Using information and communication technologies (ICTs) for development at centres in rural communities: lessons learned

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Abstract

Literature on the use of information and communication technologies (ICTs) for developmental purposes at community centres refers to these centres in various ways, e.g. as telecentres, telecottages, community teleservice centres, telecommuting centres, and community technology centres. This article starts by examining this range of centres, and by describing the activities that typically occur at such centres throughout the world. An attempt is made to develop a typology of such centres. Of particular interest are community telecentres where ICTs are used to promote development in rural areas. This is followed by a list of lessons learned regarding using ICTs effectively for development purposes at rural telecentres. These lessons are illustrated through specific South African case studies involving ICT usage at rural telecentres.

Introduction: a new digital age of changes and challenges

It is generally accepted that the emergence of new information and communication technologies (ICTs) are contributing to the creation of a new "information society" (European Community Information Society Project Office, 1995) that heralds profound changes (Forbairt, 1996a) in many walks of life. It is also apparent that there are both opportunities[1] and threats[2] inherent to this emerging communication dispensation. A UNESCO (1996) position paper states that for developing countries the question that should be afforded high priority is not *whether* they should participate in the Information Society, but rather *how* information technologies can effectively be applied to development. In South Africa political decision makers tend to confirm this view, e.g. in the government's COMTASK Report (South Africa, 1996a), and the White Papers on Science and Technology and Telecommunication Policy (South Africa, 1996b &1996c).

[1] See Share (1993, 1997h) and Forbairt (1996b).
[2] See Oppenheimer (1997) and Share (1997f; 1997h).

It has, however, been found that the level of access to ICTs significantly influences opportunities of communities to participate effectively in a range of economic, social and civic activities (Bikson and Panis, 1996). In rural communities world-wide the lack of access to such technologies is usually a major problem - with South Africa being no exception. The problem becomes one of how to extend the 'Information Superhighway' so that it covers that "last mile" to reach remote rural areas (Epstein & Brucen, 1995). Many have argued[3] that to address this problem there should be developmental initiatives in rural areas that help to provide public access to ICTs in specially equipped community centres, often referred to as telecentres[4], telecottages (Bertin, 1995) community technology centres (Campbell, 1995a) or community teleservice centres (Qvortrup, 1995). In South Africa there are a number of such initiatives underway or on the verge of being started: the Universal Service Agency (1997) has undertaken a project to launch more than 100 new multipurpose telecentres in rural areas; the Department of Communication is planning to create a number of rural Internet points-of-presence throughout South Africa in 1998, while the COMTASK Report (South Africa, 1996a) has recommended the extensive use of 'multi-purpose community centres' as focal points for empowering communities and sharing information related to developmental needs in rural areas.

This article looks at how information and communication technologies can best be used for development at rural community centres. The range of terms used for centres offering access to these technologies throughout the world is examined, and a typology of such centres is developed. This is followed by a listing of some of the lessons that have been learned regarding using ICTs effectively for development purposes at rural centres, and by illustrating these lessons through specific South African case studies.

What's in a name? – terminology for centres providing access to ICTs

Telecentres

In the literature there is a confusing variety of terms that all refer to centres that in some way provide the public with access to information and communication technologies. One of the most frequently occurring terms world-wide in this regard is 'telecentre' (spelled 'telecenter' in the United States), which can be described (Share, 1977b) as a facility that offers the public access to advanced IT and telecommunications equipment, together with some degree of support and training and a range of information-based services. According to Conway (1995), telecentres have the dual role of

[3] See Berlyn (1997), Hudson (1992;) Anderson (1997) and Horner & Reeve (1991, as described by Share, 1993), Parker (1996) and Colorado Advanced Technology Institute (1996b).
[4] See Share (1997a & 1997b), Conway (1995) and Crellin (1995).

- supporting group and community development, as well as
- supporting commercial development by drawing in more business capacity to support that community (especially by using technology in rural areas to generate additional employment and alternative income). Share (1997e) found that in Australian and Irish telecentres the most frequently occurring activities were computer training and hire, office services and desktop publishing.

Bagley *et al* (1994) note that in the United States the term telecentre often refers to a 'telecommuting centre' (see also Arsenault *et al*, 1995), in other words a location (usually urban) where workers can work by using telecommunication technology to keep in touch with their main offices. When used in this sense a telecentre is the same as a 'telework centre'- a centre that helps telecommuting by bringing the work to the workers in stead of vice versa (Campbell, 1995a) - but the term telework centre is seldom used because it has been trademarked by a California consulting firm. (For definitions of 'telework' and 'telecommuting', see Bertin & O'Neil, 1996; European Telework Development, 1997a and 1997b). Other synonyms for telecommuting centre are 'telebusiness centre' and 'alternative worksite centre'.

Bagley *et al* (1994) differentiate between six types of telecentres in the United States:

- 'Urban telecentres: multi-employer telecommuting centres' (centres providing telecommuting opportunities for employees of more than one employer).
- 'Urban telecentres: single-employer satellite work centres'. These are locations providing telecommuting facilities for workers of one organisation. Outside the United States the term 'satellite office' is usually used to describe this type of centre, although in Japan satellite office can also refer to a multi-employer remote work facility.
- 'Urban executive office suites' (telecommuting centres for executives in non-residential urban areas).
- 'Rural remote work centres'. These are rural localities striving to promote economic growth in areas away from urban areas, e.g. by also providing services such as skills training and remote education. They are similar to the European terms 'telecottages' (Bertin, 1995) and 'community teleservice centres'(Qvortrup, 1995).
- Residential and mixed-use developments. These are small business centres in residential areas that provide workstations for occasional use and also business support services to residents that work or telecommute from home, and are also referred to as 'neighbourhood telecentres'.
- 'Non-territorial offices' and other related concepts (e.g. 'unassigned offices') for non-home-based remote work.

Community Technology Centres

Still in the United States, we note that Campbell (1995a) uses the term 'Community Technology Centre' to refer to a particular kind of telecentre that brings together

the different functions of telecommunications and computer technologies in locations where there are barriers to the successful adoption of these technologies, e.g. in rural areas and depressed urban neighbourhoods. He calls such a facility in a rural area a 'Rural Community Technology Centre': a central location within a rural community or region that is equipped with computer and telecommunication equipment and services shared by users from a variety of sectors. It provides hardware, software and support to groups of individuals and organizations. Such rural centres would typically function as small business technology co-operatives, remote work sites, government service sites, or education centres.

Community Teleservice Centres

An alternative to the term telecentre - this time originating in Europe - is 'Community Teleservice Centre (CTSC)' (Qvortrup, 1995): They are multi-purpose centres that not only provide teleworking or telelearning, but also other services and activities (e.g. computer and teleconferencing services) for local communities. If run as business facilities, the communities benefits financially. There are two groups of such centres:

- centres directed towards the public (providing educational or training facilities and social services), and
- centres orientated towards business life, either supporting local enterprises or themselves working as small enterprises.

The first fully equipped CTSC was opened in Sweden in 1985, and by 1990 there were 65 such centres in Scandinavia (Bagley *et al.*, 1994).

Telecottages

Share (1997a) states that although telecentres have been established in rural, urban and suburban areas, in Australia and Europe the notion of a telecentre, and particularly the related term 'telecottage', has become particularly associated with a rural environment. A telecottage can be described (Bagley *et al*, 1994) as a small centre - usually located in a rural area - that provides workstations with advanced telecommunication and data links for use by the local population. A telecottage is used as a tool to promote economic development in depressed rural areas, and it provides training in the use of telecommunications and data processing equipment, assistance in small business formation, and brokerage of services.

For Simmons (1997) the difference between a telecottage and a telecentre is that a telecottage is usually a 'community-based' facility that is there to assist learning, access to technology and access to work for its local community, while for him a telecentre usually suggests a more commercial facility typically providing workplaces for people who want to work away from their employers' main offices. However, for the European Telework Development (1997a) initiative telecottages have progressed beyond their original focus of bringing technology and relevant IT

skills to people in remote areas, and now usually also aim to play a part in economic regeneration by helping local people find work that uses these skills, as well as playing a social role by providing local people with the basis for a network of contacts.

Campbell (1995a, and 1995g) describes telecottages as European community technology centres, but adds that in Sweden they would officially be called community teleservice centres. (In the United States telecottages would probably be called rural community technology centres or rural remote work centres). Telecottages typically have personal computers, printers, a modem, a fax machine and a consultant. Services on offer could include shared facilities, technology training, IT consulting services, business support services, electronic information access, telework opportunities and jobs, and provision of government information.

Bertin (1995) distinguishes between the following three types of telecottages and one related type of centre:

- 'Community telecottages': Normally these centres receive state funding. They have training as their main activity, but they may engage in niche businesses.
- 'Commercial telecottages': Normally such venues receive no funding; they have a niche teleworking business that is the main activity. Training is an informal activity that is less important than in community telecottages.
- 'Remote rural telecottages': This type of telecottage is often part of a visitor centre or a sub post office, with on-line services (e.g. teleshopping).
- 'Neighbourhood offices': These are workplace facilities for teleworkers, usually in towns or suburbs.

Other terms associated with centres supplying access to ICTs

In South Africa the term 'Multi-Purpose Community Centre' (MPCC) is often used to describe a structure that enables a specific community to manage its own development by providing that community access to appropriate information, facilities, resources, training and services (Benjamin, 1997). The term has a slightly broader connotation than 'telecentre', because MPCCs can also refer to centres that do not have any ICT facilities but that nevertheless provide a variety of development-related services to their surrounding communities. Synonyms for MPCC are 'Community-Based Information Resource Centre' (Giggey, 1996), 'Community Service Centre', 'Community Information Centre' and 'Community Resource Centre' (Benjamin & Keraki, 1998), as well as 'Multi-Purpose Complex', 'Multiple Use Facility', 'Community Learning Centre' and 'One Stop Shop' (Maisela, 1996).

'Technology learning centres' are centres where community members and local business have access to computers and information technologies and learn how to use them, while 'community computing centres' is a narrower term focusing on centres offering training in computer technology (Campbell, 1995a). Bagley *et al*,

(1994) describe the Australian 'Open Learning Network Centres' as distance education centres for children. When work and social welfare activities are added, these centres are called telecottages. In 1992 the Australian government started a programme to fund 30 such centres. In Japan one could come across a 'resort office' (a teleworking office situated in a resort) or a 'creative office' (a small business incubator focusing on the creative arts), while firms in many countries have 'off shore' facilities for data relocation and processing (Bagley *et al*, 1994). In the United States there are 'rural televillages' (Campbell, 1995a), such as the one developed by the Kentucky Science and Technology Council (1994) and two rural Kentucky communities, which the Council describes as "A mixed-use (public and private) community network with a 'televillage centre' at its heart, where the televillage centre is a mixed-use facility providing a package of IT services to the larger televillage."

Typology of centres

What then, is the most suitable terminology and typology to use when referring to centres that provide the public with access to ICT facilities and services? It is evident that the most all-encompassing term - and also the most frequently used term - that occurs in the literature to denote such a centre, is the term 'telecentre'. However, in order to make provision for the different types of activities that normally take place at such centres in different localities, the term telecentre (as well as related terms describing such centres) is often qualified by adjectives such as 'urban', 'neighbourhood' or 'rural' (see the typologies of Bagley *et al*, 1994; Bertin, 1995). This suggests that any typology of such centres should at least include a spatial dimension that can be used to differentiate between centres on the basis of where they are situated and, by implication, the type of activities performed to serve the different types of publics in these areas.

In addition, Share (1977c) states that telecentres can be located on a continuum that ranges from community to commercial, where these terms describe the extent to which those involved with the enterprise identify with a community or a commercial ethos. Some telecentres are expected to perform a developmental role, while others perform a highly commercial orientated role (Share, 1997d). This corresponds with Conway's (1995) description of telecentres' roles (supporting community development and supporting commercial development), and also with Qvortrup's (1995) distinction between centres directed towards the public and centres orientated towards business life.

The typology proposed for the purpose of this article incorporates both such a spatial and a community/commercial orientation dimension. Four types of centres are distinguished (see Table 1 for related terms or synonyms found in the literature):

Community/ commercial dimension:	Telecentres distinguished on a spatial dimension:	
	Rural:	Urban/suburban:
Activities in centre mainly community development-orientated:	**Rural community-orientated telecentres** Related terms in literature: Remote rural telecottage (Bertin, 1995); Community telecottage (Bertin, 1995); Telecottage (Campbell, 1995a;1995b); Rural community technology centre (Campbell, 1995a); Rural televillage centre (Campbell, 1995a); Rural remote work centre (Bagley *et al*, 1994); Open learning network centre (Bagley *et al*, 1994); Telecentre (Share, 1997a; Conway, 1995; Qvortrup, 1995, Crellin, 1995); Community Teleservice Centre (Qvortrup, 1995); Multi-Purpose Community Telecentre (Emberg, 1996).	**Urban community-orientated telecentres** Related terms in literature: Community telecottage (Bertin, 1995); Community technology centre (Campbell, 1995a); Telecentre (Share, 1997a); Qvortrup, 1995); Community Teleservice Centre (Qvortrup, 1995).
Activities in centre mainly commercially-orientated:	**Rural commercially-orientated telecentres** Related terms in literature: Commercial telecottage (Bertin, 1995); Rural community technology centre (Campbell, 1995a; 1995b); Rural televillage centre (Campbell, 1995a); Telecottage (Campbell, 1995a; Bagley *et al*, 1994) Rural remote work centre (Bagley *et al*, 1994); Telecentre (Share, 1997a; Conway, 1995; Qvortrup, 1995); Community Teleservice Centres (Qvortrup, 1995; Crellin, 1995).	**Urban commercially-orientated telecentres** Related terms in literature: Neighbourhood office (Bertin, 1995); Telework centre (Campbell, 1995a; Bagley *et al*, 1994); Urban telecommuting centre/ telecentre (Bagley *et al*, 1994); Urban executive office suite (Bagley *et al*, 1994); Satellite office (Bagley *et al*, 1994); Neighbourhood telecentre (Bagley *et al*, 1994); Telecentre (Arsenault *et al*, 1995; Share 1997a, Qvortrup, 1995).

Table 1
Typology of centres providing ICT access and facilities to the public

(a) **'Rural community-orientated telecentres'**: These are centres that are situated in rural areas and that provide local rural communities with access to telecommunication and information technologies. Usually these centres have training as their main activity, but they may also provide specific information technology-based services.

(b) **'Rural commercially-orientated telecentres'**: These are centres that are situated in rural areas and that provide ICT-related or on-line services (e.g. telework) on a commercial basis as their main activity. Training may occur, but usually only in a minor degree.

(c) **'Urban community-orientated telecentres'**: These are centres that are situated in depressed suburban or urban localities where there are barriers to accessing ICTs. These centres provide local communities with such access, and usually have training as their main activity. They may also provide specific information technology based services to local communities.

(d) **'Urban commercially-orientated telecentres'**: These are centres that are situated in urban areas and that have as their main activity providing ICT-related or on-line business services (especially telework) to the public on a commercial basis.

Lessons learned regarding the use of ICTs at rural centres

In the literature on ICT provision and usage at telecentres, descriptions of lessons that have been learned usually refer to either rural telecentres or urban telecentres. As the focus of this article is on the effective use of ICTs for development in rural areas, only lessons mentioned with regard to rural telecentres (community-orientated as well as commercially-orientated rural telecentres) are presented here.

What about lessons involving urban telecentres? Activities at urban commercially-orientated telecentres are usually described in the telecentre literature as consisting almost entirely of telecommuting and telework services performed in a highly networked and corporate urban business environment. Readers interested in pursuing lessons on telework at urban commercial centres are referred to the telecentre guidebook by Arsenault *et al* (1995), the telemanager's handbook (Shirazi, 1995a) and the telecommuter's handbook (Shirazi, 1995b). Regarding urban community-orientated centres, it is evident that many of the lessons dealing with ICT use in rural community-orientated centres could also apply to community-oriented telecentres in depressed suburban/urban areas, and lessons in this article can therefore be read with this in mind.

For the most part, the lessons mentioned in the telecentre literature appear as individual statements - e.g. as conclusions following a discussion of one or more

telecentre case studies. In some instances lessons appear in guide books - e.g. the *Applied Rural Telecommunications Investment Guide* of the Colorado Advanced Technology Institute (1996a). In other instances brief lists of lesson are to be found, such as Bretz's (1995) list of five lessons derived from Nebraska case studies (lessons describing the prerequisites to successful telecommunication pioneering developments in rural America), Denbigh's findings (as described by Campbell, 1995a) relating to telecottages in Scotland, and Anderson's (1997) suggestions of how participatory communication and training methodologies can be applied in rural telecentres. Usually each lesson is formulated in one of three ways, namely as a description of either:

- an essential step that has to be taken or a condition that has to be met in order for the telecentre to function successfully,
- a pitfall or danger to be avoided, or
- an opportunity to be grasped or a resource to be used.

For the purposes of this article each lesson found in the literature was classified and listed according to this system, resulting in three groupings of lessons on the effective use of ICTs at rural telecentres:

(a) Lessons learned: What is essential for success at rural telecentres?

- According to Share (1997g) the developmental and entrepreneurial activities at rural telecentres tend to operate according to the principles of the Integrated Regional Development (IRD), and as this approach involves an investment in developing the knowledge, skills and entrepreneurial abilities of the local population, it therefore requires *considerable levels of pre-development activity*. The Colorado Advanced Technology Institute (1996c) lists ten steps needed to get started in applying telecommunications in rural areas. Similarly, Anderson (1977) lists a number of considerations that should be taken into account *when planning to establish telecentres*, e.g. consideration should be given to the level of potential demand for services; the possible involvement of other organisations and institutions that can play a supporting role should be investigated; socio-cultural aspects which may affect the utilisation of the telecentre (such as communication gaps associated with gender) should be investigated, and there should be a participatory needs assessment to help identify information and training requirements of the local population.

- To get going, telecentres require *local pioneer scouts or champions with a vision* and who are willing to do what it takes (Bretz, 1995; O'brien & Miller, 1996; Share, 1997k).

- For successful functioning of a telecentre, *clear objectives* are essential (Denbigh, 1994, as described by Campbell, 1995a; Colorado Advanced Technology Institute, 1996c).

- It is recommended that telecentres *involve other organisations* and institutions that can play a *supporting role* (Anderson, 1977; Colorado Advanced Technology Institute, 1996d). Having an external support network can be vital (Denbigh, 1994, as described by Campbell, 1995a).

- State help, as well as support of other external institutions and organisations, can provide opportunities for rural communities, but they require a *significant community response* in order to be successful (Campbell, 1995g). What is needed are forward thinking local people who embrace change and the opportunities it brings (Bretz, 1995).

- *Co-operation* among all parties involved, including state, education, business and health institutions, will serve to avoid duplication of effort and to maximise impact (Bretz, 1995). In rural development it is also important to *collaborate* and pool resources - large organisations can operate systems that are beyond the reach of any single entity in a rural community (Campbell, 1995g).

- Anderson (1997) points out that in many cases a *human interface* (such as extension agents, NGO workers or rural teachers) will be needed between ICTs and rural inhabitants. Telecentres should be staffed with at least one person skilled in matters such as data retrieval, business management and community development (Emberg, 1996). In the literature on Development Support Communication (DSC) such a person would be called a DSC professional performing a facilitating communicator role, and the presence of such a facilitator would also be seen as vital for development programmes (Agunga, 1997, p. 241).

- *On-going training* and support of telecentre users - as well as training of trainers - is necessary (Anderson, 1997). There should also be a publicity campaign (Giggey, 1996) and an on-going education effort aimed at educational organisations, health facilities, businesses, governments and individuals (Bretz, 1995).

- Centres should be managed in a *community-centred* way: This involves taking steps such as creating community ownership by maximising community participation, being continually aware of the changing environment, as well as linking with and being accountable and transparent to community stakeholders (Luton *et al*, 1998).

- It is necessary to *monitor and evaluate* the process of telecentre development and implementation, and this should include not only the number of users, but also the impact on the users (Anderson, 1997). Share (1997l) lists a number of studies in which telecentres have been academically evaluated.

(b) Lessons learned: Pitfalls/dangers to be avoided at rural telecentres

- Projects should *not be led by technology* (Denbigh, 1994, as described by Campbell, 1995a). It is better to start with a specific development problem and the context in which the problem is to be addressed, and from there decide on the most appropriate technology/technologies to be used.

- *Technophobia* may hamper the adoption of information technologies (Beyers, 1996; Share, 1997i). A rich history of using telecommunications locally to meet the needs of citizens would contribute to the success of a telecentre (Bretz, 1995), but in rural areas where this is not present, it could be that ICTs are experienced as 'alien' by many people. In such cases it will help to arrange technology demonstrations, to take rural people on study tours to other venues where the technology is used, and to engage the local population in all stages of the development of the project (Anderson, 1997).

- Don't use just one type of technology. Christen (1997) advocates *using a mix of different communication technologies* for different types of educational uses at centres and schools. He distinguishes between 'redress' technologies (such as educational radio broadcasts) that are best suited to ensure that basic threshold conditions for learning are met for all learners, and 'reconceptualisation' technologies (such as the Internet and computers) that can help redefine the educational environment and serve as a bridge to the future. Also, beware of trying to do everything with technology (Denbigh, 1994, as described by Campbell, 1995a).

(c) Lessons learned: Opportunities to be grasped regarding rural telecentres

- Telecentres often offer a broad range of services locally which could also be *offered electronically in more distant markets* (Denbigh, 1994, as described by Campbell, 1995a).

- Commercially-orientated telecentres in rural areas should *attempt to attract "lone eagles"* (professional and business people who are knowledge workers and who move to rural areas, running their business from there through faxes, modem, express mail and airplane tickets) as an economic development strategy (Campbell (1995g). The Centre for the New West (1997) provides a list of community characteristics which tend to attract lone eagles.

- Telecentres should make use of *on-line resources of information*. For example, the *Applied Rural Telecommunications Investment Guide* (Colorado Advanced Technology Institute, 1996a) is an excellent starting point. Similarly,

Campbell's *Information Resources for Telecommunications Planning: A Guide for Rural Massachusetts* (1995b) provides lists of printed and electronic information sources that could be useful to community entrepreneurs or leaders planning to establish rural commercially-orientated telecentres. It also describes various established telecommunication initiatives in rural areas that could be used as models for similar projects in other areas, e.g. the 'free-net' model used by the national Public Telecommuting Network in Ohio to provide information to communities, schools, businesses or individuals via a dial-up computer network (see also Share, 1997j). The Colorado Advanced Technology Institute (1996d) gives details of this and other models, such as library networks, municipal information utilities, and local government-operated civic networks.

- Telecentres should be presented as a *facility for local residents* and groups to organise meetings, conferences and training to address local development needs (Anderson, 1997).

- Usually the *demand for telecentres* and for telecentre services is present even in small communities (Denbigh, 1994, as described by Campbell, 1995a), which presents opportunities for would-be entrepreneurs. However, it is advisable for commercial activities at telecentres to start small and grow to fit the market (Denbigh, 1994, as described by Campbell, 1995a), and so not to "bite off more than your neighbours can chew" (Colorado Advanced Technology Institute, 1996b).

Some South African experiences

The four case studies described in this section all formed part of *the Communication for Technological Advancement (COMTECSA)* research programme that the Human Sciences Research Council undertook in 1997 in collaboration with external research partners and organisations such as universities, technikons, and the Council for Scientific and Industrial Research (CSIR).

Serving the community in Siyabuswa - the SEIDET telecentre

From the remote Siyabuswa district situated in the Mpumalanga Province comes an encouraging story of local initiative and vision that was crowned with success (Conradie and Phahlamohlaka, 1998). The Siyabuswa Education Improvement and Development Trust (SEIDET) centre is a multi-purpose facility providing a variety of educational services and developmental programmes to the local community. These include supplementary educational tuition programmes for pupils and teachers (especially in English, Science and Mathematics), career guidance and life skills enrichment programmes for the youth, finding university sponsorships and placement for local students, training in specific educational computer applications, and access to educational satellite TV transmissions.

If the activities mentioned in the above list of lessons learned are taken as indications of success criteria for rural telecentres, then the SEIDET centre has been on target in most instances. There was, for example, a considerable level of *pre-development activity* when the centre was being planned - local residents reacted to identified educational needs in their community and formed various structures such as a Board of Trustees and Executive Committee to establish and run the centre. There were thus *local pioneers with vision,* and they set *clear objectives* of what had to be done. The centre managed to involve a number of *other organisations/institutions in supporting roles* (e.g. the University of Pretoria, the Mpumalanga Department of Education, the Human Sciences Research Council (HSRC), and Vista University). It is clear that there has been a *significant community response* to participate and help. Especially over week-ends there are many forward-thinking local teachers and residents who offer their services as *facilitators, teachers or trainers* to the centre free of charge. To support and equip these individuals, there are a number of externally financed *'training-of-trainers'* types of initiatives. There is thus abundant evidence of *co-operation and collaboration* among all parties involved. SEIDET provides a prime example of how to follow a *community-centred management approach* at a centre by creating community ownership, by being accountable and transparent to community stakeholders, and by trying to be continually aware of the changing environment by initiating, monitoring and *evaluation processes*. The centre also managed to *avoid the pitfalls* mentioned in the list above - e.g. projects being led by technology in stead of by a previously identified local development need, using specific ICTs for inappropriate uses, or trying to do everything with technology.

Commercial planning with commercial success only - the Hammanskraal Phone Shop

The Hammanskraal Phone Shop is a structure made out of reconstituted shipping containers, and it is housed at the entrance of the Leseding complex opposite the Hammanskraal police station in the North-West Province. Although it provides local residents with free access to a computer system offering detailed information on a variety of topics and areas, the centre's main focus is on a number of ICT-based services run on a commercial basis, most notably cellular telephone links with the outside world, as well as computer typing and printing facilities.

If the Hammanskraal centre's activities are compared with the activities mentioned in this article's list of lessons learned, then we note the following activities that were recommended as being vital for rural telecentres did in fact take place: With regard to commercially-orientated activities there was a fair amount of *pre-development activity*: it started when a local businessman saw the potential demand for cellular phone services, and he had the drive and *vision* to approach Vodacom - a local cellular service provider - with *clear commercially orientated objectives*. This led to the centre being erected. With regard to the community-oriented (non-

commercial) services at the centre, there was no such local pre-development planning. However, Vodacom did bring in *another institution in a supporting role*, the CSIR (Council for Scientific and Industrial Research) who installed a computer-based system that residents could use to access development-related information, and who also *trained* three *facilitators* at the centre to assist users. However, an HSRC evaluation of the system (Grossberg, *et al*, 1998) among users showed that the content of the information on offer was not seen as being very relevant for locals. It therefore seems as if the Hammanskraal centre is surviving financially because appropriate business-orientated measures were initiated and followed through in response to local communication needs. The community-orientated informational activities are not having a marked effect, seemingly because of unsuitable content, and this is to some extent indicative of a lack of local ownership and a lack of pre-installation planning.

Commercial failure but community success - the Brits Publicity Association

Brits is a small town situated not far from the picturesque Hartebeespoort Dam about 50 kilometres to the west of Pretoria. In January 1997 the Brits Publicity Association established an information centre in the rates and taxes hall of the Brits Transitional Local Council by installing a touch-screen information kiosk there. The kiosk uses the CSIR's self-help 'In-Touch' system that provides information to users in the form of text, graphics and sound that can be evoked by touching the screen.

In accordance with the above list of lessons learned, the installation of the kiosk was preceded by extensive *pre-development planning* and negotiations. Two enthusiastic officials of the Brits Transitional Local Council had collected a large amount of data on local and development-related issues, and they had a *vision* of getting local business enterprises to advertise on the kiosk system to such an extent that a profit could be made out of providing this free information to the public. HSRC evaluations of the system (Grossberg *et al*, 1997 & 1998) have shown that users like the system and the information it provides. In spite of this popularity among members of the local community, it unfortunately has transpired that local businesses are not interested in advertising on the system. Although the ICT technology (the information kiosk) is acceptable to the public, the technology appears to be alien to the advertisers, and this was not taken into account or made provision for during the planning. The information system is therefore successful as a community-orientated service, but it is unsuccessful in its primary goal, which is to be a profit-making commercially-oriented venture. Unless the advertisers' lack of support can be addressed and remedied, the continued future of this centre remains uncertain.

Community-orientated planning and success - the Micha-Kgasi educational telecentre

The Micha-Kgasi High School is located near the remote Kgabalatsane village in the North West Province. Although there are no telephone lines in the area and there are no affluent local businesses that can sponsor educational initiatives, this school has managed to erect a telecentre that is equipped with donated computers (albeit somewhat outdated in most cases) and a modem using cellular technology to provide their Pentium PC with an e-mail link to the rest of the world (Rodda, 1997; Rodda, 1998). The centre is used for computer skills development and for innovative educational projects involving the use of computers and e-mail.

If this article's list of lessons learned is again taken as indicating what activities likely to accompany success at rural telecentres, then the Micha-Kgasi telecentre can boast a number of points indicating success: The most noticeable point is the *strong leadership and vision* shown by the school principal, Mr Philemon Kotsokoane. Mostly through his efforts, there has been a great deal of *pre-development planning* regarding using ICTs for educational purposes: *clear goals* have been set, and a number of influential local and international organisations, donors and *institutions have been actively involved* in the activities at the centre. The strongest point mitigating against continuing success is that the centre has not initiated any commercially-orientated ICT programmes or activities that could provide additional funding, and so the centre has remained dependent upon donations or grants from institutions such as funding organisations or educational bodies. However, in spite of this, within a year or two the school and its telecentre have moved out of virtual obscurity and have become well-known both locally and abroad.

Conclusion

It was found that the activities mentioned in the list of lessons learned - as compiled from publications on telecentres in rural areas all over the world - also had relevance for the four case studies of South African rural telecentres. At the successfully functioning SEIDET telecentre almost all the activities observed at the telecentre were in agreement with what was recommended in the list of lessons. It therefore seems reasonable to conclude that these lessons apply locally and that continued success for this centre seems very probable. A recurring theme for the other case studies was that commercial success requires sound commercial planning, while community acceptance needs good community-orientated planning and involvement - commercial planning will not necessarily lead to successful community upliftment, while planning to better the community will not automatically result in financially viable activities. At two centres (Hammanskraal and Brits) many of the telecentre activities were done in accordance with what the lessons advocated, but still there were serious practical problems. For example, at

Hammanskraal the process of community-orientated information provision did not have the desired effect, while the Brits centre could not get local businesses to advertise on its system. It can be concluded that the Hammanskraal problems flowed from a lack of community-orientated pre-development planning and a lack of community involvement, and that the pre-development commercial planning at Brits was lacking in that it relied exclusively on one technology and that it did not make provision for the possibility that most sections of the business community were hostile towards this new technology. Finally, from the Micha-Kgasi experience it is concluded that if a telecentre can capitalise on one strong point (such as a local pioneer with drive and a clear vision of how ICTs can serve the local community), this can to some extent make up for a telecentre's deficiencies in other areas.

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