

Research Project

*An Investigation of the Critical Success Factors of a Rural
Telecentre with an emphasis on Knowledge Sharing*



University of Fort Hare
Together in Excellence

Name of Student: Oliva Muwanga-Zake
Student Number: 200417177
Degree: Masters in Information Systems
Department: Information Systems
Type of Thesis: Full Research Thesis
Name of Supervisor: Professor Roets

Completed in fulfilment of requirements of Masters of Information

Systems by Full Thesis at the University of Fort Hare

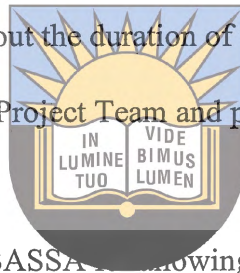


University of Fort Hare
Together in Excellence

Acknowledgements

The author would like to thank the following people for their contributions and support in completion of this research:

- Research supervisor Professor Roets for her advice and constructive criticism throughout the duration of this research
- The Connect EC Project Team and participants for their contributions and support
- Microsoft and USASSA for allowing me to utilise their telecentres in my survey
- My father, Dr Muwanga-Zake for imparting valuable knowledge, suggestions and assistance particularly with conducting the empirical aspects of this study
- My mother, Mrs. Muwanga-Zake for her strength of purpose, persistence and continuous demonstration through example
- My three brothers Semeyi, Apollo and Joshua, my life partner Abongile and my friends for their persistent encouragement and faith
- My newest nephew Zion for being an inspiration and a constant reminder of the most important things in life



University of Fort Hare
Together in Excellence

I am truly grateful for the support and contribution of all the above-mentioned people without whom I may have been unable to complete this research.

Contents of Research Paper

CHAPTER 1

1.1 INTRODUCTION	2
1.2 AREA OF RESEARCH	6
1.3 STATEMENT OF PROBLEM	8
1.3.1 STATEMENT OF SUB-PROBLEMS.....	8
1.4 THE OBJECTIVE OF THE STUDY	10
1.5 BACKGROUND	12
1.6 OVERVIEW OF RESEARCH METHODOLOGY	14
1.7 DELIMITATION OF THE STUDY	16
1.8 CONCLUSION	17

University of Fort Hare
Together in Excellence

CHAPTER 2

2.1 INTRODUCTION	19
2.1.1 GOVERNMENT AND SERVICE DELIVERY.....	20
2.1.2 THE IMPORTANCE OF UTILISING ICTs IN THE PUBLIC SECTOR.....	22
2.2 COMMON CHARACTERISTICS OF MARGINALISED RURAL COMMUNITIES	24
2.2.1 INTRODUCTION.....	24
2.2.2 LACK OF ACCESS TO RELEVANT INFORMATION AND KNOWLEDGE.....	25
2.2.3 LACK OF EMPOWERMENT.....	25
2.2.4 LACK OF PARTICIPATION AND INCLUSION.....	26
2.2.5 COMMUNICATION AND THE FLOW OF INFORMATION.....	28
2.2.6 CONCLUSION.....	32
2.3 ICTs AND RURAL DEVELOPMENT	33
2.3.1 INTRODUCTION.....	33
2.3.2 THE DANGERS OF UNSUCCESSFUL IMPLEMENTATION.....	34
2.3.3 ICTs AS A PRIORITY FOR THE POOR.....	35
2.3.4 AN EXPLORATION OF THE RANGE OF ISSUES AFFECTING THE SUCCESSFUL IMPLEMENTATION OF ICTs IN RURAL AREAS.....	36
2.3.5 CONCLUSION.....	38

2.4 THE INFORMATION SYSTEMS OF MARGINALISED RURAL POPULATIONS	39
2.4.1 INTRODUCTION	39
2.4.2 RURAL INFORMATION SYSTEMS AND ICTS	41
2.4.3 CONCLUSION	41
2.5 INFORMATION AS AN ENABLING RESOURCE	42
2.5.1 INTRODUCTION	42
2.5.2 THE INFORMATION NEEDS OF THE RURAL POOR	42
2.5.3 CONCLUSION	44
2.6 KNOWLEDGE, INFORMATION AND THE RURAL POOR	46
2.6.1 INTRODUCTION	46
2.6.2 THE IMPORTANCE OF SHARING KNOWLEDGE	47
2.6.3 CONCLUSION	47
2.7 THE DIFFERENCE BETWEEN INFORMATION AND KNOWLEDGE	48
2.7.1 INTRODUCTION	48
2.7.2 A BRIEF DISCUSSION	48
2.7.3 CONCLUSION	49
2.8 KNOWLEDGE AND THE KNOWLEDGE ECONOMY.....	49
2.8.1 INTRODUCTION	49
2.8.2 KNOWLEDGE AND RURAL DEVELOPMENT	50
2.8.3 THE STATUS OF THE KNOWLEDGE SOCIETY IN SOUTH AFRICA AND THE EASTERN CAPE	50
2.8.4 CONCLUSION	51
2.9 KNOWLEDGE ECOLOGY – AN ANALYSIS AND DISCUSSION. 52	
2.9.1 INTRODUCTION	52
2.9.2 KNOWLEDGE ECOLOGY –A BRIEF DISCUSSION	52
2.9.3 A COMPARISON BETWEEN KNOWLEDGE MANAGEMENT AND KNOWLEDGE ECOLOGY	53
2.9.4 THE KNOWLEDGE ECOSYSTEM	55
2.9.5 CONCLUSION	57
2.10 THE TELECENTRE MODEL.....	60
2.10.1 INTRODUCTION	60
2.10.2 A BRIEF DISCUSSION ON TELECENTRES	61
2.10.3 CONCLUSION	62
2.11 ICTS AS A SOLUTION – BARRIERS AND FACILITATORS.....	64
2.11.1 INTRODUCTION	64
2.11.2 HEEKS’S REALITY-GAPS MODEL	67
2.11.3 CONCLUSION	69
2.12 CRITICAL SUCCESS FACTORS OF ICT-BASED DEVELOPMENT INITIATIVES	70



University of Fort Hare

Together in Excellence

2.12.1 INTRODUCTION	70
2.12.2 HEEKS'S RECOMMENDATIONS	70
2.12.2.1 <i>Exposing Rural Realities</i>	71
2.12.2.2 <i>Improving Local Information System Capacities</i>	71
2.12.2.3 <i>Educating the Carriers</i>	72
2.12.2.4 <i>Analyse the 'How' as well as the 'What'</i>	73
2.12.3 REILLY AND GOMEZ'S RECOMMENDATIONS	74
2.12.3.1 <i>Participation</i>	74
2.12.3.2 <i>Social Inclusion</i>	74
2.12.3.3 <i>Locally Grounded</i>	75
2.12.3.4 <i>Transparent</i>	75
2.12.3.5 <i>Methodologically Appropriate</i>	76
2.12.3.6 <i>Sustainability Enhancing</i>	76
2.12.3.7 <i>Capacity Building</i>	76
2.12.3.8 <i>Reflective of Shared Visions</i>	77
2.12.3.9 <i>Strategically Oriented</i>	77
2.12.3.10 <i>Gender Sensitive</i>	77
2.12.4 MILLAR AND MANSELL'S RECOMMENDATIONS	78
2.12.4.1 <i>Locally Embedded</i>	78
2.12.4.2 <i>Customised to Local Community Needs</i>	79
2.12.4.3 <i>Partnerships are Crucial</i>	79
2.12.4.4 <i>Independent and Systemic</i>	79
2.12.5 CONCLUSION	80



University of Fort Hare

CHAPTER 3 *Together in Excellence*

3.1 INTRODUCTION	87
3.2 COMPONENTS OF A SUCCESSFUL TELECENTRE MODEL ...	87
3.2.1 APPROPRIATE TECHNOLOGY	88
3.2.2 INTERACTION AND CULTIVATION OF RELEVANT KNOWLEDGE ECOSYSTEMS	90
3.2.3 AN ACCESSIBLE AND UP TO DATE KNOWLEDGE AND INFORMATION REPOSITORY	92
3.2.4 AN ADAPTABLE CONTEXTUALLY APPROPRIATE MODEL	93
3.3 CONCLUSION	94

CHAPTER 4

4.1 INTRODUCTION	97
4.2 TYPE OF QUALITATIVE RESEARCH CONDUCTED	97
4.3 RESEARCH DESIGN	99
4.4 THE CASE STUDY METHOD	100
4.4.1 DATA COLLECTION METHODS UTILISED	103

4.5 SAMPLING	105
4.6 CONCLUSION	106

CHAPTER 5

5.1 INTRODUCTION	108
5.2 THE CONTEXT OF THE EASTERN CAPE	109
5.2.1 POPULATION DENSITY AND AGE DISTRIBUTION	111
5.2.2 DEVELOPMENT INDICATORS	112
5.2.2.1 <i>The Human Development Index</i>	112
5.2.2.2 <i>Persons Living in Poverty</i>	112
5.2.2.3 <i>The Poverty Gap</i>	113
5.2.2.4 <i>Household Income</i>	114
5.2.2.5 <i>Education Status</i>	115
5.2.2.6 <i>Unemployment</i>	116
5.3 PRELIMINARY CASE STUDY: CONNECT EC PROJECT	116
5.3.1 BACKGROUND TO CONNECT	117
5.3.2 THE CONTEXT OF THE SCHOOLS	120
5.4 BASIS FOR CASE STUDY QUESTIONS	121
5.5 PRELIMINARY CASE STUDY QUESTIONS AND ANSWERS ...	122
5.5.1 REPORT ON SEMI-STRUCTURED INTERVIEW WITH PROJECT CO-ORDINATOR	122
5.5.2 REPORT ON INTERVIEW WITH KUHLE LOWER PRIMARY SCHOOL	127
5.5.3 REPORT ON INTERVIEW WITH NGWENYATHI S.S.S	128
5.5.4 REPORT ON INTERVIEW WITH JONGILE NOMPONDO SCHOOL	130
5.6 OVERVIEW OF PRELIMINARY CASE STUDY	131
5.7 ANALYSIS OF PRELIMINARY CASE STUDY BASED ON MODEL COMPONENTS	133
5.8 ADJUSTED TELECENTRE IMPLEMENTATION MODEL	135
5.9 CASE STUDY INTRODUCTION	136
5.10 CASE STUDY APPROACH	137
5.11 REPORT FINDINGS	140
5.11.1 CENTRE ATTRIBUTES	140
5.11.2 SUSTAINABILITY AND GOVERNANCE	143
5.11.3 CENTRE STATISTICS	147
5.12 ANALYSIS OF CASE STUDY RESULTS	149
5.13 LIMITATIONS OF THE RESEARCH	151
5.14 CONCLUSION	152



University of Fort Hare
Together in Excellence

CHAPTER 6

6.1 CONCLUSION	155
6.2 CLOSING REMARKS	157
7. DEFINITION OF TERMS	160
8. REFERENCES	162
9. APPENDICES	174
9.1 APPENDIX A: PRELIMINARY CASE STUDY QUESTIONS	174
9.1.1 <i>Semi-structured Interview with Songezo Masiso – Project Co-ordinator</i>	174
9.1.2 <i>Semi-structured Interview conducted with Kuhle Lower Primary School</i>	175
9.1.3 <i>Semi-structured Interview conducted with Jongile Nompondo School</i>	175
9.1.4 <i>Semi-structured Interview conducted with Ngwenyathi S.S.S</i>	176
9.2 APPENDIX B: CASE STUDY QUESTIONNAIRE	177

University of Fort Hare
Together in Excellence

Table of Figures

FIGURE 1: COMMUNICATION PROCESS.....	28
FIGURE 2: A MODEL OF INFORMATION COMMUNICATION TECHNOLOGY (ADAPTED FROM POTT, 2003: 57)40	
FIGURE 3: MASLOW'S HIERARCHY OF NEEDS (ADAPTED FROM HUIT, 2004: 33)	43
FIGURE 4: CYCLE OF KNOWLEDGE ECOLOGY (ADAPTED FROM POR, 2001: 2).....	54
FIGURE 5: THE TRIPLE NETWORK (ADAPTED FROM POR, 2001: 2).....	56
FIGURE 6: A HYBRID (HEEKS, 1999: 17).....	72
FIGURE 7: TELECENTRE IMPLEMENTATION MODEL.....	88
FIGURE 8: PERCENTAGE OF PERSONS LIVING IN POVERTY CATEGORISED BY AREA	113
FIGURE 9: PERCENTAGE HOUSEHOLD INCOME BELOW R 6001 BY AREA	115
FIGURE 10: LITERACY RATES BY AREA	116
FIGURE 11: THE ADAPTED TELECENTRE IMPLEMENTATION MODEL.....	135
FIGURE 12: THE ADAPTED TELECENTRE IMPLEMENTATION MODEL.....	155

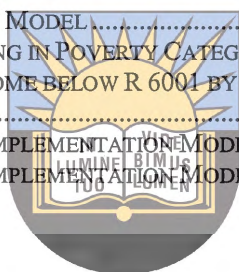


Table of Tables University of Fort Hare *Together in Excellence*

TABLE 1: MATRIX OF COMMENTS ON CRITICAL SUCCESS FACTORS FOR ICTS FOR DEVELOPMENT	82
TABLE 2: AMALGAMATED MUNICIPAL AREAS	110
TABLE 3: AGE DISTRIBUTION	111
TABLE 4: DEVELOPMENT INDICATORS.....	114
TABLE 5: TABLE OF CENTRE ATTRIBUTES	140
TABLE 6: TABLE OF SUSTAINABILITY AND GOVERNANCE ATTRIBUTES.....	143
TABLE 7: TABLE OF CENTRE STATISTICS	147

Chapter 1: The Problem and its Setting



University of Fort Hare
Together in Excellence

1.1 Introduction

The rapid development and use of information and communication technologies (ICTs) is having a direct and dramatic impact on all aspects of life. ICTs present a challenging and unique opportunity, with the potential to reshape and transform the ways in which people organise their lives, interact with each other and participate in various spheres of society (Bridges.org, 1996).

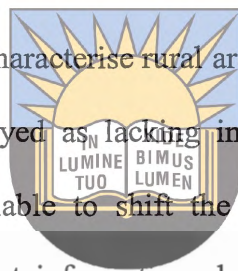


The nature of ICTs has given rise to a global society, in which historical barriers previously imposed by location and time difference have been “eliminated” (Young, Ridely and Ridely, 2001). As a consequence, ICTs provide the possibility of implementing many ideas that “*For a world in Exile*” is simply wishful thinking”: there is an opportunity now for the development of sustainable economic activity that was not there as recently as a few years ago (Alexander, 2000).

However, while ICTs are contributing to revolutionary changes in some parts of the world, other parts of the world have hardly been touched by these innovations. Real disparities exist in access to and in use of ICTs between countries and between groups within countries (UNESCO, 2003). Obijiofor (1998) believes that in a world in which the developed and developing countries pursue different goals and priorities based on their various technological endowments, the new ICTs are bound to be viewed with both optimism and suspicion.

There is a need to harness information and knowledge in the pursuit of economic and social development in less developed countries (Duncombe *et al*, 2001). According to Mansell (1999), if people in developing countries are unable to acquire the capabilities for using the new ICT applications, they will be increasingly disadvantaged or excluded from participating in the global information society. Mansell argues that although the social and economic potential of these new technologies is enormous, so too are the risks of exclusion.

Chapman and Slaymaker (2002) characterise rural areas as being information poor, with rural populations typically portrayed as lacking information vital to their lives and livelihoods. The poor remain unable to shift the barriers that keep them poor by remaining unconnected to relevant information channels (O'Farrell, 2000). In many cases it is this lack of access and participation by rural communities to relevant information channels that perpetuates the cycle of poverty.



University of Fort Hare
Together in Excellence

The diffusion of ICTs promises to have major consequences by “expanding access to education and training, broadening channels of expression and social networks, as well as revolutionising the nature of work and the economy” (Norris, 2004). Although the primary impact has been in affluent societies, ICTs have also been widely regarded as an important instrument for development in poorer nations around the world (Norris, 2004). This illustrates the importance of ensuring access to ICTs in rural and under-served areas.

Telecentres have been identified as a popular method of bringing ICTs to the poor. Due to the growing “digital divide” the study of how telecentres can be made more effective

and efficient in delivering information and information services to the poor enjoys priority. This research aims to add to this body of knowledge.

Although telecentres seem to have become the preferred mode of delivery of ICTs to the poor and marginalised, various shortcomings of the model have yet to be suitably addressed. Knowledge sharing within and around the Telecentre environment is identified as a possible means of addressing some of these shortcomings.

Knowledge sharing between rural constituents and Government and the wider environment may also enable a deeper understanding of rural needs, allowing Government, in particular, to identify, define and target more clearly areas of need within the community, and furthermore, pitch the required service in a manner that allows for enhanced efficiency and improved client satisfaction.



University of Fort Hare
Together in Excellence

Sveiby (2001) defines knowledge as the capacity to act and defines knowledge management as the process of nurturing environments for people to create, leverage and share knowledge. Improved knowledge about rural community needs may facilitate improved service delivery in rural areas, while allowing for a customised approach towards rural development.

However, for this to happen, the rural community needs to be engaged in the process of creating and sharing information and knowledge about rural realities. Breu and Hemmingway (2001) illustrate the importance of this, stating that knowledge is co-produced through situation and activity, and is therefore context-dependent. This

highlights the observation by Lahotonen (2001) that knowledge cannot easily be separated from the community that owns it.

A key focus of this study is to examine a shift from a situation of exclusion from appropriate information channels to inclusion, in a manner that enriches various development initiatives and the community at large, through enabling a knowledge-based community.

The importance of context has been highlighted by Heeks (1999) as a factor that if ignored often results in the failure of ICT based development projects. Heeks' Reality Gaps model (Heeks, 1999) further highlights the importance of adapting a model appropriately to the context within which it is to be implemented across a variety of variables (Heeks and Bhatnagar, 1999). Heeks' Reality Gaps model (Heeks, 1999) is identified as significant to the increased success of ICT based development projects.



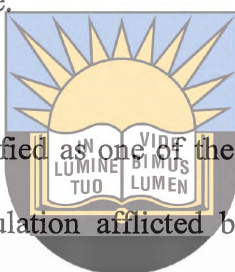
University of Fort Hare

Together in Excellence

Among the many promises of the so-called digital revolution is its potential to facilitate synergy and symbiotic partnerships through making information easily and widely available, leading not only to the creation of new knowledge, but the sharing of it. Information and knowledge have the power to transform current development practices by making them more responsive and more suited to the contextual realities of the rural poor.

1.2 Area of Research

It is apparent that the “digital divide” exists in South Africa. The Connect Eastern Cape Concept Document (2003) claims that only well coordinated and planned initiatives implemented in a sustainable manner can ultimately eradicate the “digital divide”. The Connect Eastern Cape initiative is one example of a project that has been planned and implemented for this exact purpose.



The Eastern Cape has been identified as one of the poorest provinces in South Africa with a relatively high rural population afflicted by the twin economic ills of both unemployment and poverty (The Connect Eastern Cape Concept Document, 2003).

Poverty eradication and development ~~together in Excellence~~ be inextricably linked. One reason poverty is more prevalent in rural areas is due to a lack of information (Heeks, 1999).

According to the Connect Eastern Cape Concept Document (2003), the “digital divide” represents a constant threat to the “already-wide gaps” present between the rich and the poor. Marker, McNamara and Wallace (2002) state that the poor lack political visibility and voice in the institutions and power relations that shape their lives, as well as access to knowledge, education and skills development that could improve their livelihoods.

The Connect Eastern Cape Concept Document (2003) adds that many people in the Eastern Cape Province have no access to the Information Society, obtaining no benefit from the multitude of knowledge and information easily available to numerous

populations today. Timely access to news and information is quoted as serving to promote socio-economic development, democracy and good governance; “with information and knowledge at the heart of efforts to strengthen tolerance, mutual understanding and respect for diversity” (The Connect Eastern Cape Concept Document, 2003: 10).

Marker *et al* (2002) concur, adding that in societies where information flows widely and access to communication services is widespread, markets and government institutions are likely to become more efficient, transparent and accountable. Access to relevant information flows may serve to empower the poor to make their own choices, voice their opinions, demand their rights and have more power over their own lives.

Knowledge sharing may have the potential to facilitate this by affording rural communities the ability to access and participate in appropriate information channels.



University of Fort Hare
Together in Excellence

Increased communication and the flow of information and knowledge in ways that benefit the poor is therefore a critical element of poverty reduction and sustainable development (Marker *et al*, 2002). However, simple access or unilateral communication is not enough. Rural communities need to be part of the process that informs decision-making actions affecting them.

Various Government policy and strategic issues need to be informed by a bottom-up rather than a top-down process. An ICT model that facilitates this will add value to rural development initiatives by providing a basis of contextually rich information. Such a model will enrich current initiatives by allowing the basis of decision-making to rest on real-time needs and issues identified and informed by the community itself.

1.3 Statement of Problem

How can knowledge sharing increase the successful implementation of telecentres in rural areas?

1.3.1 Statement of Sub-problems



Sub-problem 1: What are the information needs of the rural poor?

Access to telecentres means access to information. In order to pitch the telecentre service correctly in the rural context, it is important to first determine what the information profile of the rural poor are. This sub-question seeks to uncover the information needs of the rural poor through discussing and categorising various rural information needs and the barriers to information and information flow faced in rural areas. The purpose of this sub-question is to provide some background regarding rural populations and their information needs.

Sub-problem 2: How can telecentres facilitate access to relevant information in support of improved service delivery?

Improved service delivery can be facilitated through the enhanced interaction of rural communities with Government and various other rural constituents, as the process may allow for an increased understanding of rural needs.

This sub-problem serves to highlight how access to ICT, more specifically telecentres, can facilitate and support knowledge sharing and lead to improved service delivery through a better understanding of the contextual needs and priorities of the rural poor. The purpose of this sub-question is to provide some background regarding telecentres and the facilitation of access to information in aid of improved service delivery.

Sub-problem 3: What are the success factors for the implementation of telecentres in rural areas?



This research identifies telecentres as a means through which improved service delivery, particularly social services, to the rural poor can be facilitated. However, in order to utilise telecentres as a tool with which to achieve this, the challenge of correct implementation within the rural location must be overcome.

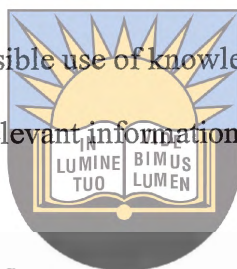
University of Fort Hare
Together in Excellence

This sub-problem will explore the required factors for telecentre success in rural areas. Heeks' Reality Gaps model and Communication Theory will be discussed specifically in this regard. In this research telecentre projects are defined more broadly as ICT based development projects. This sub-problem will also discuss the relative failures of current ICT based development projects with a focus on telecentre operation. Various challenges faced in the implementation of telecentres are explored through a discussion on ICTs and the rural context.

Sub-problem 4: What role does knowledge management, specifically knowledge sharing, have in the successful implementation of telecentres?

Knowledge sharing can also be utilised as a means to support telecentre operation within the rural context through the creation of knowledge networks between the telecentre, the community and the wider environment.

This sub-problem explores the possible use of knowledge sharing to support telecentre operation and facilitate access to relevant information flows.



1.4 The Objective of the Study.

University of Fort Hare
Together in Excellence

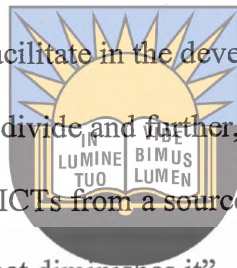
This research aims to ascertain how telecentres through knowledge sharing can be successfully implemented in the rural context in order to facilitate improved service delivery. The intention is to accomplish this through an initial identification and discussion of the various information needs and barriers to participation in information flow faced by rural communities.

Subsequently, the information needs of rural residents will be identified and discussed with a view as to how improved interaction between rural communities, relevant rural constituents and Government may lead to improved service delivery. Telecentres have been identified as a tool with which to accomplish this. However because the telecentre model is still to be successfully implemented over the long term, this study will also

explore how knowledge sharing can be used to support successful telecentre operation within the rural context.

More fundamental research is needed in order to deepen the analysis of factors that affect the success and failure of ICT based development initiatives (Millar and Mansell, 1999). This study aims to add to the body of knowledge that currently exists on ICT applications that support knowledge sharing within the rural context.

Consequently, this study aims to facilitate in the development of a pragmatic strategy that will aid in bridging the digital divide, and further, in the words of Forestier, Grace and Kenny (2002, 52), “transform ICTs from a source of growth that also increases inequality, to a source of growth that diminishes it”.



University of Fort Hare
Together in Excellence

This research is divided into three sub-sections. The first section (as per sub-problem 1 and sub-problem 2) discusses government and service delivery, the marginalised rural communities as information recipients, their information needs and the various barriers to accurate information and knowledge in rural areas, thus setting the context of the study. The second section (as per sub-problem 3) discusses information as an enabling resource and knowledge ecology as a key instrument of development. The third section (as per sub-problem 4) takes all of the above into account and discusses ICTs as a solution to the above mentioned problem statements, through an analysis of similar ICT based development initiatives and key authors' findings on the subject. The third section also analyses the ideal ICT model for rural access with a view as to how Knowledge Sharing can support and optimise it.

1.5 Background

The growth and innovations of ICTs over the past decade has led to widespread enthusiasm over the potential of ICTs to combat poverty and promote economic and social development in developing countries. The mirror image of this hope was a fear that those countries and groups that did not take full advantage of these technologies would be left further behind on the wrong side of a growing “digital divide” that would trap them in a cycle of deep and intricate poverty (McNamara, 2003).

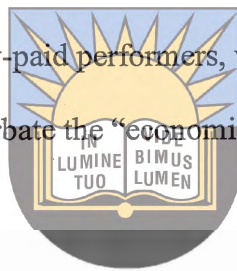


Modern societies are currently undergoing a number of fundamental transformations caused by the growing impact of ICTs (Scaidas, 2003). ICTs are changing our patterns of social, commercial, and political interactions whilst raising profound opportunities and threats for people everywhere. Due primarily to the astonishing growth of the Internet and e-commerce, technology is now widely acknowledged as a “critical force in shaping the future” (Harvard Policy Group, 2002).

But the revolution brought about by the new technologies has to confront a major challenge; that of the extreme disparities of access to and use of ICTs by developing countries as well as the societies within them. Despite increased awareness, the rich-poor divide, exacerbated by the “digital divide”, is growing. The challenge now lies in enlisting technology as an “ally” in the movement for development and social equity (Scaidas, 2003).

While the gap between the rich and poor narrowed considerably through the first two-thirds of the 20th century, it has grown consistently since then (Harvard Policy Group, 2002). Over the past thirty years, those in the middle and lower income groups have gained little in real income and have lost ground to those in the wealthiest groups (Harvard Policy Group, 2002).

Shifts to a knowledge-based economy contribute to these long-term trends. Tasks relying on cognitive skills and higher levels of education may continue to further widen the gap between high-paid and low-paid performers, with concerns prevalent that the “digital divide” may further exacerbate the “economic divide” (Harvard Policy Group, 2002).



University of Fort Hare

Together in Excellence

If these trends continue unimpeded, the negatives of a maturing information age may soon outgrow the positives, with economic growth no longer being able to compensate for what is being lost in our social and community lives (Harvard Policy Group, 2002). This highlights the significance of discovering means of utilising ICTs particularly for the growth and development of rural communities. This technology has the potential to not only support the economic growth of a community, but also facilitate social stimulation, which although very often overlooked, is also a significant factor in shaping the overall standard of living.

Information and knowledge have become vital to economic growth and the equitable participation of poorer countries in the global economy (Chapman and Slaymaker, 2002). Throughout history, inequality has been based on the ability of a few to control factors of production such as land or capital (Harvard Policy Group, 2002). In a

knowledge economy, however, knowledge is the key factor of production. ICTs provide the possibility of making this new factor of production available to the masses.

Chapman and Slaymaker (2002) state that the contradiction between the potential of ICTs to address the challenges faced by rural development and the current failure to harness them for this purpose is striking. They further state that to pursue a “one size fits all” strategy in implementing ICTs in rural areas is to ignore the real potential of ICTs to be used locally.



Mansell (1999) stresses the importance of customising ICT applications for local needs. He adds that it is not sufficient to simply duplicate strategies that seem to be working elsewhere, as tailoring ICT strategies to suit specific user contexts is of fundamental importance to the success of such strategies. Bridges.org (1996), an NGO focusing on the study of ICTs for development, adds that the stark reality is that not only do ICTs benefit privileged communities first, but they also appear to be exacerbating existing inequalities.

University of Fort Hare
Together in Excellence

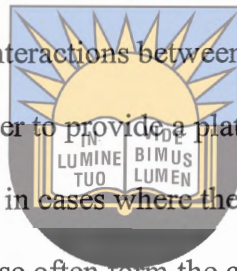
1.6 Overview of Research Methodology

The case study method has been selected as the research methodology to be used for this study. The reason for this choice includes the ability to collect evidence across a wide variety of sources ranging from documentation analysis to surveys.

Utilisation of the case study method will facilitate the description of the real-life context in which an intervention occurs, the description of the intervention itself and the

explanation of causal links in respect of the implementation of ICT based development projects (Morse and Richards, 2002). This will be done in order to highlight the effect of context on ICT development initiatives as well as the resultant success or failure of such initiatives in order to design and suggest a more appropriate mode of delivery and implementation.

The multi-perspectival characteristic of the case study method means that the researcher is able to consider not just the voice and perspective of various actors, but also of relevant groups of actors and the interactions between them (Morse and Richards, 2002). This will allow the researcher to provide a platform on which issues regarding ICT implementation can be raised, in cases where these considerations may have gone unheard. Explanations such as these often form the category of issues that provide a deeper understanding of the case and thereby also significant reasons for either success or failure.



University of Fort Hare
Together in Excellence

Case study questions will be derived from the common reasons for the failure of ICT development projects uncovered in the literature review and be based largely on the theoretical implementation model. The researcher aims to use these common issues as a foundation on which to test their actual existence, their effect in the identified environment and the extent to which each determined either success or failure. The identified problem situation as stated in this proposal will form a framework within which case study questions will be framed.

A preliminary case study will be conducted across three sites within the Eastern Cape. Subsequently the main case study will be conducted across five sites. These include two

telecentres in Gauteng, two in Kwa-Zulu Natal and one in Cape Town. The case studies will provide an analysis of a cross section of telecentres across South Africa. This will allow the researcher to compare and contrast firstly the performance of telecentres within the Eastern Cape with those in Gauteng, Kwa-Zulu Natal and the Western Cape, as well as facilitate the comparison of the various approaches that have been followed in establishing each of these telecentres and the relative success and/or failures of each.

(The research methodology is covered in greater detail in Chapter 4.)

1.7 Delimitation of the Study



An investigation into how telecentres supported by knowledge sharing can facilitate improved service delivery through the use of ICTs will be made. The research will be conducted across a broad spectrum of telecentres within South Africa. This will include an investigation into the specific information needs of rural communities, and how ICTs could be utilised to meet those specific needs. The study will also analyse the opportunities and challenges that are faced for the use of telecentres as a knowledge sharing medium.

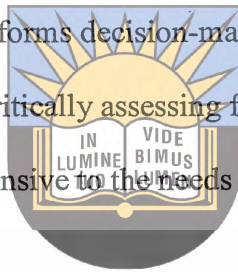
This study provides its own definition of ICTs and Rural Areas and the discussion will be limited to this context. It must be noted that rural is not meant in the most extreme sense of the word, but instead for the purposes of this research, refers to an area with some basic level of urbanisation and infrastructure including peri-urban areas. This study aims to develop an ICT model that will facilitate and support knowledge sharing between various rural community constituents in aid of development.

Although the case study itself will be conducted in sites across South Africa the main focus of the study is telecentre operation within the Eastern Cape Province in particular.

1.8 Conclusion

If Africa is serious about development and poverty alleviation, it is imperative that additional and extensive focus be directed to support and cultivate the inclusion of rural communities in the process that informs decision-making systems that affect them.

Research can play a vital role in critically assessing factors that support innovative applications of ICTs that are responsive to the needs of citizens and smaller businesses (Mansell, 1999).



University of Fort Hare *Together in Excellence*

Exploring the opportunities for applying ICTs to facilitate improved rural service delivery will form an important basis for developing a model of implementation that serves to meet the contextual realities and complexities of the Eastern Cape Province. However, the extent to which these technologies can be successfully applied to foster improved service delivery remains to be seen. Nevertheless, as stated by O'Farrell, Norris and Scott (1999, 1) "There needs to be a move from looking at technology and asking, 'What can we do with this?' to looking at people's needs and asking 'Which technology might help here?'".

Chapter 2: Literature Review



University of Fort Hare
Together in Excellence

2.1 Introduction

The Eastern Cape boasts a wealth of history and culture, with a reputation for being the origin of some of the greatest South African historical figures. With its vast geographical landscape being relatively under-developed, the Eastern Cape houses a large number of rural as opposed to urban dwellers. Natural and human resources are typically employed below their productive potential, making unemployment in the province predominant (ECDC, 2004). As a result, poverty in the Eastern Cape is widespread, with an estimated two thirds of the population living in poverty (PGDP, 2004).



University of Fort Hare

The scarcity of resources necessitates the most needy of citizens within the province bestows on the provincial government a vast and elemental task: that of discovering effective means of lifting the burden of poverty in ways that promote economic growth and improves the collective standard of living. As a result of this fundamental objective, strong importance is attached to work aimed at strengthening the asset base of the poor, with special focus directed to that which actively engages the poor people themselves (PGDP, 2004).

One of the key roles of government is to provide an array of services to improve the standard of living of all its citizens and ensure the effective functioning of the country as a whole. The effective provision of social services in particular remains one of the means through which government can improve the standard of living of its citizens,

particularly the rural poor. Consequently, service delivery improvement remains one of the urgent priorities of government (PGDP, 2004).

Improved service delivery requires the transformation of government into an institution that is more sensitive to client needs. Radebe (2000, 2) is of the view that effective service delivery improvement requires the construction of “a more modern, people-centred public service that accepts both the challenges and opportunities presented by innovation, collaboration and service”.



Marginalised rural communities represent a subset of society that often fails to gain sufficient access to basic services. ICTs may therefore have a greater role to play in giving a “voice” to the poor, empowering them through access to information, knowledge and ultimately services that may serve to significantly improve their standard of living (Heeks, 1999).

University of Fort Hare
Together in Excellence

This research explores the methods through which ICTs can facilitate greater access to social services for the rural poor through utilising information and knowledge as key instruments. This is achieved through an exploration of what key authors are saying on the subject and an analysis of how ICTs in aid of improved rural service delivery can be realistically realised.

2.1.1 Government and Service Delivery

In April 1994, after decades of struggle, millions of South Africans cast their votes in the first national democratic elections, thus realising their dream of political freedom.

In his first State of the Nation Address in 1994, former President Nelson Mandela emphasised the government's commitment to the creation of a "people-centred society, bound to the pursuit of the goals of freedom from want, hunger, deprivation, ignorance, suppression and fear" (SALGA, 2002).

For the first time in history, the South African government had to explore methods of identifying and meeting the diverse needs of all its citizens. In the quest to transform itself into an institution sensitive to the needs of society, service delivery achieved a new status as a key and critical facet of governmental function.



The South African government now faced a new challenge, that of developing an active relationship with its citizens in a manner that facilitated effective service delivery. At a provincial level, this meant ~~finding~~ *finding means to identify* and meet the changing and growing needs of the people and ensuring equitable access to government services.

University of Fort Hare
Together in Excellence

Different provinces had different challenges and therefore different needs. For the Eastern Cape government in particular, poverty alleviation, economic growth and infrastructure development formed a key strategic objective (Radebe, 2000).

As a result, the Eastern Cape government identified public sector and institutional transformation in support of improved service delivery as a key strategic focus for intervention (PGDP, 2004). This action served to encourage and highlight the need to identify and implement mechanisms for ensuring provincial transformation in aid of improved service delivery, social inclusion and democracy for all.

2.1.2 The Importance of Utilising ICTs in the Public Sector

Governance, the delivery of social services and the interaction between the state and its citizens are key areas for utilising ICTs to improve information flow and empower people. A major constraint for poor people and citizens of low-income regions or countries is the lack of an effective voice in public life, particularly in regard to decisions on policies and laws, which directly affect their livelihoods (Weigel and Waldburger, 2003). Quick and efficient access to information increases the transparency and accountability of government, leading to increased service delivery effectiveness (Weigel and Waldburger, 2003).



The underlying core principle of democracy is an informed and engaged citizenry (Cadlow, 2004). The description of democracy as stated here implies an active, participatory and fully representative system between the government and its citizens. ICTs can facilitate equality and social inclusion through ultimately extending the application of democracy equally throughout the province.

Without appropriate intervention the knowledge society could disproportionately benefit only the most affluent sectors in the developed world serving to aggravate the already wide gaps between the "information rich" and "information poor" (Norris, 2004). For Government, however, developing an effective ICT strategy that enables their business and improves their customer interface remains a major challenge (SALGA, 2002). These challenges are further magnified by massive information backlogs, lack of capacity, shortage of resources, and a lack of cohesion, integration and co-ordination (Radebe, 2000).

The incidence of these problems within government translates into the incidence of efficiency problems in government's interaction with its citizens. Although the problem as stated here is largely two-fold, involving the difficulties and inefficiencies experienced within government itself and the difficulties faced by rural citizens specifically in interacting with government, this research will focus on the latter with specific reference to how the telecentre model can be optimised in order to facilitate access to information in aid of improved service delivery.

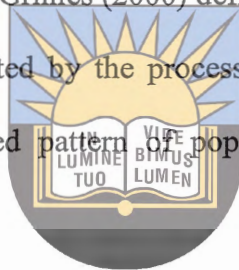


University of Fort Hare
Together in Excellence

2.2 Common Characteristics of Marginalised Rural Communities

2.2.1 Introduction

The Eastern Cape, being largely rural, faces many challenges related to poverty alleviation and economic growth. Grimes (2000) defines rural areas as those areas of the economy that are the least affected by the process of urbanisation and are therefore associated with a more dispersed pattern of population distribution and economic activity.



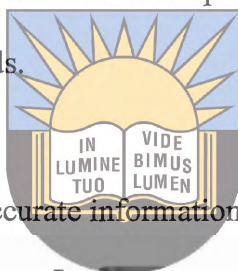
University of Fort Hare

Duncombe (1999) states that *Together in Excellence* in less developed countries, and particularly within rural areas, the market and non-market mechanisms for the transmission of information are likely to be less developed with barriers to the free flow of information likely to be higher and resource inequalities more extensive.

Rural areas typically share a number of common characteristics. As a result of the more dispersed pattern of population distribution; rural populations are often relatively isolated from the mainstream society. This isolation also inevitably makes itself felt in the area of access to information, knowledge and basic services.

2.2.2 Lack of Access to Relevant Information and Knowledge

Information and knowledge often form the “lifeblood” of most economic and social activities (Duncombe, 1999, 10). Duncombe (1999) suggests that areas that are struggling with socio-economic development often also characterise inefficiencies around provision and access to appropriate information. The dispersed nature of rural areas often contributes to a relative lack of relevant and current information and knowledge from the external environment about processes and mechanisms that affect and could improve rural livelihoods.



As a result of insufficient and inaccurate information and knowledge, rural communities become stuck in a cycle of poverty. Lacking a resource necessary for breaking out of this cycle, marginalised communities remain trapped through a succession of actions and choices based on the same inaccurate, and often insufficient, information and/or knowledge.

University of Fort Hare
Together in Excellence

Information and knowledge are enablers that facilitate better action and choice. In today’s information and knowledge society these become resources fundamental to productive and sustainable livelihoods.

2.2.3 Lack of Empowerment

One of the many characteristics of poverty is a lack of empowerment to participate and direct development efforts. There is a link between empowerment, access to accurate and timely information and knowledge and social inclusion and participation, all of

which are critical elements in the creation of sustainable development (Soefftestad, Alinin, Flyman, Kleibl and Die, 2004).

Empowerment is defined as “the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired action and outcomes” (The World Bank (2004), as cited by Soefftestad *et al* (2004)). Therefore in order to make rural development efforts sustainable, development efforts must include a critical element of empowerment.



The goal of any development project should be to make people more self-reliant and to give them the knowledge, tools and self-awareness about their own attributes that makes self-determined change possible (Soefftestad *et al*, 2004). This is important as empowered people have more freedom of choice and action, which in turn leads to a better chance of influencing and determining their own future.

University of Fort Hare
Together in Excellence

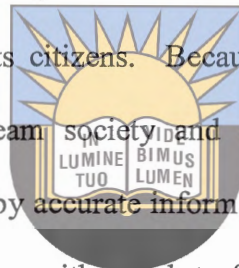
2.2.4 Lack of Participation and Inclusion

Another characteristic shared among marginalised rural communities is the lack of influence to highlight the needs, rights and injustices experienced periodically (O’Farrell, 2000). By remaining unconnected to appropriate information channels the poor remain unheard and unable to shift the barriers that keep them poor (O’Farrell, 2000).

The preceding arguments suggest that in order to address poverty suitably, development strategies must include a component of empowerment and access to relevant and timely

information and knowledge. However it is also essential to note that although access to accurate and timely information is important, the process of empowerment would be incomplete without also affording marginalised rural communities the ability to utilise that information and knowledge to participate and direct development efforts that affect them.

Soeftestad *et al* (2004) agree that access to knowledge and information is crucial to development, and that fundamentally there should also be a two-way communication flow between government and its citizens. Because rural populations are relatively isolated both from the mainstream society and also ultimately from government, productive interaction supported by accurate information between the two parties poses a significant challenge. The means with which to fill the communication gap between government and its rural citizens is an element that will prove fundamental to sustainable socio-economic development, particularly for the Eastern Cape Province.



University of Fort Hare
Together in Excellence

It therefore follows that improved communication between marginalised rural communities and access to appropriate information by both parties has a fundamental role to play in improving rural livelihoods. A significant sub-component of participation and inclusion in support of sustainable rural development is therefore the dynamic and complex element of communication.

2.2.5 Communication and the Flow of Information

O'Farrell (2000) defines information flow as a system whereby information is passed between individuals or groups implying a relationship between two parties, the sender and the receiver. Bryant (2000) supports this, adding that communication or information flow is a process originating with an information source or sender that transmits a message via a channel to the information destination or the receiver.

The most important element in the communication chain can be defined as the feedback loop, as this allows for more meaningful interaction (Bryant, 2000). Without this, communication becomes unilateral, thus either failing to achieve an objective or if an objective is indeed reached, providing no means of establishing this (O' Frank, 1995).

The typical communication process can be depicted as follows:

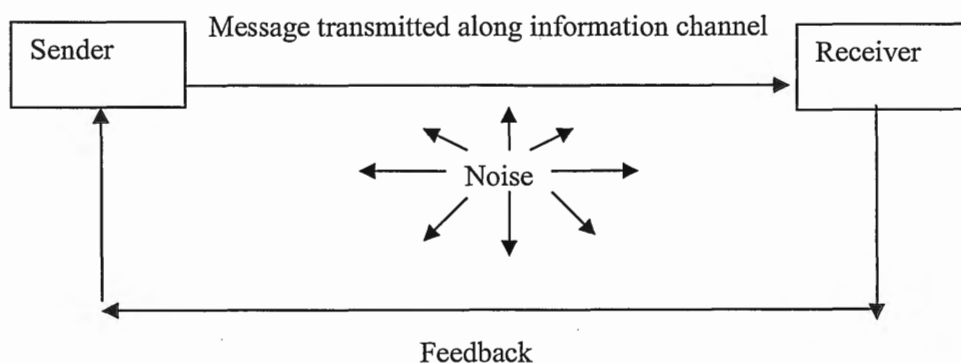


Figure 1: Communication Process

Marginalised rural communities exist in an environment whereby any communication between themselves and government is at best difficult. Noise is defined as the various interruptions to the communication process. These can include items such as an

improper information channel. In fact, items such as poverty itself and the context that surrounds it can themselves be defined as noise. Noise interrupts the communication process making it inefficient. In the rural location noise not only affects information transmission but the feedback loop as well.

An effective communication process will ensure that communication has achieved the objectives intended by both the sender and the receiver. An effective communication process also means that both parties to the communication process are actively involved in it. This means that there is an initial interaction by the sender and then feedback by the receiver, this occurs until both parties are satisfied that the other has understood the message that has been communicated. But there can be some problems with the communication process.



University of Fort Hare

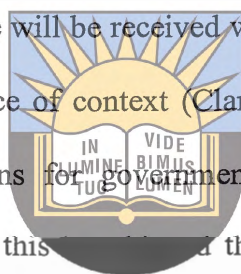
Clark (2002) cites Weaver (1996) as holding the view that there are three general problems with communication:

- **The level A problem**, the technical problem, concerns how accurately the symbols of communication can be transmitted.
- **The level B problem**, the semantic problem, concerns how precisely the transmitted symbols convey the desired meaning.
- **The level C problem**, the effectiveness problem, concerns how effectively the received meaning affects conduct in the desired way.

The level A problem can be effectively solved through ensuring an effective communication channel facilitated by appropriate ICTs. This will ensure that any message sent between rural communities, community based organisations/entities and government is accurately transmitted.

In addition to this, other communication channels can also be utilised. These include government or community representatives and the dissemination of brochures, flyers or posters. Traditional communication channels can also include transmitting messages via the television or the radio. The level B and Level C problem, however, are slightly more complex to solve.

The level B problem has to do with constructing the message effectively in order that the correct meaning is conveyed. If the sender has the ability to express themselves clearly and precisely, the message will be received with the correct meaning rather than being altered by the wrong choice of context (Clark, 2002). This point significantly supports that of providing means for government in particular to more precisely understand the rural context. If this is done then communication by government with rural communities can be made more effective.



University of Fort Hare
Together in Excellence

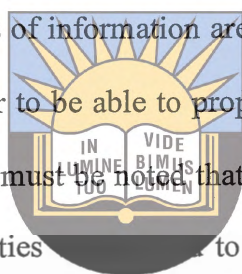
If the correct manner of expressing the message is used, then the receiver is left with little or no room for misinterpreting the desired meaning. Use of an appropriate communication channel will also significantly reduce the instance of Level B communication problems.

The level C problem has to do with the receivers' ability to correctly interpret the senders' message. Once the sender has used their knowledge to compose the message, properly expressing the meaning they desire, it is then up to the receiver to have the proper knowledge to be able to interpret the message correctly (Clark, 2002). This point also significantly supports that of providing rural populations with means of accessing information and knowledge pertaining to government and rural entities and/or processes as this may enable them to more clearly understand and decipher communications from them.

Use of an information and knowledge repository may also further assist government in composing and communicating more effectively with rural populations as it facilitates an understanding of the rural context and the angle at which the communication must be pitched in order to derive maximum benefit. It is important to note, though, that if the receiver has a low level of information or knowledge and is unable to understand and interpret the sender's message, it does not matter how well the sender composed their message (Clark, 2002).

Proper knowledge and high levels of information are a necessity in solving the Level C problem by preparing the receiver to be able to properly interpret the sender's message in the form that was intended. It must be noted that the Level C problem is a common problem faced by rural communities due to communication by outside parties.

This is further exacerbated by the relative lack of information and knowledge regarding outside parties within the rural location.

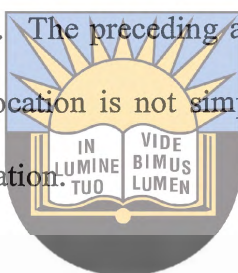


University of Fort Hare
Together in Excellence

It is suggested that appropriate ICTs will enable rural communities to become active participants in the communication process as opposed to remaining passive recipients. Active participation will facilitate value-added communication, the empowerment of rural communities and increased effectiveness by government in servicing the needs of the rural poor.

2.2.6 Conclusion

With an understanding of the inefficiencies that exist concerning rural access to information and knowledge, the lack of empowerment and the lack of inclusion, participation and communication between rural populations and government in particular, it should be understandable that a perception is held that various government services are inaccessible by them. The preceding arguments further highlight that the problem faced within the rural location is not simply about access to information or necessarily about a lack of information.



The problem can largely be defined as the lack of an effective and suitable two-way interaction between government and rural populations, supported by accurate, relevant and timely information and knowledge. The inclusion of the rural poor in this particular information chain would allow for a feedback loop that would inform various government rural initiatives, making them more efficient and responsive to the changing needs of rural populations and empower rural populations in a manner that would serve to improve the collective standard of living.

2.3 ICTs and Rural Development

2.3.1 Introduction

Having identified the problem situation, it is important to review the reasons as to how access to ICTs can serve to aid in the fight for socio-economic development, particularly in rural areas.



Loader and Keeble (2004) answer this question, stating that “perhaps unsurprisingly” there is a perceived correlation between the “information poor” and those communities which are currently socially and economically isolated. The revolution in the ICT arena has contributed significantly to the creation of a global society in which previous barriers imposed by location and time difference have been eliminated (Young, Ridley, Ridley, 2001). Consequently one cannot disregard the use of ICTs as a remedial tool for improving government access for poor and marginalised communities.

The ICT revolution demonstrates a very real possibility for facilitating the improvement of rural livelihoods through fostering access to appropriate information and knowledge. ICTs are only beneficial, however, to the extent that they can foster access to enabling information that serves to empower marginalised rural populations to wield more control over their own environments.

But given all possible implementation obstacles and other rural development priorities, what needs to be considered is why ICTs for development should be prioritised.

2.3.2 The Dangers of Unsuccessful Implementation

Sadly, although ICTs are revolutionising access to information around the world, this revolution is likely to reach everyone but the poor (Heeks, 1999). "The disinformation of Africa at the dawn of the information age may be the most lasting wound inflicted on the continent", with the prevalent threat being the development and cultivation of new patterns of dependency (Pott, 2003: 32).



Africa cannot afford to ignore the potential that ICTs provide for facilitating poverty alleviation and economic growth. The vast burden of poverty facing the continent requires that innovative means of addressing the problem effectively be found. The very nature of ICT presents an unprecedented opportunity for Africa to “leapfrog” certain stages of development in a manner that would facilitate socio-economic growth (Heeks, 1999).

University of Fort Hare

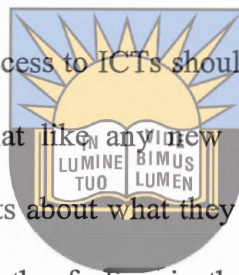
Together in Excellence

Africa continuously faces the predicament of becoming entrenched in a cycle of poverty, which becomes ever more difficult to address with passing time. The comments of the above-mentioned authors highlight the very real danger facing the continent as a result of failing to successfully utilise ICTs as a tool for development. It is therefore an urgent imperative that the means for effectively utilising ICTs to bridge the information and knowledge gap, in aid of poverty alleviation and socio-economic growth, particularly in rural areas, are explored.

2.3.3 ICTs as a Priority for the Poor

Given other development priorities and resource constraints however, it is important to discuss why ICTs for development should be prioritised. Weigel and Waldburger (2003) states that the real question here is whether the poor, in addition to the existing deprivation of income, food and health care services, should also be further deprived of new opportunities to improve their livelihoods.

Debates around whether or not access to ICTs should be a priority for the poor are rife. Heeks (1999) is of the view that like any new generic technology, ICTs do lend themselves to sweeping statements about what they can do for development, but that if the poor are considered clearly, the feeling is that they must gain eventually from adopting the technology, because the technology is development.



University of Fort Hare
Together in Excellence

Weigel and Waldburger (2003, 10) hold the view that the strategic choice facing the continent is whether to simply accept the rapidly growing gap or to use ICTs in a creative manner to “level the playing field” in economic, social, cultural and political terms. ICTs present an opportunity to address development complexities and obstacles through providing innovative means to address old problems in new ways.

The author concurs with Chapman and Slaymaker (2002, 12) who state that while it is important to understand the complexity of the rural development context and that ICTs are no "magic bullet", it is equally important to appreciate the flexibility of these technologies to accommodate the specific demands of developing countries.

Strictly speaking, the poor do not need ICTs. What the poor do need is economic opportunity, improved nutrition and health care, healthy environments, education, and other proponents of a rewarding and sustainable livelihood. To the extent that ICTs can help achieve these goals, they are a worthwhile tool for development. But they remain tools, not goals (McNamara, 2003).

Evidence strongly suggests that ICTs have the potential to create income generation opportunities and jobs, improve the delivery of and access to health and education, facilitate information sharing and knowledge creation and increase the transparency, accountability and effectiveness of government (Pott, 2003).



2.3.4 An Exploration of the Range of Issues Affecting the Successful Implementation of ICTs in Rural Areas

University of Fort Hare

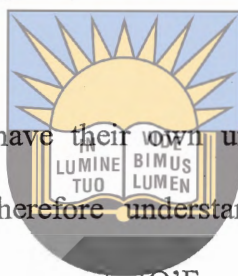
Together in Excellence

ICTs and the ability to use them and adapt them have become an important factor in generating and accessing the wealth, power and knowledge necessary for development (Pott, 2003). However, as attractive as this may sound, the implementation of ICTs as a remedial tool within rural areas faces major challenges.

Lim (2003) adds that although it is important to recognise that ICTs and information dissemination are a fundamental element of any rural development programme, there are various constraints to providing rural access to ICTs. These include infrastructure, network access, technology maintenance and literacy.

Although these may represent constraints that can be overcome as a result of continuous technological innovation, one needs to analyse the impact that the introduction of such technologies may have on rural areas as well as explore other less obvious issues.

Many ICTs rely on a capability to understand English, with fears present that the content, language, class and culture that dominate the Internet may have negative effects by generating a uniformity of ideas, preferences and world visions (Pott, 2003). This has implications for monitoring content.



Furthermore, rural populations have their own unique knowledge and information systems. Interventions must therefore understand the traditional communication practices and preferences of the community (O'Farrell, 2000). Any addition to existing information systems through the use of ICTs must respect and support the indigenous information system.

University of Fort Hare
Together in Excellence

The two issues highlighted here represent a mere subset of the kind and variety of “soft” topics that must be taken into account when implementing ICTs in rural areas. This emphasises the fact that ICT implementation in rural areas needs to consider more complex issues than simply questions of hardware and infrastructure, but also needs to consider issues such as language, culture, cultural practices, education levels and political climate that relate to social structures and norms.

2.3.5 Conclusion

Sadly, the reality is that when dealing with ICTs for development, more often than not the technology itself detracts from the implementation of a more holistic solution. This common mistake can be understood, as talk of the “digital divide” often implies something that seems to require “mere technology to redress” (O’Farrell, 2000). The reality is, however, that “multiple dimensions” of the problem suggest that unless other obvious “divides” are also addressed in a more comprehensive manner, implementing ICTs as an aid to development in rural areas will not achieve much (O’Farrell, 2000).



Only when the focus is on the content and not the technology can ICTs play an important role in rural development, as “people don’t need technology for technologies sake” but rather have a right to information (Pott, 2003). The fact is that the “digital divide” is in fact not the real issue; rather it is the information and knowledge gap that are the real concern (O’Farrell, 2000). The author supports McNamara’s (2003) view that by focusing on the “digital divide” the proponents of “ICT-for-development” have often misdirected their energies and weakened their own cause.

To make ICT work for poverty reduction and development, they need to be “both affordable and market-driven with infrastructure and multi-stakeholder efforts at all levels mobilised to help poor, disadvantaged and marginalised people use the whole range of ICTs according to their priorities and demands” (Weigel and Waldburger, 2003, 22).

Technology is only useful to the extent that people can utilise it to meet predefined needs. The definition of technology itself emphasises that technology cannot be put into practice without the involvement of people (Pott, 2003). The relationship between ICTs and development needs to be understood in respect of the relationship between people and information (Pott, 2003). Thus in order to correctly conceptualise ICTs, their relationship to people must be explored.

2.4 The Information Systems of Marginalised Rural Populations

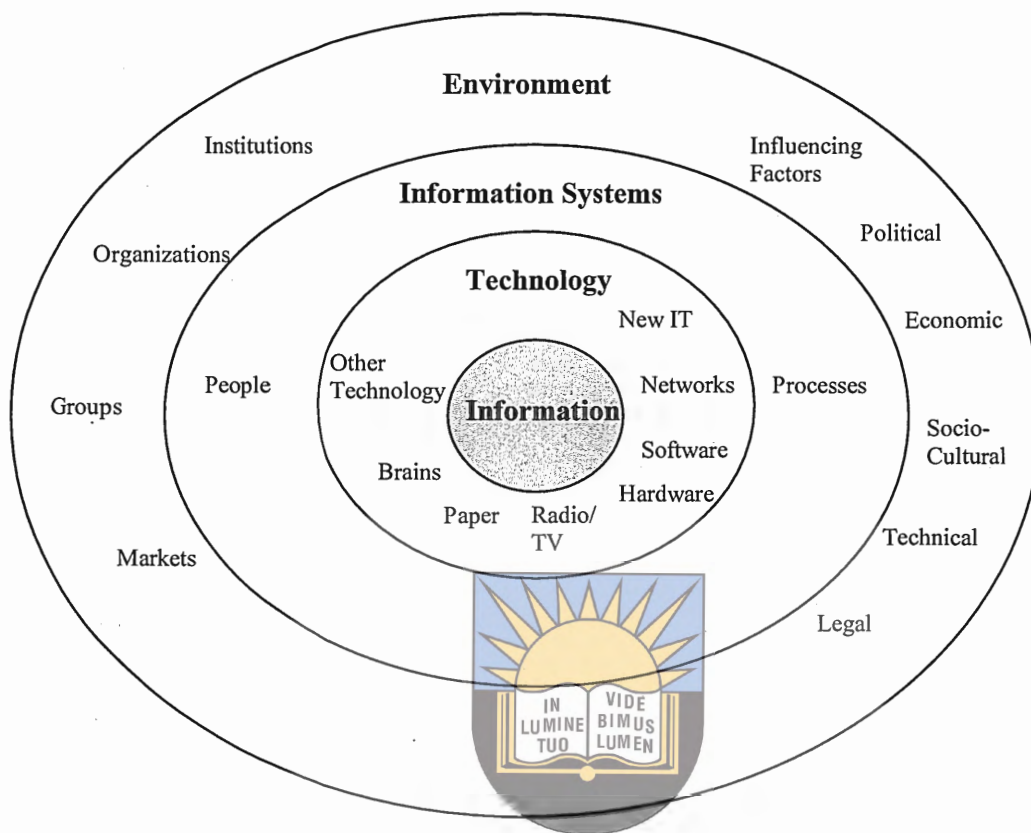


2.4.1 Introduction

It is largely accepted that the definition of an information system includes the interaction of technology, people and processes (Pott, 2003). Furthermore the information system is related to the larger context in which it resides.

University of Fort Hare
Together in Excellence

The exploration of context, information, knowledge and the added social aspect of people, how they interact and how information is communicated in respect to ICT application is a significant factor for facilitating an understanding of ICT application in rural and peri-urban areas. This is illustrated in the figure below:



University of Fort Hare

Together in Excellence

Figure 2: A model of Information Communication Technology (adapted from Pott, 2003: 57)

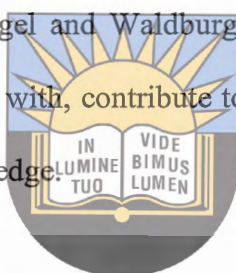
It can be seen from figure 2 that information exists within a context. It is logical that this context will affect the nature, accuracy and the ability to access the information that resides within it. It will also affect the method and quality of interaction with that information.

In poor communities it is often the parochial nature of information exchange that is the problem, preventing new and relevant information from entering the network and equally inhibiting the information and knowledge of the community from being shared and valued externally (O'Farrell, 2000). This means that often the nature of the rural location itself limits the acceptance and use of new and novel information and

knowledge. In addition the rural population will also protect use and access to its own information and knowledge.

2.4.2 Rural Information Systems and ICTs

ICTs can strengthen the "voice" of rural populations with regard to their local culture and increase their contribution to the content of local media (Weigel and Waldburger, 2003). Promotion of local content is crucial in a globalised world where information flows are typically one-way (Weigel and Waldburger, 2003). ICTs can improve the ability of the rural poor to interact with, contribute to, access and understand their own and other's information and knowledge.



2.4.3 Conclusion

University of Fort Hare
Together in Excellence

The establishment of a two-way information flow between rural populations and relevant bodies in order that appropriate information exchange is encouraged and improved, is an element that can significantly contribute to sustainable rural development. In this way ICTs can be used to increase the collective body of knowledge, allowing the poor to be both active and discerning seekers and providers of information as opposed to passive recipients (O'Farrell, 2000).

2.5 Information as an Enabling Resource

2.5.1 Introduction

Information is of vital importance to economic growth and the equitable participation of poorer countries in the global economy, with authors such as Chapman and Slaymaker (2002) stating that it has now surpassed even capital as the key resource. In this new landscape, knowledge constitutes the most important factor, while learning enabled by information and knowledge collaboration now represents the most important process (Ndou, 2004).



University of Fort Hare *Together in Excellence*

In general, it can be concluded that information, and in particular, information that is appropriate, applicable and useful, is a key resource that relatively few people in rural areas have access to. Chapman and Slaymaker (2002) add that information has a catalytic role, and further that improving the quality and quantity of information available to the poor can significantly affect the sustainability, productivity, and profitability of livelihood decisions.

2.5.2 The Information Needs of the Rural Poor

In order to understand the category of information required to improve the quality of life of rural populations one need first understand what their needs are.

Maslow (2004) categorises needs in regards to physiological needs, safety needs, belongingness and love needs, esteem needs, cognitive needs, aesthetic needs and self-actualisation. The nature of Maslow's hierarchy of needs is such that the base needs must be met first before one can progress further up the hierarchy. Maslow's hierarchy of needs is depicted graphically below in figure 3:

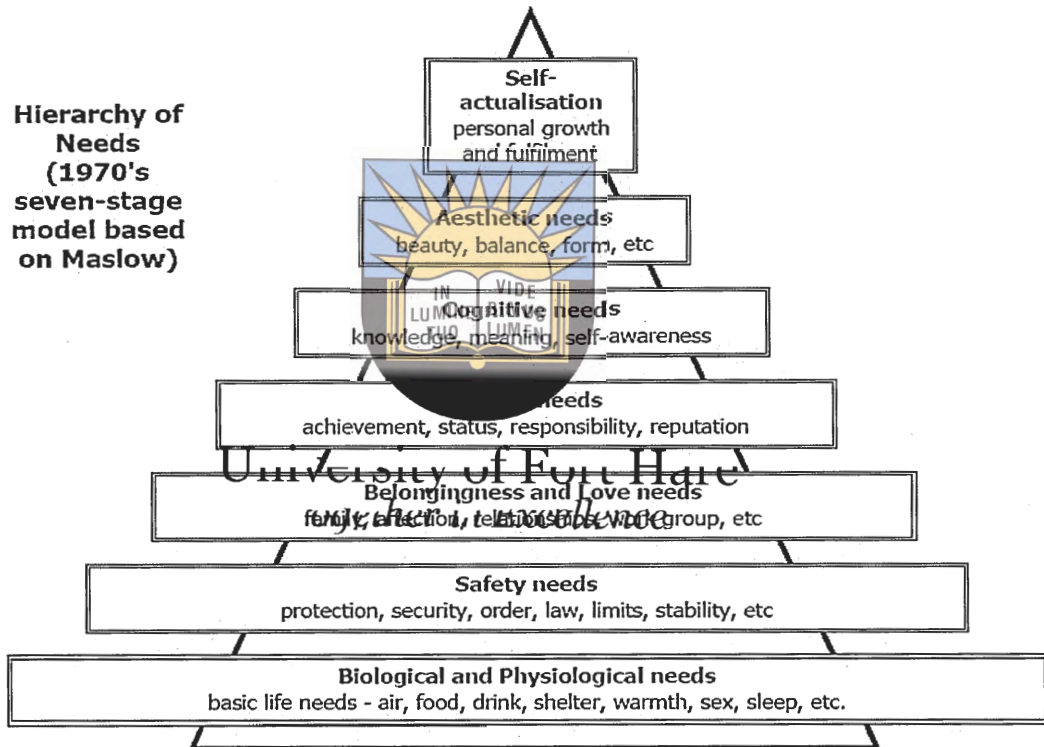
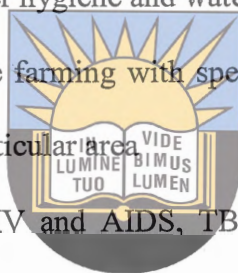


Figure 3: Maslow's hierarchy of needs (adapted from Huit, 2004: 33)

According to Maslow, people with a low standard of living are still attempting to meet base needs. The author has made use of Maslow's hierarchy of needs as it is a widely known and accepted model that helps to illustrate the fact that people living within an environment characterised by poverty are in the category of people still attempting to meet the base needs. These, as defined by Maslow, are physiological and safety needs. The author suggests that, based on this, an example of information related to

government services that would service the information needs of the rural poor in this regard include (Cecchini, 2005):

- Information on human and/or legal rights
- Information on the provision of basic services and how to access them
- Information on the registration of births, deaths etc.
- Support and advice for people in abusive relationships
- Information on how to access various social grants
- Information regarding water hygiene and water borne diseases
- Information on subsistence farming with specific focus on crops and/or animal farming applicable to a particular area
- Information relating to HIV and AIDS, TB and any other diseases that may critically affect a particular area



University of Fort Hare
Together in Excellence

This list is not exhaustive and serves simply to highlight the categories of information that may be required by the rural poor. It must also be noted that although there will be generic information requirements in rural areas there will also be context specific requirements that will relate specifically to the area in question. It is important to note that content provided through ICT should not be limited to information that can be accessed from outside sources, but should also provide a means for the rural poor to access knowledge and information existing within the community.

2.5.3 Conclusion

The author concurs with the view held by Cecchini (2005) who states that the poor need access to locally contextualized information, more than access to existing information from an alien context (Cecchini, 2005). It is suggested that access to this kind of

information can be facilitated by ICT. Such access would endow the poor with decision-making power and knowledge about the services and facilities available to them that can serve to directly improve their standard of living.

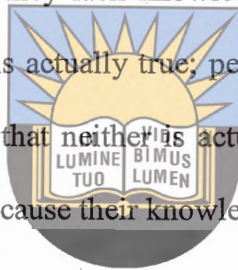


University of Fort Hare
Together in Excellence

2.6 Knowledge, Information and the Rural Poor

2.6.1 Introduction

Pott (2003, 16) states that “poor countries and poor people differ from rich ones not only because they have less capital but because they have less knowledge”. The question is whether people are poor because they lack knowledge. According to Pott (2003) the World Bank believes the reverse is actually true; people lack knowledge because they are poor. Castells (1998) argues that neither is actually the case, but rather that it is more likely that people are poor because their knowledge is not valued.



University of Fort Hare

Together in Excellence

The author however, holds the view that the truth is a combination of the opposing statements. That is that people are not only poor because their knowledge is not valued, but also because they have limited means of accessing wider knowledge, such that they are able to add to and complement their existing knowledge base in a manner that allows for and facilitates growth and development.

Central to the wider context of the problem is the view held by those controlling rural development programs that conceptualising and understanding the rural community in terms of the knowledge that exists within it is not a necessary condition for effective and sustainable development.

2.6.2 The Importance of Sharing Knowledge

Thomson (2004), states that “indigenous knowledge is an integral part of the culture and history of a local community”. In order to provide for meaningful, contextually appropriate development we need to learn from local communities such that the development process be enriched. What is required is the sharing and cross-fertilisation of information and knowledge by rural populations, local government and various other stakeholders, such that rural needs can be more effectively met.



An active relationship between rural populations and government, in particular, needs to be cultivated, whereby constant interaction informs policies and services provided by government to the rural poor, in a model that is flexible enough to accommodate the changing environment that characterises the rural location. In the authors' view, without the facilitation of this dual interaction, development efforts are likely to remain largely unsuccessful.

University of Fort Hare
Together in Excellence

2.6.3 Conclusion

The exchange of information through different forms of mass communication among nations has influenced human development by “drawing economic geographies, shaping national identities and rebalancing the distribution of power within societies and among countries” (Badshah, Khan and Garrido, 2003, 15). Nowhere is this influence more evident than in the current information revolution.

ICTs do not have to reinforce existing power relations, but rather have the potential to capture knowledge in new ways that can inform various development practices for the greater good, through the empowerment of all parties to make decisions based on current and sound knowledge (Pott, 2003, 26).

2.7 The difference between Information and Knowledge

2.7.1 Introduction

According to Malhotra and Galletta (2000) the complete information environment addresses all values and beliefs about information (culture), how people actually use information and what they do with it (behaviour and processes), the pitfalls that can interfere with information sharing (politics) and what information systems are already in place (technology).



University of Fort Hare
Together in Excellence

2.7.2 A Brief Discussion

It is important to differentiate between information and knowledge. Knowledge is based on information, but is also linked to a specific context from which it derives its value (Weigel and Waldburger, 2003). Knowledge in this broader perspective is one of the most important elements of development.

Mere access to information will not automatically lead to poverty reduction. It has to be embedded in a broader context of knowledge and development (Weigel and

Waldburger, 2003). Using, producing and sharing knowledge requires effective communication at all levels.

2.7.3 Conclusion

ICTs provide a broad range of powerful tools to enhance both the knowledge and communication dimensions of development. An informed population is essential to the efficient creation, acquisition, dissemination and utilisation of relevant knowledge and socio-economic growth.



2.8 Knowledge and the Knowledge Economy

University of Fort Hare
Together in Excellence

2.8.1 Introduction

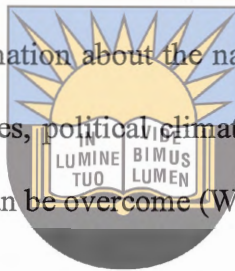
Knowledge is defined as the capacity to act. Drucker (1999) further defines knowledge as “information that changes something or somebody either by becoming grounds for actions or by making an individual or an institution capable of different or more effective action”. As a result, international institutions, country donors and the broader development community are rapidly coming to the realisation that knowledge is central to development (World Bank (1998) as cited by Cummings, Heeks and Huysman (2003)).

ICTs are the backbone of the knowledge economy and in recent years have been recognised as an effective tool for promoting economic growth and sustainable development (Chen and Dahlman, 2000). With relatively low usage costs and the

ability to overcome distance, ICTs have revolutionized the transfer of information and knowledge around the world (Chen and Dahlman, 2000).

2.8.2 Knowledge and Rural Development

For development, knowledge management offers a variety of new possibilities. This new focus on knowledge within the development sector is not out of place because development initiatives themselves are comprised of various knowledge-based practices, such as gathering information about the nature of the rural area in regards to economic activity, cultural practices, political climate and various challenges to socio-economic growth and how these can be overcome (Weigel and Waldburger, 2003).



University of Fort Hare

Together in Excellence

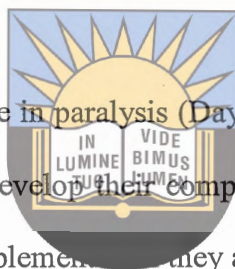
Only with an increased understanding of rural development, in all its dimensions, can these practices be improved (Cummings *et al*, 2003). The sharing and use of relevant information and knowledge through the use of ICTs can be an effective tool for cultivating, facilitating and supporting rural development.

2.8.3 The Status of the Knowledge Society in South Africa and the Eastern Cape

The list of benefits attributed to the knowledge society in the developed world is long, stretching from the spread of democracy and democratic processes through to unprecedented economic growth, widespread improvements in prosperity, socio-economic growth and the quality of life (Day, 2005). The argument is often heard that Africa is not yet ready for the knowledge society. The reasoning states that before it can graduate to this “highest state” of society’s development, Africa must go through all the previous stages of the industrial and even agrarian paradigms (Day, 2005). However,

according to Day (2005), most utilising this argument appear to have misunderstood the knowledge society, seeing it as being primarily about ICTs and organisational information processing capability.

An alternative argument, both in Africa and the developed world, is that Africa can and must become part of the global knowledge society as quickly as possible. The fear is that Africa is being left ever further behind, and the hope is that the knowledge society is the way to “leapfrog” out of poverty and exclusion (Day, 2005).



In many ways, Africa appears to be in paralysis (Day, 2005). Although more and more leaders are realising the need to develop their component of the knowledge society in their country, when it comes to implementation they are confused and intimidated by the range of ‘off-the-shelf’ solutions being thrust at them from many quarters (Day, 2005).

University of Fort Hare
Together in Excellence

In this respect there is still room for the cultivation of an active knowledge society and the effective implementation of various knowledge processes. Despite its many advantages compared with other African countries, the situation is similar in South Africa and the Eastern Cape (Day, 2005)

2.8.4 Conclusion

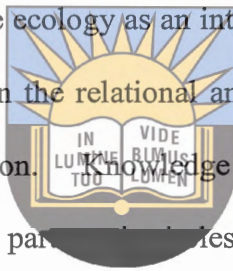
Knowledge ecology is a form of knowledge collaboration that defines the environment within which various knowledge creating systems interact. The knowledge ecology framework consists of an environment that comprises numerous interacting and interdependent social, cultural and political subsystems that shape the “creation, flow and use of knowledge” within that environment (Malhotra and Galleta, 2000: 54). In this way an environment’s knowledge ecology would influence what knowledge was

produced and stored, what knowledge is available to whom and what knowledge is valued in the performance of daily activities (Malhotra and Galleta, 2000).

2.9 Knowledge Ecology – An Analysis and Discussion

2.9.1 Introduction

Lorndon (1999) defines knowledge ecology as an interdisciplinary field of management theory and practice that focuses on the relational and social or behavioural aspects of knowledge creation and utilisation. Knowledge ecology is about studying and enhancing the ways in which the parts of a system of knowledge-generating systems relate to one another (Pot, 2001).



University of Fort Hare
Together in Excellence

This has implications for understanding more clearly the relationships within rural based organisations/government and rural populations, with specific focus on how they interact, allowing for the comprehensive identification of problems within the provincial government/rural populations' communication cycle.

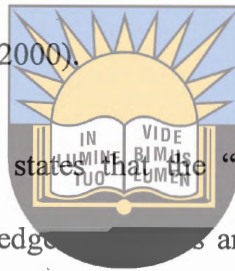
2.9.2 Knowledge Ecology –A Brief Discussion

Within a knowledge ecology framework, the focus on people does not only imply an understanding of the knowledge exchanges and relationships between people, but also implies an understanding of how such knowledge influences action or potential for action (Malhotra and Galleta, 2000). This suggests that the application of the knowledge ecology framework within the government/rural population communication cycle will

shed light on how this communication channel can be more effectively utilised to support and/or alter certain behaviours. In other words, through application of knowledge ecology, the interaction between government and rural populations can be made more effective.

2.9.3 A Comparison between Knowledge Management and Knowledge Ecology

Knowledge ecology differs from knowledge management in that it adds the context, synergy and trust relationships necessary for translating information into actionable knowledge (Malhotra and Galleta, 2000).



Malhotra and Galleta (2000, 12) states that the “paradigm shift” from a focus on knowledge management to knowledge ecology is anticipated to have implications for altering traditional channels of knowledge creation and dissemination. Knowledge ecology is anticipated to facilitate the democratisation of policy-making processes that influence specific groups and communities through an understanding of how access to and interaction with information and knowledge by specific groups influences behaviour (Malhotra and Galleta, 2000).

University of Fort Hare
Together in Excellence

Whilst the target of knowledge management is to accumulate and leverage knowledge, knowledge ecology focuses and targets the development and mobilisation of collective intelligence (Lorndon, 1999). This has implications for nurturing and cultivating the collective knowledge of a rural community, in regards to imparting knowledge about the policies and services pertaining to them and socialising these communities towards changing current practices that may be inefficient and utilising more effective methods of access and use.

In this way knowledge ecology bridges the gap between “static repositories of knowledge management and the dynamic adaptive behaviour of natural systems” (Por, 2001). The figure below depicts the cycle of knowledge ecology:

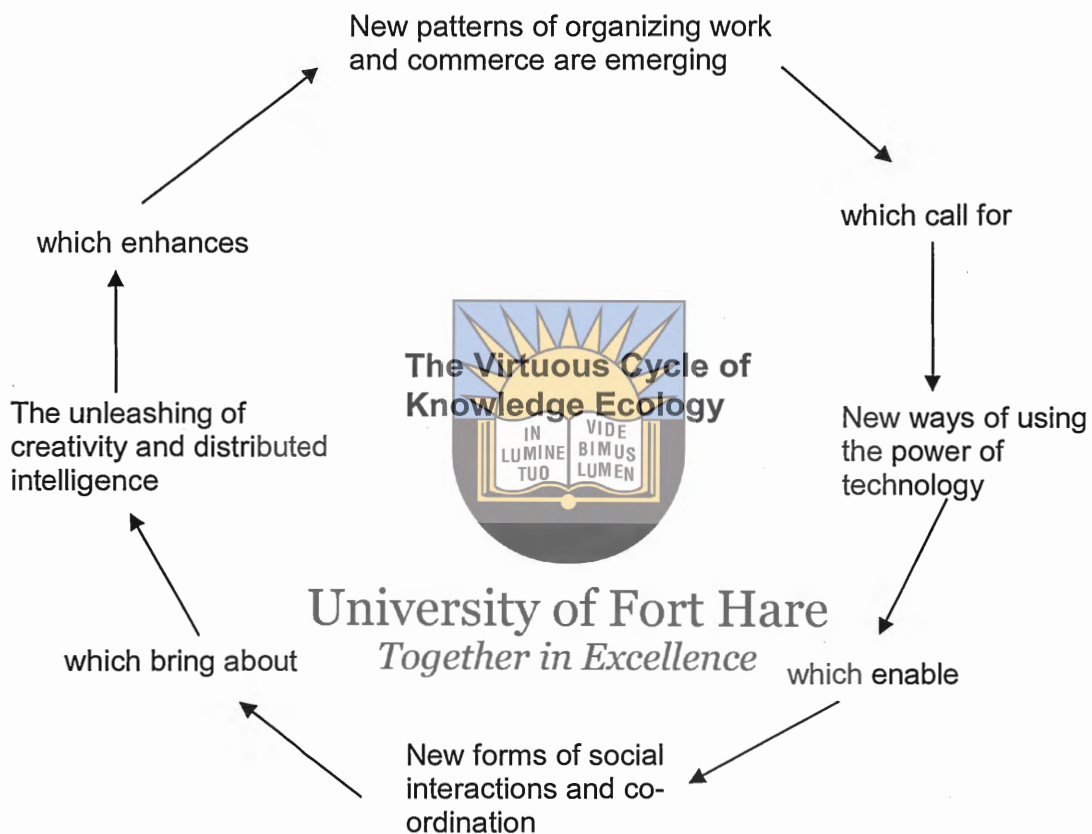


Figure 4: Cycle of Knowledge Ecology (adapted from Por, 2001: 2)

The value of the application of knowledge ecology is the ability to understand how to cultivate and foster productive communication in a manner that would allow for the accumulation of the most meaning and value for rural populations and government. Local government would be able to develop a deeper understanding of how to interact with rural populations in a more effective and meaningful way through creating and nurturing knowledge ecosystems throughout the rural location. Knowledge ecology is put in practice through the creation and application of knowledge ecosystems. Knowledge ecosystems are discussed in the section that follows.

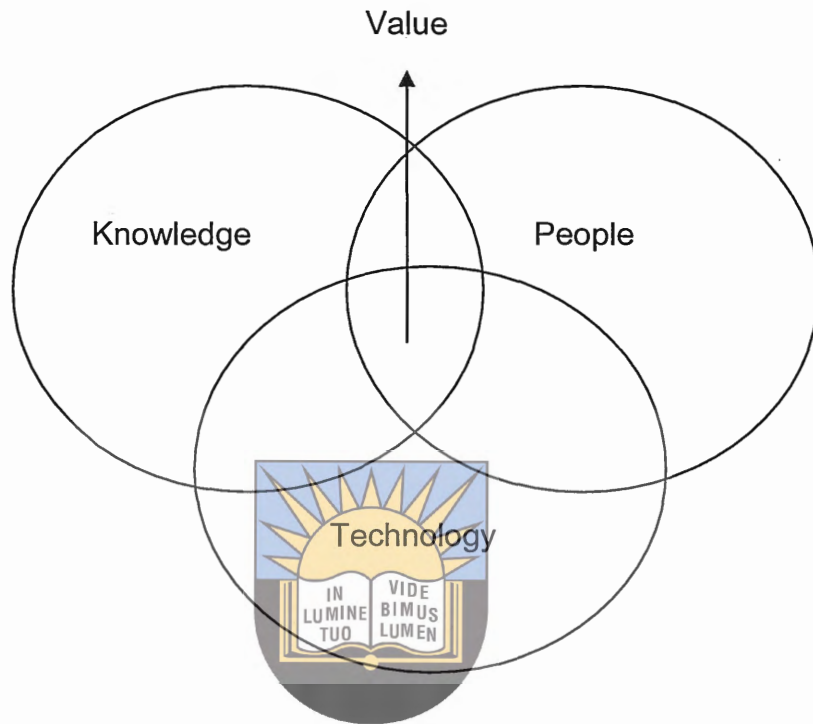
2.9.4 The Knowledge Ecosystem

The knowledge ecosystem is a framework within which “critical perspectives, new needs and circumstances, and better solutions to meet them, are introduced” (Lorndon, 1999, 34). In order to reap benefits from knowledge ecosystems, the static knowledge bases and dynamic conversations as well as the links between them must be carefully nurtured.

Por (2001, 12) states that knowledge ecosystems are similar to biological ones in that they are “self-sustaining, self-regulating and self-organising, with permeable boundaries through which they can interact with other systems”. Por (2001) adds that knowledge ecology practitioners maintain that in knowledge ecosystems people networks create knowledge networks supported by technology networks. This is referred to as the triple network, and is depicted graphically below:



University of Fort Hare
Together in Excellence



University of Fort Hare
 Figure 6. The Triple Network (adapted from Por, 2001: 2)
Together in Excellence

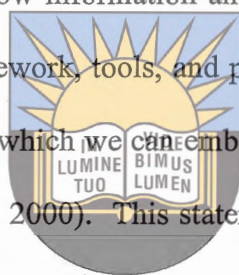
Por (2001) defines the three segments of the triple network as follows:

- **People Networks:** in the context of this research these refer to the members of the rural community, government and the ways in which they organise collaboration
- **Knowledge Networks:** these refer to the connections between the ideas that people in communities generate in the course of normal day to day activities, as well as the interaction of knowledge between the rural community and government

- **Technology Networks:** these refer to the technological means that support communication and collaboration for knowledge creation, sharing and utilisation

Knowledge ecosystems are complex adaptive systems (Por, 2001). Their power exists in the flexible and evolving relationships among the elements of the system, which interact in complex and often surprising ways (Por, 2001).

Knowledge ecology focuses on how information and knowledge can alter/affect social activity through providing a framework, tools, and practices for crafting and sustaining evolving webs of relationships in which we can embed and preserve the knowledge that emerges from social activity (Por, 2000). This statement suggests a base model for the development of an ICT based communication system for the facilitation of improved interaction between rural populations and government and the preservation of emergent information and knowledge.



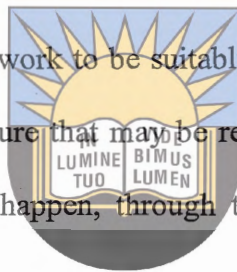
University of Fort Hare
Together in Excellence

2.9.5 Conclusion

The problem of the perceived lack of sufficient interaction between rural populations and government can be defined as a systemic problem. Systemic problems call for the input of a wide variety of people with diverse views and expertise, working together (Lorndon, 1999). “They call for the active involvement of those people who are most closely connected to, and have a stake in the issues; the people with experience and an ongoing commitment and sense of responsibility to the matters at hand” (Lorndon, 1999). In the case of rural development, this implies involving the rural poor in the information chain that informs the development and maintenance of policies and services that affect them.

From the statement above it can thus be argued that the concept of knowledge ecology has significant implications for designing a system that fosters more meaningful interaction between and within rural communities and government in support of improved service delivery. Knowledge ecology highlights the importance of elements such as people, context, information and knowledge and the significance of considering the interacting elements as systems, suggesting the importance of applying systems theory to the identified problem.

For the knowledge ecology framework to be suitably applied within the rural location, the technology and the infrastructure that may be required should be identified. ICTs are the basis on which this can happen, through their effective implementation and utilisation within the rural location.



University of Fort Hare *Together in Excellence*

In order to understand how successful ICT application within the rural location can be achieved, the various advantages and disadvantages of ICTs in support of rural development are discussed next. Understanding the issues pertaining to the implementation and use of ICTs in the rural location in combination with lessons learned allows for critical success factors and best practices to be identified in order to foster effective ICT application in the context of rural development.

This section discussed the elements of context, people, information and knowledge with respect to the support of effective government/rural population communication for improved service delivery, as well as the frameworks within which these elements should be considered. The next section discusses the technology itself as an influencing factor on ICT application in rural areas in support of effective government/rural

population communication for improved service delivery and considers how ICTs can be utilised as a solution.



University of Fort Hare
Together in Excellence

2.10 The Telecentre Model

2.10.1 Introduction

The telecentre can be defined as shared premises where the public can access information and communication technologies (Proenza, 2001). According to Molnar and Karvalics (2000) the first experimental telecentres were established in the mid eighties in the United State and Europe. After the first successes and failures new attempts were initiated in various continents around the world (Molnar and Kavarlics, 2000).



Although much has been written about the telecentra model, not much literature exists on who created it or what it evolved from. What is apparent is that various types of telecentres exist today, although based on the same basic model; however their various focus areas and reasons for existence differ slightly. According to (1999) as cited by Molnar and Kavarlics (2000) more than thirty different words indicating telecentres in some form exist today. Although this is the case, all telecentres exist for at least this shared purpose; to provide public access to ICT, ICT related services and training in order to provide for “wide range answers to local problems” (Molnar and Kavarlics, 2000).

University of Fort Hare
Together in Excellence

2.10.2 A Brief Discussion on Telecentres

In general telecentres provide a user with access to the Internet, online services and information provided by governments and commercial providers (Barr, McKean and Glafchev, 2003). The nature of services provided, and the form and size of the centre are determined by a wide range of factors, including, location, regional and local demographics, the form of centre ownership, centre governance and the management structure adopted and the level of any start-up funding provided (Barr *et al*, 2003).



Depending on identified needs, telecentres may provide any of the following services

(Barr *et al*, 2003:

University of Fort Hare *Together in Excellence*

- **Communication services** - the Internet, fax, email, videoconferencing and other online services and information;
- **Computer services and applications** – PCs, CDs, DVDs, web cameras, printers, scanners, digital cameras, other electronic equipment, word processing applications, spreadsheets and small business applications and tools
- **Resource services** – technical support, desktop publishing, graphics applications, photocopying, laminating, secretarial and administrative support services
- **Education and training services** – basic ICT training, accredited training courses
- **Government services** – for all tiers of government
- **Social development services** - support programs for youth, children, the aged and people with disabilities
- **Community development services** – community newspapers, bulletins, tourist and heritage information, library services.

It follows that the original design of the telecentre needs to reflect community needs while, once established, they need to evolve with any changes in community requirements. Clearly, to allow them to continue to provide services, the telecentre also needs to find ways of covering their operational costs (Barr *et al*, 2003).

The introduction of a telecentre into a typical rural community in a developing country represents a substantial innovation for that community (Harris, 2001). For many rural dwellers, a community telecentre will be their first encounter with a computer (Harris, 2001). Telecentres can play a significant role in meeting the social and economic needs of communities, and contribute to the development of community capacity building and therefore social capital. Their value extends beyond providing access to the Internet, online services and to affordable ICT training, as centres can also provide an important social focus for youth, people on low incomes, Indigenous communities and the aged (Barr *et al*, 2003).



University of Fort Hare

Together in Excellence

2.10.3 Conclusion

It is evident that telecentres can be instrumental in the development and well-being of a community. Not only can they provide access to information related to health, nutrition, education, agriculture and other social basic necessities, they can also support local entrepreneurs with various business services, market information, and e-commerce opportunities; they can help people connect with distant family, friends, and government officials; and they can provide a setting for entertainment and social affairs (Jacobs and

Herselman, 2006). It is essential that ICTs be demystified and deployed with the interests of local communities in mind.

For the purposes of this research projects concerned with the establishment of telecentres within rural and peri-urban areas for the purposes of socio-economic growth will be referred to as ICT based development projects, while the technologies utilised to make them operational are referred to as ICTs.



University of Fort Hare
Together in Excellence

2.11 ICTs as a solution – Barriers and Facilitators

2.11.1 Introduction

O’Farrell, Norish and Scott (1999) state that ICTs are technologies that offer new ways for communicating and exchanging information and knowledge. ICTs can be used to enable, strengthen or replace existing (manual) information systems, and the challenge faced by ICT practitioners is that of clearly defining the roles information can be expected to play and where ICTs can be applied most effectively (O’Farrell *et al*, 1999).

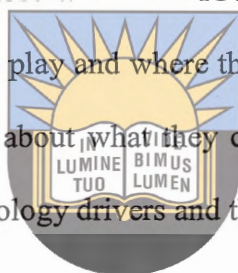


As has been discussed, ICTs hold the promise of supporting sustainable economic activity, thus promoting growth in developing countries. UNESCO (2003) cautions, however, that history has shown that enabling access to the latest technologies without clarifying why, will not allow the achievement of development goals.

One of the main arguments within the ICT debate centres around the potential for ICTs to facilitate information exchange. Chapman and Slaymaker (2002), add that these debates, however, tend to be constrained by “an inherent mutual lack of understanding” between technology drivers and development agencies. This lack of understanding may prove to be a problem when designing and implementing ICT-based applications, as input is needed from the technology drivers as to what is technologically feasible and also from the development agencies in terms of what is required.

O'Farrell (2000) states that interventions thus far have had mixed effects. Furthermore, donor driven strategies have received much criticism for the “top down driven characteristics that render replication impractical and sustainability improbable” (O'Farrell, 2000, 2). O'Farrell (2000) observes that while ICT debates tend to consider interventions either at a macro level or at a micro level, what appears to be lacking are cohesive and bold approaches to address both micro and macro levels in tandem.

One of the challenges faced by those within the ICT industry is not only to define the roles that ICTs can be expected to play and where they can be applied most effectively, but also to clarify and be honest about what they cannot do. This however, requires communication between the technology drivers and the development agencies.



University of Fort Hare

Together in Excellence

While some constraints of ICT application in rural areas are surmountable, others may prove to present more of a challenge. One such constraint is that ICTs rely on physical infrastructures. Even when such infrastructures are in place, difficulties arise when they are poorly maintained or too costly to use (O'Farrell *et al*, 1999).

Furthermore, ICTs are dependent on national policy and regulation in terms of telecommunications and broadcasting licenses, security, capital investments for hardware and software, and are additionally “dependent on the skills and capacity necessary to use, manage and maintain the technology effectively” (O'Farrell *et al*, 1999, 5). These present huge challenges for ICT implementation in rural areas, but challenges that can be overcome, through options such as project funding, hardware and software donations, wireless applications, maintenance support, as well as user training.

Nevertheless, there are other, more daunting challenges. According to Heeks (1999), most ICT projects in developing countries fail either totally or partially. Such failures keep developing countries on the wrong side of the “digital divide”. In order that the success rates of these projects be improved, the rates of failure and reasons for failure need to be quantified.

The sad reality is that the participation of developing countries in the global information society remains insignificant (Davison, Vogel, Harris and Jones, 2000). This can be attributed to a variety of reasons. The fact is that the high failure rates of ICT based development initiatives have resulted in developing countries being unable to contribute significantly to the global information society or to reap the benefits thereof (Davison *et al.*, 2000).



University of Fort Hare *Together in Excellence*

Often the high failure rates of ICT development projects has been attributed issues such as infrastructure, computer literacy levels, and maintenance problems, amongst others. Although the reasons for the high failure rates of such initiatives may be as obvious as these in some cases, this form of analysis often proves to be too simplistic, frequently failing to deal with the more complex underlying issues that shape the root cause of such failure.

While the above-mentioned literature has been helpful in building the overall body of knowledge on ICT application for socio-economic development, where there have been any action-oriented recommendations, they have often been “normative, prescriptive and also fragile, lacking the theoretical underpinnings or models that would permit any confident generalisation” (Heeks, 1999, 24). In other words, although the area of ICT

for development has been researched substantially, what is still lacking is the development or suggestion of a generic and comprehensive model that addresses the contextual factors affecting the successful use of ICT for development.

Heeks (1999) attempts to steer an alternative form of analysis through the development of a framework based on project case studies that also provides some direct operational recommendations. The Reality-Gaps Model aims to address unique and critical points that ultimately influence the success or failure of ICT based development projects.



2.11.2 Heeks's Reality-Gaps Model

There are situation specific variables for each ICT development project that ultimately determine its success or failure. These situation specific variables also often determine context specific success strategies for each project. This view is based on the Contingency Model which, according to Heeks (1999, 132), sees “no single blueprint for success”.

Inherent within most ideas of contingency is the idea of adaptation. This means that there needs to be some change in order that affected elements are better matched or suited to each other.

Burton, Lauridsen, and Obel (2000), define mismatch as a misalignment of the ICT project, in this case, with its environment, strategy, climate, technology, management style, or size. Burton *et al* (2000) add that the development of the Contingency Model rests upon the assumption that a fit among the patterns of relevant contextual, structural,

and strategic factors will yield better performance and results from such initiatives than when misfits occur. As a result, the concept of match, and more particularly mismatch, are fundamental in project design and must be taken into account (Burton *et al*, 2000).

In relation to ICT development projects, in particular, there exists an environment or context to which the proposed system must be adapted. Based on the ideas of contingency and adaptation, it should be apparent that a successful ICT development project will be one that tends to match its environment in terms of technical and social factors, including the values, perceptions and assumptions of key project stakeholders.



Bridges.org (1996), an organisation dedicated to researching the application of ICT for development, further state that although ICT based development initiatives are essential in providing ICT access to underserved communities, they have often failed in their attempts simply because they have failed to provide sustainable, replicable models. Instead these initiatives seemingly preferred the application of the top-down approach that is not grounded on the needs, interests and active direction of rural communities.

University of Fort Hare
Together in Excellence

The main purpose of the ICT development project, based on the focus of this study, would be to bring about change in the government/rural population communication cycle such that interaction between rural populations and government is more effective.

The success or failure of ICT based development projects can be described as depending on the size of the gap that exists between “current realities” and “design conceptions” (Heeks, 1999).

2.11.3 Conclusion

According to Heeks (1999), if the success rates of ICT based development projects are to increase, one of two things needs to occur. Either, local realities must be changed so that they suit ICT based development projects more closely, or ICT based development projects must be changed to suit the developing countries contextual reality more closely. The second alternative, which is likely to be the more feasible one, also forms one of the objectives of this study.



Nevertheless, environments constantly change (Cromhout, 2000). Heeks (1999) adds that design-reality gaps are not static, but change constantly throughout various phases of the project. This means that the proposed project design must be an evolving one also, such that as the environment changes project implementation and objectives too evolve to meet those changes.

University of Fort Hare
Together in Excellence

Cromhout (2000) suggests that what is required is a system that looks at finding out the needs of the rural poor on an ongoing basis, works with them to meet those needs on an ongoing basis, builds their ability to identify more and new needs on an ongoing basis, and additionally allows them to actively engage with government and other service providers in a relationship that creates meaning on an ongoing basis.

2.12 Critical Success Factors of ICT-Based Development Initiatives

2.12.1 Introduction

The author highlights the findings of five authors based on their analyses of various ICT based development initiatives. These authors include Heeks (1999), Reilly and Gomez (2001), and Millar and Mansell (1999). Each of the authors tackles the results of their analyses from different standpoints. This is important as it serves to highlight the fact that there are various and divergent views on factors that are considered crucial to the success of ICT based development initiatives. Some generic and overlapping considerations do, however, emerge. This section is divided into sub-sections describing each authors recommendations followed by a critical analysis on all the recommendations as a whole.



University of Fort Hare

Together in Excellence

2.12.2 Heeks's Recommendations

Heeks (1999) bases his recommendations on his design-reality gaps model discussed earlier in this study. His main concern is ensuring an understanding of the rural location by stakeholders such that the resultant system takes the rural context into account. Four methods in which the success rates of ICT development projects can be improved include the following:

- a. Exposing rural realities
- b. Improving local information system capacities

- c. Educating the carriers
- d. Analysing the “how” as well as the “what”

2.12.2.1 Exposing Rural Realities

According to Heeks (1999) an integral part of successful project implementation is based on a proper understanding of current realities. This is an extremely important consideration.



Exposing rural realities includes opening communication channels between various stakeholders, with a focus on those that are closest to the context of implementation and use. The intention here is not only to describe the reality or context of implementation, but also to understand it.

University of Fort Hare
Together in Excellence

2.12.2.2 Improving Local Information System Capacities

The second recommendation for improving the success rates of ICT development projects is through improving local information system capacities. This extends beyond ICT-related skills, and includes the capacities to understand and deal with more than just the technology.

Heeks (1999) adds that an often-cited solution to this problem is the creation of “hybrids”; these are those who understand both the context and the role of the technology. To expand on this brief definition, a hybrid is a body of people comprising those who understand the context an ICT-based development project is taking place in

and those who understand the technology. The aim of the hybrid is to ensure that the technology is applied with an understanding of the context in which it is to be implemented. It is often community members that will provide a deeper understanding of context and the role the technology could play in meeting pre-defined project objectives. This is depicted graphically in figure 7 below.

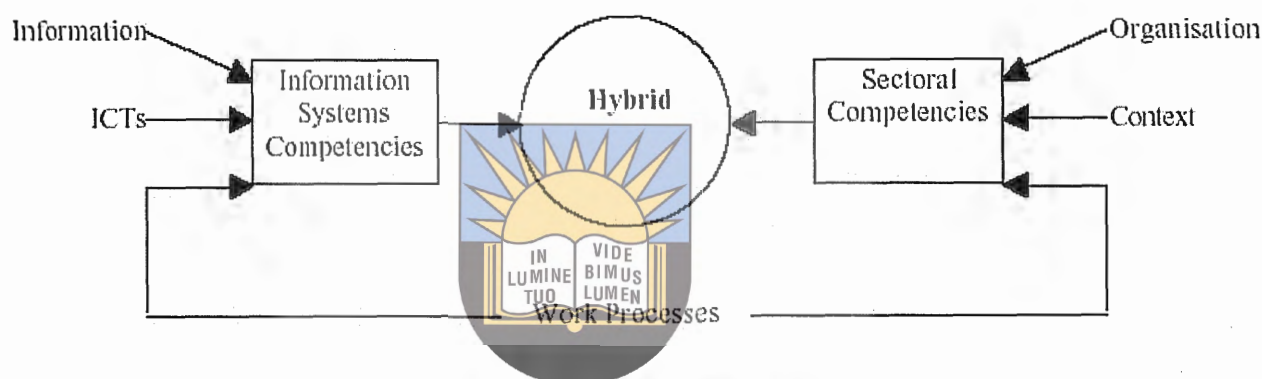


Figure 6: A Hybrid (Heeks, 1999: 17)
 University of Fort Hare
 Together in Excellence

(Please note: the above diagram makes use of ICTs and Business Application as an example and is utilised here for illustrative purposes only)

It is recommended that the hybrid is not thought of as a single entity, but rather as a way to plan skills or knowledge development for current and future parties. Rural populations need to be capacitated towards a broader skill set that includes an understanding of the ICT development project and ICTs in general.

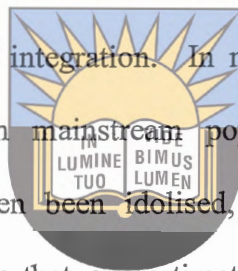
2.12.2.3 Educating the Carriers

All donors, consultants, ICT vendors involved in ICT based development projects need to be made aware of the shortcomings in current ICT development project practices, and additionally made competent in ways that will assist them in reducing design-reality

gaps. Heeks (1999: 25) highlights what he calls three current “blind spots” amongst carriers. Two of which are identified and discussed as relevant to this study.

The first is evaluation. According to Heeks (1999), a true sense of the extent of success and failure needs to be developed. Hard evidence needs to be produced through the evaluation of various ICT development projects that indicates the true extent of telecentre success or failure.

The second blind spot is that of integration. In many cases ICTs have often been isolated, that is, separated from mainstream population and community change objectives. ICTs have also often been idolised, that is, placed at the centre of development initiatives in a way that overestimates the technology’s potential and ignores most social components of the development process (Heeks, 1999). What is needed is an integrated approach, where development project objectives are the starting point with information needs derived from those objectives. If necessary, the technology is then introduced to serve those needs.



University of Fort Hare
Together in Excellence

2.12.2.4 Analyse the ‘How’ as well as the ‘What’

Heeks (1999) recommends that the contingent perspective, discussed earlier in this paper, must be applied not just to the project and/or system content (the ‘what’), but also to the project and/or system process (the ‘how’). This means that the contingent perspective must be applied not only to what the project and/or system is supposed to do, but also to how the project and/or system is supposed to do it.

The reality gaps model represents a powerful management tool for ICT development projects.

2.12.3 Reilly and Gomez's Recommendations

Reilly and Gomez (2001) highlight ten important points that need to be taken into consideration when developing an ICT model. These are that it must be participatory, socially inclusive, locally grounded, public and transparent, methodologically appropriate, sustainability enhancing, capacity building, reflective of shared visions, strategically oriented and gender sensitive (Reilly and Gomez, 2001).



2.12.3.1 Participation

University of Fort Hare
Together in Excellence

Reilly and Gomez (2001) state that all stakeholders must be involved in the evaluation process that takes place at all stages of the ICT based development project. This means that the development process must include all relevant stakeholders. A forum, such as a project stakeholder committee, must be established to ensure that all project stakeholders are afforded equal opportunity to participate in the programme.

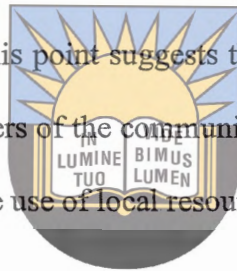
2.12.3.2 Social Inclusion

Reilly and Gomez (2001, 47) state that to be socially inclusive means that evaluations must “explicitly address, include, and provide differentiated information about the experiences of sub-groups within a society”. This means that evaluations must include those of different ages, gender, culture and religion. This point expands the one above

meaning that within the project stakeholder committee for example provision must be made to ensure that all various categories of community members are included and afforded a platform on which to provide inputs in regards to the programme.

2.12.3.3 Locally Grounded

Because evaluations are context sensitive, they also need to be locally grounded (Reilly and Gomez, 2001). This also relates to Heeks' (1999) reality gaps model and his suggestion of creating hybrids. This point suggests that project implementers must find a means to capacitate local members of the community to take ownership of the project. Project implementation must make use of local resources.



2.12.3.4 Transparent

University of Fort Hare
Together in Excellence

It is additionally important that any evaluation results are made available in a way that is appropriate to all stakeholders, such that any proceeding activities are transparent (Reilly *et al*, 2001). This is important as it also ensures stakeholder buy in. Here again, the point made also relates to Heeks (1999) reality gaps model, in terms of opening communication channels between all stakeholders. The project must be implemented in a manner that is open and inclusive of the community. Regular feedback to the community and input from the community must be sought at all phases of the project.

2.12.3.5 Methodologically Appropriate

Another equally important point is that the ICT system must be methodologically appropriate (Reilly and Gomez, 2001). This means that the methods and tools employed are appropriate for the context in which they are to be utilised. The method in which the project is implemented should suite the context within which the project is taking place. Project implementers must analyse various project implementation methods together with the community in order to select one that is contextually appropriate for the specific project and community.



2.12.3.6 Sustainability Enhancing

University of Fort Hare
Together in Excellence

The ICT project must also be sustainability enhancing (Reilly and Gomez, 2001). This means that evaluations must contribute to making such systems more viable and relevant, whilst simultaneously enhancing services, again relating to Heeks's (1999) point of such initiatives matching the rural context. The project must be implemented in a manner that enhances its chances of achieving and maintaining sustainability over the long term.

2.12.3.7 Capacity Building

According to them Reilly and Gomez (2001) it is imperative that lessons learned from both failures and successes are documented and used to empower practitioners and users. Once again, this point relates to Heeks (1999) point of educating the carriers and

the supporting element of evaluation. The project should seek to build the capacity of community members in respect of the services and products that it offers.

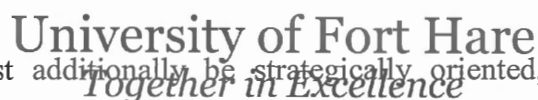
2.12.3.8 Reflective of Shared Visions

Furthermore, the ICT project must be reflective of the shared visions of the community and/or stakeholders for which it is to be developed (Reilly and Gomez, 2001). This means that project implementers should ensure that the project objectives are partially derived from and linked to community needs.



2.12.3.9 Strategically Oriented

The ICT project must additionally be strategically oriented, in that the goals or objectives of the project must be incorporated into the project design. This means that the project must be implemented in a strategic manner that minimises project risks and maximises project benefits.



2.12.3.10 Gender Sensitive

The last point highlighted by Reilly and Gomez (2001) is that the evaluation strategy must be gender sensitive. Women are often dominated by their male counterparts in many circumstances (Reilly and Gomez, 2001). It is imperative that rural women are placed on an equal footing with their male counterparts, consulted, and included throughout this process. Special care must be taken to ensure that women are provided with an opportunity to participate in the project.

2.12.4 Millar and Mansell's Recommendations

The recommendations of Millar and Mansell (1999) fall somewhere between those of Heeks (1999), to which various parallels can be drawn and those of Reilly and Gomez (2001). Millar and Mansell (1999) highlight the following findings.

2.12.4.1 Locally Embedded

The first recommendation is that ICT based development projects must be locally embedded (Millar and Mansell, 1999). According to them (Millar and Mansell, 1999), the effectiveness of the ICT project depends on its complementarity with other local development initiatives, as these projects are likely to be perceived as successful only when they complement other locally embedded development initiatives.

This means that the ICT based development project should provide information that complements existing community practices and is relevant to community aims and objectives (Millar and Mansell, 1999). They (Millar and Mansell, 1999) additionally highlight previous experience of development initiatives that involve technology, robust local networks for knowledge exchange and local use of other electronic media as important factors.



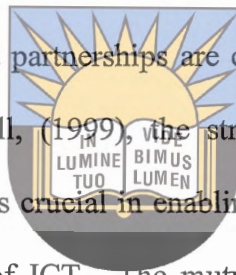
University of Fort Hare
Together in Excellence

2.12.4.2 Customised to Local Community Needs

The second recommendation is that ICT based development projects should be customised to local community needs (Millar and Mansell, 1999).

2.12.4.3 Partnerships are Crucial

The third recommendation is that partnerships are crucial (Millar and Mansell, 1999). According to Millar and Mansell, (1999), the strength and quality of partnerships amongst all project stakeholders is crucial in enabling people within poor communities to benefit from the availability of ICT. The mutual understanding of objectives by stakeholders and strong motivation and championship of the initiative by prospective users facilitate stronger partnerships. This idea supports that of Reilly and Gomez (2001) and the idea of stakeholder buy in, and also Heeks (1999) and his idea of opening communication channels between various stakeholders.



University of Fort Hare
Together in Excellence

2.12.4.4 Independent and Systematic Analysis

Millar and Gomez (1999) additionally highlight the fact that there is an urgent need for independent, systematic analysis of such projects, in order that the success and failures of such initiatives can be evaluated and documented. This is recommended both by Reilly and Gomez (2001) and Heeks (1999).

2.12.5 Conclusion

There are a large number of on-the-ground ICT based development initiatives working to provide access to technology in underserved populations (Bridges.org, 1996). Based on this research it appears that although many of the initiatives address specific issues that require attention, they too often neglect factors that limit their success. Millar and Mansell (1999) add that more primary research is needed to deepen the analysis of factors that affect the successful and unsuccessful deployment of ICT-based projects in poor communities in developing countries.



Many ICT based development initiatives do not become self-sustaining because local people do not use their services. This results primarily from the fact that these initiatives often fail to suitably consult and involve rural populations in their development and often times also fail to address the role of ICT-based applications in the community or the need for locally relevant content. As can be seen from the preceding arguments in this research it appears that there is a need for a more holistic approach to ICT based development projects, such that effective and sustainable uses for technology are integrated within local society.

University of Fort Hare
Together in Excellence

Although providing access to technology is critical, ICT based development projects must be more than just about physical access. The technology needs to be used effectively to ensure that it achieves the required objectives; this means in addition to having access to ICT people must understand how to utilise the technology to meet their needs. In order to facilitate this, the provision of training and relevant content is

important. To achieve this, a pooling of resources and experiences within the ICT for development arena is necessitated.

The recommendations of Heeks (1999), Reilly and Gomez (2001) and Millar and Mansell (1999) have various things in common. The matrix below highlights the points of agreement between these three groups of authors.



University of Fort Hare
Together in Excellence

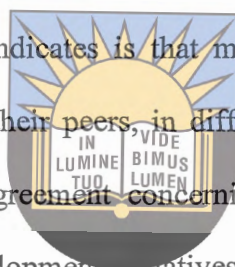
COMMENTS	AUTHORS		
	Heeks (1999)	Reilly and Gomez (2001)	Millar and Mansell (1999)
Reflective of Shared Visions	✓	✓	✓
Strategically Oriented	✓	✓	✓
Capacity Building	✓	✓	✓
Sustainable	✓	✓	✓
Customized to meet Community Needs	✓	✓	✓
Locally Grounded	✓	✓	✓
Participatory	✓	✓	✓
Gender Sensitive		✓	
Public and Transparent	✓	✓	
Socially Inclusive	✓	✓	✓
Contingency and Adaptation	✓		✓
Continuous Evaluation	✓	✓	✓

(Please note that the comments displayed in the comments section of this matrix are largely those of Reilly and Gomez (2001) solely for the purposes of simplicity and summarization.)

Table 1: Matrix of Comments on Critical Success Factors for ICTs for Development

Based on the above matrix, it can be seen that there are many points of agreement between these authors. The points of agreement between all three appear to be those of continuous evaluation of the initiative, the initiative being participatory, socially inclusive, locally grounded, customised to meet the needs of the community it aims to serve, reflective of shared visions, sustainability enhancing and capacity building.

The only recommendation that has no points of agreement with any other authors is that of gender sensitivity. What this indicates is that most of the findings made by the authors cited here are echoed by their peers, in different ways. This means that the authors cited here are in close agreement concerning their findings based on their various analyses of ICT based development initiatives.



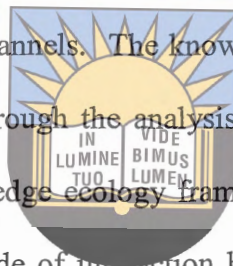
University of Fort Hare *Together in Excellence*

From the preceding arguments it can be concluded that common success factors for ICT based development initiatives include the following:

- The project suits the context in which it is to be implemented, such that it adequately meets the needs of those it is designed to serve
- The project is sustainable
- The project builds the capacity of the users of the ICT system, such that they are able to understand the system and its benefits to the community and thereby be able to take over the management and maintenance of the ICT development project in the long term
- The project empowers the rural population, as it is no use to implement a project that has to be managed and maintained by outside stakeholders indefinitely.

Real empowerment is about education; it is about furnishing poor and marginalised populations with necessary skills and tools, such that they are able to sustain themselves. This is what ICT development projects should be about, but too often; such projects fail to reap these outcomes.

Access to appropriate information and knowledge is a cornerstone of rural empowerment. Central to the use of ICTs for development is the inclusion of the rural poor in appropriate information channels. The knowledge ecology framework defined how this could be facilitated. Through the analysis of the interaction of technology, knowledge and people, the knowledge ecology framework proved fundamental to the development of an ICT based mode of interaction between government and the rural poor in support of improved service delivery.



University of Fort Hare
Together in Excellence

Heeks (1999) managed to create an ICT-for-development model that is holistic in its approach. Although the other two authors cited, that is Reilly and Gomez (2001) and Millar and Mansell (1999), are in close agreement with Heeks (1999) in terms of the characteristics they deem necessary for such initiatives to succeed, they fail to recommend a complete model of implementation, instead limiting their analyses to that of the recommendation of various preferable characteristics.

The strength of Heeks (1999) model is apparent in its flexibility. He (Heeks, 1999) incorporates Contingency Theory in his model that advocates a use-what-works approach. This not only means that the resultant ICT development project is context sensitive, but additionally that one is afforded the freedom to change approaches as the

environment changes. Resulting in a system that is 'alive' and responsive to stimuli from its environment, in terms of feedback in regards to what is working and what is not.

The inclusion of the authors Reilly and Gomez (2001) and Millar and Mansell (1999) serves to indicate that Heeks (1999) is not solitary in his view of what is required for such projects to succeed.



University of Fort Hare
Together in Excellence

Chapter 3: The Telecentre Implementation Model



University of Fort Hare
Together in Excellence

3.1 Introduction

The model proposed by the author is an ICT based knowledge sharing interaction model for the successful implementation of telecentres in rural and peri-urban areas. The literature review demonstrated that centre success was linked to how well the centre was established as an entity within the community. In other words the extent of centre success is dependant on the extent of fit between the centre and the context within

3.2 Components of a Successful Telecentre Model



The research has highlighted a number of factors as important for the development of a successful telecentre. These include the following:

University of Fort Hare
Together in Excellence

- Appropriate technology
- Interaction and cultivation of relevant knowledge ecosystems
- An accessible and up to date knowledge and information repository
- An adaptable contextually appropriate model

The model elements have been derived from the literature review. It is important to note that these factors once implemented will ensure that the elements identified by Heeks (1999), Reilly and Gomez (2001) and Millar and Mansell (1999) as significant to the success of ICT based development projects are present. These factors can be graphically represented as follows:

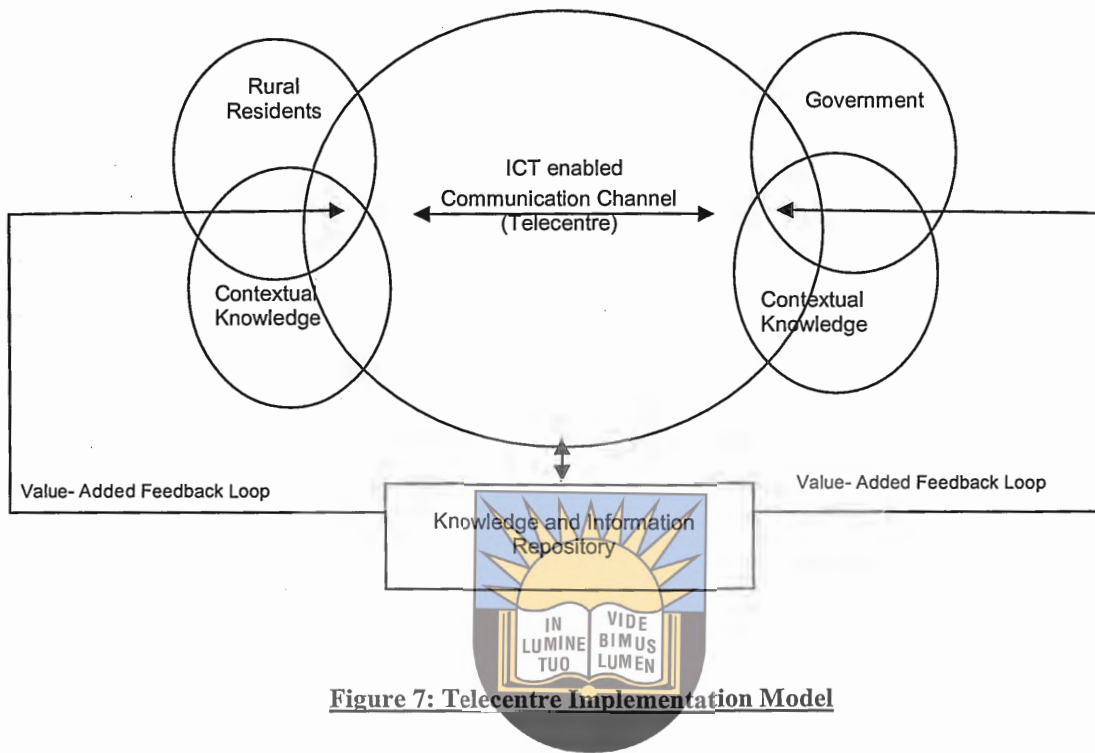


Figure 7: Telecentre Implementation Model

University of Fort Hare *Together in Excellence*

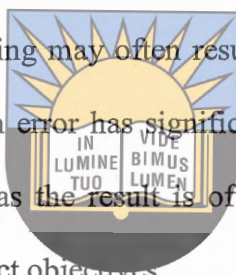
Figure 8 above is representative of the context within which the telecentre resides. In order for the centre to function successfully it needs to be embedded within and in constant interaction with its immediate environment, supported by relevant knowledge ecosystems externally and an up to date knowledge and information repository internally. The knowledge ecosystems and the knowledge and information repository ensure that the telecentre and its environment remain in synch and that the telecentre will meet the needs of its community (environment) on a continuous basis. The author will now discuss each of the identified factors in turn.

3.2.1 Appropriate Technology

Technology is an enabling resource. Technology can only be of use in the rural location to the extent to which it can facilitate and support rural development objectives. It is

imperative to bear in mind UNESCO's (2003) cautionary note that simply blindly chasing after access to the latest technologies without clarifying why, will not facilitate the achievement of many development goals. In order to identify technology appropriate to the task at hand it is first important to clarify and understand what the task is.

Chapman *et al* (2002) add that debates around ICTs often tend to be constrained by “an inherent mutual lack of understanding” between technology drivers and development agencies. This lack of understanding may often result in the identification and use of inappropriate technology. Such an error has significant implications for the failure of ICT based development projects, as the result is often higher costs coupled with the failure to achieve pre-defined project objectives.



University of Fort Hare *Together in Excellence*

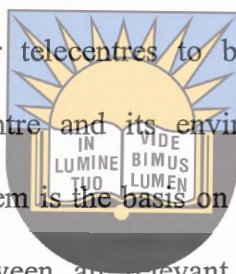
Heeks (1999) adds that ICTs have also often been idolised, that is, placed inappropriately at the centre of development initiatives in a way that overestimates the technologies potential and ignores most social components of the development process. Heeks, (1999) suggests that what is needed is an integrated approach, where development project objectives are the starting point with information needs derived from those objectives. Only if necessary is technology then introduced to serve those needs (Heeks, 1999).

The author concurs, adding that the starting point should always be with the identification and definition of the problem at hand. ICTs should always be identified as part of a more holistic solution, and not the solution in themselves. The introduction of inappropriate technology as a solution component may aid to further unnecessarily

complicate matters, in addition to raising costs, compromising project sustainability and in the long run lowering the chances of success as well.

3.2.2 Interaction and Cultivation of Relevant Knowledge Ecosystems

Knowledge ecology is about studying and enhancing the ways in which the parts and wholes of knowledge-generating systems relate to one another (Por, 2001). Rural communities, community based entities and government can be defined as knowledge-generating systems. In order for telecentres to be successful strong networks or relationships between the telecentre and its environment must be developed and sustained. The knowledge ecosystem is the basis on which information and knowledge can be exchanged via ICT between all relevant entities to derive value for the community. The extent to which these knowledge ecosystems are created and sustained will influence the extent to which the telecentre will achieve success.



University of Fort Hare
Together in Excellence

Knowledge ecology further highlights the importance of locating knowledge within a context and additionally within a holistic framework of interacting systems. In order to maximize the power of knowledge it needs to be understood in relation to the context in which it resides. This further highlights the importance of gaining a contextual understanding of the rural location, taking note that gaining an understanding on one does not mean understanding them all.

The problems faced in rural locations are largely context specific. This means that government needs to change its umbrella approach of service delivery especially to rural areas. A more effective model would be one that is customised to the contextual needs

of specific rural areas. But in order to achieve this government needs to have means of understanding the issues on the ground. As discussed throughout this paper ICTs, more particularly telecentres, once successfully implemented have the potential to play a significant role in facilitating access to government and government services by the rural poor.

A point to note is that within a knowledge ecology framework, the focus on people implies an understanding of the knowledge exchanges and relationships between people, but also implies an understanding of how such knowledge influences action or potential for action based on such exchanges (Malhotra and Galleta, 2000). The knowledge ecosystem is the framework within which critical perspectives, new needs and circumstances, and better solutions to meet them can be introduced (Lorndon, 1999).



University of Fort Hare
Together in Excellence

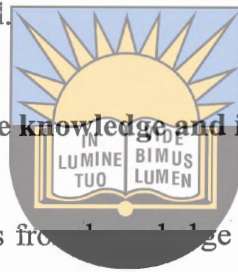
Knowledge ecology, if utilised correctly, has powerful implications for the facilitation of successful telecentre operation and the development of a communication model that informs policy and service delivery decisions that influence the rural poor.

Experts on the needs of the rural poor are the rural poor themselves; these are the people within the rural location experiencing the day-to-day issues associated with the area in question. Government therefore has a huge, relatively untapped, pool of knowledge relating to critical rural needs and how to meet them better.

But it is not sufficient for government to understand the rural location better nor have access to the knowledge available there. To enable real empowerment the rural poor need to better understand government and have access to knowledge held by government concerning the rural location. The knowledge ecosystem is the framework

that can enable this through the facilitation of successful telecentre operation. The application of appropriate technology can greatly facilitate this process.

In order for development to be facilitated access to information and knowledge through ICT should be made available specifically to rural populations where a significant lack of these resources exists. The knowledge ecosystem has important implications for the cultivation and maintenance of a knowledge based society. As a result the knowledge ecosystem has been identified as the critical foundation unit through which successful telecentre operation can be attained.



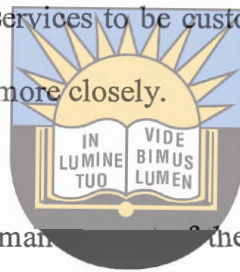
3.2.3 An accessible and up to date knowledge and information repository

In order to reap enhanced benefits from knowledge ecosystems, both static knowledge bases and dynamic interactions must be carefully nurtured (Par, 2000). A significant component of a successful telecentre model will therefore include a database as a repository of information and knowledge about the rural location. This repository must be fed by the dynamic interactions characteristic of the knowledge ecosystem, with the knowledge repository, in turn, supporting the interactions within the knowledge ecosystem.

The database will allow for the storage of existing knowledge and the build up of new knowledge that will be accessible by either rural communities, community based organisations/entities or government at any time. The maintenance of an up-to-date information and knowledge repository will facilitate telecentre interaction with the community it serves, ensuring that the telecentre remains in synch with community needs at all times. In addition government will be able to utilise the knowledge repository to map the problems that exist in specific rural areas and devise strategic

means of addressing them. The database can also be utilised as a tool to aid in information dissemination for the benefit of all parties.

The database will facilitate access to current issues rural residents may be facing, as well as potential solutions. An important function of the database will be its ability to allow for the build of contextualised information and knowledge specific to an area. This will allow community based organisations/entities and government to understand the broad issues that affect specific rural areas and allow them to focus on those areas of need. It will also permit certain services to be customised where possible to meet the needs of the rural area in question more closely.



The practical implementation and maintenance of the database is an item that should be addressed by the project implementation team and the community. As stated throughout the paper the impact of context is an element that needs to be comprehensively considered even in respect to the elements of this model. It is suggested that perhaps the physical database should reside with government either at a local or provincial level and administered by them.

University of Fort Hare
Together in Excellence

3.2.4 An adaptable contextually appropriate model

As mentioned earlier Heeks (1999) describes success or failure of ICT based development projects as depending on the size of the gap that exists between “current realities” and “design conceptions”. The author holds the view that any ICT based development model must undergo a process of adaptation to the context in question that includes relevant rural community stakeholders in order that the gap identified in Heeks’ model be minimised.

3.3 Conclusion

The model is in essence a communication model augmented by ICT as an enabler and facilitator and knowledge ecosystems as the elementary unit. The component of ICT is added to facilitate and enable more effective communication by providing an alternative channel of communication less susceptible to interference by noise. The component of the knowledge ecosystem allows for the facilitation of communication based on current and sound information and knowledge.



The ICT component facilitates both the transmission of the initial message and the feedback loop. Added to this is the presence of an information and knowledge repository or database through which relevant feedback can be filtered in order to allow for value-added feedback that more effectively takes into account both the relevant context in which the communication is occurring and any relevant prior communications. This component will further aid in making the communication process more effective and efficient.

University of Fort Hare
Together in Excellence

The model depicts two specific knowledge ecosystems, that occurring within and around the rural location and that occurring within and around government. The inclusion of these knowledge ecosystems ensures effective creation, capture and dissemination of knowledge and information for the benefit of both parties. Interaction of these two knowledge ecosystems will further facilitate and enable value-added communication whilst allowing for the cultivation of knowledge-based interactions. The knowledge ecosystem further enables the cultivation of knowledge-based societies,

encouraging learning and socio-economic development through productive social interaction.

Based on the above arguments it can be concluded that although knowledge sharing is critical for successful telecentre operation it needs to be used in combination with other factors that also contribute to telecentre success. Knowledge sharing alone will not result in successful telecentre operation. Instead knowledge sharing is an element that binds the other influencing factors together and makes them work.

The model described above takes into account the other factors such as appropriate technology, a knowledge and information repository, an adaptable and contextually appropriate model which applied in combination with knowledge sharing will significantly improve the potential of telecentres to achieve success



University of Fort Hare
Together in Excellence

The results of the preliminary case study will be reviewed in relation to the elements of this model. These include discussion and analysis based on the following items:

- Appropriate technology
- Interaction and cultivation of relevant knowledge ecosystems
- An accessible and up to date knowledge and information repository
- An adaptable contextually appropriate model

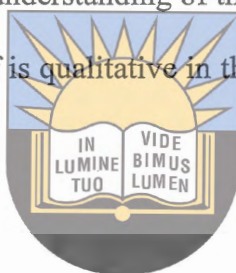
Chapter 4: Research Methodology



University of Fort Hare
Together in Excellence

4.1 Introduction

The difference between quantitative and qualitative research can be seen from the manner in which each approaches the subject matter (Martella, Nelson and Manchard-Martella, 1999). This research follows a qualitative research methodology. The reasons for this are that answering the research question requires an understanding of the way telecentres currently work, the context in which they work, the attitudes of the people driving the projects, as well as an understanding of the obstacles being faced. As a result of this, the nature of the data itself is qualitative in that it describes a particular context, perspective or experience.

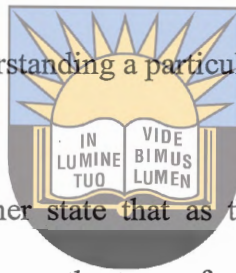


The researcher conducts a preliminary or pilot study across three telecentres based in the Eastern Cape, selected through consultation with various project co-ordinators. A second study is conducted across five telecentres based in Gauteng, the Free State, Western Cape and Kwa-Zulu Natal. This allows for the collection of a wider range of evidence as well as facilitates the emphasis of common issues experienced by project participants across South Africa. Data collection also includes collection of evidence from the project administrators located at the centre through the process of semi-structured interviews in order to gain input on project background and project planning.

4.2 Type of Qualitative Research Conducted

Morse and Richards (2002) state that qualitative research methods are the best in cases where:

- The purpose of the research is to understand an area that not much is known about or where previously offered understanding appears inadequate
- The purpose of the research includes understanding a complex situation, multi-context data or changing and shifting phenomena
- The purpose includes learning from participants in a particular setting or processes from the perspective of how they experience it
- The purpose includes constructing theory or theoretical framework that reflects reality
- The purpose includes understanding a particular situation/experience in detail



Morse and Richards (2002) further state that as the purpose points to the research question, and the research question to the type of method, so the method points to the type of data to be collected. Methodological congruence can be defined as the fit between the research problem and the research question, the research question and the research method and the research method and research data (Morse and Richards, 2002).

Each qualitative method represents a specific way of thinking about data and using techniques to manipulate data and achieve a goal. Achieving methodological congruence means that the method applied to solving the research problem provides the research with the “right” way of thinking in order to collect, analyse and order data such that they can arrive at an acceptable solution.

It is necessary to highlight that irrespective of method all qualitative research seeks to understand data that is complex and can be approached only in context (Morse and Richards, 2002). This research follows a qualitative research methodology.

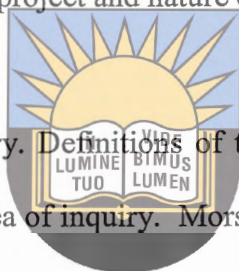
4.3 Research Design

Research design is shaped by the method and is responsive to the context as well as the research participants. Creating design involves seeing the research project at different levels and identifying the research methodology to be utilised (Morse and Richards, 2002). As a result in planning research design one should start by answering this question: What is the scope of the project and nature of the data required?

Scope refers to the area of inquiry. Definitions of the topic and related concepts and theories will in part delimit the area of inquiry. Morse and Richards (2002) add that the scope of the sample and selection of the setting are driven by two principles:

- The setting and sample must be purposively selected, which may involve choosing the most optimal example of the “phenomena” and setting in which one will be most likely to observe factors that may be of interest to the research study.
- The selection of participants will be directed by the emerging analysis and the theory being developed modified by the data obtained from the next set of participants.

In regards to the nature of the data required the variety of approaches available and the sorts of data they generate needs to be carefully considered. It is expected that the nature of the research question requires several strategies for generating the data. Morse and

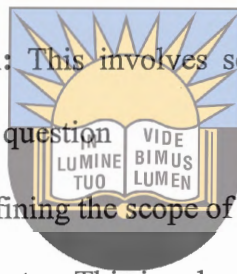


University of Fort Hare
Together in Excellence

Richards (2002) state that relying on one technique often results in homogenous data, which is unlikely to provide enough sources of understanding and ways of looking at a particular situation or problem.

According to Morse and Richards (2002) creating research design involves the following steps:

- **Establishing Purpose:** This involves ensuring that you are clear on what you are doing and why
- **Methodological Location:** This involves selecting a research method that is appropriate to the research question
- **Scoping:** This involves defining the scope of the project
- **Planning the Nature of Data:** This involves deciding what kind of data will be relevant to the study
- **Thinking Ahead:** This means working with an end goal in mind in regards to what the research is meant to achieve



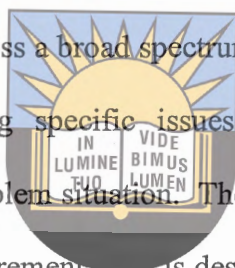
University of Fort Hare
Together in Excellence

4.4 The Case Study Method

Martella *et al* (1999) state that case study research is useful for the generation of an in-depth study of problems for the purposes of understanding processes or situations in context. What makes case studies different from other methods is that the focus is on a single case and an in-depth analysis of that case. This research makes use of comparative case study as a research method. This means that a number of cases are studied and then compared and contrasted with each other.

This study requires the analysis of the context and method of ICT implementation through interaction with identified project participants, the case study method has been chosen because it will facilitate this kind of analysis. Although the case study methodology has been subjected to scrutiny and criticism at various times since the 1930's, the case study becomes an appropriate research methodology as it is an ideal in situations where holistic, in-depth investigations are required (Feagin, Orum, and Sjoberg, 1991).

This study requires an analysis across a broad spectrum of sources while simultaneously remaining focused on uncovering specific issues pertinent to gaining a deeper understanding of the identified problem situation. The case study methodology selected for this research supports this requirement, as it is designed to bring out the details from the viewpoint of the participants by using multiple sources of data (Tellis, 1997). This facilitates the objective of uncovering the contextual perspectives of project implementation while retaining the flexibility to remain selective, focusing on one or two issues that are fundamental to understanding the case being examined (Tellis, 1997).



University of Fort Hare
Together in Excellence

Yin (1994) presented at least four applications for a case study model:

- To explain complex causal links in real-life interventions
- To describe the real-life context in which the intervention has occurred
- To describe the intervention itself
- To explore those situations in which the intervention being evaluated has no clear set of outcomes.

The research questions framed as "who", "what", "where", "how", and "why" determine the relevant strategy to be used (Tellis, 1997). The case study method includes a predominance of what and how questions. This means that the strategy chosen by the researcher falls under the exploratory sub category, where the researcher attempts to explore a specific situation with the aim of gaining clarity for the purposes of explaining it.

Six primary sources of evidence for case study research identified by Yin (1994) are:

- documentation,
- archival records,
- interviews,
- direct observation,
- participant observation and
- physical artefacts



University of Fort Hare
Together in Excellence

This research makes use of interviews, documentation analysis and direct observation. No single source has a complete advantage over the others; rather, they might be complementary and could be used in tandem (Tellis, 1997). Thus a case study should use as many sources as are relevant to the study. This study focuses mainly on using documentation, interviews and direct observation as primary sources of evidence.

Yin (1994) suggested that every investigation should have a general analytic strategy, so as to guide the decision regarding what will be analysed and for what reason. He presented some possible analytic techniques: pattern-matching, explanation-building, and time-series analysis.

Explanation building is the analytic strategy that is utilised in this study. Explanation building is considered a form of pattern matching, in which analysis of the case study is carried out by building an explanation of the case. This implies that it is most useful in explanatory case studies, but it is possible to use it for exploratory cases as well as part of a hypothesis-generating process.

4.4.1 Data Collection Methods Utilised



In this research data is firstly collected for comparative case study through a process of interviews guided by semi-structured questionnaires. Morse and Richards (2002) state that in cases where the researcher knows enough about the topic to develop questions before hand, but not enough to anticipate the answers, semi-structured interviews should be the chosen method of gathering data. The researcher designed open-ended questions arranged in a logical order to cover the topic in question.

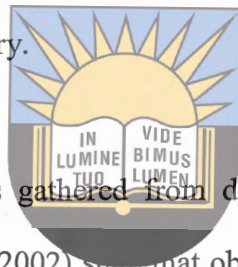
University of Fort Hare
Together in Excellence

Interviews are one of the most important sources of case study information. The type of interview used in this research is semi-structured. It is stated that “asking for reasons and giving answers are commonplace habits of everyday life” (Mishler, 1996). Mason (2002) defines an interview as an active engagement by the interviewer and interviewee around relevant issues, topics and experiences.

Kvale (1996), on the other hand, defines an interview as a “construction site of knowledge in which the interviewer attempts to understand the world from the subjects’ point of view.” All these definitions serve to highlight interviews as a significant

interactive process of sharing, understanding and creating new meaning. This highlights the suitability of the interview process as a familiar method of gathering information and constructing new knowledge.

The interviews were conducted in a manner that facilitated the construction of meaningful knowledge through enabling a context and environment that allows for comfort and familiarity. This included facilitating self-expression in a language and manner with which the interviewee is most at ease. To aid this process, the author made use of an interpreter where necessary.



Secondly, in this research data is gathered from documentation review and thirdly, observation. Morse and Richards (2002) state that observing is the most natural way of making data. Documents could be letters, memoranda, agendas, study reports, or any items that could be added to a database of research information. One of the most important uses of documents is to corroborate evidence gathered from other sources (Tellis, 1997).

University of Fort Hare
Together in Excellence

Direct observation in a case study occurs when the investigator makes a site visit to gather data (Tellis, 1997). This means that in this research wherever possible interviews were conducted on-site. Traditionally researchers have recorded observational data in the form of field notes and used it to supplement other data (Morse and Richards, 2002). Direct observation will be utilised in order to further facilitate the understanding of the context of project implementation. This assisted in gaining a deeper understanding of the environment within which the project is taking place including the type and variety of challenges that can be allocated to environment alone.

On reviewing the various strengths and weaknesses of direct observation, documentation analysis and interviews it was found that these methods of data collection were complementary as their various strengths and weaknesses tend to balance each other out.

4.5 Sampling

Identifying a sample is one of the first steps in undertaking a qualitative research study. The purpose of sampling in qualitative research is mainly to address the research question (Martella *et al*, 1999). In order to determine whether a sample is adequate the research must continuously review the purpose of the research and determine if the sample allows for the generation of research questions. The sampling method used in qualitative research is termed “purposeful sampling” (Patton, 1987 as cited by Martella *et al*, 1999).

Patton (1987) as cited by Martella *et al* (1999) indicates that purposeful sampling is used to select information rich cases for an in-depth study. The sampling technique utilised in this research is a combination of extreme or deviant case sampling (for the main case study) and maximum variation sampling (for the preliminary case study). Extreme or deviant case sampling as described by Martella *et al* (1999) involves focusing on cases that have important information because they are special or unusual in some way.



University of Fort Hare

Together in Excellence

Maximum variation sampling involves capturing and describing central themes and/or principal outcomes that represent the norm. In this way maximum variation sampling will provide a window into the common experiences within a particular area of research. The reason for this was to establish what the common experience in establishing telecentres in rural or peri-urban is and then to contrast those with cases that appear to be relatively successful in order to ascertain what the main differences in attitudes, perspectives and behaviour were that led to these very different outcomes.

4.6 Conclusion



In this research cases are chosen based on how well they describe the issues experienced and also, in some cases, how well they describe how these are overcome.

University of Fort Hare
Together in Excellence

The research method utilised in this study aims to address the identified problems and issues relevant to the successful establishment and operation of telecentres in rural and peri-urban areas in a manner that will allow for the recommendation of a solution and development of model that can assist in overcoming them.

Chapter 5: Case Study

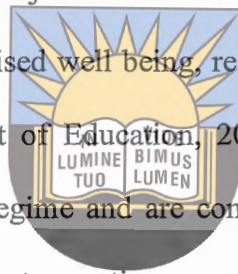


University of Fort Hare
Together in Excellence

5.1 Introduction

As the research will be based within South Africa it is important to provide some background information about the country that will assist in setting the context of the study. The context of South Africa has been greatly impacted by the policy of apartheid which was legally enacted and in effect from 1948 to 1994.

In April 1994, a massive national project “to take down the scaffolding of apartheid and replace it with a system that promised well being, respect, and expression for all South Africans began” (The Department of Education, 2004). Rural schools in particular faced the brunt of the apartheid regime and are continue to face massive backlogs in resources necessary for their efficient operation.



University of Fort Hare
Together in Excellence

More money is always needed to address the terrible backlogs left by 40 years of apartheid education, where money was directed into white education at the expense of black schools in the townships and rural areas (Garson, 2005). Although today's government is intent on rectifying the imbalances in education, the apartheid legacy still “lingers on” (Garson, 2005). The greatest challenges lie in the poorer, rural provinces like the Eastern Cape and Kwa-Zulu Natal with the more affluent provinces like Gauteng and the Western Cape, schools generally better resourced.

The backlogs from so many years of apartheid education are immense. Illiteracy rates are high at around 30% of adults over 15 years old (6-8 million adults are not functionally literate), teachers in township schools are poorly trained, and the final school examination pass rate remains unacceptably low (Garson, 2005).

While 65% of whites over 20 years old and 40% of Indians have a high school or higher qualification, this figure is only 14% among blacks and 17% among the coloured population (Garson, 2005). The "liberation now, education later" stance taken during the years of the anti-apartheid struggle severely damaged the culture of learning and teaching in schools and universities, instead of places of learning, they became sites of protest (Garson, 2005).

Redressing the resource imbalances, rebuilding the educational environment and retraining teachers is a slow and difficult process, but significant inroads have been made. The challenges faced included understanding globalisation, and locating South Africa as a competitive economy within this context (The Department of Education, 2004). Understandably so, educational reform has been a central part of the country's reconstruction. The demise of apartheid in 1994 offered unique opportunities to reconstruct a "fragmented and deeply discriminatory" education system (The Department of Education, 2004).



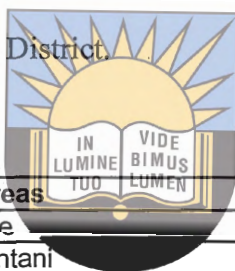
University of Fort Hare
Together in Excellence

5.2 The Context of the Eastern Cape

According to the Eastern Cape Socio-Economic Consultative Council (Eastern Cape Socio-Economic Consultative Council 2003) the apartheid era has left the Eastern Cape deeply scarred with enduring structural problems, underdevelopment and enormous socio-economic challenges. These challenges include high levels of poverty and inequality, huge disparities in access to basic services and infrastructure, high

unemployment rates, economic decline and sub-optimal performance in key sectors (Eastern Cape Socio-Economic Consultative Council 2003).

In order to address socio-economic development issues within the Province it is important to first understand the nature of the various challenges facing the Province and what they mean at a local level (Eastern Cape Socio-Economic Consultative Council, 2003). This analysis will be limited to the Amathole District in which all surveyed schools are accommodated. The table below provides an indication of the geographical span of the Amathole District.



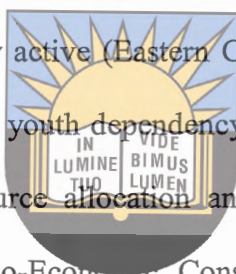
Amalgamated Municipal Areas	New Name
Willowvale, Idutywa, Elliotdale	Mbhashe
Butterworth, Nqamakwe, Centani	Mnquma
Komga	Great Kei
Keiskammahoek, Cathcart, Sibeleyein	Amahlathi
East London, King Williams Town, Mdantsane, Zwelitsha	Buffalo City
Peddie	Ngqushwa
Fort Beaufort, Alice, Middledrift, Seymour	Nkonkobe
Bedford, Adelaide	Nxuba

Table 2: Amalgamated Municipal Areas

The information following will assist in quantifying the socio-economic backlog within this area of the Eastern Cape, serving to ascertain more clearly the levels of poverty and various other obstacles faced by people dwelling in this area. What will also be uncovered is the relatively large proportion of disparities and marginalised populations that exist within the rural areas of the Eastern Cape.

5.2.1 Population Density and Age Distribution

The average population density in the Eastern Cape is 63 people per square kilometre (Eastern Cape Socio-Economic Consultative Council, 2003). About a third of the Amathole population is younger than 15 years, while a relatively 5.6% is 65 years or older (Eastern Cape Socio-Economic Consultative Council, 2003). Approximately 60% of the districts population are aged between 15 and 64 years, with a high proportion of this age group being economically active (Eastern Cape Socio-Economic Consultative Council, 2003). The districts high youth dependency ratio suggests a need for projects and programmes that target resource allocation and needs provision towards youth development (Eastern Cape Socio-Economic Consultative Council, 2003). These programs should typically include healthcare services, education facilities, skills development and access to enabling ICT.



University of Fort Hare
Together in Excellence

The table and graph below adopted from Eastern Cape Socio-Economic Consultative Council (2003) depicts the population age distribution:

Age Group	%
0 - 14 years (youth dependency)	34.70%
15 - 64 years (potentially economically active)	59.60%
65+ years	5.60%

Table 3: Age Distribution

5.2.2 Development Indicators

5.2.2.1 *The Human Development Index*

According to Eastern Cape Socio-Economic Consultative Council (2003) the Human Development Index (HDI) is a reliable indicator of development. It measures the overall achievements in three basic dimensions of human development. These include longevity, knowledge and the standard of living (Eastern Cape Socio-Economic Consultative Council, 2003). These items are measured by life expectancy, literacy rates and income respectively (Eastern Cape Socio-Economic Consultative Council, 2003). The HDI for the Amathole District Municipality is 0.48, indicating very low levels of development (Eastern Cape Socio-Economic Consultative Council, 2003).



University of Fort Hare
Together in Excellence

5.2.2.2 *Persons Living in Poverty*

Approximately 66% of Amathole's people live in poverty. The highest proportions of people living in poverty are found in Mbhashe (82%), Ngqushwa (79.9%), Mnquma (75.3%) and Amahlati (72.7%).

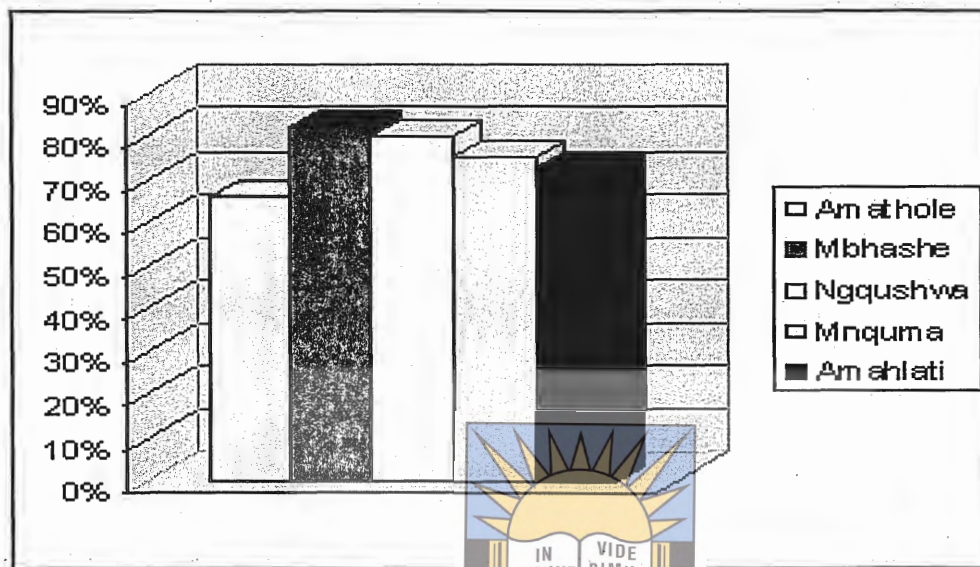


Figure 8: Percentage of Persons Living in Poverty Categorized by Area

5.2.2.3 *The Poverty Gap*

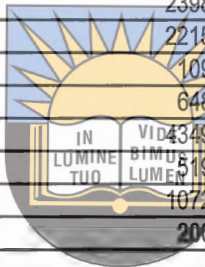
University of Fort Hare
Together in Excellence

The distribution of income and wealth in South Africa is among the most unequal in the world (Eastern Cape Socio-Economic Consultative Council, 2003). The differences become even more dramatic when comparing the Eastern Cape to the rest of South Africa, and on comparing former homelands within the Eastern Cape to the rest of the Eastern Cape Province.

The Eastern Cape Socio-Economic Consultative Council (2003) suggests that poverty and inequality can only be addressed when they are properly measured. A good indicator of poverty is the number of households living in poverty. The poverty gap, however, measures both the incidence and the depth of poverty (Eastern Cape Socio-Economic Consultative Council, 2003). The poverty gap is calculated by summing the

differences between the income of each poor household and the poverty line. The poverty gap indicates the income deficit for those in poverty; in other words, it is the amount of money that would be required to raise all poor families to the poverty line poverty (Eastern Cape Socio-Economic Consultative Council, 2003). In 1995 the Eastern Cape's share of the total poverty gap at 24%, was the highest of all Provinces (Eastern Cape Socio-Economic Consultative Council, 2003).

Development Indicators	HDI	Persons Living in Poverty (#)	Persons Living in Poverty (%)	Povert Gap (R Million)
Mbhashe	0.40	239834	82.00	388.00
Mnquma	0.48	221556	75.30	351.00
Great Kei	0.45	10931	71.80	14.00
Amahlati	0.50	64852	72.70	89.00
Buffalo City	0.59	434916	65.90	585.00
Ngqushwa	0.44	51943	79.90	77.00
Nkonkobe	0.47	107253	67.70	151.00
Nxuba	0.48	20022	70.60	28.00



University of Fort Hare
 Table 4: Development Indicators
Together in Excellence

5.2.2.4 Household Income

Household income levels are relatively low. Approximately half of the households (52%) within the Amathole District record income levels of R 0 – R 6000, and 26% earn between R 6001 – R 18 000 a year (Eastern Cape Socio-Economic Consultative Council, 2003). This means that almost 80% of household incomes have annual incomes below R 18 001 per annum (Eastern Cape Socio-Economic Consultative Council, 2003). An estimated 36% of households in Buffalo City fall into the lowest income category (Eastern Cape Socio-Economic Consultative Council, 2003). More than half of the households in Mbhashe (67%), Mnquma (64%), Ngqushwa (63%), Amahlati (61%) and Nkonkobe (56%) have income levels below R 6001 per annum (Eastern Cape Socio-Economic Consultative Council, 2003).

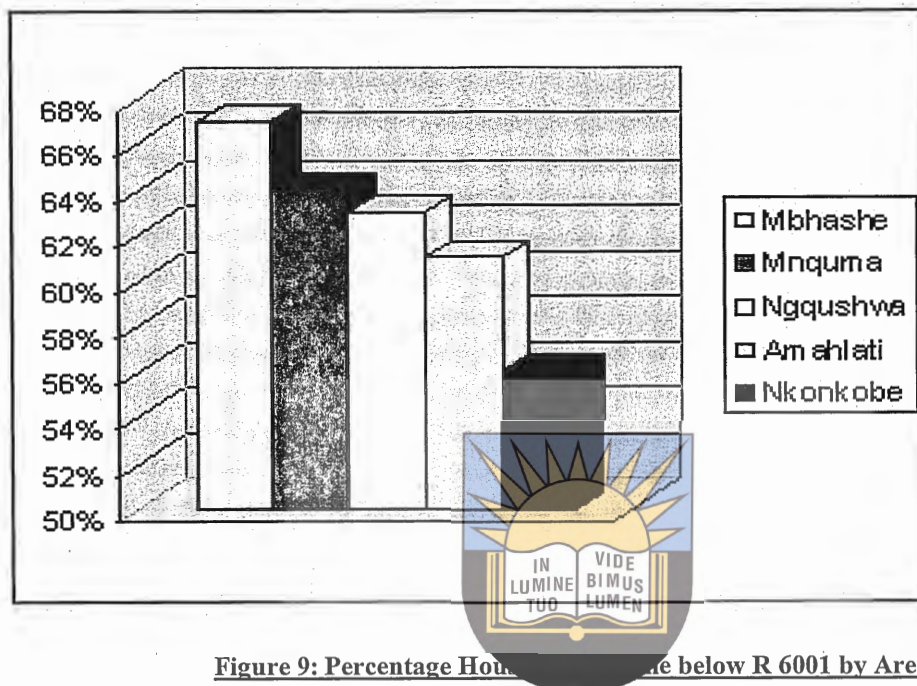


Figure 9: Percentage Households with income below R 6001 by Area

University of Fort Hare

5.2.2.5 Education Status *Together in Excellence*

Education levels are generally low. Only 16% of Amathole's population have matriculated or have above-matriculation qualifications, with at least 10% having no formal schooling (Eastern Cape Socio-Economic Consultative Council, 2003). A comparison of the levels of education across the municipal areas point to strong links between low households incomes, high unemployment and low human development index (Eastern Cape Socio-Economic Consultative Council, 2003). Functional literacy rates are generally low across the district, with very low literacy rates shown for Elliotdale (28%), Kentani (38%), Komga (47%) and Willowvale (49%).

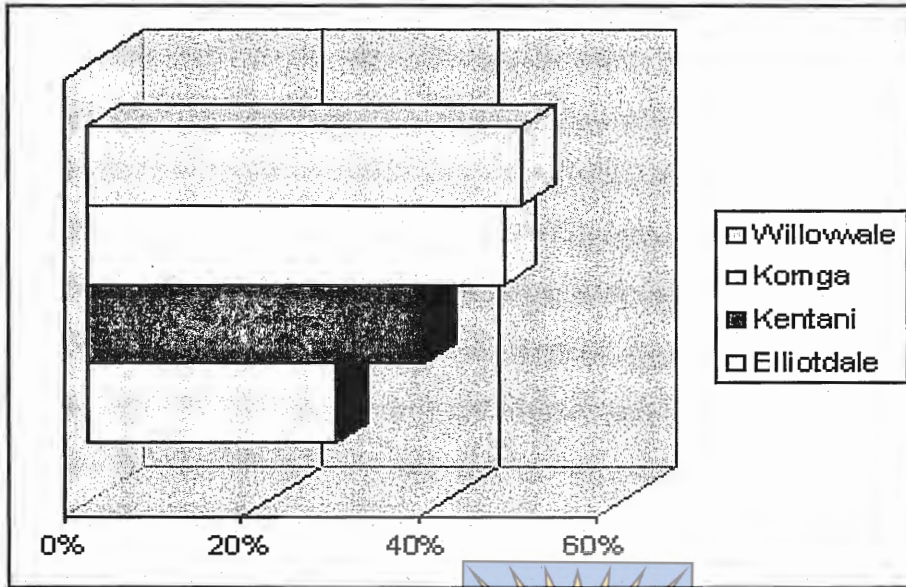
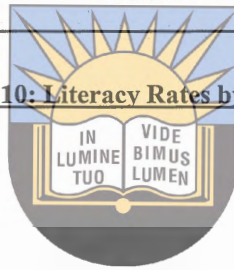


Figure 10: Literacy Rates by Area



5.2.2.6 Unemployment

University of Fort Hare

Together in Excellence

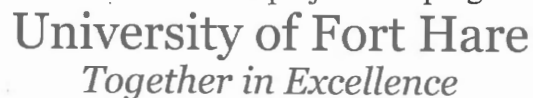
The highest number Amathole's unemployed people lives in Buffalo City (139 398), but the highest percentages of unemployed people are found in Mbhashe, Mnquma, Ngqushwa and Nkonkobe (Eastern Cape Socio-Economic Consultative Council, 2003). Unemployment in these areas is over 70% with the unemployment rate above 70% in the former Transkei and Ciskei areas (Eastern Cape Socio-Economic Consultative Council, 2003).

5.3 Preliminary Case Study: Connect EC Project

The case study was conducted across three schools. The reason for the use of School Based Telecentres (SBTs) is that this was the mode of delivery that was chosen for the Connect Eastern Cape project. As discussed earlier in this paper this project represented provincial efforts to introduce telecentres for socio-economic development in the

Eastern Cape. The Connect Eastern Cape project chose SBTs as the mode of delivery because the implementation of Multiple Purpose Community Centres (MPCCs) appeared to have been met with relative failure to meet project objectives (The Connect Eastern Cape Concept Document, 2003). The reason for the preliminary case study was to gain an initial insight into the state of ICT-based development projects in the Eastern Cape. It is important to note that the SBTs implemented by the Connect Eastern Cape project were meant to function as community centres, however due to factors discussed later in the case study these centres were unable to reach this phase of operation.

Groups consisted of the school principal and two teachers from each of the schools. Connect EC Project Co-ordinators were also contacted in order to gain an overview of the project and general feedback on how the project was progressing.



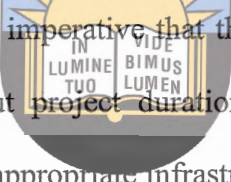
The following section starts with an overview on the Connect EC project that clearly sets out project background and objectives. This is followed by the interview questions and resultant interview report as an output from the interview with the Connect EC Project Co-ordinator. Following this are the semi-structured focus group interview's conducted at each school. All schools were presented with the same questions.

5.3.1 Background to Connect EC

A task team has been established to address the “digital divide” that exists within the Eastern Cape Province. According to the Connect EC Concept Document (2003) the goal of the task team is to provide connectivity to every community in the Eastern Cape.

The vision of the Connect EC project is to ensure that every community within the province has access to the Internet for access to government services and the “information superhighway” (Connect EC Concept Document, 2003). The Connect EC project aims to provide a co-ordinated initiative involving all stakeholders in order to address the “digital divide” in the province.

According to the Connect EC Concept Document (2003), the following have been identified as critical to the success of the project:

- 
- **Community:** It is stated as imperative that the community is fully involved in project activities throughout project duration. On identifying communities, nodal areas, availability of appropriate infrastructure, development potential and the level of social impoverishment are taken into account.
 - **Venue:** The venue within the community is defined according to the aims and priorities of the project. On identifying venue, proper building, security, community ownership of venue and other facilities within the vicinity such as clinics and multi purpose community centres are taken into account. The preferable venue in each community was identified as the community school.
 - **Connectivity:** An awareness program will be launched to attract potential donors to assist with the delivery and installation of network equipment and services. The State Information Technology Agency (SITA) will be engaged to train and assist SMMEs in recycling, installation, connectivity and maintenance. Wireless connections have been identified as the most cost effective solution.

University of Fort Hare
Together in Excellence

- **Computers:** Computers are an essential element of the connectivity project. These will be obtained through donations from various parties. It is critical that a standard level of functionality is set.
- **Access to Electricity and Telecommunications Networks:** To maximize project success venues will be chosen in collaboration with the development plans of Eskom and Telkom, both of whom have indicated a willingness to negotiate the way ahead where their plans and project plans do not coincide.
- **Role Players and Stakeholders:** The purpose of the Connect EC project is to provide a platform for collaboration and co-ordination of efforts. A range of stakeholders had been identified and contacted for project participation.



University of Fort Hare
Together in Excellence

Due to the large geographic spread and “digital backlog” in the Eastern Cape the project will be approached in phases, with the first phase will seek to connect 100 communities by the 30 November 2003 (Connect EC Concept Document, 2003). Phase one will focus on assisting schools in completing connectivity initiatives where plans were already underway and also serve as a model of implementation for the rest of the project (Connect EC Concept Document, 2003). To date no further meaningful work has taken place on the Connect Eastern Cape project due to a lack of project resources.

5.3.2 The Context of the Schools

The Connect EC project seeks to assist marginalised rural schools within the Eastern Cape to gain access to relevant ICTs in an attempt to facilitate “bridging the digital divide”. The schools included in this case study had a number of common characteristics. These included the following:

- Located within rural areas within the Eastern Cape
- Experienced issues around shortage and capacity of resources
- Serviced largely black or coloured populations
- Were all previously “Bantu Education” schools, meaning they inherited many problems attributable to the apartheid regime



University of Fort Hare
Together in Excellence

These schools all play the role of community centres within their communities. Despite their apparent difficulties they were all succeeding from within the constraints of their immediate environments. In all cases there was much enthusiasm around the project and its objectives.

The schools and the communities they served were all relatively isolated from their wider environment. In all cases the closest urban locations were towns at least thirty kilometres from the community centre. Transport to and from these communities was often hard to locate. Many community residents relied on taxis as their most reliable form of transportation.

Working community members often commuted to work in surrounding towns. In some cases the key family breadwinner lived away from home in order to earn a living. Many also sought informal employment as their means of income, as unemployment within the Eastern Cape is high and jobs very hard to come by. In extreme instances an entire family could be solely reliant on the pension of an aged relative for sustenance.

The isolation and poverty in these communities means that often travelling to the closest town in order to access government services is impractical. Slow service delivery and long queues at government departments often means that community members must return numerous times in order to access the necessary service. This often places undue pressure on already overburdened household incomes.



University of Fort Hare

Together in Excellence

A facility that brings the necessary services to the community, allowing them to utilize income where it is most useful, would go a long way to improving the standard of living of marginalised rural populations. In addition, access to government services and wider information and knowledge will facilitate empowerment and sustainable development.

5.4 Basis for Case Study Questions

The case study aimed to achieve three objectives, that of understanding the impact of the Connect EC project and ascertaining the potential, if any, of SBTs to be utilised as generic Information and Communication centres for the purposes of facilitating improved service delivery in rural areas.

The preliminary case study questions were based largely on the framework established by the research questions and the literature review. The questions were constructed in a basic manner in order to facilitate ease of understanding.

5.5 Preliminary Case Study Questions and Answers

5.5.1 Report on Semi-structured Interview with Project Co-ordinator¹

The project co-ordinator stated that the project is proceeding, although they are still to tackle the application forms for participation in the Connect EC programme that some schools have sent in.



University of Fort Hare

Together in Excellence

Stakeholders are not as involved in the project as he would like and there appears to be a problem around information dissemination around project activities and status.

Schools to be prioritised for implementation were communicated to PGITO by the Education Department; the project co-ordinator stated that the criteria utilised to select these schools were not clearly communicated. There is currently no project contact available for communicating information from the Education department.

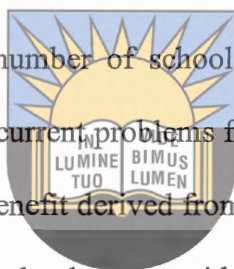
The initial project contact was reassigned to a different function within the education department. This therefore poses a problem in terms of accessing and communicating information to the Education department.

¹ See Appendix A for Interview Questions

The project co-ordinator stated that although school criteria for qualification as a potential Connect EC candidate had not been explicitly communicated the criteria as he understood them included the following:

- Rural location
- Some level of basic infrastructure (electricity)
- Security for the computer laboratory

There appears to be no set project duration. In fact the project co-ordinator foresees the project as being ongoing as the number of schools needing ICT implementation is continuously growing. One of the current problems faced by the project team is the fact that many schools do not see any benefit derived from ICTs, with particular reference to the Internet. In many cases the schools even with initial financial support lack the capacity and finance to sustain Internet connectivity. In addition many of these schools have more pressing priorities.



University of Fort Hare
Together in Excellence

Many of these schools are relatively economically unviable, with problems experienced around the provision of basic education and support of their student community. Their priorities therefore do not include ICTs and Internet connectivity.

The project co-ordinator stated that they have not sought input from similar projects run in other provinces due to the fact that the Eastern Cape is contextually different. The problems faced within this province are very different from those that may be faced by other provinces. An example is the fact that the Eastern Cape has a relatively larger proportion of rural as opposed to urban areas; infrastructure is therefore a problem faced commonly within most Eastern Cape regions. This may not pose as big a problem in

Gauteng, for instance, where most areas are urbanised. The project co-ordinator stated that should he come across suitable contacts, it would be good to learn from other provinces regarding their experiences with similar projects.

Community involvement in the project is wide-ranging. According to the project co-ordinator communities in rural areas are more enthusiastic and supportive than their urban counterparts. He stated that one reason for this may be due to the fact that people within more urban areas tend to have relatively less time to contribute towards such activities. In all cases however the communities are encouraged to involve themselves in project activities. Communities are informed of project activities and invited to use the school labs. The project team encourages communal use of the labs and ICT teaching and learning by all community members.



University of Fort Hare *Together in Excellence*

Schools are monitored after setup for a period of one month. The short monitoring period is due to a relative lack of project resources. A project manager is still to be formally assigned to this project.

Support from private enterprise comes in the form of equipment and not finances at this stage. Private enterprise is involved specifically through the donation of equipment. The Eastern Cape public is relatively uninformed of the Connect EC project. It is currently not in the project plans to publicise the project, but the project co-ordinator stated that this should be included in the longer term.

Information regarding project status is not formally fed back to project sponsors, but periodic feedback is something that the project team plans to formally implement.

Project sponsorship is not formally incentivised at this stage. Computers do have stickers indicating the sponsors' details. The project team also currently makes use of items from Microsoft such as posters etc. This is due to the fact that Microsoft is currently donating free software to rural schools.

The project co-ordinator stated that they plan to utilise Open Source software in the schools where Microsoft software is not available. Open source software is publicised within rural schools as a cost effective alternative to Microsoft software. They still plan to implement a formal marketing strategy to publicise and create awareness for the project within these schools.



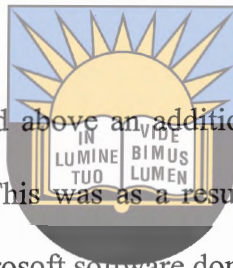
The project team is currently concentrating on getting ICTs into the schools. As most schools lack the infrastructure required for Internet connectivity, the project has not as yet met its mandate of providing Internet connectivity in most of these schools.

University of Fort Hare
Together in Excellence

The launch of the first school went well, although the school later failed to meet project objectives. This was due to a number of reasons:

- The choice of school was not based on any set criteria for participation or selection of rural schools in the Connect EC project
- The actual setup of the school lab was rushed
- The computer equipment setup in the lab was loaned to the school for purposes of the launch as no computers were available for the school from the donation pool as yet
- Teachers appeared to be ill informed about the project and its purposes

The resultant failure of the school to meet basic project objectives can partially be attributed to the above. This failure was manifested in the general confusion that surrounded the computer lab and its use. The teachers did not appear to be aware that the computers in the lab did in fact not belong to the school. In addition computer equipment was stolen by teachers and in some cases also sold. Not all stolen computer equipment has been recovered to date. A case was eventually opened and some arrests were made.



In addition to the school described above an additional nine schools were selected as priorities for immediate action. This was as a result of the fact that the schools had already secured hardware and Microsoft software donations. These included:

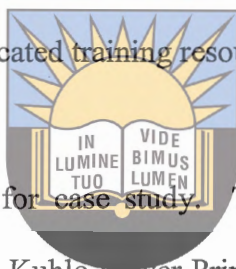
University of Fort Hare *Together in Excellence*

- Phandulwazi High School – Alice
- Hankey Senior Secondary School – Hankey
- Zingisa Comprehensive – Umtata
- St. James Senior Secondary School – Cofimvaba
- VM Kwinana – Utenhaige
- Nompumelelo Senior Secondary School – Whittlesea
- Ngwenyathi Senior Secondary School – East London
- Jongile Nompondo – Stutterheim
- Mt Fletcher Village Junior Secondary School – Mt Fletcher

Training for these nine schools, including the launch school was administered by the Education department through their internship programme. Training happened off site

and each school was intended to send a total of two teachers to attend the training. Not all schools managed to do this as a result of financial and other constraints. No follow-up training has been conducted thus far.

An additional school in Bhisho, Kuhle Lower Primary School, was also implemented. However this school had computers donated to it from the PGITO donation pool with Open Source software installed on the computers. Training consisted of a full day's on site instruction and demonstration on how to use the software. Training was conducted by the Project Co-ordinator as dedicated training resources were not available.



Three schools have been chosen for case study. These are the Ngwenyathi Senior Secondary School in East London, Kuhle Lower Primary School in Bhisho and Jongile Nompondo School in Stutterheim. The decision to use these schools as part of the case study was based on suggestion by the Project Co-ordinator that these formed interesting and unique cases for a variety of reasons and warranted some review and evaluation. The decision was also based on conducting comparative analysis on the schools based on the differences in project implementation in each case. In addition proximity and availability of key project participants resulted in the schools being ideal choices for participation in the case study.

University of Fort Hare
Together in Excellence

5.5.2 Report on Interview with Kuhle Lower Primary School²

The general consensus was that the project had helped the school. Learners and teachers were enthusiastic and very interested in the project and its outcomes. As a

² See Appendix A for Interview Questions

result of the project the principal was also able to increment school fees slightly which assisted with budgetary constraint issues the school was facing. The project also provided an opportunity to develop educators through giving them access to computers and the opportunity of gaining computer skills. The group felt that they had everything they needed at this stage, including basic knowledge on how to use the computers.

The community was not making use of the lab at this stage, but was reported as being keen to learn and be involved in the project. The school is currently teaching basic computer skills to both school educators and students. It was reported that everyone in the school was aware of the project, although sufficient training is still to be provided.



It was stated that training and additional technical support was a huge requirement at this stage. The school had no internal provision for technical support, which meant that if any computer related issues were experienced the school had no alternative but to wait for assistance from the Connect EC Project Co-ordinator who was often times too busy to fulfil this role.

University of Fort Hare
Together in Excellence

5.5.3 Report on Interview with Ngwenyathi S.S.S³

On interviewing this school it was reported that although initial contact had been made by the Connect EC Project Co-ordinators there had been no subsequent contact. As a result, although the school has computers that were obtained through donation by other parties, the computers are still to be set up in the lab. The school is currently awaiting contact from Connect EC so that this can be completed.

³ See Appendix A for Interview Questions

It was additionally stated that there is a need for computer training in the school. This need was communicated to Connect EC and there is an expectation that on setting up of the lab the required training will also take place.

Private sponsors of the computers for this school specified that a business plan be developed to illustrate how the computers were intended to be used. This business plan indicates how the school intends on involving the community through facilitating community access to their computers.



The project and its intended outcomes were communicated extensively throughout the school and the community. It was stated that despite all of this the project was a non-starter in that subsequent to initial contact by Connect EC no further correspondence has taken place.

University of Fort Hare
Together in Excellence

The school communicated needs related mainly to exploring and finding methods of minimising computer related costs, as well as facilitation of a better Internet connection. In addition technical support was also identified as a need.

A concern was communicated around insufficient capacity of the computer lab. With only 12 computers at this stage the school faces the challenge of determining how they will utilise this lab to service a school of over 1000 pupils as well as the surrounding community.

5.5.4 Report on Interview with Jongile Nompondo School⁴

This school reported a number of outstanding items still pending from the projects. Although the computer lab had been set up and the computers installed an initial problem that was experienced was with electricity that had to be upgraded before the computers could be used. On doing so they were able to start using the computers. It was found that the computers were very old and many of them were faulty. As such they feel that they are yet to experience any major benefits from the project, as although the computers are available, they are still unable to use them properly.



It was also stated that communication from Connect EC was scarce. They are as such unaware of when the current issues will be dealt with. The school is in dire need of training at this stage, currently only one teacher has had computer training. Because this teacher also has other responsibilities she is unable facilitate ICT training as well as fulfil her other duties.

University of Fort Hare
Together in Excellence

The school is currently unable to allow the community to use the lab due to technical issues they are currently facing with the computers. Although this was identified initially as a main aim for the project for the school, they are currently unable to fulfil this objective. It was also stated that the project was widely communicated to the school and the community and received widespread support and enthusiasm.

The schools needs include that of technical support, donation of other utilities such as mouse pads, blinds for the lab and a printer. Computer training is also needed.

⁴ See Appendix A for Interview Questions

5.6 Overview of Preliminary Case Study

An analysis of the preliminary case studies and the interview with the Connect EC project co-ordinator revealed the following common issues:

- Insufficient communication between project co-ordinator and the school
- Lack of required technical support
- Lack of required basic computer training
- Capacity issues brought about by a range of problems including insufficient and faulty computer equipment
- Lack of Infrastructure



University of Fort Hare
Together in Excellence

The communication issue made itself felt in a variety of ways. Many of the interview participants were completely unaware that the computer project being run at the school fell under the banner of the Connect EC project. Reference to the project using this name often resulted in a response indicating that no such project had been undertaken at the school. The researcher had to determine that this project was indeed taking place through reference to the project co-ordinator by name.

Communication issues were also felt in the area of feedback and periodic contact with project participants. Most project participants indicated that they were unaware of the current status of the project at the school, and although problems were being experienced they had no means of gaining the required support from the Connect EC project. Some stated that even in cases where they initiated contact with the project

administrators it was found that limitations experienced by the project as a whole meant that these issues could not be dealt with timeously.

The lack of technical support formed a strong theme throughout the survey. It was found that technical problems experienced by the schools could not be dealt with internally. And often external support was not readily available. This meant that most schools surveyed currently had technical difficulties or faults with computer equipment that restricted use of the computers over a long-term period.



In all schools it was reported that at most one to two teachers had any formal computer training or experience. All surveyed schools reported a dire need for basic computer training such that they were able to utilise the computer labs more effectively. Lack of computer training also meant that teachers were unable or at best found it difficult to conduct computer classes for the benefit of pupils or community members.

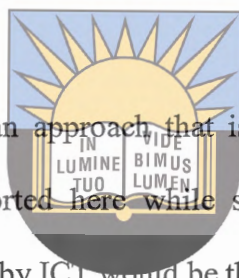
Capacity issues were experienced at all schools in different ways. Faulty equipment meant that current computer resources were restricted even further. Some schools felt that they had insufficient computers to meet the need of the school let alone the community. Capacity issues meant that schools faced difficulties in ensuring equitable access of computer facilities to the school and wider community.

In addition, many schools that applied for participation in this project were turned away due to infrastructure issues. A requirement for participation in the project was that the schools needed to have electricity. Many rural schools within the Eastern Cape

currently do not have access to electricity. This limits the number of schools that may be able to benefit from the Connect EC project.

Before one can consider the possibility of utilising SBTs as a communication link between government and rural populations, they need first be successful in meeting initial objectives. The preliminary case study revealed that all of the SBTs analysed in this research were not operational due to largely to administrative and other problems. Many challenges are still to be overcome before this can be achieved.

The author is of the view that an approach that is able to circumvent many of the challenges experienced and reported here while still allowing rural populations to exploit the benefits brought about by ICT would be the first best solution.



University of Fort Hare
Together in Excellence

5.7 Analysis of Preliminary Case Study based on Model Components

Based on the components of the suggested model, the following was uncovered:

- **Appropriate technology:** All schools identified the need for training as significant. In addition to this one of the cases also identified the inability of the school to afford connectivity and maintenance of the technology as an issue of concern. All schools required external technical support, as no internal resources with the capacity to address technical issues were present. In these cases, although the technology was appropriate in regards to its intended use, it was inappropriate in regards to the issues of training, technical support, maintenance and replacement. When implementing technology in ICT based development

projects it is also important to ensure that the school and/or community is able to continue benefiting from the technology in the short and long term by ensuring that issues such as training, technical support and life cycle management are adequately dealt with.

- **Interaction and cultivation of relevant knowledge ecosystems:** Because the SBTs were problematic to the extent that they failed to meet initial project objectives, the use of the SBTs in this respect could not be ascertained.



- **An accessible and up to date knowledge and information repository:** Again because the SBTs failed to meet initial objectives, additional features such as linking the centres to a knowledge and information repository could not be explored.

University of Fort Hare
Together in Excellence

- **An adaptable contextually appropriate model:** Although it appeared that a particular approach to setting up the centres was in place, it was not apparent that the approach was adapted to address context specific factors in each community. In addition to this what was uncovered was the lack of a structured approach towards centre governance subsequent to centre implementation. There needs to be a structured and transparent method towards co-ordinating a centres daily activities and relationships in a manner that actively moves the centre towards meeting its stated objectives. As a result the author suggests that the model be modified in order to address this.

5.8 Adjusted Telecentre Implementation Model

The diagram below depicts the adjusted model based on the results of the preliminary case study.

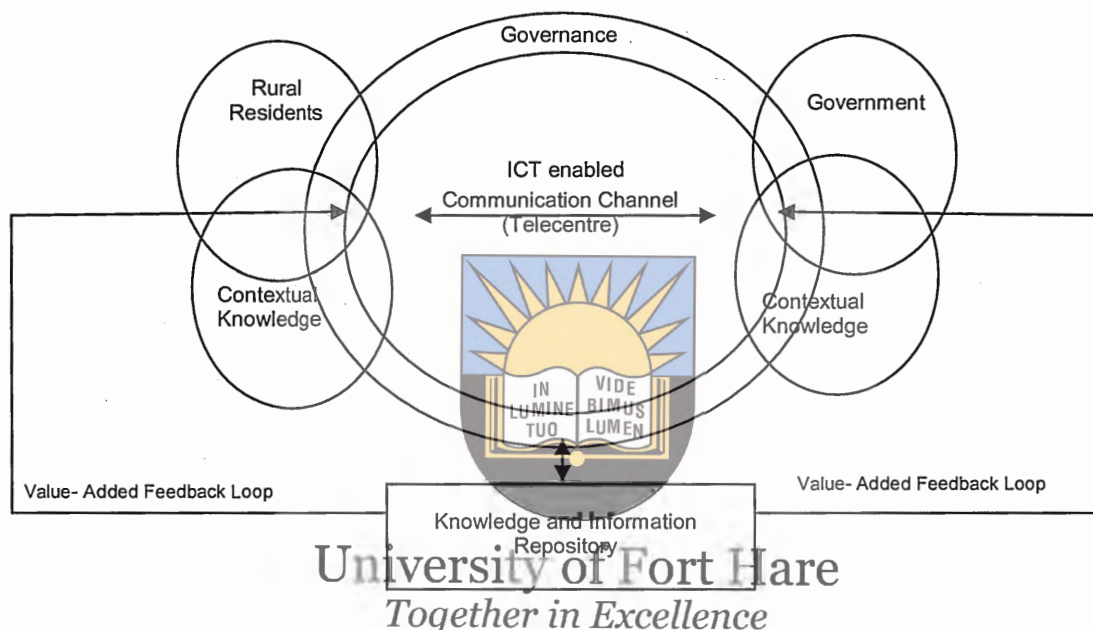


Figure 11: The Adapted Telecentre Implementation Model

The model above has been adjusted to include a governance layer that surrounds the telecentre. The governance layer ensures a structured approach towards centre administration and the development and maintenance of relationships that are significant for the effective and sustainable operation of the centre within the community. The specifics of how the governance layer is implemented and what it constitutes are context dependant. This means that these elements are to be determined through the interaction of the project team with the community within which the centre is to be implemented. Broadly, based on the literature review and results of the preliminary case study, the governance layer should govern the following:

- Access to and use of the centre

- Centre staff and administration
- Steering committee and other governance structures of the telecentre
- Use, maintenance and replacement of ICT within the centre
- Telecentre processes, policies and procedures
- Interaction with the centres external environment
- Periodic reporting to centre donors and clientele
- Periodic revision of centre services

The main case study results will be reviewed against the new Telecentre Implementation Model.



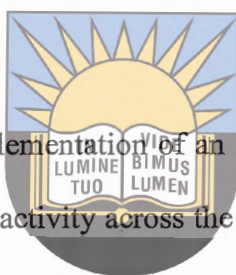
5.9 Case Study Introduction

University of Fort Hare
Together in Excellence

The importance of access to information and knowledge today is unsurpassed. For developing countries one of the most popular vehicles with which to attain mass access to enabling information and knowledge to date is the telecentre. The challenge facing developing nations has so far been the inability to utilise this important development tool effectively.

In the development context telecentre success meant the ability to meet community needs effectively and sustainably over the long term. To date ICT based development projects have remained relatively unsuccessful. Of the telecentres that have achieved success, what was lacking was the ability to take that success and replicate it on a large scale.

The results of the preliminary case study revealed that successful telecentre operation within the Eastern Cape in particular is still in its infancy and as such successful telecentres within the Eastern Cape appear to be relatively harder to locate. Because the SBTs were unable to achieve even basic operation the author was unable to utilise them as a reliable main case study basis for the purposes of this research. As a result the author chose to review telecentres across the country in an attempt to locate cases that were more broadly representative of telecentre implementation and operation within the country.



The author's approach to the implementation of an ICT operation survey is twofold. It involved an analysis of telecentre activity across the country coupled with and based on a model created as a result of in-depth research into telecentre sustainability.

University of Fort Hare
Together in Excellence

The result was the validation of factors found to be critical to the success of effective and sustainable telecentre operation. The findings of the case study are detailed in the sections that follow.

5.10 Case Study Approach⁵

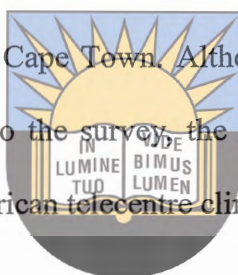
For the purposes of this research telecentre success is defined as the extent to which the telecentre is able to meet its stated objectives, coupled with the extent to which the telecentre is able to sustain itself financially. The author designed a questionnaire that

⁵ See Annexure B for Case Study Questionnaire

aimed to establish the extent to which factors linked to successful telecentre operation were present.

The centres utilised in the survey were selected with a view to providing a cross section of centres that were broadly representative of telecentre operation in the South African context.

A total of five sites were visited. This included one in Johannesburg, one in the Free State, two in Durban and one in Cape Town. Although the inclusion of more centres may have provided more depth to the survey, the centres surveyed served as a good barometer of the current South African telecentre climate.



University of Fort Hare *Together in Excellence*

More specifically the survey was administered via a semi-structured interview process. A questionnaire was developed in order to guide the interview process and ensure a foundation on which to compare and contrast the sites surveyed. The benefits of utilising this method were that of having a basis to guide the interviews while still maintaining an element of flexibility.

This questionnaire focused on ascertaining the extent to which structured centre governance and management, amongst other factors identified as significant for the achievement of telecentre success, were present. The purpose was to determine how the existence of governance and management in addition to other success factors, as identified in the Telecentre Implementation Model, affected telecentre success.

The questionnaire was divided into the following sections:

- **Centre Attributes:** addressed items such as the existence of strategic direction and objectives, operational guides, target market within the community and reporting
- **Sustainability and Governance:** addressed ownership and management, controlling structures and community representation within those structures, the separation of roles and responsibilities, terms and conditions of use, linkages with other community structures, community needs assessments, the provision of community specific information, accreditation and funding
- **Centre Statistics:** addressed average use of the centre, services utilised most often



University of Fort Hare
Together in Excellence

What follows below are the findings of the surveys conducted in Johannesburg, the Free State, Durban and Cape Town from the 23rd to the 26th January 2006.

5.11 Report Findings

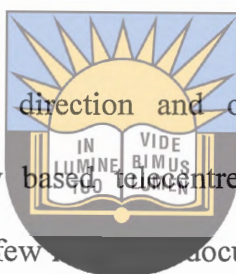
5.11.1 Centre Attributes

	Strategic Direction and Objectives	Target Market	Market Assessment	Cater for Literacy	Accounting and Reporting to:		
					Donors	Customers	Community
Qalabothja	No	Yes	No	Yes	Yes	No	Yes
Tokologoe (Chiawelo)	No	Yes	No	Yes	Yes	No	No
Kwa-Dukuza	Yes	No	Yes	Yes	Yes	Yes	Yes
USA KZN Centres	No	No	No	No	No	No	No
City of Cape Town	No	No	Yes	Yes	Yes	No	No

Table 5: Table of Centre Attributes

Centre Attributes, this section looks at whether a centre has:

- A documented strategic direction and objectives
- A specific target group within the community
- An initial market assessment
- A strategy to cater for literacy levels and
- A procedure for reporting and accounting to stakeholders



The documentation of strategic direction and objectives does not seem to be commonplace among community based telecentres. Though all indicated having strategic direction and objectives few were documented. This highlighted the fact that telecentre management seem not have a full appreciation of the importance of having documented centre mission, vision and objectives. In light of operational procedures again there appeared to be a lack of documentation and formal guidance for personnel, only one of the centres had an operations guide and suite of policies and procedures.

The telecentres though linked to their local municipal authorities in one-way or another, none could demonstrate an awareness of the local municipalities integrated development plan (IDP), neither could we establish any formal market assessment (community needs assessment) being conducted. Although only some centres run surveys with the local schools and community-based organisations, all the centres indicated that they have specific target markets within the community.

No evidence of any special ICT based activity within the centre to cater for the defined target group (women, youth, disabled, etc) existed. Except for one centre that had special programmes for specific members of the community, such as baking and sewing classes directed towards women in the community, the majority of the centres appeared to be operating on a “wholesale” approach. All centres indicated they had a strategy to deal with the literacy levels within their community. One of the most outstanding was the facilitating of training in the delegate’s mother tongue.

All the centres appeared to have reporting mechanisms to donors especially whilst under funding, although regular reporting and feedback to the community did not enjoy priority. Two centres indicated having a mechanism for reporting to and getting feedback from the community.



University of Fort Hare
Together in Excellence

5.11.2 Sustainability and Governance

	Ownership	Structures	Community Representation on structure	Separation of Roles	Daily Functions/Roles and Responsibilities	Terms and Conditions	Pages	Needs Assessments	Information Requirements	Information Repositories	Target Market	Accreditation	Revenue Needs
Qalabothja	Sec 21	Board	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	<ul style="list-style-type: none"> • Service Fees, • Phone Fees 	
Tokolooe (Chiawelo)	Sec 21	No	No	No	No	Yes	No	Yes	No	No	No	<ul style="list-style-type: none"> • Service Fees 	
Kwa-Dukuza	Sec 21	Board	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	<ul style="list-style-type: none"> • Donor Funding, • Fund raising and • Services Fees 	
USA KZN Centres	Sec 21	Board	No	No	No	No	No	No	No	No	No	<ul style="list-style-type: none"> • Service Fees • Fund Raising 	
City of Cape Town	Local CBO	Board	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	<ul style="list-style-type: none"> • Service Fees

Table 6: Table of Sustainability and Governance Attributes

Sustainability and Governance, this section seeks to establish the type and nature of:

- The centre's ownership
- Over arching structures where they exist
- Community participation in governance structures of the centre
- The separation of roles within the centre and its controlling structures
- The terms and conditions of use for the centre's patronage
- Linkages the centre has developed
- The periodic needs assessment conducted
- The way information needs are catered for
- An information repository
- Accreditations and certifications held by the centre
- The revenue needs and sources of the centre



University of Fort Hare
Together in Excellence

There seems to be consensus on the model of ownership for the community-based telecentre. All centre's interviewed indicated that they were operating under a registered section 21 entity. However the fulfilment of the board structure varied. Two have boards, which comprise non-executive membership within which community representation is catered for.

Though the section 21 model is embraced by the majority of the centres, the separation of the roles within the centre and its controlling structures appears to be ill understood or is proving difficult to implement. Of the centres interviewed two indicated that the roles of C.E.O (centre manager) and Chairperson (of board) were fulfilled by different individuals. In one centre it would appear that the development of specific function roles within the centre for its day-to-day activity does not enjoy priority.

Of the centres interviewed only one demonstrated having a terms and conditions of use document. Two centres indicated that they undertook a formal registration process for users of the centre. Only one centre indicated that it had procedures to enforce its terms and conditions of service. The registration process offers an opportunity to gauge community awareness and support but only two indicated the undertaking of user registration as an important part of the centre operations.

Based on the results of the case study linkages rank as one of the most fundamentally important aspects of a successful centre. This crucial aspect often separates a successful centre from a struggling centre. All the centres appeared to enjoy some level of linkages such as relationships with the local municipal authority, Schools, FET Colleges, provincial and national government departments.



University of Fort Hare
Together in Excellence

Though the centres have some of these relationships in place, they neither have comprehensive networks that comprise key community and other stakeholders nor do they demonstrate a leveraging of these networks by way of supporting centre operations through endeavours to reduce rates for lights and water from the local authority, secure training and IT support services for the local schools, provision of access to an array of accredited training material from the local FET colleges to mention but a few possibilities.

The conducting of periodic market assessments (community needs assessment) does not seem to be commonplace. Only one centre indicated that it used its monthly community feedback meetings to conduct periodic community needs assessments. However none

of the centres indicated being acutely aware of specific categories of information needs of their community. None of the centres, except those of the City of Cape Town make use of data repositories to service their communities; even in this case the repository is not community specific but rather stores generic information regarding various service delivery needs (these needs are not categorised by community/area).

None of the centres hold accreditations with Sector Education and Training Authority's (SETA's) or Certifications with the International Computer Drivers License (ICDL) Foundation or similar in their own names. The financial sustainability of the majority of the centres remains a low priority and a matter of "hit and miss". The value of accreditation and its link to revenue streams appears to be not understood.



University of Fort Hare *Together in Excellence*

All centres appear to be of the disposition that service fees do not hold the secret to sustainability and/or are not intended to be the lifeblood of the centre. The nature of the community based ICT centre suggests the need for creative revenue generation, because these centres are providing a service to the underserved and poor, it is difficult and often also counter-productive to charge nominal rates for access to information. The centre therefore needs to find other means of creating revenue and supporting its operations. This can be accomplished through the provision of support/auxiliary services. Only one centre appears to actively market itself, its programmes, services and its value as an advertising and marketing space.

5.11.3 Centre Statistics

	Avg. No. of people using the Centre			Services used the most	Avg. No. of people using the most common services	Canvassing for new users from non-users	Health and Safety Policy	Safety and Security
	Day	Week	Month					
Qalabothja	N/A	N/A	N/A	Unknown	Unknown	No	Yes	No
Tokologoe (Chiawelo)	N/A	N/A	N/A	Unknown	Unknown	Registration	No	No
Kwa-Dukuza	17	83	330	N/A	N/A	Actively/Flyers & Media	Yes	Yes
USA KZN Centres	N/A	N/A	N/A	N/A	N/A	Unknown	N/A	N/A
City of Cape Town	N/A	N/A	N/A	N/A	N/A	Unknown	N/A	N/A

(Please note that N/A in the table above means Not Available. In the table above not available meant that the telecentre stated that the items requested were tracked and stored but did not or could not make them available to us for a variety of reasons, whilst unknown meant that the centre had no knowledge of and/or was not keeping track of the requested item)

Table 7: Table of Centre Statistics

Centre Statistics, this section seeks to establish whether the centre measures and acts on:

- Utilisation statistics of the centre
- Service utilisation statistics
- Peak and off-peak statistics
- Community sentiment towards the centre especially the technology averse




Utilisation statistics is another aspect that does not enjoy an immense amount of focus. It would appear that the majority of centres have some kind of statistical data on utilisation. It is however done on an ad hoc basis and is primarily intended to prove that people do come to the centre and not necessarily for management decision-making. Only two centres were able to provide statistics on utilisation. Only one centre (Kwa-Dukuza) provided statistical information on the utilisation of specific services within the centre.

Inclusion of and interaction with the community is one of the most critical considerations for the continued success of a community based ICT centre. The centre needs to continuously ensure community buy in and participation both from its patrons and non-consumers of its services. The focal point of interaction with the community at large is mainly through the rendering of services by the centre and the consumption thereof by the community. Most centres advised that they advertised their services and products to the community, however only one indicated actively garnering community participation in its structures.

5.12 Analysis of Case Study Results

The centres surveyed above proved to be relatively more successful than the centres surveyed in the preliminary case study. The author attributes this to the existence of some level of governance in these centres. The survey results will be analysed based on the elements of the revised Telecentre Implementation Model listed below:

- 
- **Appropriate technology:** The technology utilised in the centres was appropriate in regards to technology fit to intended use. Similar problems in regards to maintenance of equipment and affordability were experienced. Often times due to lack of internal capacity, centres were inoperable due to faulty equipment and or networking. The problem faced within these telecentres was generally that same as those experienced by the SBTs surveyed in the preliminary case study, in that training and capacitation to both utilise and maintain the technology was still required.
 - **Interaction and cultivation of relevant knowledge ecosystems:** The centres all communicated the existence of relationships with entities in their immediate environment that displayed potential for adding value. These included relationships with the municipality in the area as well as schools and/or tertiary institutions. Centres that demonstrated greater levels of success appeared to have

mastered the art of creating and sustaining symbiotic relationships. Value was derived through sharing information and knowledge about the community in question. For example in some cases the municipality was approached in order to provide input on the demographics of the community in order to assist the centre in developing and pitching its services in the correct manner. Although this type of interaction represents an elemental level of knowledge sharing, it serves to demonstrate the potential of introducing and facilitating knowledge sharing through the cultivation of knowledge ecosystems for the benefit of successful telecentre operation.



- **An accessible and up to date knowledge and information repository:** Only one of the centres surveyed made use of a knowledge or information repository to support its operation. In the main the use of information to support centre operation was mainly in the form of registration of centre users. This element if implemented holistically could improve centre sustainability through providing access to a tool that could be utilised to facilitate a better fit between centre services and community needs.
- **An adaptable contextually appropriate model:** The method utilised to set up the centres surveyed was generally the same. In all cases some kind of market survey was conducted. Although the breadth and depth of these varied, the general trend was the better the market survey conducted the more successful the centre. Another common trend was the registration of centres as section 21 entities, this

University of Fort Hare
Together in Excellence

suggested a generally accepted legal framework within which the centre could be established and operate in. All centres had some level of centre administration in place. Although these could not be more broadly defined as governance in some cases, another common trend was the better the governance model applied the more successful the centre. Governance policies and procedures generally meant that subsequent to centre implementation or set up the centre had set guidelines on which to operate in order to ensure that it continue to meet the mandate for which it was initially developed. The existence of some degree of governance contributed substantially to these centres being relatively more successful than those surveyed in the preliminary case study.



5.13 Limitations of the Research

University of Fort Hare
Together in Excellence

A major obstacle faced in the completion of this project was access to information. The researcher found it very difficult to contact the relevant people for interview purposes as well as access supporting documentation. As a direct result of this the actual survey was limited as the researcher failed to contact specific individuals for input or gain access to requested documentation. Although the survey participants were friendly and agreeable, the major problem was in securing interview time with them.

Other limitations included the fact that telecentres implemented as part of the Connect EC project, which was chosen as the focus of this study, were not fully operational due to a variety of problems. As a result the research had to change focus slightly to discuss what

the cause of this could be attributed together with how knowledge sharing could possibly address the problem.

The administration of the database element of the model is an item that can be quite complex and as a result requires further investigation and research. A deeper analysis of telecentre activity across the country and within the Eastern Cape in particular would have enriched this research further. This was not possible due to resource constraints. As a result a more in-depth analysis of telecentre activity in the country is highlighted as a possible area for further research. Testing of the suggested model through the implementation of a telecentre based on its components is an additional area that can be informed by further research.



University of Fort Hare
Together in Excellence

5.14 Conclusion

Based on the case studies discussed in this research it can be seen that there are a number of factors that need to be considered when discussing telecentre success or failure. These include how the centre is managed internally and also how well the centre interacts with its immediate environment.

From an information systems perspective the extent to which the centre “fits” into the community can be linked to a number of factors. These include the nature of the technology utilised, the process with which the centre was established and the factors taken into account when doing so. These items have been represented in the Telecentre

Implementation Model and can be used to establish and/or gauge telecentre success or failure.



University of Fort Hare
Together in Excellence

Chapter 6: Conclusion



University of Fort Hare
Together in Excellence

6.1 Conclusion

The Telecentre Implementation Model is depicted graphically below:

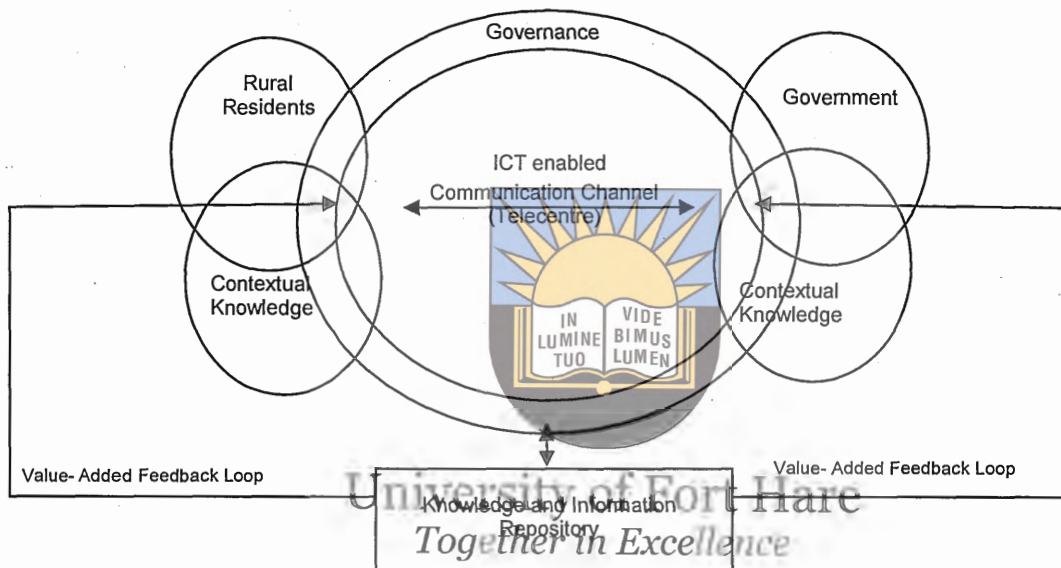


Figure 12: The Adapted Telecentre Implementation Model

The case study results indicate that the Telecentre Implementation Model is a good basis with which to gauge telecentre effectiveness and success in the long term. The governance layer that was added subsequent to reviewing the results of the preliminary case study forms a significant component of the model that in itself can sway telecentre success or failure, even in the presence of all the other success factors.

Initially the model was designed without the governance layer. The preliminary case studies revealed that even with the other model components present in some cases,

telecentre success will not be achieved without the implementation of a governance element of some kind. Further case analysis revealed that the existence of governance did indeed contribute to the success/failure of a telecentre. A comparison between the cases studied under the preliminary and main case study will reveal that apart from the mode of delivery the main differences between the cases was the extent to which some level of governance was implemented.

As a whole the research revealed that there appeared to be a relatively greater focus on the requirements of successful telecentre implementation from a project perspective. In that on the whole it appeared that telecentres can generally be run quite effectively as projects. The challenge is in the transition from project status through to telecentre establishment as a sustainable community entity. In this respect, the requirements for successful telecentre operation from an administrative/management perspective did not appear to be catered for as effectively. The Telecentre Implementation seeks to address this through the inclusion of the governance layer.



University of Fort Hare
Together in Excellence

Based on the Telecentre Implementation Model, the implementation or set up of a new telecentre would involve the following:

- An initial community needs assessment survey to ascertain that the project will indeed benefit the community and to identify synergies within the community that could facilitate the project

- The formation of a project stakeholder forum that would include members of the ICT project team as well as elected members of the community to ensure continuous community involvement and buy-in. This team would be involved in the formalisation and adoption of the ICT project plan
- A formal telecentre governance structure would be developed, discussed and widely communicated with the community that would govern access to and use of the centre by the community as well as establish centre administration and management
- The establishment of a knowledge and information repository that will facilitate service delivery to the community, as well as support communication and knowledge and information sharing with the community by government and other relevant parties
- Continuous feedback and interaction with the community to ensure that the centre remains in synch with community needs



University of Fort Hare
Together in Excellence

6.2 Closing Remarks

The digital divide is both an obstacle and an opportunity. It represents an obstacle in that it tends to magnify many of the deep-rooted challenges faced by Africa and development.

It represents an opportunity in that it calls for the innovative application of ICT and other resources, and the creative application of new solutions to old problems.

It is up to Africans to choose the perspective with which to view this new phenomenon. The author is of the view that Africa faces an opportunity as never before to re-define possibilities and re-create itself to gain maximum benefit in this new era.

One of the major challenges for ICT in Africa will be implementing the technology while still preserving the culture of indigenous populations. Bridging the “digital divide” does not necessarily mean that it is necessary to replicate the western world, what it does mean however is that it is necessary to utilise technology as a tool to assist in the development of a continent that is as proud and as well rooted in its history and culture as it is of its foundation on ICT and other proponents of a healthy and sustainable economy.



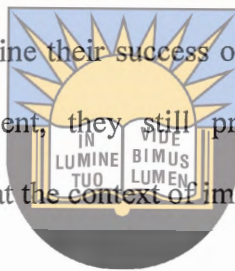
University of Fort Hare
Together in Excellence

The manner in which Africa chooses to view the “digital divide” will inform various development initiatives as well as their relative successes and failures. In this regard it is important for Africa to carefully define its desired future state and utilise ICT as a tool with which to achieve it. Remaining contextually sensitive to the environment within which ICT is to be introduced will ensure that the cultural practices of the community in question are respected and maintained.

ICTs are tools that can be used to facilitate many areas of development if they are utilised in an effective manner. The author advocates that an enabling environment for testing

various ICT development models should be developed and encouraged. This will facilitate the process of developing contextualised solutions to the challenges presented by the “digital divide”. A pilot project that tests the model developed as a result of this research would be the next logical step. This will facilitate the modification of the model in a manner that may make it more effective in meeting its stated objectives.

Before Africa can enjoy the full benefits of the telecentre it becomes important to understand the dynamics that determine their success or failure. Despite the potential of ICTs to be utilised for development, they still present the challenge of correct implementation. What is known is that the context of implementation is a critical factor in determining success or failure.



University of Fort Hare *Together in Excellence*

In this regard, research into the means with which to utilise ICT to facilitate and support various development objectives should be encouraged. This body of research serves to highlight the opportunities present for applying ICT and specifically telecentres in support of improved service delivery in rural and marginalised areas.

7. Definition of Terms

For the purposes of this research, it is necessary to further clarify the meaning of various terms:

ICTs: Information and Communication Technologies.

Chapman and Slaymaker (2002: 1) define ICTs as an assembly of technologies that can be used to collect, store and share information using multiple devices and multiple media. Heeks (1999: 3) on the other hand defines ICTs as an electronic means of capturing, processing, storing and communicating information. For the purposes of this research ICTs will be defined, based on the above, as an assembly of technologies that electronically capture, process, store and communicate information using multiple devices and multiple media.



University of Fort Hare

Together in Excellence

Rural Areas: those parts of the space economy that are least affected by the process of urbanization and therefore associated with a more dispersed pattern of population distribution and economic activity (Grimes, 2000: 13).

SBTs: School Based Telecentres

The school-based telecentres (SBTs) approach, modelled by World Links in a number of its country programmes, utilizes existing infrastructure (i.e. schools) to connect all members of the community to the Internet and has proved to be an effective mechanism

for helping marginalized communities move from the periphery of the global society (Unknown, 2004).

Sustainable Development: Sustainable Development is defined as a collection of methods to create and sustain development which seeks to relieve poverty, create equitable standards of living, satisfy the basic needs of all peoples, produce sustainable economic growth and establish sustainable political practices all while taking the steps necessary to avoid irreversible damages to natural capital in the long term (Bridges.org, 1996).



Knowledge-Based Community: The author defines a knowledge-based community as a community in which a large portion of socio-economic community activities are supported and based on a vibrant culture of knowledge creation and sharing.

University of Fort Hare
Together in Excellence

Digital Divide: The digital divide is defined as the disparity in access to technology that exists between the developed and less developed areas of the world (Bridges.org, 1996).

8. References

- Alexander, G Information-based Tools for Building Community and Sustainability.
(2000) Futures v32 (317 – 337). Available [Online]:
<http://www.elsevier.com/locate/futures>. (Accessed 22 May 2005)
- Badshah, A, Connected for Development: Information Kiosks and Sustainability.
Khan, S, United Nations ICT Task Force. 4th Publication, 58166. Available
Garrido, M [Online]:
(2003) <http://www.unicttaskforce.org/> (Accessed 5 August 2006)
- Barr, J, Maintaining the Viability of Online Access Centres in Regional, Rural
McKean, H and and Remote Australia. Available [Online]:
Glafchev, A www.dcita.gov.au/data/assets/word_doc (Accessed 15 March 2007)
(2003)
- Bridges.org Bridges.org: Spanning the Digital Divide. Available [Online]:
(1996) <http://www.bridges.org> (Accessed 17 January 2005)
- Breu, J and Knowledge Management. Available [Online]:
Hemmingway, <http://www.brint.com/km> (Accessed 17 January 2005)
D (2001)
- Bryant, A Information Systems: A discipline in Search of a Community.
(2000) Available [Online]: <http://primavera.feb.uva.nl/PDFdocs/2004-03.pdf>
(Accessed 12 April 2005)
- Burton, R, New Developments in Contingency Fit Theory. Available [Online]:



University of Fort Hare

Together in Excellence

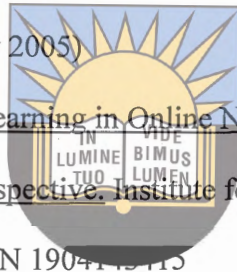
- Lauridsen, J and www.springerlink.com/index/h21353642530284g.pdf (Accessed 12 April 2005)
- Obel, B (2000)
- Cadlow, J eDemocracy: Putting down Global Roots. Institute for Electronic Government, IBM. Available [Online]: <http://www.ibm.com/industries/government/ieg/> (Accessed 2 July 2006)
- (2004)
- Castells, M The Information Age: Information, Society and Culture. Available [Online]: <http://www.h-net.org/reviews/showpdf.cgi?path=10208938118108> (Accessed 22 May 2005)
- (1998)
- Chapman, R, ICTs and Rural Development: Review of the Literature, Current Interventions and Opportunities for Action. Overseas Development Institute. Working Paper 192. Available [Online]: http://www.odi.org.uk/publications/working_papers/index. (Accessed 10 October 2004)
- Slaymaker, T (2002)
- Chen, D and Knowledge and Development. A Cross Section Approach. World Bank Research Working Paper 3366. Available [Online]: <http://www.worldbank.org/servlet/WDSContentServer> (Accessed 22 May 2005)
- Dahlman, C (2000)
- Cecchini, S Information and Communication Technology for Poverty Reduction: Lessons from India. Available [Online]: <http://old.developmentgateway.org/node/133831/sdm/blob?pid=3915>



University of Fort Hare
Together in Excellence

(Accessed 17 March 2007)

- Clark, H (2002) Speech Communication. Available [Online]: <http://www-psych.stanford.edu/~he> (Accessed 22 May 2005)
- Cromhout, P (2000) Applying Information and Knowledge Management to achieve Meaningful Service Delivery too Rural Communities. Available [Online]: www.projectliteracy.org.za/tmpl/Documents/paul%20cromhout.doc (Accessed 13 May 2005)
- Cummings, S, Heeks, R, Huysman, M (2003) Knowledge and Learning in Online Networks in Development: A Social Capital Perspective. Institute for Development Policy and Management, ISBN 1904115115 Available [Online]: <http://www.idpm.man.ac.uk> (Accessed 22 May 2005)
- Davison, M, Vogel, R, Harris, R and Jones, N (2000) Technology Leapfrogging in Developing Countries: An Inevitable Luxury. EJISDC, 1, 5 1-10. Available [Online]: www.ejisdc.org/ojs2/index.php/ejisdc/article/view/56/56 (Accessed 10 October 2004)
- Duncombe, R (1999) The Role of Information and Communication Technology for Small, Medium and Micro Enterprise Development in Botswana. Available [Online]: <http://www.man.ac.uk/idpm> (Accessed 3 November 2004)
- Drucker, P (1999) Management Challenges for the 21st Century. Available [Online]: <http://home.att.net/~nickols.htm> (Accessed 12 February 2005)



University of Fort Hare
Together in Excellence

- ECDC (2003) The Eastern Cape: An Overview. Available [Online]:
<http://www.ecdc.co.za> (Accessed 14 October 2004)
- ECDC (2004) Characteristics of the Eastern Cape. Available [Online]:
<http://www.ecdc.co.za> (Accessed 14 October 2004)
- Eastern Cape Eastern Cape Socio-Economic Consultative Council Info – Amathole
 Socio-Economic District Municipality. Information Bulletin. Volume 20
 Consultative
 Council (2003)
- O'Farrell, C, Information and Communication Technologies (ICTs) for Sustainable
 Norrish, P, Livelihoods. Available [Online]:
 Scott, A (1999) <http://www.rdg.ac.uk/AD/ea/AERDD/ICTs.html> (Accessed 26
 September 2004)
- O'Farrell, C Ten ICT Case Studies. Available [Online]:
 (2000) <http://www.rdg.ac.uk/AcaDepts/ea/AERDD/Csds.htm> (Accessed 26
 September 2004)
- O' Frank (1995) The Communication Model. Available: [Online]:
www.ait.gr/acadPrograms/ (Accessed 14 October 2004)
- Feagin, J., A Case for Case Study. Chapel Hill, NC: University of
 Orum, A., North Carolina Press.
- Sjoberg, G.
 (1991)
- Forestier, E, Can Information and Communication Technologies



University of Fort Hare
Together in Excellence

- Grace, J, be Pro-poor? Telecommunications Policy v26 (263-646) Available
 Kenny, C [Online]: <http://www.elsevier.com/locate/telpol> (Accessed 3 November
 (2002) 2004)
- Grimes, S Rural Areas in the Information Society: Diminishing Distance or
 (2000) Increasing Learning Capacity. Journal of Rural Studies v16 (13 –21).
 Available [Online]:
<http://www.elsevier.com/locate/jrurstud> (Accessed 12 April 2006)
- Garson, T Education in South Africa. *Futures* V34. (19 – 25).
 (2005)
- Harris, R (2001) Telecentres in Rural Asia: Towards a Success Model. Available

 [Online]: [http://unpan1.un.org/pantrdoc/groups/public/documents/
 /apcity/unpan006304.pdf](http://unpan1.un.org/pantrdoc/groups/public/documents/apcity/unpan006304.pdf) (Accessed 30 March 2005)
- Heeks, R (1999) Information and Communication Technologies, Poverty and
 Development. Available [Online]:
http://www.man.ac.uk/idpm_dp.htm#devinfwfwp (Accessed 27
 September 2004)
- Heeks, R and Reinventing Government in the Information Age. International
 Bhatnagar, S Practice in IT-enabled Public Sector Reform. Routledge. Great
 (1999) Britain.
- Huitt, W. Maslow's Hierarchy of Needs. Educational Psychology Interactive.
 (2004). Valdosta, GA: Valdosta State University. Available [Online]:
<http://chiron.valdosta.edu/whuitt/col/regsys/maslow.html>. (Accessed 4

November 2004)

- Jacobs, S and Herselman, M (2006) Information Access for Development: A Case Study at a Rural Community Centre in South Africa Available [Online]: <http://informingscience.org/proceedings/InSITE2006/IISITJaco113.pdf> (Accessed 17 March 2007)
- Kvale, S (1996) Interviews. SAGE Publications. United States of America
- Lahotonen, F (2001) Knowledge Management and Knowledge Sharing. Available [Online]: <http://www.brint.com/km> (Accessed 4 November 2004)
- Lim, S (2003) Power Battles in ICT Standards Setting Process. Available [Online]: <http://alexandria.tue.nl/extra2/200612032.pdf> (Accessed 30 March 2005)
- Loader, B and Keeble, L (2004) Challenging the Digital Divide? The Joseph Rowntree Foundation. Available [Online]: <http://www.jrf.org.uk> (Accessed 1 April 2005)
- Lorndon, B (1999) About Knowledge Ecology. Available [Online]: <http://www.co-i-l.com/coil/> (Accessed 5 August 2005)
- McNamara, K (2003) Information and Communication Technologies, Poverty and Development: Learning from Experience. The World Bank, InfoDev. USA.
- Mcmaster, J (1999) The Ecology of Knowledge. Available [Online]: <http://www.co-i-l.com/documentss/index.shtml> (Accessed 5 August 2005)



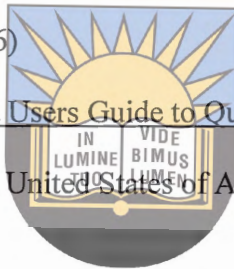
University of Fort Hare
Together in Excellence

- Malhotra, Y and Extending the Technology Acceptance Model to
 Galleta, D Account for Social Influence: Theoretical Bases and Empirical
 (2000) Validation. Futures V32 (20-34).
- Mansell, R Information and Communication Technologies For Development:
 (1999) Assessing the Potential and the Risks. Telecommunications Policy
 v23 (35 –50). Available [Online]:
<http://www.elsevier.com/locate/telepol> (Accessed 28 July 2004)
- Marker, S, The Significance of Information and Communication Technologies for
 McNamara, I reducing Poverty Available [Online]:
 and Wallace, H www.difid.gov.uk (Accessed 30 May 2005)
 (2002)
- Martella, R, Research Methods. Alyn and Bacon, United States of
 Nelson, R and America.
 Manchard-
 Martella, N
 (1999)
- Maslow, A Maslow’s Hierarchy of Needs. Available [Online]:
 (2004) <http://chiron.valdosta.edu/whuitt/col/regsys/maslow.html> (Accessed 4
 November 2004)
- Mason, J (2002) Qualitative Research in Action. SAGE Publications. Great Britain.
- Millar, J and The information revolution. In: Paths to Prosperity: Science and
 Mansell, R Technology in the Commonwealth. London: Kensington Publications



University of Fort Hare
Together in Excellence

- (1999) for the Commonwealth Secretariat, 1999, pp. 42-43.
- Mishler, E (1996) Research Interviewing. Harvard University Press. United States of America
- Molnar, S and Karvalics, L (2000) Two Models and Six types of Telecentres. A Typological Experiment. Information Society and Trend Research Institute. Available [Online]: http://www.ittk.hu/english/docs/two_models_six_type.pdf (Accessed 15 November 2005)
- Morse, J and Richards, L (2002) Readme First for a Users Guide to Qualitative Methods. Sage Publications. United States of America.
- Ndou, V (2004) eGovernment for Developing Countries: Opportunities and Challenges. EJISDC 18, 1, 1-24. Available [Online]: <http://www.ejisdc.org>. (Accessed 30 May 2005)
- Norris, P (2004) Building Knowledge Societies. The Renewal of Democratic Practices in Knowledge Societies. Harvard University, John F. Kennedy School of Government. USA.
- Obijifor, L (1998) Africa's Dilemma in the Transition to the new Information and Communication Technologies. *Futures* v30 (453 –462). Available [Online]: <http://www.elsevier.com/locate/futures> (Accessed 27 September 2004)
- PGDP (2004) The Provincial Growth and Development Plan. Provincial



University of Fort Hare

Together in Excellence

eGovernment for Developing Countries: Opportunities and Challenges. EJISDC 18, 1, 1-24. Available [Online]:

<http://www.ejisdc.org>. (Accessed 30 May 2005)

Building Knowledge Societies. The Renewal of Democratic Practices in Knowledge Societies. Harvard University, John F. Kennedy

School of Government. USA.

Obijifor, L (1998) Africa's Dilemma in the Transition to the new Information and Communication Technologies. *Futures* v30 (453 –462). Available

[Online]: <http://www.elsevier.com/locate/futures> (Accessed 27 September 2004)

PGDP (2004) The Provincial Growth and Development Plan. Provincial

Government. Bhishe.

- Pott, A (2003) Rural Development and the Flow of Information. Do ICTs have a Role? Available [Online]:
<http://www.idd.bham.ac.uk/research/dissertations/2002-2003/Alex%20pott.pdf> (Accessed 29 September 2004)
- Por, S (2001) Experts Speak Out on Knowledge Management. Available [Online]:
<http://www.pcd-innovations.com/piaug2001.pdf>
- Proenza, F (2001) Telecentre Sustainability – Myths and Opportunities
Available [Online]: <http://www.fao.org/Waicent/FAOINFO/AGRICULT/ags/Agsp/pdf/ProenzaTelecenter.pdf> (Accessed 29 May 2005)
- Radebe, T (2000) The meaning of Development, Sustainable development and Rural Development. Network for Capacity Building, Knowledge Exchange in ICT Policy, Regulations and Applications. Module 5, 59-75.
Available [Online]: <http://cbdd.wsu.edu/kewlcontent/cdoutput>
(Accessed 29 September 2004)
- Reilly and Gomez (2001) Studying the Developmental Impact of E-Governance Systems.
Available [Online]:
www.ifip.org/.../openbiblio/opac/viewDocument.php?id=85&PHPSESSID=98c95e1a87fb53e44ea3f147b1f60676 (Accessed 4 November 2004)
- SALGA (2002) Available [Online]: <http://www.salga.co.za> (Accessed 29 October



University of Fort Hare
Together in Excellence

- 2004)
- Scaidas, P Monitoring the Digital Divide and Beyond. Orbicom. NRC Press.
(2003) Canada.
- Soeftesad, ICT and Rural Empowerment Available [Online]:
Alinin, Flyman, <http://www.unipv.it/deontica/2004/papers> (Accessed 5 November
Kleibl and Die 2004)
(2004)
- Sveiby, R Knowledge Management. Available [Online];
(2001) <http://www.brint.com/km> (Accessed 29 September 2004)
- Tellis, W (1997) Application of a Case Study Methodology. Available
[Online]; <http://www.ncss.com/QR/QR3-3/tellis2.html> (Accessed
18 July 2005)
- The Department Provincial Summary Report 2004. Available [Online]:
of Education <http://www.doe.co.za> (Accessed 15 July 2005)
(2004)
- The Connect Connect Eastern Cape. PGITO. Eastern Cape Provincial Government.
Eastern Cape Bhisho.
Concept
Document
(2003)
- The Harvard Use IT to Promote Equal Opportunity and Healthy Communities.
Policy Group Harvard University, John F. Kennedy



University of Fort Hare

Together in Excellence

The Department of Education
(2004)

The Connect Eastern Cape
Eastern Cape

Concept
Document
(2003)

The Harvard Policy Group

- (2002) School of Government.
- The Harvard Policy Group Form IT Related Partnerships to Simulate Economic Competitiveness. Harvard University, John F. Kennedy
- (2004) School of Government.
- Thomson, M ICT, Power and Developmental Discourse: A Critical Analysis.
- (2004) EJISDC, 20, 4, 1-25. Available [Online]:
<http://www.is.cityu.edu.hk/research/ejisdv20/v20r4.pdf> (Accessed 15 July 2005)
- UNESCO Information and Communication Technologies in Development: A
 (2003) UNESCO Perspective. Available [Online]:
<http://www.UNESCO.org> (Accessed 24 October 2004)
- Unknown Wired in Uganda Case Study. Available [Online]:
 (2004) http://www.itu.int/osg/spu/wsis-themes/ict_stories/Wiredinugandacasestudy (Accessed 17 April 2005)
- Weigel, P and Waldburger, O ICT4D – Connecting People for a Better World: Lessons, Innovations and Perspectives of Information and Communication Technologies in Development. The Swiss Agency for Development and Cooperation (SDC) and the Global Knowledge Partnership (GKP), Available [Online]: <http://www.elids.org> (Accessed 1 May 2005)
- Yin, R. (1994). Case study research: Design and methods (2nd Ed.). Thousand Oaks, CA: Sage Publishing.
- Young, J A Preliminary Evaluation of Online Access Centres: Promoting Micro



University of Fort Hare
Together in Excellence

Ridley, G, E-business Activity In Small, Isolated Communities. The Electronic
Ridley, J (2001) Journal on Information Systems in Developing Countries. V4 (1-16)
Available [Online]:<http://www.ejisdc.org> (Accessed 12 October 2004)



University of Fort Hare
Together in Excellence

9. Appendices

9.1 Appendix A: Preliminary Case Study Questions

9.1.1 Semi-structured Interview with Songezo Masiso – Project Co-ordinator

26 May 2005



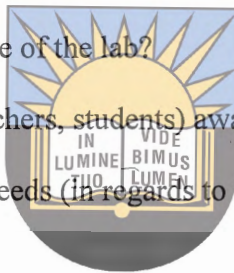
1. What is the current status of the project?
2. Are all stakeholders fully involved in the project?
3. What criteria were used to prioritise schools for implementation?
4. Is there a set duration for this project?
5. What are some of the main obstacles you encountered thus far?
6. Have you gained input from similar projects in other provinces?
7. How involved is the community in the project?
8. How are schools monitored after set-up?
9. To what extent do you encourage public/private partnership in this project?
10. How aware is the Eastern Cape public of this project?
11. How do you feedback information to stakeholders about project status?
12. How is sponsorship of the project encouraged?
13. What software do you plan to use for this project?
14. What does the training component of this project entail?

9.1.2 Semi-structured Interview conducted with Kuhle Lower Primary School

30 May 2005

Participants: *Principal, 1 Teacher, Project Co-ordinator*

1. How has the project gone (describe process, obstacles, and benefits)?
2. Do you have any training needs?
3. Does the community make use of the lab?
4. Is the entire school (other teachers, students) aware of the project?
5. Do you have any additional needs (in regards to project, support etc)?



9.1.3 Semi-structured Interview conducted with Jongile Nonpondo School
Together in Excellence

23 June 2005

Participants: *Principal, 1 Teacher, Project Co-ordinator*

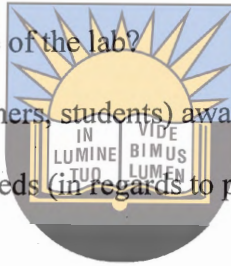
1. How has the project gone (describe process, obstacles, and benefits)?
2. Do you have any training needs?
3. Does the community make use of the lab?
4. Is the entire school (other teachers, students) aware of the project?
5. Do you have any additional needs (in regards to project, support etc)?

9.1.4 Semi-structured Interview conducted with Ngwenyathi S.S.S

23 June 2005

Participants: Principal, 1 Teacher, Project Co-ordinator

1. How has the project gone (describe process, obstacles, and benefits)?
2. Do you have any training needs?
3. Does the community make use of the lab?
4. Is the entire school (other teachers, students) aware of the project?
5. Do you have any additional needs (in regards to project, support etc)?



University of Fort Hare
Together in Excellence

9.2 Appendix B: Case Study Questionnaire

CENTRE INFORMATION

Name of Centre: _____ Location of Centre: _____

Address: _____

Contact Person: _____ Role/Function: _____

Tel: _____ Fax: _____

Email: _____ Cell: _____

Website: _____

Donor(s): _____



CENTRE ATTRIBUTES

1. Does the Centre have: **University of Fort Hare**
Together in Excellence

1.1. Strategic direction & objectives:

1.1.1. Yes

1.1.2. No

1.1.2.1. If yes, what are they? (*Supply copy*)

1.2. A day to day operations guide (*supply copy*)

1.2.1. Yes

1.2.2. No

1.2.2.1. If yes, what are its focal areas?

1.3. A specific target market within the community

1.3.1. Yes

1.3.2. No

1.3.2.1. If yes, what is the specific target market?



1.3.2.2. Was there a market assessment done? (*Supply copy*)

University of Fort Hare
Together in Excellence

1.4. A way to cater for literacy levels of the target market within the community

1.4.1. Yes

1.4.2. No

1.4.2.1. If yes, How?

1.5. A way to account and report to:

1.5.1. Donors:

1.5.1.1. Yes

1.5.1.2. No

1.5.1.2.1. If yes, How?

1.5.2. Customers:

1.5.2.1. Yes

1.5.2.2. No

1.5.2.2.1. If yes, How?

1.5.3. Community:

1.5.3.1. Yes

1.5.3.2. No

1.5.3.3. If yes, How?



SUSTAINABILITY AND GOVERNANCE

2. Ownership and management of the centre

University of Fort Hare
Together in Excellence

2.1. Who owns the centre?

2.1.1. Individual(s)

2.1.2. Community Based Organisation (CBO)

2.1.3. Non-Governmental Organisation (NGO)

2.1.4. Registered Company (CC, Pty, Pty Ltd)

2.1.5. Local Government Authority (Municipality)

2.1.6. Other (Specify): _____

2.2. Does the centre have an overarching structure such as a Steering Committee, Board, Executive Council, etc?

2.2.1. Yes

2.2.2. No

2.2.3. If yes, what kind of structure does the centre have (e.g. Steering Committee, Board Executive Council etc)?

2.2.4. If yes, is there community representation on this structure?

2.2.4.1. Yes

2.2.4.2. No

2.2.4.3. If yes, how is community representation catered for?



2.3. Does the centre separate roles and responsibilities in terms of Corporate Governance?

2.3.1. Yes

2.3.2. No

2.3.3. If yes, what key roles and responsibilities have been separated?

University of Fort Hare
Together in Excellence

2.4. Does the centre separate roles and responsibilities in terms of its daily functions?

2.4.1. Yes

2.4.2. No

2.4.3. If yes, what key roles and responsibilities have been separated?

2.5. Does the centre have Terms and Conditions of use for users of centre?

2.5.1. Yes

2.5.2. No

2.5.3. If yes, what are the key terms and conditions? (*Supply Copy*)

2.6. Does the centre have linkages with other community-based structures such as NGO's, NPO, LGA, Office of People with Disabilities (OPD), etc?

2.6.1. Yes

2.6.2. No



2.6.3. If yes, please explain? (*Supply Copy*)

University of Fort Hare
Together in Excellence

UNIVERSITY OF FORT HARE
HOWARD PIN LIBRARY
PRIVATE BAG X 1822
ALICE 5700

2.7. Does the centre conduct periodic community needs assessments and forward planning?

2.7.1. Yes

2.7.2. No

2.7.2.1. If yes, does the centre involve the community in its periodic community needs assessments and forward planning?

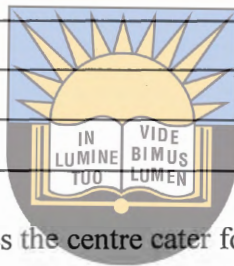
2.7.2.1.1. If yes, How?

2.8. Is the centre aware of any specific categories of information required by the community?

2.8.1. Yes

2.8.2. No

2.8.3. If yes, what categories is the centre aware of?



2.8.3.1. If yes, how does the centre cater for these specific categories of information required by the community?

University of Fort Hare
Together in Excellence

2.8.4. Does the centre maintain a repository of community specific information?

2.8.4.1. Yes

2.8.4.2. No

2.8.4.3. If yes, how is this information made accessible to the community?

2.9. Does the centre cater/provide for the needs of a specific group of people within the community such as youth, women, children, people with disabilities, etc?

2.9.1. Yes

2.9.2. No

2.9.3. If yes, whom?

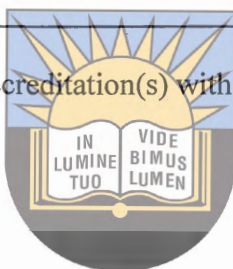
2.9.4. If yes, how are these people catered for?

Does the centre hold registration(s)/accreditation(s) with:

2.9.5. ISETT SETA,

2.9.6. ICDL Foundation

2.9.7. Other (*specify*)



University of Fort Hare

Together in Excellence

2.10. How does the centre meet its fund(s)/revenue needs?

CENTRE STATISTICS

3. Utilisation and Policies on Access and Use

3.1. What is the average number of people using the centre per:

3.1.1. Day:

3.1.2. Week:

3.1.3. Month:

3.2. What services of the centre are used the most?

3.3. What is the average number of people using each of the services listed above?



University of Fort Hare
Together in Excellence

3.4 Does the centre actively canvass for more users from non-users of the centre within the community it serves?

3.4.1 Yes

3.4.2 No

3.4.3 If yes, How?

3.5.1. Terms and Conditions of use of the centre

3.5.1.1. Yes

3.5.1.2. No

3.5.1.3. If yes, what are the salient aspects of the policy? *(Supply copy)*



University of Fort Hare
Together in Excellence