunities to further personal knowledge and self-empowerment.

Here are some basic principles for the general coordinator to ensure sound team-building:

• Transparency in decision-making processes and activities, including budgets;
• Realistic expectations;
• Agreement upon work plans and schedules;
• Maintain the momentum;
• Regular communication among sub-teams (content teams, technical team, external counterparts).

For communication among sub-teams, experience shows that meeting at a regular time (e.g., monthly) is often more effective than setting deadlines. It also helps the coordinator to monitor activities remotely. Regular team meetings enhance the incentive to achieve and thus have progress to report, and can speed the process of identifying solutions to specific problems.

4. Content groups: Once the sub-topics and target groups are specified (point 1 above), content groups should be formed for each topic, each with an agreed coordinator. The group coordinator together with the community coordinator will be the core of the team, and report to the general coordinator. The work session should define members' duties, such as the implications of being a permanent member of the group, a helper, or a resource person.

5. The technical team: This team and the content groups greatly depend upon each other: neither can progress without input from the other. Therefore, they must agree on general guidelines for content development (III.8: Production). Also, to avoid delays and corrections, they must be coordinated precisely (III.9: Validation and Testing).
f. Establishing communication structure

Conflicts and frustration in project management often stem from a simple lack of communication. If problems are not anticipated and solved at an early stage, they can grow into bigger conflicts, lead to considerable delays, cause participants to drop out, or even destroy the initiative. Fortunately, effective communication can solve or eliminate most problems.

Good communication structure and modalities for interaction among team members are crucial for effective collaboration. The mechanisms should not be too complicated or formal, and should aim to make the team aware that communication is central to its well-being. Each team member and counterpart should feel responsible towards the group and be alert to potential conflicts. Simple modalities for conflict resolution should be agreed upon to facilitate interaction between team members. To this end, discussions in the beginning should establish agreement on how to react if a problem arises. For example, team members need to know how to react in the following situations:

- You believe that somebody is undermining the work.
- You cannot meet the agreed deadline.
- You find a task too difficult.
- You believe that a team member finds a task too difficult.
- You believe that the group coordinator is not following the agreed-upon work plan.
- You believe that a team member is not doing a job well.
- You believe that a group's work does not meet its objectives.

Likewise, clearly specified communication channels help people assume responsibilities. For example, team members must know who to report to at different organizational levels: e.g. within and between the content groups, between the technical team and the content groups, between the community team and external partners, and between the counterparts.

A common work plan, which should be revised and validated regularly by the whole team, will help create clarity for each counterpart and team member. In preparing the work plan, expectations should be clearly defined as to what the different counterparts are to deliver, and when they should intervene or contribute (see below).


g. Setting a provisional work plan

The first working sessions should include setting an approximate timetable for the entire project, a broad overview of the time to be spent and volume of work to be done in each stage. This timetable should consider events that may affect the participants' availability, such as holidays, exam periods, community events, centre activities, elections, and professional commitments. The team should also discuss possible measures to prevent interruptions in the work.

The content groups should set their own agendas so they can proceed immediately to the next step of the initiative, content development. Each content group, directed by its coordinator, could begin with the following tasks, to be accomplished prior to the next working session:

- Improve and detail the content and gather more in-depth information about each topic;
- Think about presentation formats (production, video, animation, written or spoken text...);
- Make a provisional plan for producing the material.

To do this, the content groups should organize themselves. (III.6: Content Development). The coordinators should remember that it is useful to have short briefing sessions with the whole team on a regular basis, especially in the beginning, to monitor the activities and solve potential conflicts. Close monitoring is essential until the content groups work together smoothly.
SUMMARY:

- The community should have as much responsibility and influence as possible.
- Individual aspirations, knowledge, skill levels, and availability should be considered during planning and organization.
- Practical exercises and discussions will pull the participants together.
- Clear roles and responsibilities will help build an efficient team.
- Communication is key to solve and avoid conflicts.
- Sound team management requires transparency and participation in decision-making.

Country Examples

The following examples show how the teams in Mozambique and South Africa were established and how they functioned. The composition and interaction of members in the two teams differed due to the different approaches of the two projects. In Mozambique, the main objective was to involve the local team in Manhiça and stimulate interaction with the counterparts throughout the ICT development process. In South Africa, the pre-selected counterparts had a more dominant role due to the sophisticated nature of the ICT application to be developed. The community was involved at strategic stages, while the technical counterpart was in charge of the production.

The team in Mozambique

The initial project team was established at the university in Maputo, in bilateral contact with the project team at UNESCO. The team comprised technicians working in the Information Services and Content Development Department of the University (CIUEM). They were responsible for the technical side of production and for training the local team in Manhiça. The head of that department led the team, both in that capacity and in her capacity as pilot telecentre project coordinator. Five people were involved in addition to the team leader, all with experience in Web design and knowledge of multimedia production. The team's skills were developed through technical back-up from an external counterpart (IV.2: Integrating Capacity-building).

The team in Manhiça was formed by asking for volunteers at the initial workshop. Some twenty people signed up at first, but numbers soon dwindled to settle at a core group of eight to ten persons who lasted most of the way. Participation was a totally voluntary.

All of the volunteers were young. Most were local primary school teachers, though some farmers and the telecentre staff were also involved. Only one woman signed up, so an effort was made to recruit more female volunteers, including girls from the secondary school. Although they came to some meetings, they did not participate actively and soon dropped out. The reasons seemed to be related to lack of time due to the girls' and womens' many tasks, and lack of family authorization for the girls to attend activities.
Additionally, the school has more boys than girls, and the overwhelming majority of telecentre users are young males.

While these challenges will not be resolved overnight, the team hoped to help overcome barriers by familiarizing women with benefits of using ICTs and also demystifying ICTs. Nevertheless, other feasible methods for involving women were chosen (IV.1: Applying a Gender Perspective).

The team members brought various skills and knowledge: some had helped produce the first attempt at a local newspaper; one had a video camera with which he filmed events such as weddings; one had relatively good IT skills; and two were members of the local Telecentre Committee.

Team-building was promoted through joint activities such as whole-team content and training workshops in Manhiça and at the University (CIUEM) in Maputo. The Manhiça team determined its own internal organization, working in sub-groups of three to five people on different content areas. Each sub-group chose a leader, and the content group coordinators liaised with the local coordinator chosen by the team.

Striking evidence of successful team building appeared in the anonymous evaluation at the end of the story-board workshop. In response to questions about what they had liked best or what they would remember about the workshop, most answered that they had learned how to work in a team, and with different people, and had enjoyed the lively discussions. They had also learned how to plan and organize, shown by comments such as these: ‘I learned how to pass ideas from my head to paper to computer’, and ‘Before building the walls of a house, one has to sit down and plan’.

The team in South Africa

As in Mozambique, the initial project team in South Africa was established through contacts with the project team at UNESCO based on prior experience in ICT projects and developing multi-purpose community activities. The two local coordinators were 1) the head of the Alexsan Kopano Educational Trust, the general coordinator of the initiative, and 2) Naledi3d Factory, the team’s technical coordinator. Other team members included the Naledi3d staff and a fourth-year student, who was trained by the counterpart in simulation and programming. Wits University, the body responsible for the research activities, was likewise chosen based on previous experience. The three local counterparts were all new to each other. A good relationship built up quickly, and they worked closely and efficiently together.

The community centre brought in its youth office and various youths from the community. Their major role was in the beginning, when a local youth group identified the subject and gave a general focus and direction to the content. Youth groups came in again to test and validate the application. While Naledi3d Factory handled the detailed content development, the community centre gave inputs to various aspects of the content, such as the life skills, company structuring, and ideas for the business environment. Once the overall content structure was complete, the general coordinator of the community centre helped edit the application.

The gender of the team leadership was balanced by the management team being all female and the Naledi3d team being all male. The girls and boys were divided into separate youth focus groups, which helped them feel free to communicate their differing needs and aspirations. In contrast to Mozambique, a majority of the young participants were female. In general, women tend to participate more actively at this centre than men. This, however, has not always been the case (IV.1: Applying a Gender Perspective).
All roles, responsibilities and tasks were distributed during planning meetings according to the foreseen duties and the available skills and knowledge. No dissent arose on how things were allocated or handled, because the distribution of tasks was clear, and was handled by teams with experience in similar work.

The only glitch in the process was the understanding on content development. This was sorted out, but it caused the project to take longer than initially expected. What was learnt from this was that the two local counterpart teams should have gone step-by-step through all the tasks required to complete the Initiative. In conclusion, the team felt that teamwork was good all in all and could lead to further assignments and collaboration between the community centre and the technical partner.
Local ICT-based content development is critical in transforming traditional tele- and resource centres into places of open community learning (see Part II). Local content is content that is created through strong community involvement. While not necessarily restricted to local sources and resources, the local context is considered and the content responds to local needs for information and learning. The following focuses on how to generate content for the story-board of an ICT application, as well as how to ensure that the processed content appeals to the intended user groups.

The process of content development has many facets. One of the most crucial parts, story-board planning, is large enough within itself that a separate chapter is dedicated to it, following this one. The present one, therefore, discusses pre-defining the content, data collection, and various methodologies and means to create and transmit the content.

### a. Content development phases

The first phase of content development is to collect as many content elements and inputs as possible. The more the team collects, the more precise and useful the first story-board plan will be. These preparations for the story-board are very important because throughout the content-development process, the story-board is crucial for organizing content elements, creating clarity, and stimulating the team's drive to completion.

The content-development process can be divided roughly into the following steps:

1. **Initial broad and non-focused information collection.** The purpose is to get more in-depth knowledge about the topic in general, to enable identification of the key issues.

2. **Massive information collection, according to the identified topics and target groups.** This will also include collecting inputs and precise ideas for transmitting the content. It takes place before story-board planning.

3. **Organizing, editing and fine-tuning content elements.** This should follow the agreed structure of the application and its navigation system, as specified in the story-board.

4. **Filling in the missing content elements.** This includes visual inputs and animation.

5. **Harmonization and cross-checking.** This concerns all information and elements of the different sub-topics.

6. **Complete story-board.** This should to be endorsed by the team.

7. **Final editing.** This includes editing all written and oral texts, as well as all sound, voice, and animated elements.

8. **All of the content is ready for production.**
One should not underestimate the time needed to generate the initial broad lines of content. This period lets the team members get acquainted with the subject, which will enable them to make informed decisions during the focused content development. It will also enable them to put themselves in the place of the user. If the team has both knowledge and many ideas about the topic, it is already well prepared for an efficient and fruitful story-board session.

It is with the story-board that the content falls into order, and the connections among the sections become clear. Since the story-board is not linear, there is room to generate and integrate considerable content for different target groups through the navigation system. The content groups should therefore collect large volumes of information to start, acquiring a critical mass from which to select information for further processing (see below, point c).

b. Getting started

Continuing from the first working session (III.5: Establishing and Building a Team), content ideas under each topic have been specified in the subgroups, according to information needed by each target group, including indicative techniques to be used. This information can be clustered by the content groups under the following headings:

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>TARGET GROUP</th>
<th>TECHNIQUES</th>
</tr>
</thead>
</table>

The whole team should develop these initial ideas further to select those most relevant for the ICT application. The cross-checking at this early stage should ensure that issues and topics do not overlap among different content groups.

Further content development should address the following questions:

- How to collect data and generate the information needed for the content?
- How the application should present the issues to appeal to potential users?
- How to find and create concrete elements that communicate the content?

Methods to address these issues are suggested below.

c. Generating content

The prior exercise in identifying the topic issues in more detail and selecting the most important ones will largely determine much of the work that lies ahead. This applies to the content, ways and means of presentation, and the scope of the topic to be focused on. It is important to do this preliminary exercise before the actual data collection, as it will enable the team to work more systematically in the first search for information.

The information sources may differ depending on the topic and sub-topics. Some issues may only need inputs from the local community, while others may require a broader search. Broader data collection is not necessarily more complicated, and will likely be easier if information is available on the Internet or through paper publications. Focused data collection in the community can be more complicated because it is a first-time effort started from scratch. In most cases, however, this effort gives the content added value and makes the ICT application more appealing to potential users.
The following sources of information should be considered:

At the community level:

- Relevant institutions, organizations (public, NGOs, international, bi-lateral present in the community);
- Interviews with key people in the community;
- Interviews or group discussions with the general public;
- Interviews or group discussions with potential user groups - opinions and inputs to content needs;
- Local information needs recorded in the needs assessment (III.4: Selecting a Topic).

In addition, the community radio can be used for content development. For example, discussions by a facilitator and community members can provide content for the ICT application and increase awareness of the theme in the broader community. The Internet can be used to stimulate discussion and bridge the gap between the World Wide Web and the community. This methodology would simultaneously promote the ICT application and attract future users;

At regional and national levels:

- Public institutions dealing with the specific issue, documentation, facts and figures, statistics, reports for further analysis;
- Newspapers stories, news, facts and figures.

On the Internet:

- Ideas about kinds of ICT-based content that already exist;
- Ideas for presentation and navigation systems;
- Participation in relevant forums for clarification and further information.

When using information from indirect sources, the content groups should ensure that the source is reliable. Specialist(s) should check the accuracy and appropriateness of the content, and ensure that the final ICT application presents information in a way that cannot be misunderstood. Erroneous or misleading presentations on how to cure malaria, for instance, could have disastrous consequences.

d. Adapting the content to its audience

1. Formulate the message: After the raw data is collected, the content groups must carefully sift it, selecting for balanced content and unbiased presentation of value-added topics. Sections should not be overloaded with information. It is more effective to present a few well-elaborated ideas than numerous unclear ones. It is, therefore, useful to formulate the intended message for each section (see content plan below, point d.) and keep this in mind while processing the content and cross-checking at the end.

The content groups need to balance the benefits of selectivity with those of communicating additional relevant information. During the selection process, the key message should be expressed simply and clearly, with additional information provided through references and navigation links, including links to relevant websites.

2. Form and format: The selected information must be processed into proper form and format. These choices depend mostly on the intended target group. While processing content, the key thing to keep in mind is that the content must speak to the intended user. The content must not
merely respond to a specific need and be relevant; it must be presented in a way that appeals to the target user group. Here are some ways that content may be adapted to the target audience:

- If the potential user group includes non-literate people, the content should be accessible in non-text format;
- Facts and figures must be in a format that attracts the attention of intended users, such as an interactive question-and-answer game;
- To reach children, the content and presentation (e.g., colour, graphics, image, metaphor) must differ from formats intended for adults.

It is crucial to test the content elements on the target groups before final production, to ensure that the choices produce the desired effect (III.9. Validation and Testing).

3. Proper use of language: Oral and written language is the main tool to get the message across, so it must be adapted carefully to the target group. This includes the choice of which language to use, the level of formality or informality, the level of sophistication, and the vocabulary. The essential principle is that the language be clear and precise, with short and straightforward sentences. Voice-overs and interviews should be of good quality, with minimal irrelevant background noise. The speaker should have a clear voice and good pronunciation, and not speak too fast. Interview subjects should be informed beforehand of the intended target group, so that they can adapt their language and word choice appropriately. For instance, one speaks differently to specialists than to beginners.

4. Editing: Proper, accurate language requires careful editing. This is a special skill that strongly affects the final product, so a very experienced person should do it. The final edit should be a painstaking process that eliminates inaccuracies and harmonizes the chosen style.

5. Communication media: A great advantage of ICT-based applications is how they can combine a broad range of communication media. Multimedia applications (that is, presentations combining different technologies such as text and video) have the potential to convey messages more effectively than traditional means of communication such as books. ICT-based applications can be very powerful, innovative and stimulating for learning.

During content development, communication techniques should be chosen based on their appropriateness for each message. The choices will depend on the overall setting of the application. Within the limits of the project's technology (IV.3: Technology), different means may be used simultaneously, or be deliberately limited for a desired effect. The following lists some of the possible means of communication:

- Video (interviews, examples, theatre);
- Photo and image;
- Graphical animation;
- Text;
- Drawings;
- Voice, e.g. for different languages;
- Music and song;
- Sign language;
- Virtual reality.
d. Using a content plan to track progress

It is important to maintain a clear, detailed overview of all the content that is going into the application, so everything will be ready when needed. Missing content elements, even minor gaps near the end, can delay production considerably. Depending on what is missing, it may stop the technical team from proceeding with, or even starting, the design and programming of specific pages. A good story-board and content plan will provide the necessary overview, identify any gaps, and keep track of the content development process. The story-board gives an overview of the whole application, and the content plan provides detailed information on content elements and their development status.

The content plan is especially useful in developing the sub-topics, as it tells the task of each content team member and how far each has come. When members complete their tasks they can easily see where their help is most needed. It is easy for the group coordinator to monitor the group's progress, see where energy needs to be focused, and where back-up is needed. During regular meetings with the whole team, the coordinator can easily inform the team on progress and identify which members to consult on particular aspects.

An example of a content plan and its different headings is given below:
# Content Plan

**Group 3: Treatment**

**Subtopic:** *HOW TO TREAT MALARIA*

## Message 1: Go to the health post.
- **Target group:** All: Women Youth Farmers Health workers
- **How to transmit it? (Content):** Pictures of a sick person being taken to hospital.
- **Materials available:**
  - 1. Play – video
  - 2. Photos of the district health posts.
- **Responsible person:** Alex and Sérgio
- **Completion date:** 23 March
- **Status:**
  - 1. On-going
  - 2. OK
  - 3. To be identified.

## Message 2: Do the test.
- **Target group:** All, but special information for health workers.
- **How to transmit it? (Content):** Images of the laboratory with a technician doing a slide. Scientific facts and figures.
- **Materials available:**
  - 1. Photos and interview (the agent talks while working).
  - 2. Internet: Search for scientific facts and figures.
- **Responsibles person:** Edgar, Samo and Jacob
- **Completion date:** 15 April
- **Status:**
  - 1. OK
  - 2. Information to be processed and edited.

## Message 3: Take the correct dosage of pills.
- **Target group:** All, but especially parents.
- **How to transmit it? (Content):** Facts on the basic treatment.
- **Materials available:**
  - 1. Poster with calendar and pictures of the pills;
  - 2. Interview with health worker to explain the images;
  - 3. Graphic illustration of the pills.
- **Responsible person:** Edgar and Samo
- **Completion date:** 31 March
- **Status:** All OK

## Message 4: Eat well.
- **Target group:** All, but especially parents (women).
- **How to transmit it? (Content):** Show the most recommended foods and explain why.
- **Materials available:**
  - 1. Photos of the foods
  - 2. Interview with health worker
  - 3. Internet: Search for nutritional values? Recipes? People cooking and/or eating? A woman speaking?
- **Responsible person:** Elias and Marcia
- **Completion date:** 15 April
- **Status:**
  - 1. OK
  - 2. OK
  - 3. On-going

## Message 5: Special care e.g., for pregnant women.
- **Target group:** All, but especially women and young girls.
- **How to transmit it? (Content):** Explain the high risk groups. Make recommendations.
- **Materials available:**
  - 1. Photos of the high risk groups.
  - 2. Interview with health worker, and summary text.
- **Responsible person:** Marcia and Edgar
- **Completion date:** 20 March
- **Status:** OK
  - Appoint: 15 April at 3.30 p.m. (Abel).

## Message 6: Traditional treatments?
- **Target group:** All, but especially farmers.
- **How to transmit it? (Content):** Advise for or against?? Specify precautions.
- **Materials available:**
  - To be discussed within the whole team, and specialist.
- **Responsible person:** Alex and Sérgio
- **Completion date:** 8 May
- **Status:** Pending next team meeting.

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*Extract of content plan on malaria, prepared during content development, Mozambique, March 2003.*

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*Step-by-Step Guide for ICT Learning Initiatives*
*By Janne Kjaersgaard Perrier, June 2004*
SUMMARY:

- Before content development begins, the target audience should be clearly defined.
- During content development, the information should be assessed continually to ensure that it responds to expressed needs.
- Relevant information should be sought from community members in particular, as well as specialists, national and international institutions, and the Internet.
- The application should not be overloaded with information; material should be assessed and selected for relevance to the target audience.
- In developing the presentation, close attention should be paid to the oral and text language as well as the language of symbol, image, and metaphor.
- A content plan should be used to monitor content development.

Country Examples

The following examples show the approaches to content development in South Africa and Mozambique. Their respective technology choices (IV.3: Technology) affected content development mainly in terms of methodology. In South Africa, the technical counterpart generated most of the content elements, while in Mozambique, the local team worked fairly independently and created most of them. The processes shared several key characteristics: 1) community members identified and defined the content; 2) experts collaborated to ensure accuracy and appropriate coverage; and 3) both project coordinators had experience in the subject areas and provided editorial work.

Content development in Mozambique

The local team planned the overall content at a workshop in Manhiça that was facilitated by a UEM lecturer, who also participated in the needs assessment. The participatory methodology for plenary decisions combined group work, flip charts, and cards. The discussion identified: 1) target groups, 2) sub-topics, and 3) ways to transmit the information. The team then organized itself into content groups and made work plans for collecting the content.

The main sources of information were input and documentation from the staff at Manhiça Health Research Centre; the Internet; interviews with malaria patients; documents from the Ministry of Health in Maputo; and interviews with members of selected target groups.

Interestingly, information collection initially focused on Internet searches. This was new and exciting for most of the team members, and it was an easy, clear-cut starting point. The collected information at the first follow-up meeting thus consisted mainly of texts from the Internet, with little selection or local input. Much of this was useful, such as statistics, maps, pictures, diagrams, and games. The situation changed as the collection of information focused more on the team's own learning, and even more so when the team obtained a digital tape recorder and digital camera to help gather local information.

The CIUEM team gave the local team training sessions on interview methods and on how to use the new equipment, record data, as well as how to improve their Internet searches. The content groups then
recorded interviews and photographed health centres and patients. One group worked in the hospital and its malaria test laboratory, another with a local cultural group to develop music and a play for the CD-ROM. All texts and images were compiled on computer and backed up on CD-ROM.

A content plan was used to monitor data collection (see example box, III.6.), and CIUEM processed the video and sound.

**Some challenges:** In Manhiça, the local team had great difficulty organizing the collected material clearly and efficiently on the computer, despite having received training on how to create folders and files. Given the team members' experience, it is not surprising that it was easier for them to collect raw data than to process and edit it.

Another challenge was that nobody in Manhiça had the necessary editing skills. There were general problems with the accuracy of the Portuguese, and even spelling mistakes. Finally, with the local team's agreement, the project coordinator took over the editing.

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### Content development in South Africa

Three-dimensional virtual-reality applications, such as the one developed in South Africa, are technically demanding. Their interactive nature requires developing the content simultaneously with programming and design (III.8: Production). Thus, local communities typically lack the skills needed to participate in detailed content creation, which reduces the opportunities for learning during the development process.

The choice of technology must consider the technology's benefits as well as the methodology and the desired results. In this case, the end product's responsiveness to the needs of the intended target groups was considered to outweigh the restrictions in the development process.

In the South Africa initiative, therefore, content development was handled mainly by the technical partner. Directions and guidelines for content development were defined by the youth groups at the initial community workshop. This workshop identified 1) the framework for content development (III.7. Story-board Planning), 2) the general objectives of the content, 3) the sub-topics to be addressed and 4) the format preferences.

The above decisions provided a basis to begin seeking, extracting, and collating relevant information from existing sources, rather than writing it from scratch. The main sources were literature, electronic media such as Web sites, and printed matter from the Resource Centre and its Youth Desk.

Then, based on the story-board, the collected material was filtered and refined into a comprehensive document. The technical team then focused on building the content in detail, consulting specialists on specific issues as needed. Questions on design and content during this process were addressed as they arose, with input from content specialists when required.

The content was edited in three phases by the project coordinator: 1) a rough edit of content at the initial stage, giving guidelines for further content development, 2) a mid-term review to refine the content, and 3) the final edit of content.
Story-board planning helps prepare for the content production phase by determining an agreed-upon structure and presentation. The resulting visual overview of the content helps to create consistency among the topics, reveal gaps in content, and facilitate decisions on the technical means of presentation.

The story-board begins as a bare framework and gradually acquires detail, evolving into a fleshed-out scenario as it moves towards completion. As a parameter of progress, the story-board is a good monitoring tool. In addition, it provides a tool for team building, because it is around the story-board that the content groups and the whole team will meet regularly to discuss and distribute tasks and responsibilities. The story-board also helps bridge the gaps among team members' different levels of technical knowledge.

a. Looking at final products as an eye-opener

The early stage of story-board planning will benefit from demonstrating final products from similar E-learning projects. This should be done in more detail than it was in the initial community workshop (III.3: Mobilizing the Community), where the focus was on introducing CD-ROM technology. Two to four applications should be chosen beforehand. It helps if the facilitator knows the backgrounds of the E-learning projects and how the CD-ROMs came about, such as the team's composition and levels of ICT knowledge, the objectives of the CD-ROMs, work constraints and conditions, and reasons for the choices during production (e.g., technical, pedagogical, style). To stimulate creative thinking, the demonstration should include various techniques for transmitting information:

- Video;
- Photo and image (animation);
- Text;
- Voice (different languages);
- Music;
- Sign language;
- Virtual reality.

The demonstration should in particular be used to discuss elements such as:

- The flow of information;
- The importance of icons as navigational tools, and layout in general;
- The consistency in the interface design;
- Search facilities;
- Additional navigational options.

During the demonstration, participants should discuss positive and negative aspects of the CD-ROMs and compare them to what they hope to achieve with their own project. Even if the selected CD-ROMs are not perfect, they will help the team identify which elements work well, which are less useful, and which should have been included.
This session can be very interactive, with everyone commenting and offering opinions about the CD-ROMs. This warm-up session before embarking on their own story-board planning can inspire imagination and ideas that the team members might not otherwise have come upon.

b. Developing a visual plan

A useful first step in story-board planning is to create a visual plan of the topics and the relations among them. This will help determine the common interface and the navigation system from topic to topic. A next step is the same exercise within each topic, organizing the collected information. The resulting interfaces and pages will facilitate further content development.

The following group exercise can be used to develop visual plans for the entire group and for the content groups. This simple, concrete exercise leaves aside ICT questions for the moment to concentrate on content and its flow, and to facilitate participation from all members regardless of their ICT knowledge levels.

Some supplies are recommended for the session:

- One ball of thick string;
- Packet of press-stick or cello tape (to put sheets of papers on a surface);
- Different coloured thick pens;
- Scissors;
- A4 paper.

1. Building the overall structure: The goal is to determine a common interface for navigation among the topics. There may be several common interfaces for different topics, depending on layout choices and content. Additional elements can be added to the common interface, such as how to present partners, contacts, help, exit, glossary, and question-and-answer sections. This step may include preliminary discussion of styles for user-friendly navigational buttons.

2. Defining the layout of the main interface: Each content or topic group receives a piece of paper. Based on the points agreed upon in the prior step, each participant is invited to draw a layout for the main interface, and present it to the group for discussion. The proposals can be put to an anonymous vote to create a short list of favourites.

3. Organizing the content of sub-topics: The content groups now determine how to cluster the content. A topic should have three to seven sub-topics, each with a clear objective and focus. Prior sub-topic divisions might need to be changed in response to discoveries during the initial content collection. Sub-topics should have balanced amounts of information, avoiding information overloads. If little data has appeared on a sub-topic that the group considers important, plans should be made to collect more data later. Each sub-topic should receive a clear heading, and the content should be written in summary form (three to five lines or bullet points) on the same sheet of paper.

4. Discussing the means of presentation: The process of clustering the content headings is the most relevant time to discuss feasible means of presentation and to note the ideas on paper. These may include picture, video, soundtrack, graphics, voice, text, song, games, cartoon and other animation. Some can be complementary. An entire application can, for instance, be complemented by voice transmissions to serve illiterate users. In some cases, the content might be best transmitted through facts and figures. In others, it might be most appealing to the target group in the form of a story (III.6.c. Content Development).
5. Linking the sub-topics: Once the content is ordered within each sub-topic and placed in a flow chart on sheets of paper, the string should be used to indicate the links from page to page. The pages may be shuffled during the developmental stage. Once the group is satisfied with the topic’s flow, colour pens may be used to follow the topic through, its physical place relating to the common interface. This works best on a fairly large wall. Each topic group should use a different colour: blue for topic 1, red for topic 2, etc.

6. Assisting each other: To foster teamwork and team-building, groups that finish long before the others should split up and assist the others.

7. Presenting the group work: Each topic group then presents its story-board in brief to the larger group. Presenting the topic flow charts contributes to the learning process by testing the viability of the envisaged structure and means of presentation. It also lets other team members learn about, and comment on, the key issues of the flow chart. Once the larger group has endorsed all topic groups, the first outline of the story-board plan has been visualized.

8. Creating overview: The story-board now consists of many hand-written sheets, each with:

- a heading;
- an objective;
- a clear focus;
- a content summary.

It is recommended to put the sheets into electronic format and print them. This will make it easier to read and follow the story-board, and it is the first basis for further development. Ideally, this original presentation will stay on the wall throughout the process as a reference. If not, the sheets can be numbered, so they can be put on the wall for reference when needed.

This visualized presentation of the story-board is useful not only for structuring the flow of content, but also for explaining the expected output of the ICT Learning Initiative. This is the best time to introduce the story-board to the wider community and gather initial feedback. This could be at a workshop where community members are invited to comment and propose ideas on the content outline for consideration during further content development.

c. Building on the story-board to monitor progress

The story-board plan is the first outline of the content. In further development, the content groups should use it to monitor progress, fill in ideas, and process data and information. The team co-ordinator can likewise use the story-board to monitor the team as a whole.

The story-board is fleshed out as content development progresses. Evolving the story-board does not add work; on the contrary, it saves time for the team by indicating what has been done and what remains to be done. Together with a detailed content plan (III.6. Content Development), it helps the co-ordinators keep aware of points that require special attention, ensuring that the group and the team as a whole maintain the drive to completion.

The co-ordinator should keep the story-board up to date by pasting information that has been developed into its designated place. For video clips and animation, it is sufficient to note in the story-board that the element is available. The co-ordinator can note in the story-board that an element has been completed once the technicians have integrated it into the application, and so forth. This becomes a monitoring mechanism for the whole process.
The evolving story-board can also be useful for reporting to external partners, when relevant. It provides the co-ordinator with concrete information about the initiative, and facilitates report-writing by summing up progress and gaps.

d. Progressing in parallel

It is true that building a complete story-board, sourcing and preparing all the information that goes into it, takes time. Some information is more difficult to collect or process, so some sections may be complete before others. Still, this should not delay starting the production phase. The technical team should begin the production phase as soon as a fair number of story-board sections are complete. However, this is only a good idea if the team and content groups have a very clear story-board flow-chart and thus know exactly which element goes where. This will help avoid changes on content presentation once it has already been programmed.

SUMMARY:

- As much information and as many content elements as possible should be collected before beginning the story-board planning process.
- Final CD-ROMs from similar projects can demonstrate various techniques for transmitting information, and stimulate creative thinking and discussion.
- The common interface(s) should be conceived by the team as a whole.
- Content teams should make story-board flip charts for each topic and specify under each sub-heading the objective, summary of content, and technical means of presentation.
- The story-board plan can be presented to the wider community during a short workshop to get feedback on progress to date.
- Content groups and team co-ordinators should use the story-board as a monitoring tool and update it as content development progresses.

Country Examples

The following shows the story-board planning in the two project countries. Most elements in this chapter are based on the experience in Mozambique, including the methodologies for involving the community team in building the story-board and planning the content for each content section. In South Africa the technical team handled content development and developed the content around a story-board document, but without traditional story-board layout drawings.
**Story-board planning in Mozambique**

Story-board planning was taught and performed at a one-week workshop for the whole project team. The technical counterpart provided a professional trainer with CD-ROM production experience to facilitate the workshop. The main objective was to build an idea of the CD-ROM as a whole. This involved:

- Studying and learning lessons from other educational CD-ROMs;
- Discussing the pros and cons of different types of layout and navigation;
- Developing a plan (flowchart) for the information;
- Developing consistent layout;
- Deciding on the exact content to be used;
- Designing and agreeing on the navigational tools and buttons.

The work was done in the content groups, with a CIUEM team member allotted to each group. This was combined with plenary discussions and design sessions using paper, string and flip charts. This process revealed various information gaps. Preparing the design and layout of the first page meant deciding on the menu, which also helped focus on the content and how to communicate this to the target groups.

The workshop was a valuable moment for team building, particularly for integrating the members of the content and the technical teams. The learning process was also important as described in III.5. *Establishing and Building a Team*.

The story-board workshop culminated in preparing a presentation for the whole team to give in Manhiça. The objective was to seek comments, contributions and ideas from community members, medical staff, and women's organizations on the initial story-board and content outline.

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**Story-board planning in South Africa**

At the first community workshop, the youth groups chose employment as the topic and agreed on the application's overall framework and scenario. They decided to present the content through animated characters, with a mother and her twin daughters as the main characters. One daughter would pursue formal employment, the other non-formal. The family home was chosen as the site for discussing life skills, and a community centre as a place to share information. The twins' different work environments would be shown, and the twins would compare their experiences at the end of the programme.

The technical team made the story-board by writing a document as described in the country example for Content Development (III.6.). This document specified the dialogue for the identified parts of the above scenario as well as audio elements, instructions for the development team, and each content section's key message to the user.

Content development occurred in parallel with information collection and editing. These content elements were then used as a basis to develop interactive 3-D simulations.
III.8: Production

The success and challenge of the production phase lies in preparation. Many aspects of production are closely linked to the two previous chapters, Content Development and Story-board Planning, so these will likely need to be referred to during this phase. This chapter deals exclusively with processes involved in translating the previous efforts into a unified product. The key elements are design and programming. Naturally, the focus is on the technical team, but successful collaboration with the whole team is crucial for the necessary inputs and agreements. These include ensuring compatibility between the content and presentation, and that the final product meets the initial objectives.

a. Production plan

Successful production depends on sufficient resources, efficient structures, clear goals for the application, and good project management. The whole team should be very clear about what is to be produced, how the work will be done, how long it will take and what it will cost. These elements should be agreed upon before production starts. This can be achieved by agreeing on a plan that will serve as the team's framework during the production phase, covering the following elements:

- Complete the story-board by having the topic groups collect the information needed to fill the remaining gaps (III.6.d);
- A design document must be prepared, encompassing all the principles of the presentation design; and
- Programming of all content and design elements into a prototype for testing and validation.

This production plan can be drawn up once the story-board plan is sufficiently detailed, with several complete sections under each topic. This plan will facilitate the last stage of application development by helping schedule and coordinate the interactions among the sub-teams in charge of various tasks. Meeting the objectives is important; the team leader must be told of existing or foreseen delays so the other teams can plan accordingly.

b. Design document defining the look and feel

Once story-board planning is done, general design guidelines should be available that enable the team to start producing design elements for the application and assembling them in a unified design document. (The team will have discussed the general look and feel of the application during the content-organizing exercises on the general navigation system, including the principles of common interfaces and the style of navigation buttons. Technical preconditions for production are also implied by the means of presentation chosen during story-board planning and content development.)

1. Defining general layout: The first step in producing the design is to agree upon the detailed look and feel of the application, its step-by-step layout, and the message to users. The technical team, with inputs from resource and content people, should produce several layout options for
the following central functions. These options and examples should be presented to and
discussed with the whole team:

- The home page;
- Various navigational buttons;
- Navigation principles (e.g. menus, buttons, a characteristic figure...);
- Logos, icons, symbols, and the overall image of the application;
- Common interfaces;
- Topic interfaces.

These issues require agreement upon:

- Colours;
- Style and font of headings, subheadings, and main text;
- Presentation principles of pictures and images;
- Presentation principles of video snapshots.

2. Ensuring consistency: Consistency between the design and content is important because it
reinforces the intended messages to users and makes the final product more effective. Scientific
pages with facts and figures, for example, may benefit from sober design, while games for
children may work better with multiple colours.

Special attention should be given to the design of consistent, user-friendly navigation buttons
(point-and-click icons which lead to other locations). This should not be treated as a simple
process of computer graphic design, as these buttons are central in software applications. It is
essential to ensure that the target audience can understand the meaning and purpose of these
images. The designers should consider the users’ educational levels, ICT skills, and cultural
heritage, and seek input from the content teams. A participatory approach is beneficial
because, while easily recognized icons and symbols are most useful, each person can still
perceive them differently.

To make these critical choices, the team should keep the following questions in mind:

- Does the design reinforce the content?
- Does the design speak to the intended users?
- Is the design coherent among the application's various sections and pages?
- Is there an overall balance?
- Could it be simpler?
- Is the application attractive?

During this process, it is the technical team’s responsibility to ensure that the design choices are
feasible, realistic and viable. This subject will be revisited below under Technology (IV.3).

3. Replicating the design: Once the general design and layout are agreed upon by the whole
team and confirmed in a design document, these principles can be replicated in the rest of the
production process. The above preparatory steps will help prevent the need to re-do design and
layout during the programming process. A well-executed design document makes it much
easier for the technical team to proceed quickly with the detailed design and programming.
c. A major milestone

Completion of the design document and story-board is an important milestone. Because these elements encapsulate all of the design and content elements in an ICT learning initiative, this is the precondition for actually producing the application. In other words, the nitty-gritty of production can begin.

It is crucial that all team members agree now on the content (story-board) and the presentation elements in the design document. This will build teamwork by ensuring that all members are happy with the product goals, and minimize future changes. No major changes in content or design should occur after this point, as they would greatly complicate and likely delay the programming process.

d. Programming

Computer programming, or coding, is a complex task. It typically takes years of training and experience to acquire the skills to create high-quality code. An ICT learning initiative should not begin without assured access to the programming skills required for the chosen application. The required skills depend mainly on the programming language and approach chosen (IV.3). If the core team lacks these skills, they must be arranged for through counterparts such as universities, development partners, or private companies (III.1: Counterpart Arrangements).

High-quality programming is essential for functional, efficient, beautiful, and fast programmes. Conversely, poor coding undermines these qualities, frustrating users with slowness, features that do not work properly, or repeatedly having to shut the computer down and re-start. Poor programming has the potential to make the entire prior effort pointless.

The basic principle of programming is that it should be as clear as possible, with proper descriptions of each component within the code, and no redundant code. For clarity, as few people as possible should do the programming. If several people are programming, it is important to ensure consistency among their contributions by harmonizing the code, establishing naming conventions, and building a library of re-usable elements.

1. Processing: Programming involves processing story-board content elements according to the agreed layout and the specific purpose. There is no set sequence for this processing, as long as it adheres to the layout, structure and content approved in the previous steps.

Many types of elements will be processed:
- Text;
- Photos;
- Video;
- Sound;
- Graphics;
- Extras (e.g., games).

Processing certain of these elements will require detailed step-by-step processes, such as voice-overs and text-based sections. Where voice-over occurs with animation, for example, it is easier to do the sound first and have the graphic designers synchronize their work to it. Similarly, entire texts are usually digitized prior to the graphic work. If the processes need to be closely coordinated, they are usually done in tandem, bit by bit, ratchet-fashion.
During the programming, it is crucial to check regularly that the process is achieving the desired effects. Therefore, the technical team and content groups should meet regularly to discuss the programming results. This should not include ‘learning feedback’, which should end before the core production phase. The production parameters should already be well established. Content teams should only be concerned that the product meet the agreed-upon parameters.

2. Technical back-up: Technical support from external partners in this phase is most effective through regular back-up assistance throughout the programming process. Ensured support at crucial moments can eliminate bottlenecks and help the technical team keep on track.

With learning teams, technical counterparts should use plain language and avoid IT jargon when possible. The learning teams must, however, acquire some technical vocabularies, and no clear boundary exists between jargon and terminology.

3. Completing the application: The processes of doing the story-board, design document, and programming often overlap in time, because the final bits usually take longer than expected.

The final process of quality assurance by the technical team typically includes, but is not limited to, the following components:

- Finding and fixing all bugs;
- Maximizing the speed of the functions;
- Checking the applications on different types of hardware (e.g., PC and Mac);
- Checking the information and technical flows among the sections;
- Checking the interactive functions;
- Checking the placement of text elements.

Once the application seems fully operational and to meet the design and story-board specifications, it is ready for testing and validation at the community centre.

e. 3-D interactive content

Three-dimensional (3-D) interactive content opens up new possibilities for attractive applications. On the other hand, the specialized production work requires a broad range of skills that may be unavailable or very costly. The development team must have skills in the following areas:

- Photoshop (for textures);
- 3-D Studio Max or Maya (for modeling); and
- EON Studio or equivalent (for simulations).

As explained by Naledi3-D: The creation of 3-D Virtual Reality content is at an early stage, only now coming out of academic and defense environments. The tools for developing such content will likely become easier to use and more widely available over the next few years. This development cycle has occurred with many technologies that once required highly skilled specialists, such as video production and editing, web-page design, and desktop publishing.

The technical complexity of 3-D content development also restricts broad community involvement in content development (III.6). The technology requires that content and presentation be processed at the same time as programming. This level of sophistication at a very early stage makes the process difficult for those just learning to use ICT tools.
SUMMARY:

- All parties must agree on a production plan as the framework for collaboration.
- The design document should define in detail the application’s look and feel, specifying layout elements and principles of central functions.
- The navigation buttons require careful design and testing to ensure that the target users understand them.
- All team members must approve the story-board and design document before programming begins.
- Technical back-up should be available throughout the programming process.
- The final phase should be quality assurance, to fix bugs and inconsistencies.

Country Examples

The following examples contrast the production approaches in South Africa and Mozambique. In South Africa, a small professional team worked in relative isolation, focused more on the product than the process, and used a sophisticated, experimental technology. In Mozambique, a learning team did the project as their first experience in producing a complete, locally developed application.

The production process in South Africa

In South Africa, emphasis was on the quality of the final product. The three-dimensional Virtual Reality (VR) application required a professional team with solid experience in application development. A VR application was chosen partly because the technical counterpart, Naledi3-D Factory, had the necessary technical skills. Also, this is considered a very efficient and pioneering ICT learning tool, especially for illiterate learners and the intended community groups (see example of South Africa in IV.3).

The sophisticated technology made it impractical to involve youth groups in the production process. Although youth groups identified the theme (III.4) and tested the prototype (III.9), the main benefits to the community came after development, once the application became available through the community centre (III.10). The main objective was that the application be a quality product that would enrich the Youth Desk’s employment assistance services.

During production, a small professional team of five worked on the application, participating at different stages as needed. Naledi3-D Factory also drew in specific skills as required from its pool of resource persons. The Naledi3-D team members were accustomed to working together on application development, and no unforeseen bottlenecks or major challenges occurred. As the work progressed, Naledi3-D organized quality assurance through feedback sessions with the other counterparts to ensure that the Virtual Reality content met the initial objectives.
The production process in Mozambique

The goal of the Mozambique initiative was not only to produce a CD-ROM on malaria for community use, but for the production process to give the community ownership of the result. This was achieved by making the project a learning and capacity-building process for all involved. The context was a semi-rural district of Mozambique with a team of young people lacking prior experience and IT skills. The technical resources from CIUEM were adequate, but the available staff from the university had limited multimedia production experience.

Given the context and resources, it would have been easier to do the project as so many are done, by importing the technical production skills or handing it over to professionals in another country. This might have produced a good CD-ROM, but would not have met the community development objectives. The strategy was thus to bring in a trainer for the CIUEM technicians and local team, and do the production locally. The trainer visited briefly at crucial points, and was continually available on-line.

The initial production method was to divide the content sections among the CIUEM technicians. Each was to combine content in different formats to finalize a complete menu topic. This did not work well. One problem was that the technicians depended on material from Manhiça that was still undergoing revision by local doctors. More importantly, the technicians felt that their skills were insufficient for handling all the various tasks required in each content section.

After a training session, they switched to a successful approach where each focused on a separate type of task. One did sound and video; one became the art director, selecting images and layout for each content page; one solved technical and software problems; and one coordinated with Manhiça. Tasks and deadlines were adjusted accordingly.

Linked to content development, the team faced the challenge of accommodating two languages in the application, Portuguese and Shangaan. The local team helped come up with a two-part solution:

1. All written text would be in Portuguese, because few of Mozambique's literate people read a local language only, and the written forms of the local languages remain unsettled.

2. Two sound tracks would run throughout the CD, one with the written texts read aloud in Portuguese, the other with an oral translation in Shangaan. Both include live interviews in the original languages.

The local team hoped that written texts in Portuguese accompanied by voice-overs in the user's language of choice would have the added benefit of helping users improve their Portuguese language skills.
III.9: Validation and Testing

Before producing the application in large quantities, the project team must pre-test the CD-ROM with the intended user groups, check for major gaps in content, and ensure that all of the parts function properly. Users' positive and negative reactions should be analyzed and considered in further refining the application before large-scale production. Once it is distributed, testing with larger user groups will help define the CD-ROM's effectiveness, and may provide ideas for future editions.

a. Objectives
During the testing and validation phase, the project team learns from the target group's reactions to the CD-ROM. This exercise has the following objectives:

- To assess the users' understanding of the content and functions;
- To assess the users' motivation in response to the CD-ROM;
- To compare the CD-ROM's effectiveness versus traditional means of learning;
- To ensure that the CD-ROM has the desired effect, both in general and in specific content sections;
- To look for unforeseen effects;
- To adapt the CD-ROM based on the reactions;
- To revise/prepare accompanying materials to facilitate use of the CD-ROM; (III.10.b: Dissemination and Promotion);

Testing and validation begins with pre-production testing to gather immediate feedback before production, and should follow through, as the application is used more widely, with post-production testing to gather information that will facilitate improvements over time.

b. Pre-production testing
As soon as the application is finalized, pre-production testing should be conducted with a sample group from the targeted community group(s). A total of 25-30 people should be selected to represent the different types of users and their varying levels of education and ICT skills. The telecentre typically organizes and hosts the pre-production testing.

The users' feedback should be recorded in writing or on audiotape at three stages during this test:

- The individual's expectations of the programme before trying it;
- The first impression of the concept and programme while first using it;
- Reactions to the content and functions after using the programme.
1. **Focus areas:** Individual responses, successes, and difficulties in the following areas should be observed while testing the application:

- Accessibility of information;
- Navigation;
- Understanding of symbols and icons, including colours;
- Understanding of the language in the application;
- Quality, effect and balance of audio and visuals;
- Usefulness for users at different literacy levels;
- Usefulness for users at different ICT skill levels;
- Understanding of content and intended messages;
- User's sense of learning;
- Overall relevance to the user;
- Usefulness of the help buttons;

The organizers should ensure that the users can test the whole application, even though this may require several testing sessions. Each section and function should be tested by several users.

2. **Means:** All feedback should be obtained and documented before changing any content or coding. Otherwise, mingled feedback from different versions of the application could unnecessarily complicate the response process.

The three recommended methods to gather users' feedback are questionnaires, group discussions, and individual interviews. Any or all of them may be used, as appropriate, but all should gather feedback at three stages (before, during, and after testing, as mentioned above).

While the testing should include general instruction in using the application, it is most important to provide unstructured time for the individual to surf, play and learn with the CD-ROM.

Members of the content and technical teams should attend some pre-production testing sessions. Direct observation of the users' feedback will aid in understanding and follow-up.

c. **Validation of feedback**

The technical and content teams should jointly analyze the feedback for indications of undesirable effects and malfunctions, and agree on any changes to be made. While major changes in content or design would require starting from scratch, adjustments would be feasible in many areas:

- Icon style;
- Additional text to clarify existing topics;
- Text reductions in confusingly overloaded topic areas;
- Improving the technical efficiency of functions;
- Help buttons and their contents;
- Graphic design (e.g. colours).

When the agreed-upon changes are complete and validated, the team may begin producing the CD-ROM for wider distribution.
d. Post-production testing

Compared to printed books, CD-ROMs are much easier to alter and update over time. This potential to continue improving the application justifies extended, post-production testing.

A CD-ROM’s evaluation period could be considered to extend for a defined period beyond its launch, through continued gathering of feedback on its effect and impact. (For details on evaluation methodologies, see IV.4.d: Evaluation).

The following means for recording user feedback over time can be used as appropriate, individually or in combination:

- **Test questionnaires** from the pre-production tests can be included electronically in the application, along with a request for users to complete and send them to the project’s follow-up team after a specified time.

- **Counterpart agreements** involving active product dissemination can include testing (III.10.b: Dissemination and Promotion), with counterparts inviting and motivating new users to participate. This would typically involve other telecentres and university departments that are interested in the effectiveness of the CD-ROM for applied research. Feedback on the content could come through similar agreements with organizations interested in related subjects.

- **An on-line feedback system** via e-mail should invite users’ general comments, including problems with information in the application and suggestions for additional information (IV.4.d: Evaluation).

Over time, these post-production feedback mechanisms will facilitate improvements in a given application, expanding the scope and content, and eventually leading to a new edition.

**SUMMARY:**

- Testing should be organized in two major stages: 1) final preparation for production and 2) general testing after production, extending over time.
- Pre-production test results should be organized and analyzed as a whole before making any changes in the application.
- Pre-production testing should involve all sections and functions of the CD-ROM.
- This should also involve users with varying educational and ICT skills levels, to get a broad picture of the CD-ROM’s usability.
- General testing after production and over time should involve counterparts within the evaluation mechanisms.

**Country Examples**

The following examples show the elements of testing and validation in Mozambique and South Africa. The methodologies were quite similar. As this handbook was prepared, testing was being organized in Mozambique and first reactions had been registered in South Africa.
Testing in Mozambique

The validation and testing of the CD-ROM on malaria was organized around two key indicators:

1. Accessibility and ease of understanding the information and messages intended for the users;
2. The application’s ease of use (installation, navigation etc.)

Testing will be carried out with representative groups of the priority target audiences, including women, young people, children, farmers and health workers. Members of each group will be introduced to the CD-ROM, and have the opportunity to explore it by themselves. In addition, doctors will be asked to confirm the scientific validity of the information.

Feedback will be sought through questionnaires from groups such as health workers and young people, while other groups will provide feedback through discussions and interviews. CIUEM will design the questionnaires, the interview guidelines, and facilitation methodologies, The Manhiça team will conduct the tests at the telecentre.

The application will be produced for wider distribution once the feedback is received and processed, and any resulting changes are complete. Telecentre staff can install the CD-ROM and related software, so users will not need to. While the primary aim is to circulate and use the CD-ROM, telecentres and other counterparts will be asked to conduct user surveys over time and send them to the project team to help develop new improved editions of the CD-ROM.

Testing in South Africa

Before testing by user groups, the prototype application was given to the key counterparts for general comments and reactions. An invitation to participate in the pre-production testing was extended to the youth from Alexandra Township who attended the initial workshop where youth employment was selected as the topic (III.4). The 24 youth who were selected represented a range of ages and backgrounds and a balance of gender.

During the testing period, the users provided feedback both verbally and via pre-designed forms. These forms addressed a number of important areas, the most important being content and usability. Recording of the feedback was organized with the assistance of the community centre facilitators. Staff from Naledi3D Factory summarized and analyzed the feedback, and accordingly revised the final version of the VR learning content.

The comments below from one testing session reflect the users’ reactions to the question of how the programme differed from their normal learning experience.

‘I am an assistant facilitator in Life Skills, and we do this verbally and some practically. However, doing it visually by use of a computer was very different and a great learning experience’.
‘I believe that this experience is a better teaching solution than just reading from a book...’
‘The difference is that the computer shows you more information than the teacher’.
‘It was different, because I got the information from a computer, and it was fun the way it was designed. I have fallen for this programme. It has widened my horizon’.
‘The programme allows you to learn at the same time as having fun. It is not too formal. It allows you to listen and think carefully’.

Step-by-Step Guide for ICT Learning Initiatives
By Janne Kjaersgaard Perrier, June 2004
III.10: Dissemination and Promotion

Once the final product is ready, it should be made known to all relevant entities in the community and beyond. If the product is of sufficient quality, it should be disseminated and promoted beyond the primary target group as a model for similar local ICT content development projects. In this way, the effort can promote both the content and the process of learning through ICTs. If resources are scarce it is important to target the distribution, making the CD-ROM available only to people, networks and institutions that can use the application constructively. Accompanying materials and activities should be provided to ensure that the CD-ROM is used effectively. The following suggests ideas and means for a promotion and dissemination strategy.

a. Contexts and outreach

The telecentre that is home to the ICT Learning Initiative can finally harvest the fruits of its efforts. With the final CD-ROM, the telecentre, together with community members and counterparts, has produced a means to reach out to new users and enhance its presence in the community. The first step in the promotion and dissemination strategy is to reach these target groups effectively.

The second step is to ensure that the outreach goes beyond the immediate community. Additional contexts involving existing and potential counterparts should be considered. Below is a list of stakeholders with potential interest in the CD-ROM content and/or the ICT Learning Initiative as a model. (Point b. below lists means to contact the stakeholders and intended user groups and involve them in dissemination and promotion.)

Potential partners to be considered are:

Similar structures: Multi-purpose community centres;
Traditional telecentres;
Resource centres;

Communities:
NGOs;
Public institutions;
Libraries (public and school);
Information desks or offices with local associations;
Schools and colleges;
Teacher training institutions;
Other public access points;

Project partners:
Every counterpart involved in every stage of the project;
Subject relevant organizations;
ICT development networks;

National level: Ministries;
NGOs;
All parties and bodies consulted during counterpart arrangements;

International level: International organizations and specialized agencies;
International NGOs and civil society organizations.
b. Means
Various means may be used to reach these stakeholders. Factors to consider include the extent of promotion, the stakeholder's profile, and its potential interest in either the CD-ROM or the initiative itself. Below are some means for promotion and dissemination:

- Concrete distribution of the product, alone or in an attractive package with accompanying material;
- The media;
- Activities and events.

1. Product distribution: The CD-ROM can be sent to stakeholders directly. To save resources, contact should be made beforehand to ensure that they are interested and that they have the capacity and availability to apply the CD-ROM (see media/e-mail below).

An attractively designed booklet-cover for the CD-ROM will help with promotion, especially if it effectively introduces the application to potential users and distributors. The CD-ROM's value and interest can be further enhanced with accompanying materials that help people understand the application better and use it more effectively.

Since a package of material costs more to produce than a CD-ROM, the budget planning should specifically include determining an appropriate number of, and budget for, promotional packages. Now that the prototype is ready, additional external funding may become available. Potential counterparts who wanted to see the final product before committing themselves may now be willing to join the initiative (III.1: Counterpart Arrangements) to support wider promotion and distribution of the CD-ROM.

- Components of the package may include:
  - The ICT application on CD-ROM;
  - A paper booklet inside the CD-ROM cover that explains the CD-ROM's contents, how it came to be, and how to use it;
  - A printed compilation of key material on the CD-ROM;
  - A telecentre activity guide with recommended settings for introducing the application to the community;
  - A guide for facilitators on introducing the CD-ROM to new users with limited ICT skills;
  - Visual aids, e.g. video.

2. Media promotions: Mass communications media are critical for reaching potential users locally, nationally and internationally, as well as for promoting the ICT learning approach in general. In planning media promotion strategies, keep in mind that new examples of successful ICT learning have great potential to open new doors to the concept of ICT learning.

Well-developed programs using spoken, written, and visual communications can cost-effectively encourage target groups to participate in disseminating and promoting the ICT product. Dissemination approaches for the press, radio and Internet are discussed below.

The press: Given the wide variations in the purposes of newspapers and magazines, at least two press briefs should be prepared, one general and one detailed. These should be sent out by ordinary or electronic mail, as appropriate for the specific newspapers and magazines. The following types may be interested:
Local and national newspapers;
Specialized ICT- or content-related magazines;
University press;
Newsletters of counterparts.

Radio: Radio has the great advantage of reaching the illiterate. Community radio stations are particularly effective, because they broadcast information and programmes in local languages and are interested in locally relevant content and events. Also, broadcasting allows many creative on-air activities:

- Product announcements;
- Invitations to demonstrations and workshops;
- On-air discussion by specialists and users on how to use the application;
- Interviews with new users of the application;
- Interviews with team members;
- Discussion and awareness-raising by content specialists.

Internet and e-mail: These are the most cost-effective means of dissemination. E-mail should be used for initial promotions to the press and radio, as well as relevant institutions and organizations (see point a. above). Those who express interest can be sent CD-ROMs or full packages. E-mail is also a good format for discussion and sharing information, perhaps leading to new partnerships.

Internet promotions may be conducted on-line through demonstrations at the telecentre and counterparts' web sites; ICT forums and networks; electronic newsletters; and content-related forums and networks.

3. Activities and events: An attractive, successful product designed to assist local communities has great potential for promotion in development contexts. First, the counterparts can distribute the CD-ROM and promote the initiative to their other partners. These may include relevant organizations and networks that can provide additional promotional support.

Organizations and institutions relevant to the CD-ROM's content or ICTs in general may be interested in promoting the CD-ROM and the ICT Learning Initiative at various types of events:

At national and international levels:

- ICT- and subject-related fairs and conferences;
- Seminars and workshops;
- Distribution as reference material at other events.

Locally, the CD-ROM can be promoted at various types of events and awareness-raising activities:

- Community workshops to demonstrate the CD-ROM;
- Smaller group demonstrations, introductions and training at the telecentre;
- User groups formed through associations, using telecentre facilities;
- Telecentre training courses for general ICT skills;
- Extracurricular presentations and workshops at schools;
- Presentations and workshops in professional and social networks;
- Word of mouth;
- Stands at local markets;
- Posters and hand-outs.

Step-by-Step Guide for ICT Learning Initiatives
By Janne Kjaersgaard Perrier, June 2004
SUMMARY:

• Development of the promotion and dissemination strategy should begin during initial planning.
• Mobilization of additional support for promotion and dissemination should be attempted once the final product is ready.
• The promotion and dissemination strategy should center on the target user groups.
• Time and resources should be allocated for reaching out beyond the local community.
• Potential users should be sought through various means such as attractive, instructive packaging for the CD-ROM, media promotions, and relevant activities.

Country Examples

The following examples show the elements of the planned promotion and dissemination strategies in Mozambique and South Africa. The applications were still being tested and validated when this handbook was being prepared, and promotion activities had not begun. The examples include activities and means that were considered by each country team, as well as some thoughts on how to reach out widely and effectively.

Dissemination and promotion in Mozambique

For the first phase of promotion, CIUEM will manually produce approximately 100 copies of the CD-ROM on malaria. If more are needed, additional funding should be mobilized and reproduction delegated to a professional company with the necessary equipment.

The CD-ROM will be publicly launched in Manhiça, with the support of the local community and health structures. Copies will be distributed in Mozambique free of charge to all known telecentres, community and educational initiatives using ICTs, and schools involved in the SchoolNet project. Other NGOs and foreign organizations will be encouraged to purchase the CD-ROM.

An effort will be made to link up with local health structures. Health workers should have access to the CD-ROM and the information should be applied in their health education activities. Although very few rural hospitals or health centres have access to computers, increasing numbers of District Directorates of Health have adequate power supplies and are beginning to use computers.

The CD-ROM will be promoted through national radio, TV and newspapers. This promotion will focus on the content, the project team and the reactions of the target groups. Community radio stations, particularly in areas with telecentres, will broadcast information about the CD-ROM and the ICT learning experience in Manhiça. The local radio station in Maputo City has broadcast items about the production process. This included interviews with members of the Manhiça and Maputo teams, which were re-broadcast on national public radio.

Local language issues may affect wider dissemination at community levels. The CD-ROM is in Portuguese and Shangaan, and Shangaan is not understood in central and northern Mozambique. However, soundtracks could be made in other local languages, given sufficient interest in these regions and support by new counterparts.
Dissemination and promotion in South Africa
First, 100 copies of the CD-ROM on youth unemployment will be produced, accompanied by information packages containing printed copies of the materials, guides for facilitators, and a video presenting the project’s process.

The CD-ROM will be disseminated by the Alexsan Resource Centre at the Youth Desk and library centres. The whole package is to be launched through the Government Communication Information Systems (GCIS), the National Multi-purpose Centre Initiative, and the Telecentre Initiative run by the Department of Communications. In this way, the multi-purpose centres will be asked to provide additional support services (the CD-ROM package includes suggestions and materials for these services). Selected schools and youth organizations are also part of the primary target groups.

Entities will be chosen to receive the CD-ROM package based on assessments of their equipment, electric power, and facilitation capacities for operating and disseminating the application.

Helping unemployed youth find work is the main objective of the Youth Desks at the Alexsan Resource Centre. At regular intervals, the centre plans to invite youth who have used the application to workshops where they can discuss additional questions and learn of opportunities.

In promoting the CD-ROM, the Centre will ensure linkages to the Department of Labour’s learnership programmes. The CD-ROM may also help revitalize the centre’s career guidance section, adding value to the centre’s current work in youth advice and support.

A general media launch involving newspapers and radio is planned. The project partners would also like to use the launch as an opportunity to show government departments the advantages of applying a Virtual Reality format to disseminate information at the community level.
PART IV:  

Key features

This section discusses four key issues that are relevant during most or all phases of an ICT learning initiative: the gender perspective, capacity-building, technology choices and evaluations. As in Part III, the country examples at the end of each chapter are based on experiences in Mozambique and South Africa, except in the chapter on evaluation, where the example evaluation framework is a summary of performance indicators from both countries.
IV.1: Applying a Gender Perspective

An ICT learning initiative is an outstanding opportunity to promote gender equity. Gender equity can be promoted around any topic relevant to group life, such as health, social issues, productivity, arts and leisure. Applying a gender perspective means seeking to identify, and to understand the reasons for, similarities and differences in the meanings of issues, actions and processes to women and men, male and female adolescents, and boys and girls. By improving the understanding of gender differences, a well-adapted gender strategy may also help increase the initiative's effectiveness in its primary goals.

a. In the context of open learning communities

A central principle in open learning communities is to analyze social processes on a given topic from male and female perspectives, with the goals of understanding existing gender relations and overcoming the existing inequities (a concept of learning for generating positive change in solidarity, see Part II).

Open learning communities intend to provide women, men, and adolescent girls and boys with new spaces for meaningful learning and knowledge-sharing, to break the silence around unfair gender relations, and to promote gender equity through issues relevant to daily life.

African tele- and community centres often report a gender divide in the use of services: more males than females generally use the telecentres; girls and women typically come to use the telephone; boys tend to be the main computer users; and girls tend to drop out of computer courses. The opposite trend appears in other cases where the participants in the centres' activities are mostly women. To help telecentres become true community centres, issues and participation must be addressed from a gender perspective.

b. In the context of an ICT learning Initiative

Gender issues concern both sexes and all who participate in a project:

- Team members and their roles (e.g., do women and girls choose technical aspects or focus on graphic design and interpersonal relations?);
- Communities (e.g., differences in distributing tasks, interest in data collection, and influence on the orientation and presentation of content);
- Intended users of the final product (who will use it, and how?).

c. Taking a gender approach

If an ICT learning initiative does not focus directly on girls and women, the relevance to gender issues may not be immediately visible, and these issues may not always be easy to grasp or address. In most initiatives, however, gender equity is obviously a relevant issue affecting people's everyday lives and the development of their communities.
The gender perspective should be incorporated into the entire process of the project (IV.4.c: Evaluation). The general organization of the process should govern how the gender perspective is applied in specific activities, as well as the selection of subjects and target groups to be addressed. Gender issues should not be treated separately or piece by piece, which could be perceived as an oppressive checking of exact attitudes and behaviour.

Similarly, it is better to apply a gender perspective through the overall approach than through a separate gender strategy outside the initiative proper. This approach would consider various aspects of the gender perspective by paying attention to what happens to men and women, boys and girls when they act together in a group, be it in a team, a community, or a society.

The following suggestions are intended to promote a gender perspective that will add value to the ICT learning initiative:

- Profiles of the community and centre will observe the specificity of activities, interests, needs and behaviour of men, boys, women and girls, in addition to providing a quick snapshot of the community (III.2: Identifying a Community).

- The needs assessment should be based on gender-aggregated information, to enable analysis of the issues from both men’s and women’s perspectives (III.4: Selecting a Topic).

- In identifying a topic for the application, it helps to create an environment where girls and women feel comfortable to express themselves (see idem).

- In establishing a team, it is best to try for an equal number of men and women. Content groups too should have fair and functional gender balances. In some cases, it might be better to mix men and women in groups; in others it might be better to separate men from women, or younger from older (III. 5: Establishing and Building a Team).

- For a mobilized and committed team, and to minimize drop-outs, individual male and female members should receive substantive output from the initiative throughout the process (see idem).

- Task assignments should not follow stereotypes, but respond to individual aspirations and skills; e.g. girls may be good project managers or technicians, and a male might be best at photoshop and artwork.

- The team should consider different preferences in the timing of tasks: women and men may prefer different hours depending on their different daily responsibilities.

- The best time to consider the different needs, interests and behaviour of men and women in relation to the topic, and to organize the content presentation accordingly, is during content development (III.6: Content Development).

An initial analysis of gender differences in relation to the topic of the initiative should be conducted to facilitate a discussion. This, in turn, should lead to decisions supporting the development of open learning communities for gender equity. As a first step, the following questions can help identify a relevant gender perspective:

- Is the chosen theme equally relevant for men and women? If not, the differences should be clearly defined: these may appear in activities, interests, needs, roles and responsibilities.
• How can the CD-ROM communicate issues that concern men and women in ways that convey both points of view?

• Would men and women use the CD-ROM or the information it contains differently?

• How can the content development and presentation include both men and women? What does each individual want from the initiative?

SUMMARY:
• A gender perspective concerns both sexes and all topics and contexts.
• A gender perspective should be deeply integrated into the initiative, and not stand alone.
• A gender perspective should enter into all project phases, particularly when selecting topics, establishing teams, and developing content.
• Challenges that arise in applying a gender perspective may reveal deeper gender problems that the initiative might usefully address.

Country Examples

The following examples show how the gender perspective was applied in Mozambique and South Africa. Both initiatives had gender imbalances, but in opposite ways: the Mozambique team was mostly young men, and in South Africa it was mostly women. This influenced how activities were organized and how gender issues were addressed during project implementation.

Gender aspects of the Initiative in Mozambique

The 15-person core working group in Mozambique had only two women, despite the participatory approaches used in establishing the team (see country example III.5). Women said that this resulted not from lack of interest in the project, but from heavy daily workloads that left them less time for such an endeavour than was available to men, both young and elder. This did not hinder the team from applying a gender perspective.

Women were also difficult to reach in the initial needs assessment. To represent their opinions and ideas adequately, additional data was collected from women exclusively (see country example III.4). This initial gender issue was rooted in the traditional distribution of social roles, which made it harder for women to participate than men. In this case, the gender perspective was constrained by the need to select team members on the basis of feasible commitment and demonstrated interest.

Thus, the team chose to reflect gender equity in the project methodology and content development, rather than through including women in the core project group. The gender perspective was applied in the following ways:

- The needs assessment on the use of telecentres addressed the needs of women in particular, in addition to those of youth in general. The women's responses provided guidance and inputs as to their expectations from such centres, and showed very limited knowledge of the potential uses and benefits of ICTs to women.
The collection of information and data was gender-aggregated, with special attention to the differences in responses from men/women, boys/girls, intended for further analysis.

The application was targeted at women in particular, in addition to children, youth, farmers and health workers, as identified by the community. The working and training sessions specifically addressed the differences in men's and women's needs, interests, and activities in connection with the project theme, malaria. This was done to facilitate gender-sensitive planning of content development and presentation, and better responses to the potential users' learning needs.

While the core group had only two women, women and girls participated in the broader reference group involved in discussion, data collection, and testing. This required less time than full team membership, allowing them to participate and contribute to the initiative.

Members of the Women’s Association who had received basic computer training through a prior telecentre project helped test the prototype application. Adaptations were made according to their feedback and observations.

The project facilitators ensured that the women in the core group felt at ease during working sessions, and that the initiative allowed them to learn in the areas that they desired.

Gender aspects of the Initiative in South Africa

In South Africa, the main working group was split equally between women and men, as were the focus groups and facilitators who identified the topic for the ICT application. However, an all-woman team was responsible for the research tasks and management, while a mainly male team was responsible for producing the CD-ROM. This occurred because the task skills were considered before the gender balance.

Participation: It is noteworthy that women were easily recruited for this project. Six years before, the Resource Centre had difficulty attracting women participants, due mainly to the nature of the centre’s activities, as well as the women’s household duties and teen pregnancy. This time, the Centre specifically addressed these issues and tried to make the programmes relevant to women. An unintended effect of the shift in focus was that the Centre activities became less relevant to men, and low participation among men became a general trend. Men's greater participation in recreational activities such as soccer may also have been a factor.

It was further observed that today, women in Alexandra Township realize that they should become empowered. Taking a back seat is not an option. They have moved away from passive roles and expectations that men would create the support that women need. These urban women now need things to be more tangible and have realized that, if they are to be heard, they should participate.

The women participated very actively during the focus groups and the launching workshop. In some focus groups, the women were more vocal than the men. In line with the above-mentioned trends, a major gender difference in these activities was women outnumbering men in focus groups and completion of questionnaires. Nevertheless, the focus groups generated some interesting and empowering gender discussions for both the men and the women who took part.
**Methodology:** The needs assessment specifically provided a gender perspective by having three focus groups for each age cohort. The single-gender groups allowed people to express and reflect on gender-specific needs. The mixed-gender groups allowed men and women, girls and boys, to share experiences and begin communicating on gender issues, while the researcher observed gender relations at play. Responses in the needs analysis were disaggregated by gender. One conclusion was that information needs in the community differed more by age than by gender.

Gender issues were also highlighted during content development. The main characters in the CD-ROM were a mother and her twin daughters. To avoid bias, one daughter was in charge of a male staff member, and the other daughter had a male boss. When validating the ICT application, a balanced group of girls and boys, men and women, participated in testing the prototype so the project team could observe gender differences in perceptions of content and functions.
IV.2: Integrating Capacity-building

Capacity-building is key in an ICT learning initiative, as shown in Part III. Capacity-building has many aspects beyond the acquisition of skills: it aims to transform traditional telecentres into places of learning, and to give community members opportunities to learn about issues that are relevant to their needs. It is also about learning how to use ICTs to acquire, share, and generate information and content for awareness-raising. In this context, learning occurs not only through interactive teaching, but more essentially through shared, practical work, using innovative means and media to achieve a defined outcome. In contrast to the step-by-step details on participatory methodologies for the implementation process given in Part III, the following provides an overview of potential areas for integrating the development of skills into an ICT learning initiative.

a. Creating a motivating framework

One advantage of an ICT learning initiative over conventional training is that it combines skills development with practical work. An ICT learning initiative can integrate capacity-building in many areas, and at different levels, during the various phases of application development. The work towards a concrete outcome is satisfying for participants, and applying newly acquired skills motivates their completion drive (III.5: Establishing and Building a Team).

Learning can be integrated in the initiative at different levels:
- Advanced intensive learning;
- Basic learning;

... and through different means and methodologies:
- Formal settings in workshops and courses with trainers and facilitators;
- Semi-formal settings through introductions to various tasks by facilitators and/or guidelines;
- Peer training, e.g., a mentor monitoring a team member's work;
- Learning by doing; practical work.

The degree of emphasis on capacity-building may vary during implementation, depending on the skills and means available. To create a motivating framework for implementation while adhering to the project's pre-conditions, it is important to consider the following factors:

- Skills available in the community;
- Skills and resources available through counterparts;
- Participants' interest in skills development;
- Objectives and approach of the initiative;
- Technology chosen;
- Time frame of the initiative;
- Availability and commitment of the participants.

The goal here is to conceive implementation mechanisms that balance learning opportunities with the skills and knowledge needed for a successful project (III.1: Counterpart Arrangements).
b. Potential areas for learning

An effective motivating framework for the participants will combine potential areas for learning with appropriate means to facilitate the learning. The table below gives an overview of these ingredients. Not all areas for capacity-building should be covered in a single project, because this would be too time-consuming. It could hamper progress and jeopardize the completion drive of the team. The above criteria will help the team and its counterparts to select appropriate aspects of capacity-building for emphasis during implementation.

<table>
<thead>
<tr>
<th>Potential learning areas:</th>
<th>Means:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advanced IT skills:</strong></td>
<td>Workshop courses with experienced trainer. This should be combined with practical work on CD-ROM development under close guidance and monitoring, to apply the acquired skills in a real project.</td>
</tr>
<tr>
<td>• Programming and use of multimedia development tools</td>
<td></td>
</tr>
<tr>
<td>• Image processing and web design</td>
<td></td>
</tr>
<tr>
<td>• Audio editing</td>
<td></td>
</tr>
<tr>
<td><strong>Basic computer skills:</strong></td>
<td>Regular telecentre courses. A focus on file and folder management is useful for content group members. Practical work could include using Powerpoint or an equivalent to prepare small presentations and brochures for local use.</td>
</tr>
<tr>
<td>• File and folder system;</td>
<td></td>
</tr>
<tr>
<td>• Microsoft package or an equivalent; Internet/E-mail.</td>
<td></td>
</tr>
<tr>
<td><strong>Video recording and digital editing</strong></td>
<td>Training by an experienced person combined with practical work developing CD-ROM content elements.</td>
</tr>
<tr>
<td><strong>Interviewing techniques</strong></td>
<td>Training by a facilitator combined with practical work in community research, developing CD-ROM content.</td>
</tr>
<tr>
<td><strong>Team-building</strong></td>
<td>• Story-board planning</td>
</tr>
<tr>
<td></td>
<td>• Participatory approaches</td>
</tr>
<tr>
<td></td>
<td>• Coordinating work across sub-teams</td>
</tr>
<tr>
<td></td>
<td>• Building confidence through practice</td>
</tr>
<tr>
<td></td>
<td>• Providing feedback to each other.</td>
</tr>
<tr>
<td><strong>Facilitation and presentation</strong></td>
<td>Group work during team or community workshops.</td>
</tr>
<tr>
<td><strong>General management</strong></td>
<td>Coordinators managing content teams:</td>
</tr>
<tr>
<td></td>
<td>• General planning and project cycles</td>
</tr>
<tr>
<td></td>
<td>• Meeting objectives with available resources and time</td>
</tr>
<tr>
<td></td>
<td>• Monitoring progress</td>
</tr>
<tr>
<td></td>
<td>• Content-development plans</td>
</tr>
<tr>
<td></td>
<td>• Reporting techniques and formats</td>
</tr>
<tr>
<td></td>
<td>• Evaluation techniques</td>
</tr>
<tr>
<td></td>
<td>• Partnership-building with counterparts.</td>
</tr>
<tr>
<td><strong>Conception and development of tools and instruments</strong></td>
<td>• Data and information collection</td>
</tr>
<tr>
<td></td>
<td>• CD-ROM features such as interactivity, games, information, combining verbal, picture and text to convey messages</td>
</tr>
<tr>
<td></td>
<td>• Tests and feedback techniques</td>
</tr>
<tr>
<td></td>
<td>• Promotion strategies</td>
</tr>
<tr>
<td><strong>Content issues</strong></td>
<td>Content group participation:</td>
</tr>
<tr>
<td></td>
<td>• Acquiring, processing and presenting information</td>
</tr>
<tr>
<td></td>
<td>• Exchanging feedback among content groups</td>
</tr>
<tr>
<td></td>
<td>• Discussions and exchanges with specialists, the broader community, and relevant institutions and organization.</td>
</tr>
</tbody>
</table>
SUMMARY:
- Mechanisms for capacity-building should be organized during counterpart arrangements.
- Participants' various aspirations for skills development should be considered while planning a capacity-building strategy.
- Learning opportunities should be balanced with the need for skills to accomplish the goals.
- Capacity-building activities should not hamper the overall completion drive of the team.

Country Examples

The following examples show the kinds of capacity-building mechanisms used in Mozambique and South Africa. Due to their different approaches and technology, emphasis was put on different components. In Mozambique, the emphasis was on learning by the team members during application development. This involved different kinds and levels of skills development, for which various mechanisms were put into place. In South Africa, fewer people were involved in capacity-building during application development, because the overall project emphasis was on ensuring that the application was a learning experience for future users.

The capacity-building approach in Mozambique

The basic approach was for the initiative to be a learning experience for all of the participants (approximately 15 people). Efforts were therefore made to respond to the participants' capacity-building needs and interests, according to their roles and tasks in the team. It combined formal and semi-formal training, in which the key elements were practical work and team-building. It was time-consuming, but worthwhile. During the initial counterpart arrangements, mechanisms were put in place to organize training at three levels:

1. The telecentre provided basic computer training for the Manhiça team;
2. CIUEM provided additional training for the local team;
3. The external technical counterpart provided training to the CIUEM team;

Training areas covered in Manhiça included:
- Use of digital tape recorder, camera, scanner, CD-writer;
- Organization of files and folders;
- Treatment of images;
- Internet searching;
- Interviewing techniques and organization.

Areas covered at CIUEM included:
- Story-board planning;
- Use of multimedia software;
- Processing and editing of sound and video;
- Concept and organization and navigation tools.
Participation in the initiative brought learning about organization, people management and planning for both the CIUEM and the Manhiça teams. Their recognition of this emerged from feedback and evaluations after workshops and training sessions. A major discovery for all participants was that the technical skills for multimedia production were a relatively small part of this learning, compared to the planning, data collection and information processing.

The participants needed little motivation to learn: young people in the community generally crave education and lifelong learning, and the community provides few opportunities for this. The information needs studies confirmed this unsatisfied appetite for learning; education and health were always at the top of the list.

The CD-ROM is intended to be educative, so issues on malaria are presented in text and image, music and voice, games and quiz material. The team is eager to learn whether multimedia techniques will transmit messages in the community more effectively than traditional methods such as written manuals or oral one-to-many lectures, which have less scope for interaction.

The capacity-building approach in South Africa
While the core team members tended to focus on their respective areas of specialization, they naturally learnt from each other through interactions during implementation. Team-building became stronger as the project developed and the team members became more aware of each other's tasks as well as the sequence of content and application development. This experience may strengthen cooperation and efficiency in similar future projects.

Opportunities for capacity-building and learning were integrated at different phases of the project:

1. A student's membership on the technical production team enabled him to apply his programming skills in a true development project, closely monitored by the technical coordinator.

2. Six young facilitators were trained to facilitate group work, with an introduction to group work methodologies. All had done youth work before, giving them good bases in community-research skills. After each focus-group session, a short debriefing was held with the facilitator to discuss the challenges faced and lessons learnt. At the end, all of the facilitators received reference letters supporting their future involvement in community research.

3. The CD-ROM's objective was to provide a learning experience that would motivate each user to complete the course. To this end, it provides information in verbal, picture and text formats, and the whole process is highly interactive, in moving from one learning segment to another.

4. Promotion of the CD-ROM will focus on youth groups being trained to use ICTs for job searches and general information at tele- and community centres in South Africa. To this end, guidelines were prepared to help telecentre managers and trainers introduce the CD-ROM to new users.
IV.3: Technology

Application is a general, commonly used term for all types of computer programme, ranging from simple text-and-image presentations to complex, interactive creations containing vast volumes of information. Applications are built using special applications typically known as development tools, the capabilities of which determine the possible contents and functions of the end product. Thus, the desired functions of the end product will influence the choice of development tools. The challenge of choosing appropriate technology, therefore, is to match the purpose (primarily, the intended users' needs and skills) with the available budget and development skills.

a. Compatibility between technology and equipment

Choosing appropriate technology for the application includes ensuring that the target users have access to the necessary hardware and software. Rapid progress in computers' performance, coupled with great demand for the latest technologies, means that several older computers can be bought for the price of a single new one. Many community centres thus choose to buy older computers, despite possible limitations in using the latest applications. Applications for these end-users, therefore, may be more broadly useful if they are simple ones that can run on older computers.

b. Off-line versus on-line dissemination

Efficient, cost-effective dissemination is crucial. Digital content is most commonly disseminated either on-line via the Internet, or off-line via hard media such as CD-ROM, floppy disk or DVD.

On-line dissemination has the advantages of immediate access for Internet users world-wide, greater ease of updating applications regularly, and extremely low cost to the producer. However, the Internet can be costly for users, especially in developing countries (as noted in Part II.5). Audio/video content and quality may be compromised due to limited data-transmission capacity at public Internet-access points such as telecentres and cyber cafes. Exclusive use of on-line solutions to reach local communities in remote areas thus may not be appropriate.

Off-line dissemination via such media as CD-ROM and DVD may be more efficient and cost-effective than on-line solutions. Both of these media have high data-capacity and are easy to copy and use, and neither requires high-quality Internet access.

c. Skills level and costs

1. Technical know-how: Application development can require many different levels of programming skills, from basic to advanced, depending on the choice of software. Making applications visually attractive calls for skills in graphics and the handling of equipment such as scanner, digital camera, video recorder, and CD-ROM writer. HTML and multimedia applications require additional knowledge of graphic development tools such as Photoshop, Flash Media, Illustrator and Fireworks.
2. **Additional skills:** In addition, application development requires personal and professional skills in such areas as creativity and, especially within larger teams, project management. It is noteworthy that complicated multimedia systems may not be the most attractive and efficient ones. Success relies on the conception and the creative handling of tools. A simple application with few technical details can be powerful and fully meet its purpose.

Most of the work in application development is in the planning and preparation of content (not the programming). The group needs a shared understanding, and an agreement on how best to reach the intended users: how to blend text, image, and sound for the desired effect; how to stimulate learning, laughter and reflection. For a successful result, these creative skills should be highly valued in combination with technical skills in the application development process.

3. **Costs:** The cost of application development tends to rise in proportion to its complexity, mostly due to the cost of expertise such as programming skills. The feasibility of a given technology usually depends on the availability of expertise in the community or through collaborators.

c. **The right choice...?**

Selecting the most appropriate technology requires considering the purpose, target users, and target environment, as well as the available skills and funds. The following presents examples of the preconditions for, and implications of, embarking on ICT learning initiatives at different levels of technical complexity. This overview of three applications at three different technical levels includes outlines of the applications' uses, requirements in technology and skills, and advantages/limitations. All of these factors should be considered in identifying appropriate technology for a given purpose.
1. Simple presentations

| Software:          | • Microsoft PowerPoint  
                      | • StarOffice Presentation. |
|--------------------|---------------------------------------------------------------------|
| Hardware:          | • Pentium PC or equivalent.                                        |
| Overview:          | • Used for computer-based presentations with limited information-volume.  
                      | • Intended to accompany verbal presentations, and most effective in these contexts.  
                      | • Format supports linear presentation of information  
                      | • One-way communication.                                           |
| Typical uses:      | • Presentations, often at workshops and seminars, of material that can be broken down into pages or slides, each with limited text, graphics and audio-video. |
| Advantages:        | • The software is fairly easy to learn for those with basic computer skills.  
                      | • Presentations are simple to develop and use. Individual or group training can produce quick results within an ICT learning initiative. |
| Limitations:       | • Severe limitations on the amount of content that can be presented effectively.  
                      | • Limited audio-visual capabilities.  
                      | • Low interactivity.                                                |
| Technical skills required: | • Advanced knowledge of Windows or Linux, including how applications interact.  
                      | • Expert knowledge of PowerPoint development or equivalent Experience producing CD-ROMs for distribution. |
2. World Wide Web-based applications

**Software:**
- Dreamweaver
- Golive (Adobe)

**Hardware:**
- Pentium PC or equivalent.

**Overview:**
- A graphical application for sharing information electronically.
- Combines text and simple audio-visual components.
- Used with Internet browser (e.g., Netscape or Internet Explorer).
- Can be accessed via Internet and locally (e.g., on CD-ROM).

**Typical uses:**
- Electronic sharing of large volumes of information.
- Training materials.

**Advantages:**
- Standard application recognized world-wide.
- Allows storing large volumes of web-page data (up to 600 MB per CD-ROM).
- Allows interactive use of data stored in databases, facilitating research and games, for example.
- Fairly easy to develop.
- Allows extended use of hyperlinks to support interactivity and selective, individual information searches.

**Limitations:**
- Internet browser needed (but normally provided with the computer).
- Audio-video quality may be reduced when used online, and using audio-video over slow Internet connections may cause severe delays.
- The application's numerous files and folders can be hard to share via email.

**Technical skills required:**
- Advanced knowledge of Internet navigation and browsers.
- Advanced website-development skills.
- Advanced design skills.
- Experience with website management and/or producing CD-ROMs for distribution.
### 3. Multimedia-based applications

| **Software:** | ColdFusion (macromedia)  
|               | Macromedia Director  
|               | Sound Forge  
|               | StudioMax 3D  
|               | Eon Reality  |
| **Hardware:** | Multimedia PC (Pentium 3 / Pentium 4) or equivalent.  
|               | Good graphics card, e.g., GeForce, Riva TNT.  |
| **Overview:** | Highly graphical application.  
|               | Can create 3D and include most media (multimedia), such as quality video, animation and sound.  |
| **Typical uses:** | Computer-based training applications.  
|               | Graphical simulations/demonstrations.  |
| **Advantages:** | High flexibility and a powerful learning environment.  
|               | Can take advantage of cutting-edge technology.  
|               | Attractive due to animation and variety of media.  
|               | Visual nature appeals to most audiences.  
|               | Interactivity lets users explore what interests them.  
|               | Visual presentation helps overcome language and literacy barriers.  |
| **Limitations:** | Software development packages are costly.  
|               | Time-consuming to develop multimedia application.  
|               | Often requires high-level computers and expertise to develop content.  
|               | Audio-video inputs must be high-quality for satisfactory results.  
|               | Additional equipment such as video camera needed.  
|               | Outsourcing to specialists may be required to achieve good content quality.  |
| **Technical skills required:** | Advanced skills with multimedia applications.  
|               | Experience developing multimedia applications; advanced skills with several development tools.  
|               | Video, picture and sound editing skills  
|               | Advanced design skills.  
|               | Good knowledge of programming.  
|               | Experience with CD-ROM production for distribution.  |
**SUMMARY:**

- Technical specifications of the application must be geared to the equipment on which it will be used.
- Additional equipment for application development, such as scanner and digital camera, must be compatible, and should be tested at the outset to save time.
- Technology decisions usually involve trade-offs; e.g., greater user-friendliness typically requires more sophisticated and demanding software.
- Wishes to integrate training and community activities into the initiative should be considered when deciding upon the technology.
- Producing a good application requires not only technical skills, but also organizational skills, creativity, and innovative thinking.

**Country Examples**

The following examples describe the technologies used for application development: in South Africa, a Virtual Reality multimedia-based application in 3-D; and in Mozambique, a multimedia web-based application. The examples describe the reasoning behind the choices of technology, and some of the consequences. Additional information on the consequences to other activities in the initiative is provided in the country examples in chapters III. 4: Establishing and Building a Team, III.5: Content Development, III.8: Production and IV.2: Integrating Capacity-building.

**Technology choices in Mozambique**

In Mozambique, the team used regular PCs with Macromedia Flash, Director and Adobe Photoshop to develop a multi-media application with relatively simple animation, sound and video. The choice of standard multi-media application was made, because the University that was responsible for the technical part, on the one hand had the necessary equipment, and on the other, considered this level of technology appropriate for the intended purpose. A main concern was that the application should be run on older computers. A 3-D application would, therefore, have been inappropriate considering the computer capacity available in the community centres.

In Mozambique, the team used ordinary PCs with Macromedia Flash, Director and Adobe Photoshop to develop a multimedia application with relatively simple animation, sound and video. A standard multimedia application was chosen because the university that was responsible for the technical part had the necessary equipment and considered this level of technology appropriate for the intended purpose, especially to ensure that the application would run on older computers. Given the computer capacity available at most community centres, a 3-D application would have been inappropriate.

In the beginning, the technical team members at the University did not feel fully confident in developing their own application. They took up the challenge though, because capacity-building through tuition by accredited trainers was foreseen to improve the skills of the team in application development, and the very project approach allowed to learn by doing. This combination of technical inputs was successful, because the University team was relatively well skilled before embarking on the initiative, and the new skills learnt were therefore easily assimilated.
At first, members of the university's technical team did not feel fully confident that they had the skills to develop the application independently. They accepted the challenge because they were promised training in the necessary skills, and the approach of the project encouraged learning-by-doing. This approach was aided by the team's pre-existing computer skills, which made it easy to assimilate the additional skills.

With respect to content development on malaria, the project team sourced a lot of information from the Internet, in particular from Brazil due to the common language. They used local institutions and specialists, in particular doctors, to verify both relevance and accuracy of the information, and to generate additional content in the community. The project team used a digital camera for illustrating content and reflecting the life in Manhiça. Video snap-shots of local theatre plays were used to animate specific parts of the content. A voice-over in Shangaan, the local language, was used in addition to Portuguese to make the application user-friendly, also for illiterate users. Training was carried out, among others to teach the Manhiça team to handle the video camera, the digital camera and the tape recorder.

For content development, the project team obtained much of the information on malaria from the Internet, particularly from Brazil due to the common language. They used local institutions and specialists, especially doctors, to verify the relevance and accuracy of the information, and to generate community-based content. The project team used a digital camera to illustrate the content and reflect life in Manhiça. Video snapshots of local theatre plays were used to animate some of the content. Voice-over in Shangaan, the local language, and Portuguese were provided to make the application user-friendly, especially for illiterate users. The Manhiça team was trained to handle equipment including video camera, digital camera and tape recorder.

### Technology choices in South Africa

In South Africa, three-dimensional (3-D) virtual reality (VR) technology was chosen for several reasons. The initiative's technical counterpart, Naledi3-D, had great confidence in VR technology, and this is the company's main area of expertise. Based on three years' experience in the development field, Naledi3-D believed that 3-D VR technology was appropriate for the project, and that the benefits in learning, especially in developing communities, greatly outweighed the technology's challenges. World-wide, few other companies, if any, were applying this new technology directly to benefit developing communities.

This choice was reinforced by a UNESCO study (June 2003) on the value of VR compared to other technologies for community learning applications. Later, the choice was strongly re-inforced by positive reactions to the project's VR content among youth at the Alexsan Kopano Resource Centre.

VR technology's strengths are in stimulating interactivity and intuitive engagement among users. VR technology makes the content visually accessible, creating great potential to bridge the gaps in literacy, knowledge, and language that can impede learning in developing communities.

Restrictiveness is the weak point of VR technology. Application development requires advanced skills that may be unavailable or too costly to procure, and which tends to exclude broader community involvement, even in content development. Also, developing communities may lack the computer resources needed to use the applications, or to take full advantage of their interactive features.
IV.4: Evaluation

Evaluations should be built into projects from the earliest stages of the planning process to ensure that the projects meet their goals, and to save energy, time and resources. It is important to look at both long- and short-term goals because projects can fulfill short-term aims, such as producing a CD-ROM, without meeting long-term ones such as strengthening gender equity. This broader perspective thus benefits not only the current project, but future projects. To foster a shared sense of ownership, the evaluations should engage individuals, groups, communities, and relevant organizations and institutions in an integrated, participatory approach.

a. The benefits of evaluations

Evaluation reports often receive too little attention. The evaluation results are a potentially valuable product of an initiative, and so should be presented in clear, accessible formats that can educate and empower all of the project's stakeholders. If presented and promoted skillfully, the reports can serve many purposes:

- Advocacy;
- Public education;
- Partnership-building;
- Networking;
- Lobbying;
- Planning.

Many community centres, telecentres and development partners want to know how ICT-based projects for gender equality are working and why. Evaluation reports documenting practices and lessons learnt could be gathered to create a pool of such reference material. This Step-by-Step Guide is one example of how to disseminate experience from an initiative.

Evaluation results can provide inputs for ICT policy discussions nationally, regionally and globally. They can support articles for newsletters, the Internet, journals and reports. Reporting the success or failure of a given project's methodology can benefit communities and development partners. Evaluations can be used by advocates for particular approaches to policy, or simply to inform policy debates on development interventions.

Evaluation results are constructive in strengthening partnerships among various entities:

- Community centres within and across borders;
- Relevant institutions and the community;
- Decision-makers at central and local levels;
- NGOs at national, regional and international levels.

Evaluation results can support fund-raising by communities and their development partners by providing a track record and experience of work on a given subject, or with a given approach and method. More broadly, evaluation results can demonstrate the need to commit resources to ICT learning initiatives.

Step-by-Step Guide for ICT Learning Initiatives
By Janne Kjaersgaard Perrier, June 2004
b. The tools

1. Qualitative and Quantitative indicators: Evaluations should be based on defined indicators that help to focus and locate information on specific issues for further analysis. Indicators are standards used to monitor and evaluate projects and measure achievements. They are pointers, numbers, facts, opinions and perceptions that look into and measure changes of specific conditions or situations. As parameters of progress, they provide a close look at the results of initiatives and actions.

Quantitative indicators, the traditional indicators in planning and evaluation, are facts and figures: specific and objectively verifiable measures of changes brought about by an activity (ref. GEM). The generally accepted criteria are also known under the acronym SMART: Specific, Measurable, Achievable, Realistic, and Time-bound.

Qualitative measures give individual perceptions and experiences of situations, a close look at how (or if) the initiative under review has affected behaviours or lives in the community (ref. GEM). They are valuable, because they probe for reasons and contexts that may not be accessible or apparent in quantitative measures.

Quantitative indicators could, for example, be comparative numbers of women participating in telecentre activities before and after the initiative, or the number of women trained in computer skills, or the number of women who use the Internet compared to men. Qualitative indicators could be individuals' expressions of confidence in using ICTs for learning, or in having computer skills for better employment opportunities.

A combination of qualitative and quantitative indicators generally provides better bases for analysis. For example, the number of women using telecentres gains significance if they indicate whether the information they find and the links they make through the Internet add to their sense of independence and empowerment, and vice versa (ref: GEM).

2. Baseline or needs assessment: To develop indicators for the local situation, a baseline assessment should be made before beginning the project activities. Baseline assessments, or needs assessments, describe pre-existing conditions such as the community's perception of information needs, participants' interests, and local issues relevant to the project. The community can help develop questions, collect information, present and discuss the information with the project team, and devise indicators for the project (III.4: Selecting a Topic, and III.2: Identifying a Community/Community profile).

c. A framework

Evaluations should start with the project's first actions and continue until the very end, serving as a feedback system to collect and analyze information on the effects of the activities.

The framework for evaluation combines the input and process indicators together with output indicators, which measure whether objectives are achieved. This is a tool that supports strategic planning, and it can play a significant role in identifying constraints to implementation and obstacles to success that may not otherwise be readily apparent. An important goal of this framework is to integrate learning by stakeholders and project partners into the planning and implementation process.

1. Input indicators: Inputs typically refer to the financial, human and material resources for producing the intended outputs of an initiative. Inputs may include the approach used in the initiative, if this is seen as a prerequisite for success.
A quantitative input indicator could be the number of workshops held to mobilize the community before beginning project activities. Related qualitative indicators could be the workshops’ effects on community awareness about ICT potential and possibilities for community learning, and levels of participation in subsequent project activities.

2. **Process indicators**: The process is the strategy that links an input to an output. The term refers to scheduled activities designed to evolve from the starting point towards a desired output.

A quantitative process indicator could be the frequency of skills-training workshops. A qualitative indicator could assess a workshop’s training programme, materials and reports, or gather feedback from participants (e.g., how useful is this knowledge?)

3. **Output indicators**: Output refers to the measurable, intentional results of inputs. Output indicators typically include the quality and quantity of the services, goods, infrastructure, and changes that a project produces to promote its desired results.

Quantitative output indicators could be the number of applications produced or people using them regularly. Qualitative indicators could be the CD-ROM’s influences on users’ behaviour or how it met their information needs.

d. **Gender-sensitive evaluations**

Gender-sensitive indicators track gender-related changes over time, with the aim of measuring various aspects and achievements in promoting gender equity.

1. **Smaller versus larger projects**: Gender indicators measure how (and if) a project addresses and affects gender roles and discrimination by monitoring changes in the status and roles of women and men over time. Gender issues identified within the specific project or activity context are the appropriate basis for choosing the indicators to be used. For larger projects or at the country level, indicators based on feminist analyses of societies, relationships and development (ref. GEM) can be especially useful tools. These include the gender empowerment measure, the human development index and gender development indices.

For smaller projects, it may be more relevant to formulate project-specific indicators to capture women’s and men’s experiences in the given community, especially in such areas as women’s empowerment and participation. Given their different social roles, men and women, boys and girls, may also have different perceptions of similar experiences or activities.

2. **Measuring indirect and undesired effects**: While ICTs can be tools to change power relations between women and men, they can also have undesired and unexpected effects. Indicators should be able to differentiate whether ICTs are helping to empower or marginalize women, and whether they are reproducing or transforming gender roles. Potential unintended consequences should be considered in evaluations, including the potential for ICTs to indirectly affect women who lack access to them.

Ultimately, these gender indicators seek to answer basic questions: Did the initiative really change lives? If so, in what ways and how much? Or are we still in the same situation? (ref. GEM)

It is important to identify and discuss issues related to gender from the very beginning of the project, ideally from the baseline or needs assessment, until the very end.
e. Engaging the community

1. Flexibility: While it is sound practice to define the indicators at the beginning of an initiative, it is also important to be prepared to alter the indicators in unanticipated ways during implementation; ideas may arise or certain indicators may become accentuated or gain accuracy along the way.

The specific realities and experiences of the stakeholders determine the indicators. The findings and critical issues identified in the evaluation must reflect the realities of the communities. This can best be ensured if the community itself is involved in setting the evaluation criteria in the planning phase, and in giving feedback as the project moves along (III.3: Mobilizing the Community).

Returning feedback to the project's intended beneficiaries is essential for maintaining a participatory and sound basis for evaluation. One of the most stimulating drives for participation in a project is awareness of its progress. Community participants will be greatly energized by receiving regular reports on feedback exercises and changes in plans. Direct feedback to the beneficiaries creates a readiness to shape the initiative themselves, and a sense of ownership. They recognize that they can learn from each other, and that their opinions and active participation can make a difference.

2. An integrated and simple exercise: Although evaluations often seem cumbersome, there are simple ways to integrate evaluation and assessment into general project activities. This can be as simple as designating appropriate project stages as milestones. It does not require major additional activities, just integrating small feedback mechanisms from relevant stakeholders into existing project activities. Specific evaluation activities can be organized, of course, but informative assessments can be achieved through simpler means.

The goal is to gather project information that can be useful along the way for adjusting similar activities and for measuring progress, and for the final evaluation, which will help future initiatives. Quantitative data can be collected through various exercises at different stages of an initiative:

Individual and group feedback:
- Feedback can be gathered and discussed in sessions at the end of training activities and community workshops, in groups or through individual evaluation forms;
- Similar processes can be conducted at the end of each development stage;
- Facilitators and trainers should note the development of individuals and groups, tracking it from activity to activity;
- On-line feedback can be gathered at an e-mail address. Participants can send fact sheets, best practices, success stories, etc., in which the application played a role (III. 9: Testing and Validation).

Separate exercises to ensure the reliability of quantitative and qualitative indicators:
- Smaller and larger surveys to capture quantitative data;
- Questionnaires to capture individual experiences and perceptions;
- Interviews with beneficiaries, authorities and institutions in the community.

Alternative means:
- Video recording of the whole initiative process;
- Photos to capture changes brought by the initiative;
- Public information in the media on the project issue, seeking to measure the initiative's effect on coverage.
SUMMARY:

- Indicators should be developed in a participatory fashion, including all stakeholders when possible.
- Indicators should consider input and process objectives, as well as output objectives.
- Indicators should consider indirect and unintended effects of the initiative.
- Both qualitative and quantitative indicators should be used.
- Indicators should be sex-dissaggregated and clearly defined for ease of use and understanding.
- Indicators should be simple, technically sound measures of both short- and long-term trends.
- Limiting the number of indicators makes it easier to compare the findings; the ultimate focus should be on outcome indicators.

Country Examples

In both Mozambique and South Africa, the teams used integrated mechanisms to continuously assess the success, relevance and effects of project activities. These mechanisms included evaluation exercises after training sessions, feedback loops for content development, and discussions at community workshops on how to improve and direct project implementation. As this handbook was being prepared, both projects were planning to conduct overall evaluations with the counterpart and an external evaluator, but the evaluations had not taken place. The following therefore is a summary set of indicators inspired by the activities in both countries.
Framework for evaluation:

**Example of input, process and output performance indicators**

<table>
<thead>
<tr>
<th>Area</th>
<th>Justification</th>
<th>Performance indicator</th>
<th>Source</th>
<th>Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counterpart arrangements</td>
<td>To assess whether counterpart arrangements have been made before launching the Initiative.</td>
<td>At least seven bodies consulted outside the community, and seven bodies in the community. At least four committed bodies, including an external technical counterpart.</td>
<td>Project briefs, Memorandum of understanding etc..., Documents – such as contracts and agreements</td>
<td>Counterparts, Project records</td>
</tr>
<tr>
<td>Project approach</td>
<td>To assess whether and how the Initiative mobilized the broader community.</td>
<td>Number and nature of activities in, and with, the community: At least five larger community workshops during the implementation around ICTs and the selected topic.</td>
<td>Community members, Institutions</td>
<td>Interim evaluations, Project records, Interviews</td>
</tr>
<tr>
<td>The project team</td>
<td>To assess the benefits of team-building.</td>
<td>At least 15 stable team members, Structure and internal organization of the team (coordinators, content teams etc), Defined roles and responsibilities.</td>
<td>Telecentre, Team members</td>
<td>Project records, Interviews</td>
</tr>
<tr>
<td>Area</td>
<td>Justification</td>
<td>Performance indicator</td>
<td>Source</td>
<td>Data Collection</td>
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<tr>
<td>Participation</td>
<td>To assess participation in the Initiative.</td>
<td>At least 60 community members have been directly involved in application development at one stage or another.</td>
<td>List of participants</td>
<td>Project records</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Interviews</td>
<td></td>
</tr>
<tr>
<td>Content development</td>
<td>To assess the learning process in content areas, and the capacity in information research and content creation.</td>
<td>The complete story-board and the quality and quantity of information it contains, including the variety of presentation means.</td>
<td>Story-board Team members Specialists</td>
<td>Project records</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Interviews</td>
<td></td>
</tr>
<tr>
<td>Capacity-building</td>
<td>To assess the project's capacity to integrate skills-development activities into the implementation process.</td>
<td>At least three advanced ICT training courses of more than two days. A two-week internship in programming. Diplomas obtained by all team members in basic computer skills. At least four working sessions between content specialist and content groups.</td>
<td>Team members Specialists Technical counterpart reports</td>
<td>Project records</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Interviews</td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>To assess the efficiency of the production process.</td>
<td>Time spent on production and programming.</td>
<td>Production team Team members</td>
<td>Records Interview</td>
</tr>
<tr>
<td>Area</td>
<td>Justification</td>
<td>Performance indicator</td>
<td>Source</td>
<td>Data Collection</td>
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<tr>
<td>Testing and validation</td>
<td>To assess the quality of the product.</td>
<td>Qualitative feed-back provided by user groups during the testing sessions.</td>
<td>Testing workshops</td>
<td>Questionnaire Records of debate after testing session</td>
</tr>
<tr>
<td>The product</td>
<td>To assess the material outcome of the Initiative.</td>
<td>At least 400 copies of the CD-ROM and its packaging produced for dissemination to other telecentres.</td>
<td>Telecentre Counterparts</td>
<td>Production records and budget</td>
</tr>
<tr>
<td>Skills development</td>
<td>To assess the learning achievement of participants.</td>
<td>Skills development in at least five areas, excluding content area, covering all participants.</td>
<td>Team members Community groups</td>
<td>Project records Interviews</td>
</tr>
<tr>
<td>Promotion</td>
<td>To assess the potential outreach of the Initiative.</td>
<td>List of active counterparts in promotion activities and their areas (institutions, NGOs, media, telecentres…).</td>
<td>Counterpart arrangements</td>
<td>Project records</td>
</tr>
<tr>
<td>Dissemination</td>
<td>To assess the efforts made to disseminate the CD-ROM.</td>
<td>List of entities to whom the CD-ROM package was distributed.</td>
<td>Dissemination strategy</td>
<td>Project records</td>
</tr>
<tr>
<td>Short and long-term impact</td>
<td>To assess the effect of the Initiative and the CD-ROM on learning and community development.</td>
<td>Number of telecentre visitors. New projects combining learning and ICTs. Feedback on the CD-ROM and number of contexts in which it was used. Increased awareness about the content issue. Relevant behaviour changes (individual and institutional).</td>
<td>Telecentre Local and national institutions Community members Local NGO’s</td>
<td>Telecentre statistics Evaluation questionnaire Community workshop One/two years after termination of project</td>
</tr>
</tbody>
</table>
Resource material

Project documents

1. General:

2. Concerning South Africa:
Community Workshop Report: Building Open Learning Communities for Gender Equity with the Support of ICTs, by Merridy Wilson, November 2002.

3. Concerning Mozambique:
Technical back-up visit 1, by Concept Interactive, July 2003.
Technical back-up visit 2, by Concept Interactive, August 2003.

Other documents used as background material
Community Multimedia Centre Technologies, draft, by Peter Schioeler, UNESCO, November 2003.
A Guide to Gender-Sensitive Indicators, produced by Canadian International Development (CIDA), and the GEM Gender Evaluation Methodology, developed by APCWNSP (Women’s Networking Support Programme).
Gender, Information Technology and Developing Countries: an Analytic Study, by Nancy Hafkin and Nancy Taggart, Academy for Educational Development for the Office of Women in Development, Bureau for Global Programs, Field Support and Research, USAID, June 2001.

Step-by-Step Guide for ICT Learning Initiatives
By Janne Kjaersgaard Perrier, June 2004