

**THE MANAGEMENT AND PRESERVATION OF INDIGENOUS
KNOWLEDGE IN DLANGUBO VILLAGE IN KWAZULU-NATAL, SOUTH AFRICA**

by

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DECLARATION

I declare that thesis entitled “**The management and preservation of indigenous knowledge in Dlangubo Village in KwaZulu-Natal, South Africa**” is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

SIGNATURE
(Mrs N Zimu-Biyela)

DATE

ABSTRACT

The objectives of this study were to establish various practices of indigenous knowledge (IK) commonly used in the Dlangubo village, and methods and tools used in managing IK; to determine ownership protocols and what they know about the South African (SA) intellectual property (IP) laws; to explore the role of libraries and information and communication technologies (ICTs) in managing IK and, lastly, what model can be developed for the management of IK in the Dlangubo village, in KwaZulu-Natal province in South Africa. In order to gain more insight about the problem studied, the socialisation, externalisation, combination and internalisation (SECI) model of knowledge management and the diffusion of innovation (DoI) model were adopted. The SECI model helped in understanding the modes of knowledge creation and transfer that were used in managing IK in the area of study. The DoI model was important in understanding the perceptions of the community about the South African intellectual property (IP) laws, the libraries and the ICTs in managing IK.

This study used the constructivist theoretical underpinning and adopted the qualitative approach in order to inquire in depth and explore the studied phenomenon in the natural setting of the Dlangubo village. This approach allowed the researcher to engage in an in-depth interviewing process with the participants in order to explore IK management challenges and then get empirical evidence about the area studied. Flowing from the qualitative approach, the grounded theory (GT) was adopted because it uses the systematic inductive approach to inquiry followed by a constant comparison of categories in order to generate theory, which is grounded in data of the sampled participants of the Dlangubo village.

The findings of the study indicated that the practices that were predominantly used in the area of study included agricultural crop farming and livestock keeping, the initiation of girls into adulthood and beadwork. The in-situ preservation strategies were more common than the ex-situ preservation strategies. Most of the respondents indicated that they acquired IK through apprenticeship of family line. The majority did not have knowledge or had insufficient knowledge about the South African IP laws. In addition, they were not using the libraries and the ICTs in managing their IK. The model that was recommended was to have the cultural information centre where they can sit together and share their IK and skills, and market their finished products.

Key terms: Indigenous knowledge; Management; Preservation; South African intellectual property laws; Libraries; Information and communication technologies; SECI model; Diffusion of innovations; Qualitative method; Grounded theory.

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Ranko-Ramali, Mathipha and Gumbo (2014:4) asserted that earning one's doctorate is much more about persistence and resilience than it is about intelligence. Acquiring a doctorate degree consists of 90 per cent resilience and perseverance and probably one per cent intellect. Where would I have gathered that persistence and resilience from without the untiring support, coaching and mentoring from my supervisors: Prof. Luyanda Dube and Prof. T B van der Walt. Many times, I was tempted to drop out of my studies but my primary supervisor, Prof. L Dube, kept on motivating me to the final destination.

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DEDICATION

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LIST OF ACRONYMS

CBD	Convention of Biological Diversity
CEDAW	United Nations Convention on the Elimination of all Forms of Discrimination Against Women
CEO	Chief Executive Officer
CIC	Community Information Centre or community-focused information centre
CRDP	Comprehensive Rural Development Programme
CRDP	Comprehensive Rural Development and Land Reform
CRM	Customer Relationship Management
CoGTA	Cooperative Governance and Traditional Affairs
CWP	Community work Programme / Project
DA	Department of Agriculture
DAC	Department of Arts and Culture
DISA	Digital Imaging Project of South Africa
Dol	Diffusion of Innovation theory
DRDLR	Department of Rural Development and Land Reform
DST	Department of Science and Technology
DUT	Durban University of Technology

GDP	Gross Domestic Product
GT	Grounded Theory
HSRC	Human Sciences Research Council
HSRC-LIS	Human Sciences Research Council and Library and Information Services Unit
HIV/AIDS	Human Immuno Virus / Acquired Immuno Deficiency Syndrome
ICCPR	International Covenant on Civil and Political Rights
ICTs	Information and Communication Technologies
IDTI	Independent Development Trust Institute of South Africa
IFLA	International Federation of Libraries and Association
IK / IKS	Indigenous Knowledge / Indigenous Knowledge Systems
IL	Information Literacy
IOP	Izulu Orphan Project
KM	Knowledge Management
LFS	Labour Force Survey
MDGS	Millennium Development Goals
NRS	National Recordal System of South Africa
NTLIS	The Northern Territory Library and Information Services

NGO	Non-governmental organisation
PLA	Participatory Learning Action
PRA	Participatory Rural Appraisal
RRA	Rapid Rural Appraisal
SA-IP	South Africa-Intellectual Property Laws
SECI	Socialisation, Externalisation, Combination and Internalisation
TDKLS	Traditional Digital Knowledge Library Services
UNCED	United Nations Conference on Environment and Development
UNDHR	United Nations Declaration of Human Rights
UNDRIP	United Nations Declaration on the Rights of Indigenous People
UNESCO-WIPO	United Nations Education, Scientific and Cultural Education – World Intellectual Property Laws
UNISA	University of South Africa

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CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

Indigenous knowledge (IK) has gained momentum due to its importance as a strategic resource for development in the lives of the majority of the world's population. IK plays a significant role in various aspects of life like poverty alleviation, medicinal treatment, conservation of natural resources and it is also helpful in decision-making and problem-solving at local, national and international levels (Mwaura 2008:9, 10, 13; Raphesu 2010; World Bank 1998:1). The importance of Indigenous Knowledge Systems (IKS) in problem-solving is emphasised by Maila and Loubser (2003:277) when they define it as: 'that body of accumulated wisdom that has evolved from years of experience and trial-and-error problem solving by groups of people working to meet the challenges they face in their local environments, drawing upon the resources they have at hand'.

The term 'indigenous knowledge' covers a wide spectrum, hence the question 'What qualifies as legitimate indigenous knowledge?' remains the subject of legal and ethnic community debates. This is due to the fact that not all IK is rational and others need some refinement (Kaniki & Mphahlele 2002:3; Masango 2010:78-79; Mwaura 2008:31). It is, therefore, important that Africa should build on all the valuable IK and relinquishes all that is deskilling or disempowering and is disastrous to her development, advancement and sustainability (Maila & Loubser 2003). IK has existed since the beginning of humanity (Kaniki & Mphahlele 2002:2), but continues to have varied terms and definitions (Chisenga 2002:16). For example, various

authors use the anthropological approach to understand the characteristics of IK and prefer to call it folk knowledge or traditional knowledge (Chisenga 2002; Makinde & Shorunke 2013; Masango 2010:78; Morris 2010:1). Similarly, Mugwisi, Ocholla and Mostert (2012:102); Ocholla (2007:2); Ocholla and Dlamini (2007:1-2); and Ocholla and Onyancha (2005:247) define IK as local / traditional / folk knowledge, ethnoscience which is a dynamic archive of the sum total of knowledge, skills and attitudes belonging to, and practised by, a community over generations and is expressed in the form of action, objects and sign language for sharing. In the same tone, Makinde and Shorunke (2013) identified three broad aspects of IK as including traditional knowledge that is inter-generational knowledge and passed from generation to generation, empirical knowledge that is based on observations of the surrounding environment (nature, culture and society), and revealed knowledge that is provided through dreams, visions and intuition. Morris (2010:1) purports that IK is linked to humans who consciously and unconsciously interact with their environment and with each other through the use of language and symbols. For Morris (2010:1) all human beings, whether in urban or rural areas, carry some elements of traditional knowledge with them. He cautions that the argument that urban people might not be using their traditional knowledge in their day-to-day decision-making activities as rural people do, is debateable (Morris 2010:1).

Based on the foregoing argument, it is clear that there is no universal definition for IK. However, there seems to be consensus on the fact that IK is dynamic and evolving, it is multi-disciplinary in nature and it can be represented in tacit and explicit forms, albeit in differing proportions. Flowing from this standpoint, this study focuses on the management of both tangible and intangible IK and the role of libraries in managing both dimensions. Since IK is largely tacit, the socialisation,

externalisation, combination and internalisation (SECI) model has been adopted in order to understand IK management in the Dlangubo village. This model promotes the creation, the sharing and the management of knowledge (Mandrulianu 2008:118; Nonaka & Toyama 2003:4-6). According to Ngulube (2003), the SECI model provides a holistic approach in the management and preservation of IK. It promotes the use of both in-situ and ex-situ preservation methods, the process that implicates the management of both tacit and non-tacit IK. Stevens (2008) further acknowledges that, in the knowledge management arena, tangible and intangible knowledge can complement each other. However, Ocholla (2007:2) is of the view that the need for the integration of IK into the mainstream of knowledge management has not been fully realised in Africa, hence the importance of this study that aims to understand the state of IK management and preservation in the Dlangubo village, KwaZulu-Natal province in South Africa.

Various scholars are of the view that digitisation is a mechanism used to provide the long-term preservation of an item, but not lifetime preservation needs (Keakopa 2008; Peters 2003:80-81). Similarly, Koenig (as cited in Muswazi 2001:251) argues that codification is the process of creating structured information and knowledge sources through the use of information communication technologies (ICTs). This is another strategy for preserving IK. The aim for codification is to organise and manage knowledge to facilitate knowledge sharing and dissemination. For many years, various institutions, including libraries, have organised and preserved knowledge (Muswazi 2001:251). Over the years, the management and preservation of knowledge has been influenced by the advancement in technological developments. For instance, Akinwale (2012:4) posits that ICTs have changed the landscape in the management and preservation of knowledge in general and IK in

particular. The evolution of ICTs has brought about digitisation as the process of codifying information or knowledge for the purpose of preserving for posterity as well as global dissemination. He indicates that digitisation comprises two stages: the early stage and the advanced stage. The early stage of digitisation includes the transfer of information from analogue to digital. The advanced stage involves the management of digitised records, like the creation of metadata schema in order to manage access to digitised records (Akinwale 2012:4). According to Akinwale (2012:4), research on digitisation has been based on two basic perspectives – the library-oriented approach and the culture-oriented approach. The focus of this study was to determine whether the two approaches could be integrated in terms of the in-situ and ex-situ management methods to manage and preserve IK. The study looked at how the SECI model and libraries and their resources were used as management strategies in the sharing and dissemination of IK locally, nationally and globally.

Many theoretical and empirical studies have been conducted to assess IK management and preservation. Specifically, these studies focused on management and preservation challenges as well as knowledge management approaches that can be used to manage and preserve IK in developing countries (Anwar 2010; Hart & Vorster 2006; Lwoga 2010; Mukuka 2010a:39; Ngulube 2002, 2003; Peters 2003; Raphesu 2010; Stevens 2008; Worthington 2003). For example, Anwar (2010:11) argues that a collection development policy must serve as a starting point for IK collection development projects. It must assist in identifying knowledge holders, recording procedures, repackaging, dissemination and preservation of IK. Peters (2003:80) is of the view that effective projects for the preservation of heritage resources should be programme based. The selection criteria should take into consideration the value of items, risk for damage and level of use. Ngulube's

(2002:96) theoretical study has identified some of the major challenges to the management and preservation of IK collection as including development policies, accessibility, storage and preservation media, and intellectual property rights. He argues that IK is largely tacit, but it can be articulated both tacitly and explicitly through the use of the SECI model. In that way, IK remains embedded in communities that use it (Ngulube 2003). He differentiates between preserving in-situ and ex-situ and indicates that both approaches have their pros and cons, but can complement each other for better solutions. In-situ preservation is explained as preservation of knowledge in its original form, for example, artefacts, and also singing and dancing. The in-situ preservation method ensures the management and preservation of IK without taking it away from the people. Preserving in-situ is important as there is an argument that knowledge linked to objects and traditional social activities like dances has a high probability of being sustained for posterity and it is also important for capacity building and socio-economic development (Mire 2007:67-69; Ngulube 2003:26). For ex-situ preservation, the use of taxonomies, databases, thesauri, bibliographies, inventories, registers and knowledge centres has been recommended (Ngulube 2002:96-98).

Berckmoes (2008), Masango (2010) and Mukuka (2010a) assert that putting IK on databases is a challenge as it exposes IK to abuse. Therefore, communities should be educated about the advantages and disadvantages of these innovative tools. Lessons can be learnt from the successful projects like the Traditional Knowledge Digital Library (TKDL). In this database, India documents its traditional medicines and uses a patenting system to protect it from abuse. This model has been adopted by the World Intellectual Property Organisation (WIPO). India has also taken the lead internationally in arguing for the protection of traditional knowledge (Anwar 2010:11;

Green 2008:50; Mashelkar 2002:194). Given the challenges highlighted above, the importance of this scientific study cannot be over-emphasised as it strove to address the gaps that have been identified by the other studies. The objectives of the study were to establish IK practices that were commonly used for daily survival in Dlangubo village, to establish methods and tools that were used for managing and preserving IK, to determine ownership protocols and what they knew about the South African intellectual property law system and to determine the use and role of libraries, databases and ICTs in managing and preserving IK. Notwithstanding IK management challenges mentioned in other studies, this study concurs with other IK proponents that there is less empirical evidence (Lwoga, Ngulube, Stilwell 2010:176; Njiraine, Ocholla & Onyanha 2010:194) about IK management challenges in developing countries, including South Africa.

Due to the inherent value of IK and its propensity to exploitation and marginalisation, its management and preservation cannot be done in a vacuum; it is supposed to be anchored on a legislative framework that will be the overarching frame for preserving IK. For instance, the South African IKS Policy underlines the importance of putting IK on databases and the importance of protecting it through the use of the South African Intellectual Property Law Amendment Bill of 2008 (Department of Science and Technology IKS Policy 2008). This is a critical issue because the South African Intellectual Property Law Amendment Bill (2008) has received some criticism. In South Africa, the intellectual property rights (IPRs) consist of four Acts: Copyright Act, Patents Act, Design Act, and Trade Mark Act. The Copyright Act No. 98 of 1978 protects the subject matter of the original author from abuse for a certain limited period. The Patents Act No. 57 of 1978 protects the patented work from abusers for a certain limited period. The Designs Act No.195 of 1993 protects the designs of

things like artefacts, paintings designs and various industrial designs. The Trademark Act No. 194 of 1993 protects the value of a successful trademark, service mark, or trade dress from being misappropriated by external forces (Masango 2010:77; Mukuka 2010b:137-207; Saurombe 2009:198). When the term of protection for a patent, copyright, design and trademark lapses, the protected work or creation enters the public domain again, to be more or less freely used by others (Varadarajan 2011:383). Mukuka (2010b:137-207) argues that indigenous communities need rights that exist in perpetuity.

During 2008, challenges of the South African Intellectual Property Law Amendment Bill (2008) were brainstormed at a workshop at the North West University in South Africa, which included academics, traditional healers, indigenous community representatives and students. The shortcomings that were highlighted included that it allowed individuals to protect their inventions and intellectual property rights at the expense of communal property rights, traditional communities did not understand the role of databases and ownership of such mechanisms, the registration process followed the first-come-first-serve approach and it can be abused by the powerful who have resources and access to relevant offices, some communities felt that they needed and should be afforded methods of protection other than the Bill, traditional communities felt that there was no need to follow a renewal process that is cumbersome, the Bill was silent about the protection of traditional healing methods that are associated with taboos, they resisted the influence of Western technology, research on traditional foods was lacking in the Bill, the Bill was silent on the resolution of disputes, yet it is highly likely that disputes would arise when communities and individuals fight for benefits. Provision of conciliation and arbitration in terms of the Arbitration Act of 1995 could help the advisory purpose of the Council.

The Bill must then indicate and state the terms of reference of the Council with regard to alternative dispute resolution. Although the Bill had received some criticism, it also brought about some improvements. These improvements included the issue of inclusivity of the indigenous community as one of the core elements in the Bill (Saurombe 2009:200-201).

It is not within the scope of this study to provide a detailed discussion of the Bill but it is important to understand how some stipulations protect the original inventors of IK, either as individuals or collectively. This knowledge can be integrated into the community's existing knowledge. In that way, the community can make comparisons between the advantages and disadvantages of traditional preservation methods relative to modern methods. Consequently, informed decisions can be made on what to adopt and what not to adopt when managing their IK for sustainable development purposes.

Based on the foregoing arguments, the inherent value of IK cannot be disregarded. The International Federation of Library Association (IFLA) (2002) acknowledges that due to its value and importance there is a need to manage it holistically and protect it through the use of intellectual property laws (IFLA 2002). The IFLA and Library and Information Science (LIS) scholars assert that libraries can play a crucial role in facilitating the projects for the collection, preservation, dissemination and sharing of IK. They can assist in facilitating access to the internet, databases and various ICTs that help in the management of IK. They can also assist in educating communities about intellectual property rights (Anwar 2010; Anyira, Onoriode & Nwabueze 2010; Greyling 2008; Kniffel 2007). Davis (2009), Mutula (2008) and Ocholla (2009) agree that libraries can assist in providing relevant local content, including IK, to the local people. Raju and Raju (2010:5) assert that libraries can help to facilitate the

repackaging of information so that it becomes re-usable information. However, some IK scholars argue that in their endeavour to fulfil the IFLA's mandate, libraries are thwarted by many challenges, such as lack of financial resources, human capacity, technology shortages and the lack of strong legal frameworks at national and international level to support the library efforts to document and communicate IK (Sithole 2007:117). For example, Chisita (2011) argues that African libraries do not have sufficient technological skills to manage oral traditions. Because of the above limitations, some IK scholars recommend a multidisciplinary collaborative approach in IK management activities (Mondo, Baryamureeba & Williams 2007; Ngulube 2002:96-97). Dadzie and Van der Walt (2015:96) argue that librarians need to be multi-skilled.

Despite the above challenges, in some countries, libraries and knowledge centres have taken the initiative of digitising their IK, for instance, India with its database called the Traditional Knowledge Digital Library (TKDL) (Chakravarty 2010) and Australia with its project called the Northern Territory Library and Information Service (NTLIS), which was started in June 2004 (Richmond 2005:30). Calls have been made to codify and digitise IK before much is lost, but this study agrees with other IK scholars that, in Africa, it is not clear to what extent documentary heritage digitisation projects are being undertaken (Britz & Lor 2004). Furthermore, Britz & Lor (2004) indicate that one of the more significant projects in sub-Saharan Africa is known as the Digital Imaging Project of South Africa (DISA). In South Africa, DISA has been established to operate within the internationally accepted standards of regulated open access. Some of its key objectives were to increase visibility of heritage resources and to provide archivists and librarians of the African continent with knowledge and expertise in digital imaging, specifically of IK, and in this way bridge

the knowledge and digital divide (Peters 2003:82-84). However, it is not clear whether these objectives have been realised fully. Kalusopa and Zulu (2009) further underline that most African countries have been grappling with identifying strategies that they can use to deal with digital preservation strategies. Three years later Akinwale (2012) confirms Kalusopa and Zulu's (2009) views. Consequently, IK has not been adequately represented in African libraries (Adeniyi & Subair 2013:1; Mutula 2008:111; Ocholla 2009:21). This under-representation of IK in libraries has been a cause for concern in Africa (including South Africa as a country with a rights-based constitution). For Bakker and Muller (2010:49), a rights-based constitution implies that each society has a right to take part in the management and preservation of its cultural heritage resources. Article 27 of the Universal Declaration of Human Rights (UNDHR), which was adopted in 1948, and the Constitution of the Republic of South Africa, No. 108 of 1996, state clearly that everyone has the right to participate freely in the cultural life of the community, to enjoy the arts and share in scientific advancement and its benefits. Therefore, recognizing such rights would mean defining and understanding the knowledge society and information society as inclusive. It would mean not to relegate the benefits of information systems (IS) and knowledge systems (KS) only to information elites (Mukuka 2010a:39; Ocholla 2009:21; Odora-Hoppers 2002b: 85). But this right does not seem to be fully realised in the South African libraries including school libraries as access to information relevant for diverse users is still a challenge (Mojapelo & Dube 2014:8).

While some IK researchers argue that South Africa (like Brazil and India) has made great strides in improving IK management and preservation by introducing an IKS Policy in 2004, the National Indigenous Knowledge Systems Office (NIKSO) in 2006, the Intellectual Property Bill Act as amended in 2010 and Indigenous Knowledge

Systems Bill in 2014 (Adam, n.d.; DST 2014; Green 2008; Moahi, n.d.), Raphesu (2010) argues that it still experiences the challenges of IK management and preservation like other developing countries. Although not limited, challenges highlighted include scarcity of dedicated taxonomists to study biodiversity, lack of organisational structures to promote good management of IK and exploitation of IK. Furthermore, Raphesu (2010) recommends the importance of raising awareness through the use of advocacy campaigns and community-based structures that can be used to educate communities about various government initiatives that aim to assist in promoting good IK management and preservation.

1.2 Problem statement

Mainstream literature in the field of IK concurs that indigenous knowledge has at least been side lined, ignored, negated, and at worst denigrated, misunderstood or mismanaged (Chisa & Hoskins 2015:57; Chisita 2011; Kaniki & Mphahlele 2002; Lwoga, Ngulube & Stilwell 2010:176; Ocholla & Dlamini 2007). This has negatively impacted not only on the value, purpose, growth, sustainability of IK but it has also eroded indigenous values and beneficiation to indigenous communities. For many years indigenous communities have used their oral tradition tools in managing IK like story telling; apprenticeship and social structures or CoPs (Rogers 2003; Stevens 2008). Because IK is largely tacit and embedded in the mind of the beholder continuity of knowledge has been affected by a number of factors like migration, urbanisation, limited or lack of social cohesion, death of the knowledge holder and limited or lack of documentation (Akinwale 2012; Moahi, n.d.). Although some scholars are of the view, that projects about the documenting of IK including scholarly literature were gradually improving (Lor 2005; Ocholla & Onyacha 2005) but Akinwale (2012) contends that Africa still lags behind in terms of documenting its

IK especially the one for grassroots innovators and not scholarly work. It is apparent that traditional management tools can no longer offer absolute solutions to IK management challenges. On the other hand, the contemporary innovative IK management strategies like digitisation; ICTs; libraries and intellectual property have neither provided an absolute answer to IK management challenges as IK continues to be appropriated. Flowing from the issue of using different methods, tools, platforms and technologies of managing IK is the issue of ownership protocols as IK gets distorted and occasionally gets lost when transferred from tacit to non-tacit format (Bradsher 1991:148-149; Ocholla 2007:4; Ocholla & Dlamini 2007:4). This is due to the lack of appropriate policy standards and protocols that accommodate the indigenous socio-cultural realities of indigenous communities (Chisa & Hoskins 2015:25; Janke 2005:107-110; Mukuka 2010b:12). In view of the foregoing arguments it was deemed important to conduct scientific investigation regarding IK management in South Africa and particularly in Dlangubo village. The study sought to gather empirical evidence on what innovations are needed to ensure that IK is managed for sustainable development purposes in Dlangubo village.

1.3 Research purpose and objectives

The purpose of the study was to understand the state of IK management and preservation in the Dlangubo village, KwaZulu-Natal province in South Africa.

The objectives the study were as follows:

1. To establish IK practices in Dlangubo village.
2. To establish methods and tools used for managing and preserving IK.
3. To determine the ownership protocols for the various IK practices and what they knew about the South African intellectual property law system.

4. To determine the use and role of libraries, databases and ICTs in managing and preserving IK.
5. To develop a model to manage and preserve IK.

1.4 Contextual background

In 2004 the South African government introduced IKS Policy. One of the aims was to redress the imbalances of the past of the marginalisation of IK. The policy comprised of four key areas of IK development. They included, affirmation of African cultural values in the face of globalisation; development of services provided by IK holders and practitioners; contribution of indigenous knowledge to the economy; and integration of IK with other knowledge systems (DST 2004) are important for inclusive rural development. For Hart & Vorster (2006:14) while all four key areas are critical but two and three are more notable in contributing towards the improvement of poor health and also in reducing poverty in Africa. In addition to that in 2014 the Department of Science and Technology promulgated IKS Bill with an aim of further improving IK management in the country. While the initiatives are acknowledged it is not very clear whether they have made desired impact regarding IK management of the rural communities with specific reference to the Dlangubo community.

1.4.1 Background about Dlangubo village

Dlangubo village also known as Dlangubo Traditional Council is a small rural village, which is situated a couple of kilometres away from the town called Empangeni in the KwaZulu-Natal province. The village is subdivided into eight sub-places called Bonisani, Dlangubo, Fasimba, Enqoleni, Khabingwe, MngaMpondo, Mqadayi and Nomyaca. A headman manages each sub-place. All headmen report to the chief. Dlangubo village is administered by the Umlalazi Municipality, which falls under the

UThungulu district. The municipality is dominated by tribal authorities of which the Dlangubo Traditional Council is one. Eshowe, Mtunzini and Gingindlovu are the three main towns of the Umlalazi Municipality. The Dlangubo Traditional Council falls under Eshowe, which is considered to be the administrative and service centre of the Umlalazi Municipality. Eshowe is also of great significance as it is the birthplace of King Cetshwayo who was the king of the Zulus during the Anglo-Boer war in 1879. There are several traditional Zulu villages that are open to tourists within an easy drive of the town. The Dlinza forest is a beautiful forest which is an ideal tourist destination (Umlalazi Municipality Report: 2008). The Umlalazi area features the following important conservation areas:

1. The Ongoye Forest, which is located in the east of the municipal area and is a nature reserve attracting local and forest visitors.
2. The Entumeni Nature Reserve, which is located to the West of Eshowe.
3. The Mbongolwane Wetland is identified as the management area in terms of the Umlalazi Land Use Management System.
4. The Dlinza Forest is a nature reserve located in the town of Eshowe.

The intangible living heritage resources as indicated above validate that Umlalazi Municipality is rich in IK hence the richness also underpins Dlangubo village as the area of study. As already highlighted, despite the existence of rich knowledge about oral tradition and oral history, it is apparent that initiatives for the IKS Policy have not sufficiently reached Dlangubo village as people are still affected by unequal living conditions. The majority are poor. Strong communal togetherness is weakened by the weak social structures and cohesion. The village is still under-developed and infrastructural development is taking place slowly. There is still a scarcity of

electricity and water as the services have not reached some areas. Some members of the community still survive by making use of water from rain, rivers, lakes and tanks, and the use of wood from the natural vegetation for cooking is still a common practice. Some community members practice small-scale resource-poor agricultural farming and they own livestock and medium and small plantations.

1.5 Significance of the study

This study was important because its empirical findings would contribute to the existing theoretical and scientific evidence. In addition it is hoped that its findings would help inform policy makers about IK practices around which robust and comprehensive policies need to be developed, especially for the purpose of socio-economic development in the country. The study was also important as its findings would show what library models need to be developed in order to improve IK management and preservation in the Africa and how they can be sustained.

1.6 Originality of the study

There are a number of routes to demonstrate the originality of research, including the development of new methodologies, tools and/or techniques, new areas of research, new interpretations of existing material, new applications of existing theories to new areas, or new blends of ideas (Phillips & Pugh 2005:62). The objectives of this study were arranged logically to allow the synthesis and the compatibility of the already existing knowledge with the new knowledge. By doing so, the study raised awareness on how the value of the already existing IK management and preservation tools can be invigorated by diffusing innovative IK management tools like the South African intellectual property laws, the ICTs and libraries like creating forums and spaces in libraries for exchanging knowledge. For Phillips and Pugh

(2005:62-63) that would mean using the old knowledge but with a new interpretation, taking a particular technique and applying it in a new area, bringing new evidence to bear on old issues. In this study, both models adopted (DoI and SECI) provided space for the holistic approach in the management of IK and also for the diffusion of new knowledge in order to intensify IK management projects.

1.7 Limitations and delimitations

Hofstee (2011: 117) explains limitations as what separates the researcher from performing his or her study according to the chosen method. Secrecy as one method for IK preservation still remains a challenge in knowledge sharing. Some IK practices are considered sacred and can only be shared with trusted members (Raseroka 2008). For this study to deal with secrecy and sacredness of information during data collection, it adhered to the guidelines of the UNISA Policy on Research Ethics, Department of Information Science (2007). Another limitation was that IK is a very broad topic and the researcher's data collection period was limited, because its main focus was on the IK practices that were commonly used for daily survival, especially crop farming, livestock keeping and folklores.

1.8 Research methodology

A synopsis of the research methodology used is provided in this section as this aspect is dealt with in Chapter Three. This study used the qualitative approach to explore the objectives of the study. A qualitative approach uses a naturalistic in-depth inquiry to explore the phenomenon being studied. A strong feature of the qualitative approach is the subjective understanding of human experiences in their natural setting (Silverman 2010:119). In this approach, the

researcher relies more on the views of the participants and usually gathers data by conducting an inquiry in a subjective, biased manner.

The research design that was adopted for this study was GT. According to Gudykunst (1983:287), GT focuses on generating theory through constant comparative analysis. Silverman (2010:356) defines GT as the way of inducing theoretically based generalisations from the qualitative data. GT uses a systematic inductive approach to inquiry followed by a constant comparison of categories in order to generate theory grounded in data (Charmaz, in Denzin & Lincoln 2011:360-361).

For this research study, the population consisted of various categories of the people above the age of 20. They included local community members who were the IK knowledge holders and practitioners from the following seven sub-places that were sampled: Dlangubo, Fasimba, Enqoleni, Khabingwe, MngaMpondo, Mqadayi and Nomyaca. The other category of the population consisted of the local fieldworkers and the knowledge intermediaries.

The data collection procedure in this study involved the use of grounded theory, focus groups, semi-structured interviews and participant observation and non-participant observation.

1.9 Definition of terms

In this section, concepts frequently used in this study are defined, such as knowledge, indigenous knowledge, knowledge management, management and preservation.

1.9.1 Knowledge

The definition of knowledge according to Mandruleanu (2008:117) is used in this study. Knowledge is defined as a fluid mix of framed experiences, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. Nonaka and Takeuchi (1995:248) identified two types of knowledge –tacit knowledge and explicit knowledge. Explicit knowledge is expressed in symbols and words and tacit knowledge is highly personal, and involves personal beliefs, values, intuition and insight. According to Adam n.d, Averweg and Greyling (2010:2) and Raphesu (2010:3), the following types of knowledge have implications for IK: tacit knowledge, explicit knowledge and implicit knowledge. Implicit knowledge is the type of knowledge that helps individuals to know what is socially and culturally appropriate in a given situation, including shared beliefs, values and expectations (e.g. knowing that it is inappropriate to disrespect an elderly person).

1.9.2 Indigenous knowledge

Boven and Morohashi (2002:13) argue that there are varied definitions of IK and these definitions differ depending on the specific aspects the writer wants to stress. The definition of IK has already been highlighted in the introduction of this chapter. IK is traditional or local knowledge or a large body of knowledge and skills that have been developed outside the formal educational system. IK is embedded in culture and is unique to a given location or society. It is the basis for decision-making of communities in food security, human and animal health, education and natural resource management (Hart & Vorster 2006:9; Mpofu & Miruka 2009:85; Mwaura 2008:21). IK encompasses many forms. It includes cultural heritage in the form of traditional stories, songs, dances and ceremonies that reflect beliefs related to

spirituality, family, land and social justice (Akinwale 2012:5). Other IK proponents assert that although it is local knowledge, it is not static. They underline that it is also dynamic in nature, and changes its character as the needs of the people change (Green 2007:136; Hountondji 2002:36; Ntuli 2002:54). Mearns, Du Toit and Mukuka (2006) identified special features of IK and these have been summarised as follows:

1. IK is local, holistic and integrative because it is rooted in a particular community and its experiences are situated within broader cultural traditions of the people living in that place.
2. IK is essentially functional and is geared for practical response and performance.
3. IK is experiential rather than theoretical and is reinforced through continuous experience, and through trial and error.
4. IK is learnt through repetition, which aids in its retention and reinforcement.
5. IK is constantly changing by way of being produced and reproduced, discovered and lost.
6. IK is characteristically shared to a greater degree than other forms of knowledge, although its distribution is socially differentiated, based on gender and age.
7. The distribution of IK is always fragmented. It does not exist in its totality, either in one place or one individual.
8. IK is tacit and cannot be codified easily.
9. IK is transmitted orally, or through imitation and demonstration, and the process of codification may lead to the loss of some of its properties.

1.9.3 Knowledge management

For this study, knowledge management (KM) is associated with the following definitions: KM is about creating an environment to encourage knowledge creation and transfer (Mandroleanu 2008:118). Shannak, Masa'deh, Al-Zu'bi, Obeidat, Alshurideh and Altamony (2012:521) define KM as a discipline that promotes an integrated approach to identifying, managing and sharing information assets. Information assets may include databases, documents, policies and procedures, in addition to unarticulated expertise and the experience held by individual workers.

IK is largely tacit (DST 2013; Ngulube 2002). Many KM theorists agree that tacit knowledge can be created, shared and managed through the use of four modes of knowledge conversion and transfer such as socialisation, externalisation, combination and internalisation (Mandroleanu 2008:118; Nonaka & Toyama 2003:4-6).

1.9.4 Management and preservation

Many management theorists agree that there are varied definitions of management and management is defined broadly as the process of designing and maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims (Olum 2004:2; Wehrich 1993:4). The narrower view of management is that management comprises the following important functions or components: planning, organising, staffing, leading and controlling. The main goal of management is to increase productivity and organisational effectiveness and efficiency (Olum 2004:2; Smith, Cronje, Brevis & Vrba 2007:8-9; Wehrich 1993:1-2). This study argues that the above type of management is common in formal settings and can be applicable to a lesser extent in informal settings.

In this context, IK management is used to refer to a process by which communities capture, control and share knowledge in order to meet specific local goals (Akinwale 2012:5). The detailed definitions of the terms 'management' and 'preservation' have been given in the introduction of this chapter. This study adopted the definitions of Akinwale (2012), Muswazi (2001) and Ngulube (2003).

1.10 Structure of the thesis

The thesis was structured as follows:

Chapter 1: Chapter One provides background information about the challenges of IK management and preservation as the integral focus of this study. In this chapter the following sub-topics are discussed: introduction; problem statement; research purpose and objectives; contextual background; significance of the study; originality of the study; limitations and delimitations; definition of terms; summary of research methodology, which covers the research approach, research methodology, structure of thesis and conclusion.

Chapter 2: Chapter Two discusses the literature review in line with the objectives of the study. It also highlights the two theories that were adopted for the study, which were the SECI model and the diffusion of innovation (DoI) theory. The SECI model as the main model helped to understand how the community members shared knowledge about IK. The DoI theory as the ancillary model to augment the SECI model helped to get the perceived views of the community about the innovations suggested in this study like libraries, databases, ICTs and intellectual property laws.

Chapter 3: Chapter Three discusses the research methodology that was used for this study, which was the qualitative inductive approach. Grounded theory was used as a research design. This chapter also elaborates on the research approach,

research design, population, sampling procedure, data collection procedure and data analysis.

Chapter 4: Chapter Four presents the empirical findings in relation to IK management and preservation challenges in the Dlangubo village. It also highlights whether the challenges experienced in other developing countries, especially in Africa, also applied in the area of study.

Chapter 5: Chapter Five elaborates on the interpretation of the scientific findings.

Chapter 6: Chapter Six provides a summary of the conclusions, the recommendations and the areas identified for further research. In addition, the model recommended for this study was presented.

1.11 Summary

This introductory chapter provided background information regarding the importance of IK and its management in South Africa particularly Dlangubo village. Further to that, challenges of managing and preserving IK as highlighted in various theoretical and empirical studies were discussed. Flowing from that the chapter alluded on the problem statement, research purpose and objectives, contextual background, significance of the study, originality of the study, limitations and delimitations, research methodology, definition of key terms and structure of the thesis.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

The literature review was guided by the objectives of this study, which were: to establish the various IK practices that were most commonly used for daily survival at the Dlangubo village, to establish methods and tools that were used for managing and preserving IK, to determine the ownership protocols for the various IK practices and what they knew about the South African intellectual property rights (IPR), and to determine the use and role of libraries, databases and ICTs in managing and preserving IK. The ultimate goal was to determine what model could be developed for the better management of IK in the area of study.

As already highlighted in this study, IK comprises both tacit and explicit knowledge practices. Explicit is expressed in symbols and words and tacit is highly personal, and involves personal beliefs, values, intuition and insight (Nonaka and Takeuchi 1995:248). Nowadays, all knowledge, irrespective of the type, is recognised as a resource that is on par with other economic resources and, consequently, it should be managed like other economic resources (Ondari-Okemwa & Smith 2009:29). Many studies concur that knowledge management does not have to be strictly confined in formal organisations, but can extend to informal settings (Mosia & Ngulube 2005). In South Africa, the need for the management of IK for socio-economic development purposes was realised since 1994, when South Africa became a democratic country and introduced the IKS Policy in 2004 and other legislation and offices like NIKSO and NRS Office were established (Green 2007). This study is significant as it will contribute scientific evidence to the already existing

knowledge base about IK management. In this context SECI model and Dol theory were adopted as theoretical bases to help in providing insight about IK management in Dlangubo village. Because these two terms 'model' and 'theory' have been used frequently in this chapter it was deemed important to explain their meaning. According to Lwoga (2010:64) theory is a set of interrelated constructs or variables, statement, definitions and propositions that present a systematic view of phenomenon by specifying relations among variables with the purpose of explaining natural phenomenon. Theories gather together all items of empirical evidence into a coherent conceptual framework for a wider applicability. Theories can incorporate facts, laws and tested hypotheses. Theories are more explanatory while models are more descriptive. A model is a hypothetical description of a complex entity or process. It is viewed as a simplified representation of relationships between and among concepts. It is also viewed as a representation of reality. It can help in getting clarity regarding key issues in the nature of phenomena (Lwoga 2010:64). In this study SECI model and Dol theory were adopted in order to gain insight regarding IK management and preservation in the area of study.

2.2 Theoretical framework

The aim of theoretical frameworks is to make research findings more meaningful and generalizable. They help to stimulate research and the extension of knowledge by providing direction and impetus (Lwoga 2010:65). As already highlighted the foundation for this study was grounded on two theoretical frameworks which were the SECI model and the diffusion of innovations (Dol) theory. Dol theory was used to strengthen the argument of the SECI model. For this study it was deemed important that the clarification of the what and why the theories were adopted as innovations in

this study should take precedence over the explanation of how they were applied or how they informed this study.

2.2.1 What is SECI model and its role in knowledge management (KM) processes?

Both theories were adopted in order to understand the management and preservation of IK at the Dlangubo village. The SECI model was adopted because it provides a holistic approach in the management of both tacit and explicit knowledge (Nonaka & Toyama 2003:4-6). The Dol theory was deemed relevant for this study because, in essence, diffusion is the process by which an innovation is communicated from a central point through certain channels over time among the members of a social system (Rogers 2003). Given that IK resides in elderly members of the community and transmitted from them to a wider audience, the principle of diffusion was regarded as relevant to the study. Similarly, the theory appreciates and strengthens arguments on the importance of libraries and their resources as part of the innovative tools that can be used for the diffusion of IK (Roman 2003:61). Both theories provide guiding framework for explaining the importance of managing IK in both formal and informal settings.

Tacit knowledge is highly personal, difficult to codify and to communicate to others; hence, Michael Polanyi's words "We can know more than we can tell" (Nonaka 2007:165). KM theorists agree that tacit knowledge can be created, shared and managed through the use of four modes of knowledge conversion such as socialization, externalization, combination and internalization (Mandrulianu 2008:118; Shannak et al. 2012:526). Nonaka and Toyama (2003:4-6) assert that the SECI model is important for the knowledge creation and transfer. The process starts with socialization where knowledge is converted from tacit to tacit. For Adachi

(2011:21-22), there are two types of socialization modes of knowledge conversion. One focuses more on physical communication than verbal communication, for example, in traditional apprenticeship apprentices can learn knowledge through sharing as well as hands-on experience. Nonaka calls this process sympathized knowledge. This technical dimension of the socialization mode of knowledge conversion process normally takes place at individual level (Adachi 2011:21-22). The second type of the socialization mode of knowledge conversion takes place at team level. The focus is more on the face-to-face repeated knowledge-sharing processes among team members and on the sharing of cognitive knowledge and skills of team members (Adachi 2011:22-23).

Externalization takes place when tacit knowledge is converted into explicit knowledge, such as concepts, images and written documents. The advantage is that knowledge can be shared widely (Nonaka & Toyama 2003:4-6). According to Adachi (2011:25), a shared language facilitates the externalization mode of knowledge sharing among the team members and organizational structures. Adachi (2011:22-23) calls the knowledge created during an externalization process conceptual knowledge. Combination is when knowledge is collected from inside or outside the organisation and then combined, edited or processed to form more complex and systematic explicit knowledge (Nonaka & Toyama 2003:4-6). It is a process of exchanging, sorting, adding, disseminating, sharing and reconfiguring explicit knowledge among the organizational members through documents, meetings, telephone conversations, computerized communication methods and others. This combination knowledge-creation process is called systemic knowledge (Adachi 2011:26). In terms of databases, ICTs can play an important role in facilitating this mode of conversion and in disseminating the new explicit knowledge among the

members of the organization (Nonaka & Toyama 2003:4-6). Lastly, is internalization. In this process, explicit knowledge created and shared throughout an organization is again converted into tacit knowledge. This stage is viewed as praxis because knowledge is applied and used in practical situations and becomes the base for new routines. The pragmatistic way of learning-by-doing is an effective method to test, modify and embody explicit knowledge as one's own tacit knowledge (Nonaka & Toyama 2003:4-6). According to Adachi (2011:27), knowledge created through an internalization process is called operational knowledge. This pragmatic approach tallies well with Dol theory of social change as knowledge is acquired in order to innovate and thus close the identified knowledge gap (Rogers 2003). This is also important for social constructivism as explained in the forthcoming knowledge management approaches.

Yip, Ng and Din (2012) assert that knowledge management activities can take place in various kinds of organizations, whether small or medium enterprises. They argue that it consists of the following eight activities: knowledge identification, acquisition, application, sharing, development, creation, preservation and measurement. They indicate that an enterprise must establish its strategic goals in order to be able to determine the knowledge gap between their existing knowledge and the knowledge required. The next step is to close the gap by acquiring the required knowledge internally and, mainly, externally. Thereafter, knowledge acquired needs to be applied and modified in order to make it relevant to the organization's strategic goals and organizational competitiveness. The sharing and distribution of knowledge within an organization are a critical condition in strengthening organizational competitiveness. Knowledge development includes all the management efforts that aim to produce capabilities that are not available within the organization. Knowledge

creation focuses on creating new knowledge or innovating the knowledge existing within the organization. Once the knowledge has been acquired, it must be preserved, updated constantly and made relevant because obsolete knowledge is useless. After this, the last activity is knowledge measurement, which involves the measurement mechanisms used to assess the impact and the effects of the knowledge that has been implemented in an organization. The measurement mechanism used needs to be linked to the strategic goals of the organization (Yip, Ng and Din 2012).

Shannak et al. (2012:526) highlight the challenges and opportunities of implementing knowledge management activities in formal organizations as including the following: motivating employees to use acquired information and tools; developing metrics to assess the effectiveness of a knowledge management program; measuring the results; motivating employees to share knowledge; making knowledge useable, like storing it in a retrievable manner; enabling employees to relate acquired knowledge to their work; identifying suitable people to implement the KM program; changing people's behaviours and perceptions; identifying and representing the organization's existing knowledge; and changing bureaucratic culture and organizational structure (2012:525-526). In order to resolve these challenges, the organization can undertake the following initiatives: create and stress continuous learning; provide opportunities for people to engage in workshops, conferences and various dialogues; encourage and reward collaboration and team learning; involve people in developing and sharing a common vision; identify and train leaders who will facilitate learning at individual, team and organizational level; begin training and inculcation of shared activities at the local level with small groups before moving to organizational level (Shannak et al. 2012:525-526). Furthermore, eight factors are highlighted as

common in successful KM projects and they include: linkages to economic performance and industry value; a solid technical and organizational infrastructure; a flexible knowledge structure; a knowledge-friendly culture; clearly communicated KM systems purposes and goals; motivational incentives for the KM users; multiple channels for knowledge transfer and senior management support (Shannak et al. 2012:525-526).

This study argues that, although the above KM strategies were applied in formal organizations, they can also be extended to informal organizations like rural communities (Lwoga 2010; Mosia & Ngulube 2005). There are many lessons that can be learnt from these KM strategies which can be reused in rural communities. Many theoretical and empirical studies agree that knowledge-sharing activities in rural areas are declining. Therefore, if there are no KM activities, especially collaborative ones, the danger of IK becoming extinct exists (Mondo, Baryamureeba & Williams 2007). For example, Lwoga (2010) conducted a scientific study to assess the application of knowledge management approaches and ICTs to manage agricultural IK in some districts in Tanzania. The SECI model is one of the KM approaches that were used. The findings of her study indicated that KM approaches can be used to manage IK and to introduce exogenous knowledge in the local communities. The study also concluded that, unless KM approaches are applied, IK will continue to disappear and the rural communities will have nothing to rely on in terms of their IK (Lwoga 2010:iv-v). Mosia and Ngulube (2005) also performed an empirical study to determine how knowledge had been shared and distributed in an “open” system such as the Tyolomnqa Estuary in the Eastern Cape in South Africa. The findings revealed that knowledge sharing among the communities using the Estuary was fragmented. CoPs and storytelling were the models suggested to

facilitate knowledge sharing in the management of estuaries (Mosia & Ngulube 2005:175).

2.2.1.1 The application of SECI model in this study

The basic principle of applying knowledge management principles when managing IK is to be able to convert the intangible mode to a tangible format (Ocholla 2007:2; Ocholla & Onyacha 2005:247). Furthermore, Ocholla (2007:2) asserts that the conversion of IK from tacit to non-tacit mode is critical as it integrates IK into the knowledge management mainstream. Because this study used the SECI model, the four modes of knowledge transfer were used and are explained below.

1) Socialization

In this mode of knowledge transfer, intangible knowledge is socialized either at team or individual level through word of mouth. In addition, learning by doing (known as apprenticeship) or transfer of skills becomes prevalent (Adachi 2011). Communication is a fundamental requirement in the socialization process. According to Rogers (2003:5), communication is one of the four key elements that can be used to determine the rate of the diffusion of an innovation. In this context, the study sought to understand how IK was communicated among the community members of various ages, genders and other social classes, and how the innovation was perceived by the adopters in terms of its relative advantage, simplicity, compatibility, observability and trialability. During socialization, learning or diffusion of innovations takes place at an informal level through the use of traditional tools and methods like oral tradition, CoPs and apprenticeship. The other critical factors that might influence the adoption include the level of trust, the issue of a language that was used to communicate information about an innovation, and the circumstances

under which information was communicated. In this study, findings confirmed that socialization and in-situ preservation strategies were embraced by the community studied. However, the culture of knowledge sharing was declining due to various reasons like lack of commitment and cooperation, challenging weather conditions, lower levels of information skills and lack of resources.

2) Externalization

During externalization, knowledge is transferred from intangible to tangible so that it can be accessed globally, either through regulated access or open access. This stage is complex and challenging as it has implications of information getting tainted or being lost to third parties (Ocholla 2007:4). In this context, the study sought to understand how IK was transferred from tacit to explicit. Traditional and modern tools were used during this process and what the perceptions of the participants were regarding the issue of documenting and digitizing IK and the use of libraries, ICTs and SA-IP laws in managing and preserving IK. The five attributes of innovations like (the relative advantage, the compatibility, the complexity, the trialability and the observability) (Rogers 2003: 222) served as guiding framework in understanding the perceptions of the participants.

3) Combination

Combination entails the transfer of knowledge from explicit to explicit. As already highlighted in this study, Nonaka & Toyama (2003:4-6) assert that databases and ICTs can play an important role in the dissemination of the new explicit knowledge among the members of the community. In this study, it was observed how the databases and ICT were used in knowledge transmission. In addition, what were the perceptions of the participants regarding their use. For example, the findings of the

study confirmed that the diffusion of these innovations was limited. Fasimba Primary School knowledge intermediaries were the predominant users of these innovative knowledge management tools. In summary, the use of libraries and ICTs and ex-situ preservation strategies was at a very low rate in the area of study. This is discussed in detail in Chapters Four and Five.

4) Internalization

Ocholla (2007:2) posits that internalization entails the use of codified knowledge in order to broaden one's intangible knowledge. Nonaka & Toyama (2003:4-6) assert that this process involves learning by doing. Furthermore, they view this process as an effective method to test, modify and embody explicit knowledge as one's own tacit knowledge. Knowledge created through the internalization process is called operational knowledge (Adachi 2011:27). In line with the objectives of this study, it was observed how the community studied used modern tools, such as SA-IP laws, libraries and ICTs in order to close IK management gaps in the area of study. As already highlighted above, the use of ex-situ preservation strategies was at a very low rate in the area of study.

2.2.2 What is Dol theory and its related concepts

The Dol theory is explained as a social process in which subjectively perceived information about a new idea is communicated and it rests on the premise that a new idea, practice or object has perceivable channels, time and mode of being adopted by individual or organisations (Minishi-Majaja & Kiplang'at 2005:212; Rogers 2003). Dol theory consists of four key elements that inform the diffusion process. They include the innovation, mass communication, time and decision-making, and the needs and goals that influence the social system to adopt an innovation (Chambers

et al. 2004:23-27; Rogers 2003:11-26). Furthermore, Rogers (2003: 222) highlights the five types of variables that determine the rate of adoption of innovations as: the perceived attributes of innovations; the type of innovation, the communication channels, the nature of social system and the extent of change agents' promotion efforts. However, the most research studies on innovation focus on how the five perceived attributes of innovations can be used in predicting the rate of adoption of an innovation. These attributes include relative advantage, compatibility, complexity, trialability and observability (Rogers 2003: 222). Minishi-Majaja and Kiplang'at (2005:212) call them characteristics that determine the rate at which an innovation would be adopted by a social system. Furthermore, they explain relative advantage as the degree to which an innovation is perceived as better than the idea it supersedes. The greater the advantage, the faster the adoption. Compatibility is the degree to which an innovation is perceived as consistent with existing values, past experiences and needs of potential adopters. The more compatible with the existing social system, the faster the adoption. Complexity is the degree to which an innovation is perceived as difficult to understand and use. The more complicated the ideas, the slower the rate of adopting them. Trialability is the degree to which an innovation may be experimented with over a limited period. An innovation that can be tried brings less anxiety and uncertainty and thus will be adopted faster. Observability is the degree to which the results of an innovation are visible to others. Visibility of the results stimulates peer discussion and confirms the importance of an innovation and in this way increases its adoption (Minishi-Majaja & Kiplang'at 2005:212). In addition, they explain mass communication or communication channels as the means by which messages about an innovation are communicated among members of a social system. The other element is time and it is influenced by

three factors: the decision-making process, the individual's innovativeness and the rate of adoption. Social system is explained as a set of interrelated units such as individuals, groups, organisations, sub-systems, that are engaged in joint problem-solving in order to achieve a common goal (Minishi-Majaja & Kiplang'at 2005:212-213).

Innovation theorists agree that an innovation is likely to be adopted if it is perceived as being more advantageous than the known alternative, more observable and visible to the adopter, compatible and consistent with the existing values, considers the past experiences and the current needs, is simple to understand and use and if it is reversible and capable of being used on a trial basis (Moseley 2000:98; Rogers 2003:222). The six key elements that lead to the adoption of an innovation by the adopters include: the recognition of a need in order to improve the existing situation; the desire to acquire more knowledge about an innovation, sometimes the learning takes place before the recognition of a need to adopt; the interest developed or the development of a positive attitude about an innovation can help inform decision-making processes on whether to adopt or not to adopt; then follows the implementation; and, lastly, the reinforcement of an innovation so that it is not abandoned or reversed (Moseley 2000:-98).

2.2.2.1 The application of Dol theory in this study

Dol theory, in essence, assists in understanding the major elements of diffusion that influence or hinder the process of adopting an innovation (Minishi-Majaja & Kiplang'at 2005:213). Dol theory is multi-disciplinary; it draws on a number of theories of organisational behaviour adopted from microeconomics, sociology and communication theory. It is viewed as an umbrella for strategy, innovation, network

theory, social structural theory and a host of other approaches that can be used in understanding ICT-related changes in organisational settings (Minishi-Majaja & Kiplang'at 2005:213-214). Minishi-Majaja and Kiplang'at (2005:213-214) argue that Dol theory has a potential application to information technology, ideas, artefacts and techniques. The theory has also been widely used to investigate diffusion of agricultural innovations. Another strength of the theory is that adopters and non-adopters may be studied in order to understand the factors that influence their adoption behaviour (Minishi-Majaja & Kiplang'at 2005:213-214).

The purpose of this study was to establish IK practices that were used in the area of study and why they were still of value to the community, to establish the traditional IK management and preservation tools and their advantages and disadvantages, to determine ownership protocols and what they knew about the South African IP law system, the ICTs and libraries. The ultimate goal was to develop a model that could be used to improve the situation. A consideration of the objectives of the study suggested a theoretical framework that has elements of knowledge management tools, technological innovation, adoption diffusion and communication. Various theories were carefully studied in an attempt to find the best-fitting theory. For example, the study evolved from critical theory, team-building theory and eventually adopted the SECI model theory. In addition, the Dol theory was adopted to strengthen the SECI model theory.

The introduction of an innovation within a community is always informed by certain reasons. The innovation process begins with agenda setting where one or more individuals identify a problem and thus seek an innovation as a strategy of dealing with a problem (Rogers 2003; Minishi-Majaja & Kiplang'at 2005:213-214). In this context, the agenda setting was prompted by the challenges of IK management as

highlighted by theoretical studies and few empirical studies, including IK not sufficiently documented; lack of collection development policies; lack of or limited organisational structures; IK ownership protocols; lack of or limited understanding of SA-IP laws and the limited role of libraries, databases and ICTs in managing IK. The study used the SECI and Dol models to understand how IK was managed through the use of both traditional and modern tools. The study looked at diffusion at two levels: firstly, as a process by which new knowledge about IK was communicated among various community groups as categorised according to various ages, gender and other social class like crop farmers, livestock keepers, folkloric manufactures and knowledge intermediaries. The innovations in this study comprised a number of entities such as initiation artisanship, apprenticeship education, knowledge about the South African IP laws, libraries and ICTs. The study looked at how the four key elements and five attributes of Dol theory were implicated in the objectives of the study.

1) Communication channels

Communication channels are defined as the means by which messages about an innovation are communicated among members of a social system (Rogers 2003). Social system is explained as a set of interrelated units such as individuals, groups, organisations and sub-systems, that are engaged in joint problem-solving in order to achieve a common goal (Minishi-Majaja & Kiplang'at 2005:212-213). In this study, the first mode of knowledge transfer of the SECI model (socialization) assisted in understanding how new knowledge was communicated among community groups of different ages, genders and social class, including knowledge intermediaries. The findings indicated that different age groups had different perceptions about communication channels. For example, with a focus group from Mqadayi, an adult

woman participant observed the relative advantage of an innovation of social networking before it was introduced. She commented that the innovative tool had already diffused with the teenage girls as it became their priority during the initiation artisanship. The problem was identified, then the need to adopt in order to improve communication channels was viewed as a strategy that can be used to deal with the problem. This confirms the views that adoption is determined by the relative advantage, the compatibility, the trialability, the simplicity and the observability of an innovation. In addition, early adopters can inspire late adopters to adopt (Rogers 2003).

Similar to other studies, indigenous knowledge is still embedded in the minds of the elders. The knowledge-sharing activities have declined and when they take place, it is predominantly through socialization, oral tradition and apprenticeship. It takes place according to specific social structures determined according to certain characteristics. The use of libraries, ICTs and SA-IP laws took place at a very limited rate with individuals and groups of certain ages and educational levels, respectively. This study argues that the need for IK management and preservation through the use of libraries and ICTs should be stimulated. This is imperative as in the area of study a dual school and community library with a computer centre does exist and is known as Enqoleni Education Centre.

2) Time

This study concluded that the lack or limited diffusion of innovations like libraries, ICTs and intellectual property laws was multifaceted. For example, it was influenced by the low levels of information literacy skills, lack of coordinated social structures, lack of or limited cooperation among group members and lack of resources. The challenge for the lack of resources such as ICT facilities was also highlighted by

Ocholla and Dlamini (2007:1) in their study to explore the use of ICT tools for capturing, preserving and disseminating IK among IK owners and users in KwaZulu-Natal, South Africa. This study argues that the innovation decision process to adopt or not is dependent on the availability of ICT facilities and other innovative tools to manage IK. This study suggests that because Fasimba Primary School knowledge intermediaries and some community members, especially the younger generation, had already adopted some of these innovations, they could help in collaborating with the libraries in addressing the IK management gaps relative to the needs of the community.

3) Social system

The findings of this study confirmed that social systems existed and were categorised according to age, gender and social class. For example, the livestock farming group was dominated by males, crop farming and beadwork by females, and knowledge intermediaries by individuals with a certain level of education. In focus group two of Enqoleni sub-place, one female participant indicated that their beadwork group failed to successfully register a cooperative because they were uneducated. However, this was their perception, but it was confirmed from the responses of other focus groups that social structures had dissolved due to a lack of cooperation, commitment and lack of resources. For example, crop-farming cooperatives independent of CoGTA had dissolved due to lack of cooperation and resources. Therefore, when introducing innovations, it would be important to take into consideration the factors that caused problems.

4) Relative advantage and compatibility

The objectives of the study were to establish IK practices that were commonly used in the area of study; the traditional methods and tools that were used to manage and

preserve IK, their advantages and disadvantages; ownership protocols and the role played by the South African IP laws, the libraries, the databases and the ICTs in managing and preserving IK. The findings concluded that the socialization mode of knowledge transfer, including the use of oral traditions, apprenticeship, social structures and in-situ preservation strategies were predominantly used. The other innovative tools like the South African IP laws, the libraries, the databases and the ICTs were used, but at a very low rate. As already highlighted, ICTs like cellphones, including social networking, were commonly used by the younger generation. Adults and elders used cellphones mainly for communicating with family members and friends. Radios and televisions were used for personal matters and not for IK management-related matters. The Fasimba Primary School knowledge intermediaries transpired as the predominant users of innovations like libraries, databases and ICTs. In addition, they also used traditional IK management methods like providing apprentice education about crop farming, rituals and artefacts. Put differently, traditional methods of managing IK were also diffused as innovations to the Fasimba Primary School learners. The study discovered that, although other knowledge intermediaries had adopted certain ICT tools like computers and cellphones, their relative advantage in line with IK management was not recognised. Similarly, the other participants of various social structures like grass-mat crafters had adopted innovative technologies in their IK knowledge, for example, coloured wool and innovative tools were used for grass-mat weaving, but their relative advantage in line with ex-situ preservation strategies was not recognised. The study concluded that although South Africa has introduced IKS Policy (2004) and the South African intellectual property law with the aim of improving IK management for socio-economic development purposes, these initiatives have not been sufficiently

rolled out to the rural communities in order to address IK management gaps that were exacerbated by the previous regime. In this area of study there was generally low usage of libraries, ICTs and South African IP laws relative to IK management and preservation needs.

2.2.3 Limitations of SECI model & DoI theory

Many knowledge management theorists agree that SECI model was created for the knowledge management processes within the formal organisational context of the Japanese firms' hence its relevancy in other contexts needs to be further explored (Nonaka and Takeuchi 1995; Yoshimichi 2011:23). In Africa many theoretical and empirical studies have been conducted and their findings have confirmed that knowledge sharing activities in rural areas were becoming weak hence they recommend that knowledge management processes including the SECI model be extended to informal settings for improved knowledge management results (Lwoga 2010:88; Mosia and Ngulube 2005). Similarly and based on the findings of this study, this study adds to voice of other empirical studies that it was imperative to extend knowledge management principles including SECI model to rural areas and mitigate the risks of IK loss. While the importance of knowledge management is acknowledged transfer of IK from tacit to explicit has been a complex process. This is due to the fact that during the process the intrinsic value of IK gets distorted or is compromised to a certain extent and sometimes ownership rights get tainted (Ocholla & Dlamini 2007). Based on that Masango (2010) and Mukuka (2010) underline that it is crucial to educate rural communities about the risks of documenting, codifying and digitising their IK and how it can be protected through the use policies and legislations like intellectual property laws.

Rogers 2003 contends that Dol theory also has its limitations. The most notable one is that it tends to focus more on innovations and their adoptions at the expense of the already existing knowledge of community members hence the failure of the diffusion of some innovations. For example, Rogers (2003:106-109) presents a good example of how the diffusion of an innovation of purified drinking water within the Egyptian villagers failed. The findings of the study indicated that the majority of Egyptian villagers preferred to continue using unpurified water from the canals rather than the clean water from the taps. Instead, they would use clean water to wash their hands and feet prior to entering the mosque for prayer rather than for consumption. Some women who preferred to use the clean water would mix it with canal water and get it contaminated again. Some were despondent to use it because sometimes the taps were dry and queues very long. According to Rogers (2003:108), the innovation was not fully adopted because it lacked compatibility. Lack of compatibility also failed the diffusion of external livestock feeding products in India which was well received when it was introduced by a local Indian women farmer (World Bank 2004). Hence, many IK scholars argue that developmental projects that succeed are those that take cognisance of existing knowledge and involve local members from the beginning (Els n.d.; World Bank 1998). In this context, the Dol theory was deemed relevant because of its compatibility with the current study. It has been experimented with and used in rural settings; hence, it was adopted for this study which was conducted in a similar setting. Professionals in a number of disciplines, like Agriculture and Marketing, have used the Dol theory to increase adoption of innovative products and practises (Minishi-Majaja & Kiplang'at 2005:213-214).

2.3 IK practices

As already highlighted in Chapter One, the coverage of IK is very wide. For clarity, in this chapter IK was divided into two main categories that were prevalent in the area of study: agriculture and folklores. The folklores were further subdivided into tangible and intangible practices to facilitate discussion. Agriculture was prioritised because it comprises the largest collection of indigenous practices worldwide (Aluma, in World Bank 2004:24).

2.3.1 Agriculture

Hart and Vorster (2006:4) assert that there are three types of agricultural practices: industrial agriculture, green revolution agriculture and resource-poor agriculture. In South Africa, most African people practice small-scale agricultural farming (Wenhold, Faber, van Averbek, Oelofse, van Jaarsveld, Jansen van Rensburg, van Heerden, & Slabbert 2007:328). The term agriculture comprises various dimensions like agricultural farming, including agricultural plants, medicinal plants, livestock farming and natural resources like land, sea, environment and their ecosystems (Dube & Musi 2002:10). As there is inconsistency in the terminology used in the literature, to eliminate confusion in this study, the term agricultural vegetable crops is used to refer to the domesticated and undomesticated plants used for either subsistence or commercial farming purposes. Agriculture crop farming would be used to refer to the mechanisms used in order to produce vegetable crops.

Literature has indicated that some plants and vegetable crops have evolved from being undomesticated to becoming domesticated plants. The evolution was informed by many factors, such as the importance of plants for food security, the

nutritional content and its potential to treat certain ailments. The same can be said about various kinds of domesticated animals and their importance in food security, socio-economic factors and safeguarding purposes serve as determining factors in their domestication. To give some examples about the importance of domesticated plants and animals, Appendix 13 gives a list of domesticated and undomesticated food types, including plant foods, animal foods and beverages. Appendix 14, comprises of a list of plant species used for medicinal purposes.

Below is the discussion of agricultural IK dimensions like vegetable crops, medicinal plants, fruits, beverages and livestock.

2.3.2 Vegetable crops

Domesticated plants include all those plants grown in home gardens or arable lands, either for consumption, medicinal or commercial purposes. Some domesticated plants were initially used as undomesticated plants (Dakora, in Normann, Synman & Cohen 1996:116-118). They included food plants like legumes, jujube beans, cowpeas, mung beans and various kinds of maize (Dube & Musi 2002:10). Undomesticated foods include certain kinds of wild plants and fruits. The fruits are sometimes used as relish or snack or to prepare other foods. Some wild plants are used for medicinal purposes and for consumption (Asase & Oteng-Yeboah 2012:614; Keirungi & Fabricus 2005:497).

Appendix 14 gives the list of plant species, their scientific names, the local name used if available, the name of the country where it occurs commonly, its use and how each type was used. The list was adapted from Asase and Oteng-Yeboah (2012:608-613) and Dakora, in Normann, Synman and Cohen (1996), and is not exhaustive. It is apparent that Africa is rich in IK but the concern for many IK

proponents is that the knowledge has not been documented or has not been sufficiently and systematically documented (Asase & Oteng-Yeboah 2012; Maroyi 2013:1 & Mwaura 2008:29). The plant crop species listed in Appendix 13 confirms that African countries use similar crop species with different local names. For example, *Pennisetum typhoideum* (millet) is used in South Africa and Malawi. *Pennisetum americanum* (L.) (Leeke) (millet) is used in Ghana. *Sorghum bicolor* L and *Sorghum vulgare* ('amabele' is a local name in South Africa) is used in Burkina Faso, Ghana, South Africa and other African countries (Asase & Oteng-Yeboah 2012; Dakora in Normann, Synman & Cohen 1996:-123-124). In South Africa, sorghum is no longer popular because it was replaced by maize (Dakora in Normann, Synman & Cohen 1996:-123-124).

In Africa, there are many popular foods. For example, by the Middle Ages, indigenous food crops such as millet, cowpea (*Vigna unguiculata* L. Walp), bambara groundnut (*Vigna subterranean* L.), watermelon, yam and fonio had already been domesticated and widely cultivated in the savannah zones of Africa (Dakora in Normann, Synman & Cohen 1996:116). These traditional crops managed to survive the displacement by the new crops from America like maize, sweet potatoes, cassava, pineapple, guava and groundnut. Furthermore, Dakora (in Normann, Synman & Cohen 1996:116) indicated that the new crops had displaced some important local African food plants, which had been cultivated even before the Middle Ages. For example, the two important food legumes which had been widely cultivated throughout Africa were cowpea and bambara groundnut. They had gradually been replaced by commercial legumes called soybean (*Glycine max* L. Merr), groundnut and the common bean (*Phaseolus vulgaris* L.) from South America (Dakora in Normann, Synman & Cohen 1996:116). This reflects on how the system

of colonialism had impacted positively and negatively on many aspects of life in Africa, including agricultural farming.

In South Africa, the use of leafy vegetables is an old practice and common among African people. Some leafy African vegetables like amaranth and pumpkins managed to survive replacement by the exotic new crops. These vegetables are cultivated as domestic plants or harvested as undomesticated plants (Jansen van Rensburg et al. 2007:317-318). The seven groups of leafy vegetable species common in South Africa and other African countries include *Amaranthus* spp (amaranth) or imbuya (in isiZulu); *Cleome gynandra* L. (Spider flower) of African cabbage (in English); *Brassica rapa* L. subsp. *Chinensis* (Chinese cabbage in English); *S. nigrum* complex (Nightshade in English); *Corchorus olitorius* and *C. tridens* (Jew's mallow); *Vigna inguiculata* L (Cowpeas) *Cucurbita pepo*, *C. maxima* and *c. moschata* (pumpkins); *Citrullus lanatus* and *Cucumis melo* (melons) and *Momordica balsamina* (balsam pear) (Hart & Vorster 2006). The common challenge in Africa is that knowledge about the names of plants and plants themselves is disappearing; hence, there is an urgent need to document it (Jansen van Rensburg et al. 2007:317-318).

2.3.3 The importance of vegetable crops

Acipa, Kamatenesi-Mugisha and Oryem-Origa (2013:7429) conducted a study to assess the nutritional value of some selected domesticated and wild plants in Uganda. The findings of the study confirmed that among the selected food plants, vegetables were found to be rich in nutrients and minerals compared to seeds, fruits and roots. The wild or undomesticated food plant species had rich sources of nutrient elements, for example, the copper leaves were found to have a higher concentration of calcium than broccoli and okra. The study also indicated that there

was a need to balance the intake of nutrients from both domesticated and undomesticated plants in order to eliminate nutrient deficiency diseases (Acipa, Kamatenesi-Mugisha & Oryem-Origa 2013:7429).

The study found that soybean and the marama bean were rich in protein and oil (Dakora in Normann, Synman & Cohen 1996:116). The wild plants and fruits remained important because of their nutritional value. They could help improve the quality of health of the people. Some of their leaves were rich in iron and calcium. Some wild fruits were rich in vitamin A, B complex and C, which were good for the growth of children. Wild fruits have a high dietary fibre value. They were inexpensive and locally available. They were also of commercial value in local markets (Acipa, Kamatenesi-Mugisha & Oryem-Origa 2013:7435-7437). The marula tree (*Sclerocarya caffra*) was used not only as a source of food during drought, but its fruit could also be eaten and soup could be made from its nuts. It was common in Namibia, Swaziland and South Africa and was used as a nutritious beverage (Bille, Shikongo-Nambabi & Cheikhyoysel 2013:7195).

2.3.4 Livestock and its importance

The study also found that African countries practised livestock farming for various reasons, including consumption, social and commercial purposes. For example, in South Africa, livestock keeping was the dominant industry in the agricultural sector. It contributed 49% of agricultural output and enabled South Africa to produce 85% of its own meat requirements (Reddy, Goga, Timol, Molefi, Mather, Chetty and Wallace 2015). The Masaai people of Tanzania were known as highly experienced in the field of livestock keeping. They had vast knowledge of how and when to move their livestock from one place to another. Consequently, their herds managed to stay healthy and produced a reliable supply of milk and meat that met the demands of

their households. The Masai people had knowledge about the environment, livestock genetics, breed selection, and medicinal plants that were used to treat livestock diseases. This knowledge helped them to manage their cattle for daily survival and also to reduce poverty. Nowadays, their challenge is that cattle were contracting various diseases that were difficult to treat due to the fact that grazing lands had become smaller, as land had been occupied by crop farmers (Mwaura 2008:78-79).

In South Africa, common animals used as sources of food include domesticated chickens, pigs, goats, sheep and cattle. Chickens also produce eggs and both chickens and eggs are used for consumption and commercial value. Rural households also keep pigs, but this practice is less common than keeping poultry. Some small-scale farmers still have arable lands for livestock farming. Some have lands called commonage, which could keep both small and large livestock, many cattle, goats and sheep. Livestock is kept for various reasons like milk production, meat and wool. The products are used for human consumption and commercial value (Wenhold et al. 2007:329-330). Meat and edible foods in the wild may present the cheapest source of vitamins, proteins, minerals and other nutrients. However, the common challenge that was reiterated in this study was that knowledge about these foods and their nutritional value was not codified or adequately documented. The hunting of wild animals is no longer a common practice in some African countries (Mwaura 2008:13;-29; Sibisi in World Bank 2004:35; Steiner & Oviedo in World Bank 2004:33).

2.3.5 Folklores (Tangible and intangible practices)

Various authors define folklores differently. The World Intellectual Property Organisation's (WIPO) Intergovernmental Committee on Intellectual Property,

Traditional Knowledge and Expressions of Folklores in the Draft Treaty on the Protection of Expressions of Folklore defines folklores as productions consisting of characteristic elements of the traditional cultural heritage developed and maintained by a community, or by individuals reflecting the traditional artistic expectations of such a community. Such productions may include the following forms of expression: verbal intangible expressions such as folk tales, folk poetry and riddles; aspects of language such as words, signs, names, symbols and other indications; folk songs and instrumental music. The second expression includes artistic expressions; folk dances, plays and rituals. The latter ones are tangible expressions such as productions of folk art, such as drawings, designs, paintings, carvings, sculptures, pottery, terracotta, mosaic, woodwork, metal ware, jewellery, basket, weaving, handicrafts, needlework, textiles, carpets and consumables. The tangible dimensions also include musical instruments and architectural forms. Furthermore, musical instruments can be used to produce intangible forms like music (Nwauche 2010:49).

In many African countries, elders have used folklores or oral tradition as medium or tool to educate younger generations. Proverbs, riddles, songs, legends and myths were used to educate youngsters about the experiences of the past (Morapa 2009:145-146). Ntuli in Odora-Hoppers (2002b:58) is of the opinion that in all the societies the beginning and meaning of life lies within the world of myths, which are given form through rituals. For these rituals to be effective, songs, dances and other cultic acts are performed and various objects are created such as beadwork, grass mats and sculptures (Ntuli in Odora-Hoppers 2002b:58). Furthermore, he asserted that these rituals accompany us throughout life, from cradle to grave. For example, in the Zulu culture, when a child was born the umbilical cord was not cut off but it fell off, and the spot where it fell was consecrated because of the belief that the world

was sacred in nature and thus must be preserved and protected as part of the universe that connects human beings to the ecosystem (Ntuli in Odora-Hoppers 2002b:58). Literature has confirmed that different ethnic groups perform various rituals to show symbolic interactionism or their continued connectedness with things that add meaning to their lives, like agriculture and folklores. For example, Mvula (1988:164) reiterates that, among the Ngoni community of Malawi, sex and gender differentiation began at the birth of a child. If a male child was born, the husband was told “Your wife is well” and if it was a girl child, he was told “You had seen a blanket or someone to pound or fetch water for you”. In summary, different sexes were associated with different household activities (Mvula 1988:164).

Among the Shona tribe in Zimbabwe, folklores were used to inculcate a sense of responsibility. They helped to foster critical and analytical thinking. Songs, praise songs and storytelling were also used to transmit messages, whether educationally, health, cultural or social (Morapa 2009:145-146). Mpofu and Miruka (2009:90) argue that the culture of sharing knowledge about folklores has declined among many rural households, hence, there is an urgent need to document it. From the literature reviewed, this study concludes that IK is synonymous to traditional or folk knowledge; hence, some IK scholars prefer to call IK, folk knowledge or traditional knowledge (Chisenga 2002; Makinde & Shorunke 2013; Masango 2010:78; Ocholla 2007). It is largely tacit, inter-generational knowledge that is passed from generation to generation. It is a knowledge base that can be used in various aspects of life like agriculture, health, education and religion. Based on that, the need for its revitalisation for sustainable development and for the achievement of the Millennium Development Goals (MDGs) cannot be argued (Forsyth 2005). Given that, it is

crucial that libraries as agents of change educate communities on how to manage IK strategically (Ondari-Okemwa & Smith 2009:28-29).

2.4 Methods and tools for managing and preserving IK

From the above discussion it has emerged that different traditional tools and methods can be used for the management and preservation of IK. They include oral tradition like proverbs, riddles, songs, praise songs, legends and myths, or rituals, folk dances, plays and rituals. Furthermore, skills can be transferred by practicing folk art, drawings, designs, paintings, carvings, sculptures, pottery, woodwork, metal ware, jewellery, baskets, beadwork, weaving, handicrafts, needlework, textiles, carpets and consumables (Morapa 2009:145-146; Ntuli in Odora-Hoppers 2002b:58). Stevens (2008:26) reiterated that indigenous communities have their own tools for transmitting IK, like oral storytelling, ceremonies and apprenticeships. The challenge highlighted that traditional media was gradually disappearing due to many factors, such as the declining culture of sharing; the younger generation's lack of interest in IK with a deeper interest in social networking technology and educational programmes which focus more on foreign values. Because the coverage is wide and the space limited, the discussion of the traditional tools used to manage IK will be limited to the following three types: oral tradition, communal meetings and apprenticeship.

2.4.1 Oral tradition

Bradsher (1991:150) indicates that there is an overlap in the definition of the terms 'oral tradition' and 'oral history'. Oral traditions comprise varied cultural heritage practices and resources transmitted over generations by means of observation, doing and, mainly, word of mouth in order to qualify as oral traditions. Oral history,

on the other hand, is usually an academic process of inquiry into memories of living people who have a rich knowledge of oral traditions (Bradsher 1991:150). Oral history includes oral tradition, folk wisdom and folk history that were handed down through generations. In oral history, both interviewer and respondent are joint creators of the record. They share responsibility for its validity and integrity (Bradsher 1991:148-149). It is apparent from the definition given that IK and its dimensions are components of oral tradition. IK is a critical tool in transmitting value-laden knowledge through generations; hence, some authors are of the view that it has become a strategic economic resource like other knowledge (Ondari-Okemwa & Smith 2009:28). For example, Biyela (2014:4), in her article entitled 'The traditional Zulu Valentine', clearly articulates how beads were used to transmit oral messages, especially healthy loving relationships. She alluded that sending a message to a recipient who did not understand it, was like a fruitless exercise (Biyela 2014:4) and Ocholla (2009:24) underscores that good content should be sensitive to language, cultural diversity and knowledge, including local community needs. It is envisaged that CoPs would be able to help in addressing the issues of knowledge sharing and skills transfer and are discussed in the next section as other traditional tools of knowledge transmission.

2.4.2 Communal meetings and Communities of Practise (CoP)

Ngulube and Mngadi (2009:2) explain CoPs as groups of like-minded people who regularly work together in developing collective knowledge and shared 'sense-making' of what they do and how they do it. In CoPs, knowledge is often shared through an 'apprenticeship system'. Furthermore, they assert that CoPs are one of the best methods of sharing tacit knowledge. According to Sandrock (2010:40-41), three main dimensions of the CoPs comprise the domain or the area of expertise of

the group members, the members who have a trusting relationship and commitment to the CoPs goals and the general interest of the community or organisational work that brings members together. Some of the advantages of CoPs are that they assist in matters like increasing individual skills and expertise, improving performance, sharing new ideas, fostering innovation, exchanging and combining knowledge in new ways, developing social capital among CoP members, increasing the flow of knowledge, improving the sense of belonging and sharing the expertise among members (Ngulube & Mngadi 2009:3). Gathering from the definition of CoPs and the above advantages, it is apparent that CoPs can be used in both formal and informal settings. Findings of a study that was conducted in an informal setting confirmed that the use of CoPs and ICTs can play a critical role in strengthening knowledge-sharing activities (Mosia & Ngulube 2005).

Literature has indicated that knowledge sharing through communal meetings has long existed or has been a common practice in indigenous communities; however, many IK proponents argue that the practice is gradually disappearing due to various reasons associated with modernisation. For example the culture of 'mind your own business' is gradually diffusing in rural communities and will soon replace the phenomenal culture of knowledge sharing and the spirit of 'ubuntu'. Biyela (2014:1) gives an example of important community meetings or ceremonies that were held by rural communities, like the one called 'ukweshwama' or the annual ceremony to celebrate the first fresh produce in January. The commitment and sacrifices that young unmarried men had to go through before the celebration was very challenging, but also very fascinating. However, it brought the realisation of the aesthetic value attached to some oral traditions, hence, this study is in agreement with Ntuli in Odora-Hoppers (2002:54) that some lessons can be extracted from our

past and can be of value for the present distilled. This is debatable because people have different views of moral values, of various rituals and of oral traditions. Libraries can play a critical role in facilitating the development of policies and legislations that can serve as guiding framework when CoPs are used for knowledge-sharing purposes.

2.4.3 Apprenticeship

Learning by doing (apprenticeship) is still a common tool for transferring knowledge in African rural communities (Easton 2004). Stevens (2008:26) argues that due to modernisation, traditional media of transferring IK is becoming largely unavailable. As already highlighted in this study, in Africa many rural communities are still practising initiation rites (the traditional method that is used to initiate teenage girls and boys into adulthood). Apprenticeship is commonly done according to age groups, gender, social class and religion. Sirika (2008) asserts that the basic principle of artisan training is that the learning process should take place, together with the transfer of skills to the artisan. There is much literature indicating the existence of platforms that promote skills transfer through apprenticeship among indigenous communities. Chisita (2011) and Stevens (2008) agree that libraries need to intensify programmes that promote the use of traditional media as basis for knowledge sharing relative to the needs of the community. For example, libraries can provide spaces for artisan training, initiation ceremonies, agricultural farming talks and other oral traditional conferences (Chisita 2011:3-4).

2.4.4 Preservation methods

In this context preservation was used to refer to the management of IK through the use of both traditional methods like oral traditions, folklores and other traditional method technologies. Modern methods of preservation were used to refer to

preservation of IK by codifying, documenting and digitising it. Many IK proponents concur that indigenous communities have had their methods and tools of managing and preserving IK like oral tradition, apprenticeship, artefacts, spirituality, food and seed drying systems; agricultural management technologies like permaculture and folklores (Stevens 2008). But the challenge is that traditional IK management and preservation methods have been disregarded and not sufficiently diffused like the modern methods. Many IK scholars advocate for the need of balancing the diffusion of both traditional and modern methods of IK management and preservation (Chisita 2011; Stevens 2008). Further IK proponents are of the view that preserving IK in its original form through in-situ preservation strategies like oral tradition, artefacts, folklores and rituals is critical as it helps IK to remain embedded in the minds of knowledge holders and also within their communities (Chisita 2011; Mire 2007; Mpofu & Miruke 2009; Ngulube 2003). The topic on preservation has been contested nationally and internationally because neither method whether traditional or modern has provided absolute answer to IK preservation challenges. Consequently many IK scholars agree that it is important to integrate both indigenous (in-situ) and exogenous (ex-situ) methods when managing IK (Becvar and Srinivasan 2009:421-422; Hart & Vorster 2006).

Despite challenges using ex-situ methods like ICTs and databases to preserve IK facilitates global knowledge sharing activities in the 21st century (Chisenga 2002). Ex-situ preservation strategies entail documentation, codification and digitisation of IK. Definition of terms takes precedence to the discussion of advantages and disadvantages of ex-situ preservation strategies or methods. Chapter Six of the IKS Bill (2014) has been set specifically for documentation and codification of IKS but does not give definitions of these terms. The responsibility of the function has been

assigned to the National Indigenous Knowledge Systems Office (NIKSO). Chapter Four of the South African National Policy of Living Heritage (2009) focuses on identification and documentation of living heritages. Documentation is defined as an act of committing elements of living heritage to record in order to keep the knowledge and skills about living heritage for posterity (South African National Policy on Living Heritage 2009:4). Further the Policy states that according to the 2003 UNESCO Convention safeguarding of heritage resources implicates identification, documentation, preservation and protection of heritage resources (South African National Policy on Living Heritage 2009:14). Chisenga (2002); Makinde and Shorunke (2013); Sithole (2007) agree that codifying and documenting IK into print and electronic formats facilitates global access.

As already highlighted in this study Koenig, as cited in Muswazi (2001:251), defines codification as the creation of structured information and knowledge sources through the use of ICTs. The aim of codification is to organise and manage knowledge to facilitate knowledge sharing and dissemination. For Akinwale (2012:4) digitisation implicates codification of information and knowledge for a specific purpose like preservation for posterity or for the purpose of global knowledge sharing. Akinwale (2012:4) defines digitisation as a process of codification of information or knowledge in order to provide global access. Further Akinwale (2012:4); Kalusopa and Zulu (2009) assert that digitisation comprises of two stages: the early stage and the advanced stage. In the early stage, analogue information is converted into electronic or digital format. The advanced stage involves the assigning of bibliographic details to the digitised document and record in order to facilitate retrieval. It is apparent that there is an overlap in the meaning of the terms documentation, codification and digitisation. For this study documenting, codifying and digitisation were used to mean

the process of transferring information and knowledge from oral to print or digital or from print to digital for a specific purpose like global sharing or long-term preservation. To facilitate retrieval and regulated global access and sharing of information second level of metadata creation is imperative. According to Muswazi (2001:251) library and information sector (LIS) has a proud history of organising, accessing, sharing, linking and preserving knowledge. This is debatable as Chisita (2011) argues that African libraries do not have sufficient technological skills to manage oral traditions hence the dearth of heritage resources including IK in libraries. All is not lost in Africa as some scholars are of the view that the volume of digital materials published in Africa is relatively small but gradually increasing including Africa's heritage resources (Akinwale 2012; Lor 2005:63).

Ocholla and Dlamini (2007:4-6); World Bank (1998:8-10) agree that codification, recording, documentation and digitisation all implicate knowledge management and preservation processes. It is crucial that precautionary measures are taken during digitisation to mitigate risks of knowledge and ownership distortions. For example in India, TDKL has ensured that digitised information about traditional medicines is patented. Australian libraries have also ensured that the issue of ownership is not compromised during the codification and digitisation projects. A policy known as Indigenous Cultural and Intellectual Property (ICIP) was developed to serve as a guiding framework in ensuring that the communal rights of the people are protected and patented so that the future generations of Australia can also enjoy the benefits. This policy was later turned into legislation (Janke 2005:100-110). In South Africa many policies and legislations have been developed to protect IK including the digitised heritage resources including IK like the DAC's National Policy on the Digitisation of Heritage Resources of 2010, the IKS Bill of 2014, the SA-IP Laws

Amendment Act (2013) and IKS Policy (2004). The challenge is rigorous implementation of these policies especially in remote rural areas. Similarly this study agrees with other studies that something is done but with little desired impact (Hart & Vorster 2006; Hart et al 2014).

Although digitisation has been prevalent in formal settings this study agrees with other studies that IK digitisation projects need to extend to informal settings. However digitisation is not a panacea to challenges of IK management especially in the rural context hence the function needs to supplement indigenous and in-situ IK management methods and not replace them (Stevens 2008).

2.5 Ownership protocols for IK practices and knowledge about the South African intellectual property law system

Because of the complexity related to IK ownership protocols, this topic has been debated in many international and national forums like the WIPO and the UNESCO. IK's inherent value has informed governments to realise the need of protecting IK by developing policies and legislation to serve as guiding frameworks. Within the South African context some weak aspects of the legislation have attracted criticisms and debates. Some advantages and limitations of the IP law are reflected in the next sub-topic.

2.5.1 IK ownership

In the definition of IK as given by many IK scholars, the issue of communal ownership is deeply entrenched. IK is viewed as the sum total of local knowledge that has been passed on over generations (Janke 2005; Ocholla 2007; Ranasinghe 2008). Many IK authors agree that the intellectual property laws do not cater sufficiently for the communal ownership, but place strong emphasis on the centrality

of the individual (Moahi, n.d; Mukuka 2010b:12). Based on that, Britz and Lipinski (2001:235) and Moahi (n.d) call for the harmonisation of IP laws worldwide in order to ensure that African communities also benefit from their IK. They are of the view that justice must be used as a normative tool to protect the communal ownership rights of the original creators of knowledge through commutative justice, contributive justice, distributive justice and retributive justice. Commutative justice implies that the digitisation of the African heritage cannot take place without the consent and fair compensation of Africans. Contributive justice implies that knowledgeable people in Africa should make available their vast wealth of knowledge for the benefit of human kind globally. Distributive justice means that Africa must distribute its documented heritage wider and must be helped and educated on how to access it once it is digitised. Retributive justice refers to the fair punishment of those who trespass intellectual property laws by stealing or damaging Africa's digitised heritage (Britz & Lor 2004:220-221; Britz & Lipinski 2001:240-242).

2.5.2 Intellectual property laws

Intellectual property is a legal term that explains the exclusive rights of the original creators and innovators of the IP. For one to be able to obtain IP rights, one has to express her or his ideas in some material form, for example, write them down, record them on a tape and make a sculpture, music or artwork. This protection of one's creativity or innovation has financial implications so that those who need to use it or to get copies from it can pay an amount of money (James 2004:3). For example, in South Africa, IP is protected by the South African Intellectual Property Laws Amendment Bill of 2008. In the Bill, 'intellectual property' is defined as any creation of the mind that is capable of being protected by law from use by any other person, whether in terms of South African law or foreign IP law, and includes any rights in

such creation but excludes copyrighted works such as theses, dissertations, articles, handbooks or any other publication which, in the ordinary course of business, is associated with conventional academic work (South African Intellectual Property Law Bill 2008). The main challenge that has been highlighted about the Bill is that it protects tangible IK and ignores intangible or tacit IK (Masango 2010; Saurombe 2009). Although the South African government has taken the initiative to involve various stakeholders, including the community members, in brainstorming the Bill through the University of North-West, it is not clear how this initiative has been rolled out throughout the country. Given this, it is important that libraries raise awareness and educate the communities about the IP laws and related laws. For example, folklores, both tangible and intangible IK, are recognised by WIPO as important elements of the cultural heritage of every nation. Therefore, a range of IP law tools have been adopted by a number of countries in order to protect folklores through 'sui generis' protection systems. In the South African Department of Trade and Industry (DTI) policy framework (n.d.) 'sui generis' is explained as a Latin word that means 'something of its kind or uniqueness'. Further it is indicated that what makes an IP system sui generis is the modification of some of its features so that they become unique to be accommodated under sui generis legislation (DTI, n.d). Janke (2005:104) gives a relevant example about the Chinese Law called "Chinese Draft Law of the People's Republic of China on the Protection of Ethnic Culture and Folklore of 2003". According to Janke (2005:104) the law provides for the protection of ethnic culture and folklore or traditional culture that is in 'imminent danger or of historical value within the territory of China'

The patents, trademarks, designs and copyright can be used to accommodate various aspects of IK. For example, countries like Botswana, Malawi, South Africa

and others have developed laws in order to protect their folklore expressions (Raseroka 2008:8-9). In Malawi, folklores are protected under Copyright Act of 1993. While the regimes or domains of IP laws are important but they also have limitations. For example protecting of information through patents, trademarks, designs and copyright may also disadvantage poor communities. It may limit access to information and thus perpetuate knowledge divide. Therefore innovative protective measures that favour the needs of grassroots innovators are imperative (Mashelkar in Odora-Hoppers 2002:189-191).

Nwauche (2010:55) indicates that the Universal Declaration of Human Rights (UNDHR), which was adopted in 1948, Article 27 International Covenant on Civil and Political Rights (ICCPR); the African Charter on Human and Peoples' Rights; the UNESCO Convention on the Protection of the Diversity of Cultural Expressions; the United Nations Declaration on the Rights of Indigenous People (UNDRIP) and others all recognise the protection of folklores and the collective and group cultural rights. According to Kerr (2006:145) the importance of protecting folklores was highlighted in the UNESCO-WIPO World Forum held in Thailand in 1997.

This study adds to the voice of other studies that libraries have the crucial role of educating communities about IP laws and their moral and ethical implications. In most indigenous communities, IK is embraced as a primary good and as important in the economic, political and social processes. Information professionals can help in explaining the rights of ownership of indigenous people to their IK in line with the commutative, contributive, distributive and retributive social justices. They can explain the moral and ethical implications of these laws (Britz & Lipinski 2001:240-242). Libraries can provide a physical or virtual space where the IP laws can be discussed and knowledge shared. The other sessions can include listening to radio

programmes and television programmes that educate people about these laws. This is important as it transpired during the brainstorming session of the IP laws at the University of North-West in 2008 that the laws have difficult legal terms for the community to understand (Saurombe 2009).

2.6 Role of Libraries and ICTs in managing IK

The UNESCO Public Library Manifesto (1994) describes the public library as the local centre of information which provides access to all kinds of knowledge and information. It describes the role of the librarian as that of “an active intermediary between users and resources”. The Manifesto further notes that the library services and collections must include all types of appropriate media and modern technologies, as well as traditional materials (Mnkeni-Saurombe & Zimu 2013:3). Wendland as cited in Chisita (2011:3), notes that libraries and archives as repositories of formal scientific and indigenous and other cultural materials perform vital preservation, educational and scholarly functions of access for the benefit of whole society (Chisita 2011:3).

2.6.1 The importance of libraries, ICTs and other resources

Many theoretical and empirical studies agree that public libraries have a vital role to play in providing access to a wide range of knowledge and information (Greyling & Zulu 2010; Mchombu 2006:5). However, this need has not been fully realised in many developing countries, especially Africa, because libraries are faced with many challenges, including the lack of financial resources, human capacity, technology shortages and the lack of legal frameworks at national and international level to support the library efforts to document and communicate IK (Sithole 2007:117). Chisita (2011:3) argues that African libraries have been a by-product of colonial rule

and some of the library content has not been relevant to the local needs. Greyling & Zulu (2010:30) report that African libraries are poorly equipped to make a meaningful contribution to the current global digital knowledge economy. Allaga (2004:34) indicates that the library model promoted in most of the countries in Latin America has focused on the information needs of the cities at the expense of rural communities. In most countries in the region, library activities for indigenous peoples have not been incorporated in a national or regional library plan (Allaga 2004:139). In such a national or regional library plan, 21st century libraries have to respond to the call of indigenous people and re-organise their services in line with the needs of the local people (Chisita 2011:3).

Nowadays, community libraries are accepted as important entities in helping communities manage their knowledge innovatively for development purposes. For example, in one of the rural areas of Malawi, the Chiwamba Community Information Centre model was developed in line with the needs of the local people (Mchombu 2006:12-17). Some IK scholars concur that one way of re-organising knowledge is by codifying or digitising it so that it can be available globally, but in a regulated manner (Akinwale 2012:4; and Chisenga 2002). According to Peters (2003) and Makinde and Shorunke (2013), documenting IK is not easy, it can be laborious, challenging and time-consuming. As already highlighted in this study, Akinwale (2012) laments that Africa lags behind in terms of digitisation of heritage resources, Chisita (2011) argues that African libraries do not have sufficient technological skills to manage oral traditions. Given that, some IK scholars recommend an interdisciplinary collaborative approach in IK documentation projects (Mondo, Baryamureeba & Williams 2007; Ngulube 2002:96-97).

In addition lessons can be learnt from the experienced libraries. For example, India has a reputable IK database known as the Traditional Knowledge Digital Library (TKDL). The TKDL digitizes traditional medicines and ensures that they are protected from abuse through the use of the International Patent Classification (IPC) system (Chakravarty 2010; Hunter 2005:117). The Northern Territory Library and Information Service (NTLIS) in Australia is another example of the network of libraries involved in IK digitisation projects in order to create an integrated database for IK sharing. This is done to ensure that their IK and cultural heritage are codified, managed, preserved and protected accordingly (Hunter 2005:117). In South Africa, the popular one is known as DISA. During its first phase, its participating institutions managed to digitize 40 anti-apartheid periodicals of three decades (1960-1990). This registers some progress in terms of digitisation of heritage resources in Africa but there is still room for improvement. DISA's other focus was on capacity building (Britz & Lor 2004:217; Peters 2003:82-84). However, it is not clear whether it has managed to build the capacity of information professionals so that they are able to cascade skills down to the community.

Many IK proponents have conducted studies in line with the role of ICTs and databases in managing IK. Results have indicated that ICTs cannot offer absolute solutions to the challenges of IK management and preservation. Some scholars view them as tools for rural development as they connect and facilitate information sharing between communities. They are of the view that they can also be used to reduce poverty (Jiyane & Mostert 2010:54; Mthoko & Pade-Khene 2013:36), but empirical findings of some studies seem to have different viewpoints. For example, in Ghana, an empirical study was conducted to assess the use of ICTs in the provision of agricultural, health, political, community development and educational information.

The results came up with only a few advantages such as efficient and effective communication for socio-economic development and efficient information gathering, storage, dissemination and fast access to information. It was discovered that rural communities rarely used them, even in areas where they were made available for use. Instead, the use of radio, television and video played an important role in educating farmers about agricultural farming (Alemna & Sam 2006:237). In their study, Lwoga, Ngulube and Stilwell (2010:182) also confirmed that farmers relied more heavily on verbal communication than on ICT, although ICT was made available to them. This strengthens the importance of integrating both in-situ and ex-situ preservation methods in managing IK. Chisita (2011:3) also endorses this argument when highlighting that documenting IK only is not enough, but IK should be put into a cultural context. Libraries and information centres should provide permeable spaces that allow the following activities to take place: freedom of speech, intellectual freedom, diffusion of knowledge, research and learning, access to information and preservation of cultural heritage and many more (Chisita 2011:3).

It can be concluded that librarians still have much work to do in helping to improve information and computer literacy skills of the rural communities, especially agricultural farmers. It is apparent that in order to make libraries relevant, compatible and simple to use, new model libraries need to be developed that will adopt both traditional and modern preservation methods as the South African IKS Policy (2004) and many LIS scholars have recommended (Chisita 2011; Stevens 2008).

2.6.2 Limitations of the current library models

As indicated in the above section literature has confirmed that libraries in the developing world have been biased in terms of content management and

preservation. They have tended to focus more on content that promotes Western ethos at the expense of local content (Allaga 2004; Chisita 2011). Putting it succinctly in Ngulube's (2002:95) words "the dominant information management model has been based on acquiring, organising and preserving recorded and codified knowledge which is largely generated by researchers, laboratories and research institutions". Further he argues that this model has little room for IK which is largely tacit and informal (Ngulube 2001:95). In this 21st century the traditional roles of libraries and cultural heritage institutions have been challenged in terms of relevancy of their content in line with the needs of the diverse users they are serving (Chisita 2011; Mutula 2008; Ocholla 2009). Mutula (2008) asserts that lack of cultural policies have hindered progress in putting IK on virtual spaces in Africa. Lack of/or limited strong digitisation policies to serve as a guiding framework in developing digital libraries that cater for the information needs of heterogeneous user communities has been a challenge (Chowdhury 2010:211; Koycheva in Lau, Tammaro & Bothma 2012:74).

A number of factors have thwarted the current library models in fulfilling their mandate as expected. They include lack of or limited skills especially technological skills needed to manage diversified media and big digitisation projects in libraries; limited or lack of materials and financial resources needed to manage varied media; limited or lack of support from the senior management including government. In some countries there have been lamentations that libraries are not even included in the national development programmes (Akinwale 2012; Allaga 2004; Lor 2005:63; Sithole 2007).

In South Africa the need for the new model library has also been highlighted in Chapter Eight of the IKS Policy (2004). The IKS Policy (2004) states that a new library model is required in order to:

- facilitate indigenous and community information access based on their identified needs;
- provide opportunities for indigenous and local communities to actively record and share their contemporary history, culture and language with both indigenous and non-indigenous people;
- and to use new technology creatively to support indigenous and local community development.

2.7 The recommended library model

While the importance of public libraries in information management and dissemination has been acknowledged globally, the greatest concern in the 21st century is for the libraries to become relevant to the diverse needs of the diverse users, especially those who had been historically marginalised (Hoq 2015:299). Makinde and Shorunke (2013) underline the need for libraries to re-examine their roles in line with the current needs of their diverse users. In addition how they can make an impact in changing lives for the better (Makinde & Shorunke 2013). Information management scholars have reiterated that there is a need for transformed libraries in Africa that are active participants in today's knowledge and information society (Davis 2009; Ocholla 2009). Therefore, for this study to remain relevant to the population studied, the recommended library model for the Dlangubo community is called the community-focused information centre (CIC). Becvar and Srinivasan (2009:421-422) assert that the CIC is the type of a library that

encourages people to participate in creating and sharing information about themselves and their communities. It has a great potential to empower and engage marginalized communities, including women. It uses collaborative and culturally sensitive approach (Becvar & Srinivasan 2009:421-422). However, Rosenberg, in Hoq (2015:302), divides the model into two dimensions: the first model includes a rural information centre that provides reading material and a referral centre that provides advice to the local citizens. The community can be motivated to contribute support financially and administratively. The second model involves rural information centres and libraries as part of a larger public library network system. Raju and Karisiddappa (2000), in Hoq (2015:302), propose nationwide rural development information networks connecting all institutions of rural development and urban libraries. It can be used to disseminate information about training schedules and research findings on rural development. Videoconferencing facilities can also be established for regular monitoring of progress and conducting of seminars. Furthermore, they propose the development of agricultural marketing intelligence and communication networks that can be used to connect all agricultural produce market centres (Raju & Karisiddappa (2000), in Hoq 2015:302). Mchombu (1999) proposes the idea of specialised rural information centres for women that would not only be led by women, but would consist of a plethora of information materials suited to the needs of women. This study argues that it is critical to look into the identified information needs of the population studied as a base or pre-requisite in providing relevant sources of information. For example, a study that was conducted by Kwake, Ocholla and Adigun in 2005 for the women living in Eshowe, Amatikulu, Gingindlovu and Mtunzini towns and villages of the Umlalazi district of KwaZulu-Natal concluded that women preferred the use of old technologies such as radio and television, if

available (Stilwell 2011:53). Therefore, understanding the information and knowledge needs of the community studied would help in addressing the identified gaps in line with the needs of the people.

According to Hoq (2015:305) the best library model is the one based on the following principles: understanding the needs of the local people; involve the local people in the running of the library; provide the library with adequate human, intellectual and material resources; market the services for effective usage of the library; and is able to sustain the library. Although this study agrees with the strategy of understanding information needs of users before instituting information and knowledge management strategies, it is not in agreement with the user-pay model as this might continue to marginalise the users who cannot afford to pay. For library fund-raising projects, reasonable rates of penalties can be instituted with the potential members who can afford to pay. For example penalties can be used with the members who have failed to attend pre-arranged discussion sessions for adult education literacy programmes. But, it is important to involve community members in decision making regarding issues that affect them to avoid imposing issues on them.

Some authors also suggest the use of ICTs in libraries as enablers or drivers for socio-economic development projects. However, another view is based on that the method that works for the Dlangubo community might not work for the population in Ghana or Uganda; hence, the information needs of the rural villagers should be determined before instituting the programme as the South African IKS Policy (2004) suggests. Some scholars suggest the importance of piloting project in order to determine their relative advantage and compatibility in line with the needs of the community. For example in Northeast India the successful use of ICTs in one Community Information Centres (CICs) was first piloted before the initiative could be

extended to other places (Satpathy in Hoq 2015). As already highlighted in this context the Community Information Centre (CIC) model is recommended for the area of study because it is deemed as relevant institution in dealing with the identified information and knowledge management needs of the Dlangubo community. Within the South African context, CIC model is important because Chapter 8 of the South African IKS Policy clearly supports new models of library and museum services that can involve local community members in IK management processes (DST 2004). Given that government support is crucial for such projects so that they can become effective in improving socio-economic development activities in rural areas.

2.8 Summary

This chapter commenced by reflecting on the theoretical models that were adopted for this study, the SECI model and Dol theory. SECI model was adopted because it provides a holistic approach in the articulation of the management of both tacit and non-tacit IK. The Dol theory was adopted to invigorate the argument of the SECI model. It is the theory of social change and it assisted in understanding the perspectives of the sampled participants regarding IK management in Dlangubo village. In addition and the limitations of these models were also briefly discussed. Subsequently the discussion was structured in line with the objectives of the study which were: what were the IK practices commonly used for daily survival in the area of study?; what methods and tools were used in managing and preserving IK?; how were IK ownership protocols managed and what did knowledge holders know about the South African Intellectual Property (IP) laws?; what role did libraries and ICTs play in managing IK?; and lastly but not least what model can be developed in line with the information and knowledge needs of the Dlangubo community and

recommendations of Chapter Eight of the South African IKS Policy of 2004? In closing the limitations of the current library models were also briefly highlighted.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Birks and Mills (2011:4) argue that it is important to understand the difference between research methodology and research methods as these are sometimes confused. Research methodology refers to a set of principles and ideas that inform the design of a research study (Birks & Mills 2011:4). It is about the decisions that a researcher makes regarding cases to study, research methods to use, data gathering and data analysis techniques to adopt when planning and executing a research study (Silverman 2010:109-110). Mathipha and Gumbo (2014:41) assert that research methodology encompasses research methods, data collection and data analysis techniques that can be used in order to conduct a research study. For Mouton and Marais (1990:15-16), the main goal is planning and executing the scientific research effectively in order to ensure that the findings are more credible.

In this study, the identification of a suitable research methodology and research methods for a research study was influenced by the research problem studied (Gray 2009:33). This study was based on the premise that IK has not been managed as scientific knowledge; hence, Lwoga, Ngulube and Stilwell (2010:176) argue that there is an urgent need to manage before much is lost.

3.2 Research approach

Due to the aim of the study, which is to establish and explore the management and preservation of IK at the Dlangubo village, a qualitative approach based on the constructivist philosophical assumption was adopted. Charmaz, in Gubrium and

Holstein (2002:677), posits that the constructivist approach places priority on the phenomenon of a study and sees both data and its analysis as having been created from the shared experiences of the researcher and the participants and the researcher's relationship with the participants. Constructivists study how participants construct meanings and actions in their natural settings. They also view data analysis as a construction that not only locates the data in time, place, culture, and context, but also reflects the researcher's analytical thinking. Because the researcher aimed to share her views regarding IK management challenges and how gaps can be addressed, this study used the qualitative approach based on a symbolic interactionism paradigm with constructivist methods. According to Berg (2004:8), symbolic interaction is an umbrella concept with a number of related theoretical orientations. Blumer (1969), in Berg (2004:8), as the original founder of this theory indicates that in symbolic interactionism, human beings communicate what they learn through symbols like language. Therefore the role of researchers is to attach meaning to these symbols and also gain understanding of how people interact in order to construct and re-construct their social world (Berg 2004:8; Charmaz in Gubrium & Holstein 2002:678).

Embedded in the constructivist paradigm is the qualitative approach, which uses a naturalistic in-depth inquiry to explore the studied phenomenon (Creswell 1998:15; 2008:46). The strong feature of the qualitative approach is the subjective understanding of human experiences in their natural setting (Silverman 2010:119). In this approach, the researcher relies more on the views of the participants and usually gathers data by conducting an inquiry in a subjective, biased manner. This process involves asking broad general questions, collecting the textual data and then

describing and analysing data in order to develop theory (Creswell 2008:46). Qualitative research uses tools like participatory mapping methods, structured, semi-structured and unstructured questions, observations and focus groups in order to study things in their natural settings and interpret them in terms of the meanings that people attach to them (Gray 2009:371-374). In qualitative research, structured questions can assist in comparing differences among things while unstructured questions assist in getting detailed information about a particular phenomenon. However, qualitative researchers are encouraged to make use of unstructured questions in order to get detailed information from the participants and thus ensure reliability (Creswell 2008:51-56). Researchers using the qualitative approach do not jump to conclusions quickly, but collect as much data as possible in order to do comparisons (Gray 2009:15).

For Silverman (2010:104-109), the qualitative approach is an intellectually diverse field in which researchers can use various models like naturalism, emotionalism, ethnomethodology and postmodernism to understand the social world. For example, naturalists give priority to understanding subcultures and they tend to ignore how people create meaning or make sense of their own world (Silverman 2010:105, 124).

3.2.1 The rationale for using the qualitative approach in this study

The nature of the topic and the research questions used in this study informed the rationale for choosing the qualitative approach (Creswell 1998:17; Silverman 2010:13; 120). The qualitative approach allowed the researcher to engage in an in-depth interviewing process in order to explore IK management challenges and opportunities experienced in the area of study. The aim was to get empirical evidence from the knowledge holders regarding the phenomenon studied. In this context, the researcher went into the field without prior knowledge to explore the

studied phenomenon in line with the objectives of the study. The qualitative data collection tools that were used included grounded theory, participatory methods, semi-structured interviews (SSIs), focus groups and observation.

Many related studies have used the qualitative approach to explore the problems studied. For example, Dahlberg and Trygger (2009) used both the quantitative and qualitative approach, but predominantly the qualitative approach, in-depth interviews and participatory observation to explore the unsustainable harvesting of medicinal plants for the primary health care purposes by the Mngobokazi community of the Mkuze wetlands of KwaZulu-Natal in South Africa. Keirungi and Fabricius (2005) used the qualitative approach, SSIs and the participatory method to explore the unsustainable harvesting of medicinal plants for commercial purposes by the community of the Nqabara village in the Eastern Cape Wild Coast in South Africa. Elia, Mutula and Stilwell (2014:20) used the qualitative approach and a post-positivist paradigm to study the way in which farmers used IK to adapt to climate change and variability in the semi-dry region of central Tanzania. Hart and Aliber (2010:79) used a combination of qualitative and participatory research methods and techniques in their study to determine the way in which farmers, especially female farmers in Limpopo and KwaZulu-Natal, used specific technologies (conventional and traditional) provided by government extension workers in producing food crops for commercial and subsistence use (Hart & Aliber 2010:79). Lwoga (2010:22) used the mixed method and mainly the qualitative approach to explore the application of knowledge management approaches and ICT in managing agricultural IK in selected districts of Tanzania. Mosia and Ngulube (2005) used the qualitative approach, focus groups and SSIs to study the management of knowledge for the sustainable use of estuaries in the Eastern Cape. Roos (2008:660) used the qualitative approach to

explore the way in which elders became increasingly vulnerable to drought in certain parts of South Africa. In this context, the qualitative approach was used to explore the challenges and opportunities of IK management and preservation in the Dlangubo village. The data gathered assisted in the construction and re-construction of theory for socio-economic development purposes.

3.3 Research design

GT was adopted as the research design for this study. Silverman (2010:356) defines GT as the way of inducing theoretically based generalisations from the qualitative data. GT uses the systematic inductive approach to inquiry, followed by a constant comparison of categories to generate theory grounded in data (Charmaz in Denzin & Lincoln 2011:360-361). GT is an iterative, comparative, interactive and abductive method. With an inductive approach the researcher begins the study by using a range of individual cases and then extrapolates data from them to develop categories (Charmaz in Denzin & Lincoln 2011:360-361). On the other hand, the use of a comparative approach in an iterative manner keeps grounded theorists interacting with data. An abductive approach ensures that unique findings are investigated further by developing hypotheses, questions and new data about them (Charmaz in Denzin & Lincoln 2011:360-361). This approach emphasises the importance of not ignoring negative cases in order to strengthen the credibility of the research study. Negative cases are cases or participants who do not respond in the anticipated manner or who have opposite reactions to the majority in a particular case studied (Morse in Bryant & Charmaz 2012:240).

3.3.1 The rationale for using GT design in this study

The advantage of using the GT design for this study was that the researcher had more direct control over choosing relevant cases to be studied, then further engaged with them in the process of data collection, coding, analysis and theory construction (Charmaz in Gubrium & Holstein 2002:675-676). Glaser (1978:3) asserts that in order to remain sensitive and make meaning of the data gathered, the first step is for the researcher to enter the research field with as few predetermined ideas as possible. His or her mandate is to remain open to what is emerging in the natural setting of a research field (Glaser 1978:3). Theoretical sensitivity is an abstract term that refers to a researcher's ability to give meaning to data and to recognize that data has pertinent meaning to the emerging categories as against data that does not (O'Reilly, Paper & Marx 2012:254). Silverman (2010:147) asserts that the broadening of the information by interrogating and analysing narrower cases assists in increasing the confirmability of the study. O'Reilly, Paper and Marx (2012:252-253) reiterate that theoretical sampling and constant comparison for purposive sampling naturally lead the researcher from one participant to the other as emerging data is captured, compared and contrasted against the original one in order to generate theory. It is a tool for digging deeper in order to understand the phenomenon being studied (O'Reilly, Paper & Marx 2012:252-253). According to Birks and Mills (2011:10-11), theoretical sampling helps the researcher to engage in snowball sampling in order to develop data that is thicker. Multiple interviewing, constant comparison and theoretical sensitivity should take place before the intermediate stage. Charmaz, in Gubrium & Holstein (2002), argue that these processes should take place throughout until data saturation and core categories that best fit the objectives of the study are developed. Silverman (2010:280-281)

recommends that a qualitative GT researcher must engage in a comprehensive data treatment of studying deviant cases and then develop properties for emerging categories before reaching data saturation. When the researcher thinks that he or she cannot probe any further, the last stage of data collection will be reached, which is called data saturation. It takes place when subsequent data gathered provides no new information to develop new properties of the categories (O'Reilly, Paper & Marx 2012:253-254). According to O'Reilly, Paper and Marx (2012:254), the theoretical saturation stage can only be reached after several months in the field, numerous in-depth interviews and dozens of observations, and, eventually, a conclusion can be reached that no new categories can be developed any further.

This study used GT based on the symbolic interactionism theoretical paradigm with constructivist methods. For Gray (2009:400), the principle behind symbolic interactionism is that people develop a sense of identity through their interaction and communication with others. In addition, a person's identity can be continually reconstructed as he or she learns new things from the environment surrounding him or her. As already highlighted in qualitative approach, the use of this approach was based on the premise that data gathered from the participants has multiple meanings, it reflects the researcher's and the participants' meanings, the researcher enters the unknown world of the participants and thus makes his or her subjective and objective interpretation of it. Therefore, a constructivist approach to GT was used to complement symbolic interactionism because they both emphasise the study of how action and meanings are constructed by the participants. A constructivist approach assisted in understanding implicit meanings that the community studied attaches to the objects they use in their natural setting and thus build conceptual

analysis of data based on those implicit meanings (Charmaz in Gubrium & Holstein 2002:678).

In this study, the constructivist inductive analytical approach was used because it takes cognisance of the views of the researcher and the participants. The ultimate goal was to construct and re-construct the social world (Charmaz in Gubrium & Holstein 2002:678; Roos 2008). Green (2008:51) warns constructivist theorists to guard against asserting everything as culturally orientated at the expense of the natural and the rational factors. For Green (2008:51), humans are holistic beings and thus should be developed likewise, by paying attention to their cultural, physical and spiritual needs.

Some related studies have used the various versions of GT to explore the social world. For example, Elia, Mutula and Stilwell (2014) used the post-positivist approach to conduct qualitative research and to a certain extent quantitative analysis to determine how farmers have used IK to adapt to climate change and variability in the semi-dry region of central Tanzania. The approach placed emphasis on the similar principle of rational reasoning of both the participants and the researcher in order to understand the phenomenon studied (Charmaz in Denzin & Lincoln 2011:364-365; Denzin in Bryant & Charmaz 2012:454-455). The GT and qualitative approach using constructivist theoretical perspective were found useful for this study because the ultimate goal was to construct a model informed by the information needs of the participants. The assumption was that the model would help improve IK management activities in the area of study, if needed.

3.4 Study population

A population is the total number of possible units or elements includes in the study (Gray 2009:148, 579). According to Neuman (2003:216, 541), it includes the unit that is being sampled, the geographical location, and the temporal boundaries of populations. For this research study, the population consisted of various categories of people older than 20. They included local community members who were the IK holders and practitioners from the seven sub-places that were sampled including: Dlangubo, Fasimba, Enqoleni, Khabingwe, MngaMpondo, Mqadayi and Nomyaca. They were selected because they had knowledge in various IK practices like crop farming, livestock keeping and various practices of folklores. The other category of the population consisted of the local fieldworkers and the knowledge intermediaries. The local fieldworkers and the knowledge intermediaries were selected because they were considered knowledgeable about the various government and non-government IK-related projects that were taking place in the area of study. In this study, the term 'local fieldworker' was used to refer to an individual who was employed for the project of the Department of Cooperative Governance and Traditional Affairs (CoGTA). The aim of the project was to create job opportunities and reduce poverty in the area of study. The term 'knowledge intermediary' was used to refer to those individuals who were either government or non-government officials or extension workers. They IK-related related matters, especially agricultural IK (IFAD 2009:25; Hart & Aliber 2010:84; Moris & Copestake 1993:10). In this study, knowledge intermediaries or extension officers emerged as snowball samples from the initial focus group discussions the researcher conducted with the community participants. They included participants from the following IK-related projects that were conducted in the area of study: CoGTA, Izulu Orphan Project (IOP), Sathi Gqi/Woza, Fasimba

Primary School and Mgitshwa High School. In this study, five out of every six crop-farming focus groups that were sampled consisted of the fieldworkers who were employed for the CoGTA project. The majority of them were women. Therefore, it was deemed important to give a brief overview of this project in the next section.

3.4.1 Co-operative Governance and Traditional Affairs

During the data collection period (November-December 2014), CoGTA was running its community work programme (CWP) in the area of study. The information gathered from the CoGTA website indicated that the CoGTA CWP was an innovative government programme that aimed to provide job opportunities and reduce poverty in the area of study. The programme has resorted under CoGTA since April 2010. The purpose of the CWP was to provide employment, especially to the unemployed youth; to contribute to the development of public assets and services in poor communities; to strengthen community development approaches and to improve the quality of life for people in marginalised economic areas by providing work experience, enhancing dignity and promoting social and economic inclusion.

As already highlighted in section 3.4 of this chapter, the term 'fieldworkers' was used to refer to the crop farmers that did the practical work in the CoGTA fields. However, the CoGTA knowledge intermediaries were divided into two categories: the immediate supervisors that supervised the fieldworkers during the field work and the senior supervisors that supervised the immediate supervisors of the fieldworkers. During the semi-structured interviews with the knowledge intermediaries or senior supervisors of the CoGTA project, responses indicated that the project started in the Dlangubo village in 2010 and was continuing indefinitely as they did not know when it would end. Females employed as fieldworkers in this project outnumbered males. The project focused on four key areas: crop farming, early childhood education,

health and social, and construction. The majority of the CoGTA fieldworkers were local community members. Because the fieldworkers convened in the community halls and school halls which were easily accessible, the headmen organised more focus groups for the CoGTA crop-farming fieldworkers. Consequently, in this study, five CoGTA crop-farming groups were sampled. They were based in various sub-places like Dlangubo, Fasimba, MngaMpondo, Mqadayi and Nomyaca. Each fieldworker worked eight days per month so that each person would receive a little salary each month. This was acknowledged as important as it helped the community members to provide for their families. Furthermore, the CoGTA knowledge intermediaries revealed that there was no structured annual programme in place that could guide them like the project annual goals, timelines, milestones, deliverables and contingency plans. Put differently, a project plan which includes what crop seeds should be planted, when, how, why and for whom did not exist. It was apparent that there was inconsistency, especially regarding the provision of training programmes and the supply of seeds, as it was indicated that it all depended on the contracted service provider of the time and some service providers were more supportive than others. The examples were not disclosed to maintain the ethical issue of confidentiality. The CoGTA senior supervisors or knowledge intermediaries indicated that the train-the-trainer model was used and the immediate supervisors would then further train the fieldworkers.

3.5 Sampling procedure

A sample is a set of objects, occurrences or individuals selected from a parent population for a research study (Gray 2009:581). In qualitative research, the non-probability or non-random samples are used (Neuman 2003:211). Non-random samples focus on how the sample or small collection of cases or units or activities

illuminates social life. The primary purpose of sampling is to collect specific cases, events or actions that can clarify or deepen understanding of the problem being studied (Neuman 2003:211). The aim of qualitative research is to find cases that are relevant to the problem being studied and are known as purposive samples (Leedy & Ormrod 2001:219). In GT, the logic of theoretical sampling for a purposive sampling is based on selecting cases on the basis of their relevance to the problem being studied (Silverman 2010:141-144; 270). Furthermore, qualitative researchers work with the small number of purposive cases.

In this study, the purposive and snowball sampling procedures were used. As already highlighted in purposive sampling, the researcher selects cases or subjects against one or more trait of the problem studied in order to give what is believed to be a representative sample. The disadvantage of purposive sampling is that the researcher may inadvertently omit a vital characteristic or may be subconsciously biased in selecting the sample. With snowball sampling the researcher identifies a small number of subjects who in turn identify other knowledgeable subjects in the population (Gray 2009:152-153). The purposive focus groups that were arranged by the headmen consisted of the CoGTA/CWP fieldworkers. They were selected because most of them had been employed in the CoGTA farming project since 2010. In addition, they were easily accessible as they were convened in the community or school halls during their lunch hours. Some of the fieldworkers played dual roles of being fieldworkers and knowledge holders because they were also active practitioners in various IK dimensions such as the initiation of girls into adulthood, beadwork, handcrafting of traditional mats and other folklores. For the purpose of this study, if the crop farmer practised or had knowledge about one or more IK practices, but mainly practised crop farming because of various reasons like poverty

alleviation or food security, the main activity remained the primary function while the other activity, like beadwork or initiation practitioner, was classified as the secondary function. The other purposive samples consisted of the female crop farmers who were not employed by CoGTA, the livestock keepers, the grass-mat weavers, the shoe hand weavers, the wood workers, the oral poets, the African art painter and sculptor, and practitioners engaged in various practices of folklores.

As already highlighted in section 3.4 in this study, seven out of eight sub-places of the Dlangubo Traditional Council were sampled. These included Dlangubo, Enqoleni, Fasimba, Khabingwe, MngaMpondo, Mqadayi and Nomyaca. The Khabingwe focus group of bead-workers was used for a pilot study. Bonisani was the only sub-place that was headed by a headwoman. It was not sampled because it was a fairly new sub-place and social structures like the community hall, the schools and the communal crop-farming group were not yet operational. Through snowball sampling the researcher was able to gain access to some knowledge intermediaries who were engaged in various IK-related projects in the area of study.

3.6 Data collection tools and procedures

In this section, the discussion started by explaining how the researcher made a formal request to enter the field of study, followed by how the open-ended questions were pre-tested and finally the data collection tools that were used for this study and how they were used.

3.6.1 Preparation and community entry

In order to adhere to the research ethic of respect (UNISA Policy on Research Ethics 2007; Tapela, Buscher, Maluleke, Twine & Steenkamp 2009) and facilitate smooth entry into various sub-places of the Dlangubo Traditional Council before the data

collection process began, the researcher attended the tribunal meeting of the Chief, the headmen and other interested community members. Such meetings are held every Tuesday from 09:00 until 13h00. They may be shorter or longer, depending on the agenda for the day. The purpose of attending was to be formally introduced to the chief and his headmen. The headwoman of the Bonisani sub-place was used as a gatekeeper to introduce the researcher to the forum. The chief gave the researcher an opportunity to explain the purpose of the research study briefly. The formal letter from the institution of study (the University of South Africa (UNISA): Department of Information Science) was handed to the chief (see Appendix 1). Thereafter, the chief officially granted permission for the research study to continue, as he viewed it as important for community development. The headmen were requested to help the researcher facilitate and coordinate the processes of meeting the knowledge holders or IK practitioners of the various sub-places. Thereafter, the researcher got the cell numbers of the headmen from the Chief's Court clerk or secretary so as to facilitate the process of gaining entry into the purposive samples of the various sub-places.

3.6.2 Pretesting the Khabingwe focus group

According to Silverman (2010:197, 272) pilot testing has its advantages and disadvantages, for instance, it allows a researcher to practice in-depth interview discussions and thus change the interviewing style, in case there is a need. Furthermore, Silverman (2010:199) argues that pre-testing can also be tricky as the researcher goes to the field without knowing the answers and questions that he or she will receive from the participants. In response, his or her bias might be reflected, therefore, it is imperative to precede interviews with a focus group, pilot the interview schedule and record and transcribe interviews. The latter is important as researchers sometimes fail to show sufficient evidence of their interviews and questions that

triggered a particular answer and other verbal and non-verbal cues that guided the interviewee in a particular direction.

In this study, pilot testing was conducted with a focus group comprising three women above the age of 60 from the Khabingwe sub-place. In order to gain access to the pre-test focus group. The researcher used one woman as a gatekeeper. The researcher gained familiarity with her when they were introduced to each other during the first informal visit in the area of study. The gatekeeper was then requested to make prior arrangements with the other knowledge holders of IK. She managed to get hold of the other two women who were almost the same age. They were all above the age of 60, had no formal education and used their thumbprints as signatures. They were selected because they had knowledge about the history of the place and had lived in the Dlangubo village for more than 10 years. In addition, two of them were bead-workers and one of them was an initiation practitioner. The discussion session took place in the hut of one of the bead-workers. It began with the researcher introducing herself and explaining the purpose of the research and ethical rights of the participants in their mother tongue (Zulu). The ethical checklist was used for this purpose (see Appendix 3). Thereafter, participants were asked whether they had any questions about their ethical rights and they were asked to indicate if they agree verbally to take part in the study. Put differently, the researcher requested them to verbally agree if they were willing to take part in the focus group discussions and interviewing sessions (see Appendix 3.1). They verbally agreed and also clapped their hands to emphasise their commitment. This was observed as a sign of respect.

Because this study used GT, the discussion was guided by the open-ended questions that ranged from the preliminary, intermediate and ending questions (see

Appendix 4). The idea of starting with the preliminary questions helped the researcher to retrieve data inductively, to engage with data interactively and to do a constant comparison of responses of the preliminary questions relative to the intermediate ones. In addition, this approach helped during the constant comparison of responses from one focus group to another focus group, especially those practising similar activities (Charmaz in Gubrium & Holstein 2002:680). Furthermore, Charmaz, in Gubrium and Holstein (2002:681), underscores that a researcher using the constructivist approach needs to define terms in order to understand implicit and tacit meanings attached to them.

3.6.3 Focus groups

Focus groups consist of a homogenous group of people who have similar characteristics in line with the topic being studied (Moris & Copestake 1993:38). They are used as a tool for gathering information for formative and summative evaluations (Krueger & Casey in Wholey, Hatry & Newcomer 2010:378; Ulin, Robinson & Tolley 2005:89-90). The advantages of using focus groups include the ability to gain understanding about group insight and interaction in a short time (Krueger & Casey in Wholey, Hatry & Newcomer 2010:382-383; Stewart, Shamdasani & Rook 2007:42-43; Ulin, Robinson & Tolley 2005:89). Furthermore, Krueger and Casey, in Wholey, Hatry and Newcomer (2010:381-382), highlight the distinctive features of focus groups as including: the questions that focus on the problem being studied. The goal is not to reach consensus but to share ideas and make recommendations. The environment must be relaxed, permissive and responsive. The participants must be homogenous. The size must be manageable – not too small nor too large with at least 12 or fewer participants. The rule of thumb is to hold three to four group sessions with each type of group, for example, when

comparing men and women. The researcher or facilitator can hold three to four group sessions with each type totalling six or eight sessions. The facilitator must be skilled in getting through all the questions within a specified time while also allowing the sharing of information (Krueger & Casey in Wholey, Hatry & Newcomer 2010:381-382). Because it might be a challenge to adhere to time, it is recommended that questions are piloted before the main research starts (Silverman 2010:272).

The literature does not seem to reach consensus regarding the size of focus groups. For example, Creswell (2008:226) recommends four to six participants. Stewart, Shamdasani and Rook (2007:58) suggest six to 12 participants with interviewing sessions that last from 1.5 to 2.5 hours, while Ulin, Robinson and Tolley (2005:91) recommend a group composition of eight to ten group participants. Krueger and Casey in Wholey, Hatry and Newcomer (2010:382) are of the view that the size can range from four to 12, depending on the background of the participants, the complexity of the topic and the expertise of the moderator. Smaller groups of five to eight are recommended for sensitive or personal topics and when participants have experience with the topic. The danger with a bigger group is that it might be difficult to control and to get in-depth responses (Krueger & Casey in Wholey, Hatry & Newcomer 2010:382-383). The number of sessions may be determined by the phenomenon or problem being studied (Krueger & Casey in Wholey, Hatry & Newcomer 2010:382-383; Silverman 2010:193). However, the standard principle in focus groups is to conduct three to four sessions with each case, with each session running not longer than two hours (Krueger & Casey in Wholey, Hatry & Newcomer 2010:383). The normal rate for collecting data from focus groups, including the

development of field notes, is to work with one group per day (Ulin, Robinson & Tolley 2005:91-92).

Mosia and Ngulube (2005:178) assert that there is usually no consistency regarding the number of participants, but it depends on the logistical arrangement at the time of the study. For example, Gloet in Mosia and Ngulube (2005:178), used two focus groups consisting of 26 and 31 participants, respectively. Hellstrom and Husted in Mosia and Ngulube (2005:178), used 27 participants in their focus group discussions (Mosia & Ngulube 2005:178). Furthermore, they posit that it is important that the group should not be too big so as to disadvantage sufficient participation by most members nor too small so as to be able to provide sufficient evidence. In addition, they indicated that the number of groups that should be convened depends on the composition of the group and the aims of the research study, but Morgan in Mosia and Ngulube (2005:178), argues that one group was never enough (Mosia and Ngulube 2005:178). In this study, 15 focus groups with a number of participants ranging from three to 14 were used. The bigger groups of more than 20 participants were divided into two focus groups to facilitate probing. Consequently, the study ended up with 15 focus groups, including nine crop-farming focus groups, two livestock keeping focus groups, one focus group for artistic folklore like the traditional wedding and three mixed gender groups for tangible and intangible folklores like beadwork, grass mats, shield work, African artwork, sculptures and oral poetry. The researcher worked with one to two focus groups per day. The session with each group ranged from one hour to two and half hours. The questions were open ended and included probing questions that emerged during the discussion sessions. The questions ranged from preliminary, intermediate and ending questions. The preliminary questions were general, but included probing questions. The

intermediate questions focused more on the special activities of the focus groups, but showed some overlap with the preliminary questions (see Question Guides attached as Appendices 5 and 5.1). The aim was to do a comparative analysis of the incidents of the participants in order to identify common categories and themes and ultimately develop a theory. At the end of the session, the transect walks were undertaken, if necessary, and if the conditions permitted (see Observation Guide as Appendice 5.1). An in-depth discussion regarding data collection and analysis of various focus groups is given under the sub-topic of data presentation and analysis and Chapters Four and Five of this thesis.

3.6.4 Interviews

In this study, SSIs were used. The SSI uses a blend of closed-ended and open-ended questions often accompanied by follow-up and probing questions like what, why and how. One hour is considered as a reasonable length of time to engage in the interviewing process and avoid boredom (Adams in Wholey, Hatry & Newcomer 2010:366). One disadvantage of using interviews, and to some extent focus groups, is that the researcher has to prepare guiding questions prior the interviewing session, instead of allowing data to naturally occur (Silverman 2010:131). Krueger and Casey in Wholey, Hatry and Newcomer (2010:381-382) posit that the facilitator needs to be skilled in getting through all the questions within a specified time while also allowing the sharing of information during the interviewing session. However, Silverman (2010:272) indicates that it might be a challenge to adhere to time frames; hence, it is important that questions should be piloted before the main research starts. One of the advantages of using focus groups is that they can assist in the pilot testing of data collection instruments (Krueger & Casey in Wholey, Hatry & Newcomer 2010:379).

In this context, SSIs were used because they were suitable to the problem studied and the objectives of the study. The use of the SSIs allowed the researcher to engage in an in-depth qualitative interviewing process with the participants and in their natural setting. The SSIs also accommodated questions that emerged during the interviewing process (Adams in Wholey, Hatry & Newcomer 2010: 367). The open-ended questions were asked in line with the objectives of the study. The SSIs were used with both the community members and the knowledge intermediaries. Two SSIs were conducted with the community members. One SSI was conducted with an oral poet from Enqoleni and the other with an elderly woman of older than 80 years from MngaMpondo. The latter interview was conducted by means of a house visit. The SSIs were guided by the interview and observation guides attached as Appendices 6 and 6.1. Five semi-structured interviews were conducted with the knowledge intermediaries. Each interviewing session consisted of one or two participants. The semi-structured interviews were guided by the interview and observation guides attached as Appendices 7 and 7.1. The pre-testing of the questions was done with the Khabingwe focus group of bead-workers in order to determine how long the answering of the open-ended questions would take (Krueger & Casey in Wholey, Hatry & Newcomer 2010:379, 389). The discussion session was guided by the question and observation schedules attached as Appendices 4 and 4.1.

3.6.5 Observation

Creswell (2008:221) explains observation as the process of gathering open-ended, first-hand information by observing people and places in their natural setting. It gives an opportunity to record information as it happens in a setting, to study actual behaviour and to study participants who have difficulty verbalising their ideas

(Creswell 2008:221-222). Furthermore, Creswell (2008:223-224) indicates that it is important for the researcher to select a site to be observed, to know who or what, when and how long to observe, to determine the role of an observer in terms of whether it will be participative or non-participative, to conduct multiple observations over time in order to get the best understanding of the site, and to decide on how field notes will be taken. Blackman, in Gudykunst (1983:286), argues that observation is another method of getting qualitative data. It uses a combination of methods and techniques like direct observation, direct participation, and interviewing and document analysis. Gray (2009:400) argues that direct observation entails working with people for a certain period of time (for months or years) in a place like in public health and medical institutions. For the observation method to be effective the researcher needs to play both roles of being an inside or outside role player (Gray 2009:400). The disadvantages of using observations are that the researcher needs to have good observation and analytical skills and an ability to pay attention to the visual details and other management issues like being able to identify deceptive actions of some participants (Creswell 2008:221-222).

In this study, both participant and non-participant observations were used. The observation of actual behaviours was conducted during the focus group discussion sessions and interviewing sessions. In addition, the body language, the non-verbal communications, the participant's tone of voice or physical movements were recorded as they communicated more than the verbal ones. For example, the frustration that the livestock keeping focus group had regarding the deployment of an extension officer was observed through the participants' facial expressions when they addressed that point. The use of hands when a participant addressed an important point was noted. The non-verbal cues used when participants unanimously

agreed with each other regarding points of concern were also noted. Things that were not clear during the observation sessions were clarified with the participants in order to remain faithful to the data (Creswell 2008:223-224; Ulin, Robinson & Tolley 2005:231). The transect walks were undertaken after the discussion and interviewing sessions. Non-participant observation checklist served as a guiding framework of all the non-verbal actual behaviours which were observed (See Appendices 5.1, 6.1, 7.1 and 8.1).

The researcher was also involved in the participant observation with the theoretical group that was organised in order confirm the challenges and opportunities of IK management and preservation with the participants from the various sub-places like Dlangubo, Enqoleni and Khabingwe. The knowledge intermediary or educator from Mgitshwa also took part in order to share knowledge about small-scale commercial farming. The aim was to observe and compare the crop yields and tangible folklores from the various sub-places. The researcher participated in the artistic folklores like the dancing and the singing, together with the participants. In addition, the group had a meal together where they ate the cow head's meat or 'inyama yenhloko' and dumpling and enjoyed Zulu beer.

3.7 Qualitative data analysis

Gray (2009:495) and Neuman (2003:439) explain qualitative data analysis as the process of examining patterns of similarities and dissimilarities among the cases studied in order to gain insight about them. In this study, data analysis was guided by the basic principles of grounded theory. The coding system was used to analyse data manually and electronically through the use of the software program NVivo10. The first stage of data analysis was based on thematic analysis. Thematic analysis is

a common method of identifying, analysing and reporting patterns or themes within the data sets. Themes are sentences or phrases that capture something important about the data in relation to the research objectives and research questions of the study. They attach meaning to the data sets that were collected from the participants. Coding is a pre-requisite for developing themes. The code is the label that is given to a particular piece or pieces of data that contribute to a theme (Centre for Statistical Analysis and Research 2015). In this study, data was analysed thematically as indicated in Chapters Four and Five.

3.7.1 Advantages of using NVivo

NVivo is a software programme that was used to analyse data for this study. It helped to organise data into different folders of small projects. It facilitated the process of developing and analysing codes quicker than doing it manually. In NVivo there are three important platforms that can be used when working with data. They include the navigation view, the list view and the detail view. The navigation platform consists of different compartments or tabs that help to organise and house data. The list view displays the content of the data and is subsequently explored in the detail view. For example, the sources tab can be used to archive the interview transcripts in the form of texts, audio (like voice recording and video recording). Nodes serve as containers for codes and themes. It can be used as containers for codes in line with the different objectives of the study. The simple basic method of creating codes in NVivo is to work with nodes. The new node can be created by clicking 'New Node' in the navigation view. The 'New' dialog box then opens and is given a new name like a folder. For example, it can be named 'leafy vegetables' if the intention is to include all the codes related to leafy vegetables like spinach, cabbages, pumpkins and amaranth. Once the new node has been created, it is automatically listed in the list

view and can be explored through the detail view. The basic principle used to create mother and child notes is to drag and drop it into a new node box or the already existing node box. Demographics can also be assigned like the grouping of responses according to various sub-places, gender, age and social class. The node classification option is used for assigning demographics. The system is user-friendly and allows one to delete, merge and uncode; hence, it is critical to have basic computer literacy skills (Centre for Statistical Analysis and Research 2015).

3.8 Ethical consideration

According to Babbie and Mouton (2005), Creswell (2008) and Gray (2009), in social scientific research, a researcher needs to be aware of the general agreements among researchers of what is proper and improper when conducting scientific research. Leedy and Ormrod (2001:107) assert that most ethical issues in research fall into one of four categories, which are protection from harm, informed consent, right to privacy and honesty with professional colleague. Firstly, the researcher should not expose research participants to undue physical or psychological harm. Research participants should be told the nature of the study to be conducted and be allowed to make a decision on whether they want to participate or not. If they decide to participate, they need to be informed that they have a choice to withdraw. Participation in the study must be voluntary. A researcher should respect participants' right to privacy and results should be presented to respect the participants' anonymity. Lastly, researchers need to report their findings in a complete and honest way and try to limit bias (Leedy & Ormrod 2001:107-108). Furthermore, they indicate that many disciplines have their own codes of ethical standards governing research that involves human subjects and animal subjects (Leedy & Ormrod 2001:108). Similarly, the University of South Africa (UNISA) is also

governed by its own codes of research ethics. The institution has also developed the UNISA Policy on Research Ethics to minimise the risk of non-compliance.

Because the study was conducted in a rural setting, the researcher started by requesting entry into the village. In the company of a gatekeeper, a meeting of the Dlangubo Traditional Council was attended during which the researcher was introduced to the chief. As already highlighted, the chief gave the researcher an opportunity to explain the purpose of the research study briefly. The letter from the university was submitted to the chief for record-keeping purposes (see Appendix 1). In return, the researcher received a letter authorising her to conduct research in the area of study (see Appendix 2).

During the interviewing session, the researcher was vigilant in maintaining high ethical standards, including confidentiality and respect for the community members, especially the elders (Creswell 2008:238; Tapela et al. 2009). The researcher ensured that before the commencement of the discussion and interviewing sessions the participants' ethical rights were explained clearly through the use of the participants' mother tongue, which was Zulu (see Appendix 3). Participants were informed that they had the right to withdraw in the middle of the session if they felt that they wanted to and then verbal consent forms were signed (see Appendix 3.1). In addition, the researcher respected what was considered as secret and sacred by tradition. The participants were not compelled to share what they did not wish to share. Strict confidentiality was maintained as participants were not encouraged to use their names (Creswell 2008:238). At the end of all the interviewing sessions, the researcher thanked the participants for their commitment in participating in the study. A brief review of the fieldwork done and a discussion of the way forward on how the research findings and recommendations would be shared was communicated

(Tapela et al. 2009). For this particular research study, the researcher committed to prepare a copy of the thesis that would be kept in the Fasimba Primary School as the knowledge intermediaries of that school were very cooperative. In addition, the school library was well organised and applied strict library rules. The chief was also informed about the arrangement and was in agreement with it.

3.9 Evaluation of qualitative data

Qualitative research has been criticised and viewed as subjective to the researcher's bias. Arguments have been based on that, it produces large quantities of data about a single, unique phenomenon of study, which sometimes lack generalisation (Cope 2014:89). Cutcliffe and McKenna (1999:378) reiterate that many scholars have been concerned about the credibility of the findings of qualitative research studies. In order to address these concerns, Lincoln and Guba (1985) have developed five criteria that can be used when evaluating the credibility of the findings of qualitative research studies (Cope 2014:89). These included credibility, dependability, confirmability, transferability and authenticity.

3.9.1 Credibility

Credibility refers to the truth of the data or the participant views and their interpretation and representation by the researcher. It can be enhanced by the researcher describing his or her experiences as a researcher and verifying the research findings with the participants. To support credibility when reporting a qualitative study, the researcher should demonstrate prolonged engagement, methods of observation, audit trails and researcher's reflexivity (Cope 2014:89). One challenge for this study is that it cannot claim to have demonstrated prolonged engagement with the participants due to time constraints. The researcher had only

60 days with the participants. Nonetheless, the researcher strove to gather as much data as possible in order to demonstrate the triangulation method. The basic principle of GT assisted in ensuring that constant comparison was done. In addition, the researcher engaged with the deviant cases like in a case of Fasimba Primary School knowledge intermediaries who integrated both traditional and ex-situ IK management methods. They were deviant because the majority of the participants sampled used in-situ IK management and preservation strategies like word of mouth, apprenticeship and artefacts.

In this study, the observation and analysis of non-verbal behaviours took place with all the sampled participants. Non-verbal behaviours were observed when the participants expressed anger, happiness or excitement. Depending on the logistics of the time, the transect walks were also undertaken to the fields to observe crops and carcasses of the cows. This was critical in confirming claims that transpired during the interviewing sessions. Reflexivity of the researcher in terms of bias was minimised as much as possible. However, the authenticity of data might have been compromised when data was translated and interpreted from the participants' mother tongue (isiZulu) into English. This study accommodated that because it used constructivism and symbolic interactionism approaches for data analysis purposes.

3.9.2 Dependability

Dependability is associated with the constancy of the data in similar conditions. This can be achieved if the study findings are replicated with similar participants in similar conditions (Cope 2014:89). In this study, consistent responses emerged from the focus groups that were practising similar functions, like crop farming and beadwork. For example, the types of crop vegetables that were grown were similar. In addition, the methods and tools that were used to manage and preserve IK were similar (word

of mouth, communal meetings, memory and observation, practising and imitating behaviours). The challenges regarding scarcity of water, poor fencing, animals and pests that destroyed their crops, stealing and lack of commitment and cooperation among the community members were reiterated in various crop-farming focus groups. In addition, the concepts of low marketing services of the finished products of the beadwork and other tangible folklores also emerged consistently in various focus groups that were sampled. Therefore, an element of dependability of the research results were observed in the various focus groups of the various sub-places practising similar functions. Findings were similar to other studies and indicated the lack or limited use of ICT facilities in managing IK (Ocholla and Dlamini 2007:1). Similarly, in this study it was apparent that not enough was known about the innovative methods of managing IK like the use of information centres, ICTs and intellectual property laws, despite IK being revitalised in developing countries (Njiraine, Ocholla & Onyacha 2010:194-195). This is cause for concern, as South Africa has IK policy and IK and heritage resources management legislations.

3.9.3 Confirmability

Confirmability has to do with using different methods or approaches in the same study to confirm those of another study (Cutcliffe and McKenna 1999:379). It explains the researcher's ability to demonstrate that the data represents the participants' responses and not the researcher's bias or viewpoints. The researcher can demonstrate confirmability by describing how conclusions and interpretations were established and showing that the findings were derived directly from the data. This can be achieved by providing rich quotes from the participants that indicate the themes that emerged during the sessions (Cope 2014:89). As already highlighted under the sub-topic of 'credibility' in this study, rich quotes embedded in the focus

group discussions and semi-structured interview transcripts indicated consistency in the respondents' responses, for example, when asked about various kinds of crops they planted and domesticated animals they kept. Rich quotes indicated the common vegetables they planted like "cabbages, spinach, pumpkins, beetroot, green pepper and sweet potatoes". The domesticated animals included "cattle, goats, chickens and low rates of sheep". When asked about the tools and methods used to manage IK, rich quotes indicated that "knowledge was kept in their minds as it was part of their upbringing". They indicated that they acquired IK through word of mouth, observing and practising the skills. When asked about the challenges, the common patterns emerged and included mainly "lack of cooperation, lack of formal education and challenges like lack of water, dry weather conditions, poor fencing, animals and pests destroying their crops". Therefore, it was concluded that the responses were important in adding to the findings of other similar studies that confirmed that drought was a critical factor in agricultural farming in South Africa. In addition, women outnumbered men in agricultural farming, yet had low levels of literacy skills, which needed urgent attention in order to help them improve their agricultural farming activities and other activities. This was important for their socio-economic development activities.

3.9.4 Transferability

Transferability refers to the findings that can be applied to the other settings or groups. Sufficient information from the respondents, including the context in which the research study was undertaken like the background, history, personalities, cultures and political conditions, should be given (Cope 2014:89; O'Connor 2011:421). Furthermore, Cope (2014:89) asserts that background information will assist in determining whether the findings can be transferable or not. This criterion is

also dependent on the aim of the study if it is intended for the generalisation of the findings of the study. In the context of this study, the focus group of the Fasimba livestock keepers proves to be a good example. The background, history, personalities, cultures and political conditions under which the participants lived could not limit some of the participants from expressing their anger about the challenging conditions they were experiencing as livestock keepers. They were assertive and openly needed to know whether the research was of mutual benefit or not, as they had experience of researchers benefiting from their knowledge and the community not benefiting in return. They indicated that they were experiencing a high death rate in their cattle and were in desperate need of help. They were angry because the extension officer from the Department of Agriculture that used to help them in treating various ailments was moved to another area. In this scenario, the background, history, personalities, cultures and political conditions influenced the discussion session.

3.9.5 Authenticity

Authenticity has to do with the ability and the extent to which the researcher expresses the feelings and emotions of the participants' experiences in a faithful manner. By reporting descriptively, readers can understand the participants' feelings through their quotes. Cutcliffe and McKenna (1999:378) posit that GT accommodates authenticity because its principles are grounded on constant repetition and comparison of responses from the participants. This helps the researcher to check the credibility of themes and categories that emerged in one interview relative to the subsequent interviews. Appleton (1995), in Cutcliffe and McKenna (1999:378), argues that triangulation can also be used to increase the authenticity and credibility of the qualitative research findings. Triangulation can

entail the use of basic principles of GT like constant comparative methods and the use of different data collection methods that culminate in producing the same results. In this way, the truth value is increased (Cutcliffe and McKenna 1999: 378-379). As already indicated, to increase the credibility of the research findings in this study, the basic principles of GT methods were used like the constant comparison of the results derived from the various focus group discussions. In addition, a voice recorder was used with the aim of supplementing the written GT memos. The use of the voice recorder was critical as it was impossible to capture thoughts, feelings and all the verbal communications simultaneously without the help of the voice recorder (Stocker & Close 2013:1). At the end of each session, the researcher and the fieldworker ensured that transect walks were undertaken in order to confirm the credibility of the data discussed with the various focus groups, like how crops were thriving under the dry weather conditions and to observe carcasses along the banks of the artificial dams. In addition, tangible folklores were observed as participants were asked to bring them along. The researcher also attended artistic rituals such as the traditional wedding or 'udwendwe' and 'Nomkhubulwane' as a non-participant observer to observe how these were conducted.

3.10 Summary

This chapter started by articulating the difference between research methodology and research methods. In this study, the qualitative research approach and the GT design were adopted. The qualitative approach was adopted because it uses the naturalistic in-depth inquiry in order to explore the phenomenon studied (Creswell 1998:15; 2008:46). The strong feature of the qualitative approach is on the subjective understanding of human experiences in their natural setting (Silverman 2010:119). Research design is defined as the process that involves the planning of

the structure of the research project and then executing those plans (Silverman 2010:109-110). The study population comprised of the community participants who were knowledgeable about IK, including CoGTA fieldworkers. The knowledge intermediaries emerged as snowball samples during initial interviews with the sampled participants. Participants were between the ages of 20 and 80 years. The sampling procedures that were used included the purposive sampling method and the snowball sampling method. For data collection this study used the focus groups, the semi-structured interviews, and the participant and non-participant observation methods. These data collection strategies were preferred because they were the best fit for the problem studied and research objectives of this study. In order to be able to understand the challenges and opportunities of IK management and preservation in the area of study, the basic principles of grounded theory method and NVivo 10 software were used for data analysis and interpretation, and theory development. Similar to the other research methods, qualitative research has its pros and cons. Based on that, the five criteria used to evaluate its credibility were also discussed in this study. To ensure that research did not infringe on the participants' rights, this study was guided by the research ethics as recommended by various authors, including the UNISA Policy of Research Ethics.

CHAPTER FOUR

PRESENTATION OF DATA

4.1 Introduction

In this study, the interview schedule was divided into three sections: preliminary, intermediate and ending questions. The aim was to align them to the objectives of the study. For example, the preliminary questions focused on the IK practices that were commonly used for daily survival in the Dlangubo village. The intermediate questions looked at the methods and tools that were used for managing and preserving IK and ownership protocols. The ending questions focused on understanding what the sampled participants knew about the South African intellectual property law system and whether they were using libraries, databases and ICTs in managing and preserving IK. Many studies agree that, in qualitative research, the use of numbers is not as important as the words and language. However, sometimes numbers might help to quantify NVivo codes like the number of male participants who practised livestock keeping. In addition biographical information is important as it might be linked with the activities of the community studied (Romm, in Mathipha & Gumbo 2014:134).

4.2 Biographical information of the participants

Table 4.1 below illustrated the IK practices that were identified in the area of study and the biographical information of the participants such as age, gender, location and educational level.

Table 4.1: IK Practices of various sub-places and biographical information of the sampled participants

IK Domain	Sub-place	Female	Male	Age range	Level of education
Vegetable crop	Dlangubo	26		20-80	No formal education; primary; secondary; grade 12
	Enqoleni	14			
	Fasimba	03			
	MngaMpondo	23			
	Mqadayi	04			
	Nomyaca	26			
Livestock keeping	Fasimba	03	25	30-80	No formal education; primary; secondary; grade 12; post-secondary qualification
Tangible folklores	Enqoleni	03	03	30-80	No formal education; primary; secondary; grade 12; post-secondary qualification
	Khabingwe	03			
	Nomyaca	01	02		
Artistic expression & intangible	Dlangubo MngaMpondo	03	01	30-80	No formal education; primary; secondary; grade 12; post-secondary qualification
TOTAL		109	31		

For this study, seven out of eight sub-places of the Dlangubo Traditional Council were sampled. They included Dlangubo, Enqoleni, Fasimba, Khabingwe, MngaMpondo, Mqadayi and Nomyaca. The Khabingwe focus group of bead-workers was used for a pilot study. With regard to biographical information, it emerged that the following IK practices were common across the board: vegetable crop, livestock, tangible and intangible folklores or artistic expressions. In terms of gender representation in IK activities, women seemed to be dominant over their male counterparts, with the exception of livestock farming. Notable, only the Fasimba community practised livestock farming, the reason for which will be discussed later in this chapter. Overall, the age of respondents ranged from 20 to 80 across the board, with most participants being in the middle age (30-60) bracket. The oldest participants were two females who were older than 80 years. One was from MngaMpondo and had a rich history of genealogical line of the Biyela chieftainship and the other was from Nomyaca. She practised beadwork and crop farming. The education levels of participants ranged from no formal education to post-secondary qualifications. Most of those with higher education were young males and females and most of the older ones had lower levels of education. There was no apparent distinction between males and females with regard to educational levels. For this study, the researcher managed to conduct nine crop-farming focus group interviews, two livestock focus groups, four focus groups for the folklores, two semi-structured interviews and five semi-structured interviews for the knowledge intermediaries.

In the next section, the results will be discussed thematically. The discussion was guided by the objectives of the study and began with the IK practices that were commonly practised in the area of study. In Chapter Two it was highlighted that in the literature reviewed for this study inconsistency was noted regarding the use of

terminology like vegetable crops, domesticated and undomesticated plants. In order to clear the confusion, in this context the term vegetable crop was used for the edible domesticated and undomesticated plants with the exception of medicinal plants.

4.3 IK practices

Transcripts and data sets presented in this section portray the responses of the sampled participants in line with the questions that were asked during the preliminary phase. IK practices were presented in order of priority and in line with the responses of sampled participants, including the researcher's observation and interpretation. Similar to the findings of other studies, agricultural farming, including vegetable crop farming and livestock farming, emerged as dominant activities in the area of study. It must be noted that in this study interviews were conducted in the mother tongue of the sampled participants, which is 'Zulu language'. Further, the researcher translated the transcripts into 'English language'.

4.3.1 Vegetable crops

Dlangubo (CoGTA) crop-farming focus group interview transcript:

Interviewer: "What are the types of crops that you normally planted in the CoGTA gardens?"

Participant: "Spinach; cabbages; pumpkin and lettuce".

Participant: "Beans; peas and maize".

Participant: "Beetroot; onions; tomatoes; potatoes; sweet potatoes and amadumbes".

Participant: "Chillies; green pepper and tomatoes".

Participant: “Another traditional plant foods that we used to enjoy and some of them are no longer used include: isithwalaphishi; izinkobe; izindlubu; amadumbe; ubhatata; isijabane; amabhece and umbila (See Appendix 11 for the definition of Zulu terminology). These foods are fat free and nutritious”.

Interviewer: “Where do you get seeds from?”

Participant: “We got seeds from the contracted service provider, but the supply was inconsistent and it depended on the contracted service provider as some were more supportive than others. We also got seeds from the advisor, the knowledge intermediary from Mgitshwa High School who gave us plant seeds or dry seeds in case she had surplus”.

Interviewer: “Why are the types of plants highlighted important to you?”

Participant: “The local clinic professionals have reiterated that fresh vegetables from the garden are important because they are more nutritious, thus we need to eat them frequently”.

Participant: “They are important for food security”.

Participant: “The harvested crops are helpful in the school feeding programme and thus help in reducing hunger and poverty in the area”.

Participant: “They are also supplied to the local clinic so that they can be further supplied to the poor families and sick elders who are sick and bedridden”.

Participant: “Through the school learners they are distributed widely to the poor households in the area of study”.

Participant: “In September 2013, the surplus harvest was celebrated during the gathering in the chief’s tribunal court. The chief and some of his headmen; the top officials of the uThungulu district; uMlalazi Municipality; CoGTA and the local Department of Agriculture attended the ceremony. Traditionally, this was called ‘ukweshwama’ but the custom is no longer common in some areas, including Dlangubo. Food is not even preserved in the granaries or ‘izingolobane’ anymore. Nowadays, our children do not know anything about granaries or ‘izingolobane’”.

Interviewer: “What are the challenges experienced regarding crop farming?”

Participant: “There are many challenges including: scarcity of water; pests and animals destroying our crops especially beetroot and tomatoes; poor or no fencing as we use shrubs for fencing; drought; lack of resources and lack of markets to sell our crop yields”.

Enqoleni crop-farming focus group interview transcript:

Interviewer: “What are the types of crops that you normally plant in your communal gardens?”

Participant: “Spinach; cabbages; pumpkin and lettuce”.

Participant: “Beans; peas and maize”.

Participant: “Beetroot; onions; tomatoes; potatoes; sweet potatoes and amadumbes”.

Participant: “Chillies; green pepper and tomatoes”.

Interviewer: “Where do you get seeds from?”

Participant: “We meet three times per week and put money together to buy seeds”

Interviewer: “Do you get training help on crop farming like from anyone, either internally or externally from the Department of Agriculture?”

Participant: “No we just use our traditional knowledge. One time an advisor came to take a soil sample for testing but did not come back with the results”.

Interviewer: “How have you managed to maintain social cohesion in your group, because most independent groups in the area have dissolved?”

Participant: “We have an understanding for each other and if there is a problem we sit together and resolve it”.

Interviewer: “What is your crop harvest used for and how is the surplus managed?”

Participant: “We use it as food security and the surplus is supplied to the schools and clinics”.

Participant: “Initially, our advisor used to take the surplus to the market for trading and brought us cash to use for other family responsibilities, but he stopped doing and we do not know why. Now it is a real challenge because some of our crop yields get stale; hence we supply it to the schools and the local clinic for the sick and the poor”.

Interviewer: “What are the challenges experienced regarding crop farming?”

Participant: “There are many challenges including: scarcity of water; pests and animals destroying our crops especially beetroot and tomatoes; poor or no fencing as we use shrubs for fencing; drought; lack of resources and lack of markets to sell our crop yields”.

Participant: “Another challenge is that we are only planting for consumption, it is our wish that one day we can be able to plant for commercial purposes. We wish to be helped regarding that or government officials to help us on that, if possible”.

Fasimba (CoGTA) crop-farming focus group interview transcript:

Interviewer: “What are the types of crops that you normally planted in the CoGTA gardens?”

Participant: “Spinach; cabbages; pumpkin, maize and lettuce”.

Participant: “Beetroot; beans, onions; potatoes; sweet potatoes; and amadumbes”.

Participant: “Chillies; green pepper; peanuts and tomatoes”.

Interviewer: “Where do you get seeds from?”

Participant: “We got seeds from the contracted service provider, but the supply was inconsistent and it depended on the contracted service provider as some were more supportive than others. We also got seeds from the advisor, the knowledge intermediary from Fasimba Primary School who gave us plant seeds or dry seeds in case he had surplus”.

Participant: “In addition, he educated us about the recycling of plastic, metal and paper in order to raise funds to buy seeds. He has also educated us on how to make permaculture in order to improve soil management”.

Interviewer: “Why are the types of plants highlighted important to you?”

Participant: “They are important for food security”.

Participant: “The harvested crops are helpful in the school feeding programme”.

Participant: “They are also supplied to the local clinic so that they can be further supplied to the poor families and sick elders who were sick and bedridden”.

Participant: “Through the school learners they are distributed widely to the poor households in the area of study”.

Participant: “Sometimes the surplus is sold to the community so that we can buy seeds. We as CoGTA employees are not allowed to take some home but are meant for school feeding programmes and also for the poor families in order to fight hunger and poverty in the area”.

Interviewer: “What are the challenges experienced regarding crop farming?”

Participant: “There are many challenges including: scarcity of water; pests and animals destroying our crops especially beetroot and tomatoes; poor or no fencing as we use shrubs for fencing; drought; lack of resources and lack of markets to sell our crop yields”.

MngaMpondo; Mqadayi and Nomyaca (CoGTA) crop-farming focus group interview transcripts:

In the foregoing transcripts (Dlangubo, Fasimba and Enqoleni) similar response patterns were noted; hence, in the forthcoming transcripts, similar responses of the participants from the various sub-places were integrated.

Interviewer: “What are the types of crops that you normally planted in the CoGTA gardens?”

MngaMpondo; Mqadayi and Nomyaca participants: “Spinach; cabbages; pumpkin; lettuce; beans; peas and maize; beetroot; onions; tomatoes; potatoes; sweet potatoes; and amadumbes; chillies; green pepper; and tomatoes”.

Nomyaca participant (80-year-old female): “Here at Nomyaca we used to have a communal group and we planted various vegetable crops like cabbage; spinach; sweet potatoes; potatoes; beetroot; onions and tomatoes. We met at least three times per week and put money together to buy seeds. The group dissolved because of a lack of cooperation. In addition, the community was not supportive. They preferred buying vegetables from the outside markets despite being told that informal trading of the vegetable crops was taking place in the area. In addition, we had problems of drought; scarcity of water; shortage of seeds and pests and animals destroying crops especially beetroot and tomatoes. The fencing was not much of a problem as the Department of Agriculture had done a good one for us”.

MngaMpondo participant (80-year-old female): “Another traditional plant foods that we used to enjoy and some of them have disintegrated include: isithwalaphishi; izinkobe; izindlubu; amadumbe; ubhatata; isijabane; amabhece and umbila (see Appendix 11 for the definition of Zulu and English terminology). These foods are fat free and nutritious”.

Interviewer: “Where do you get seeds from?”

Participants: “We got seeds from the contracted service provider and sometimes bought them from the harvests that was sold”.

Interviewer: “Why are the types of plants highlighted important to you?”

Participants: “The local clinic professionals have reiterated that fresh vegetables from the garden were important because they were more nutritious thus we need to eat them frequently”.

Participants: “They are important for food security”.

Participants: “The harvested crops are helpful in the school feeding programme”.

Participants: “They are also supplied to the local clinic so that they can be further supplied to the poor families and sick elders who were sick and bedridden”.

Participant: “Through the school learners, they are distributed widely to the poor households in the area of study”.

Interviewer: “What are the challenges experienced regarding crop farming?”

MngaMpondo and Mqadayi participants: “There are many challenges including: scarcity of water; pests and animals destroying our crops especially beetroot and tomatoes; poor or no fencing as we use shrubs for fencing; drought; lack of resources and lack of markets to sell our crop yields”.

4.3.2 Livestock

As already highlighted in Table 4.1, the livestock farming focus group consisted of 28 participants. To facilitate probing they were divided into two groups of 14 participants each. Because responses were similar they were incorporated into one transcript.

Fasimba livestock farming focus group interview transcript:

Interviewer: “What are the types of domesticated animals that you normally keep?”

Participant: “Cattle, goats and chickens”.

Interviewer: “What about sheep and pigs?”

Participant: “We farm sheep at a very low rate and pigs we do not farm them and they were not popular with our parents”.

Participant: “With sheep, weather conditions do not permit and with pigs we are not used to their farming system”.

Interviewer: “Why are the cattle, goats and chickens important in your farming system?”

Participant: “They were part of our upbringing, we learnt about them from parents and grandparents”.

Participant: “A man was respected depending on the number of cattle he owned”.

Participant: “Cattle are sometimes used to pay the lobola or penalty when the unmarried man impregnated unmarried matured girl”.

Participant: “Cattle are sometimes sold in order to pay for the school fee and other family responsibilities”.

Participant: “Cattle and goats are used to perform traditional rituals like ‘umkhehlo’; ‘umemulo’; and cleansing rituals after the death of a family member”.

Participant: “Cattle; goats and chickens are used as food security”.

Participant: “The skin of cattle and goats is sometimes used to make shield work”.

Interviewer: “What are the challenges experienced regarding livestock keeping?”

Participant: “Drought has killed a lot of our cattle, there has been scarcity of water and our cattle got trapped in the mud of the artificial dams *Participant:* “We have no

medication to treat ailments because the Department of Agriculture deployed the officer who used to help with that”.

Participant: “In addition, there is scarcity of grazing lands due to drought. In addition, we are unemployed and do not have money to buy cattle feeds and medication”.

Interviewer: “Why are you so dependent on government nowadays, what about your knowledge about traditional plants to treat ailments for your livestock?”

Participant: “Very true. As you say, we still have knowledge in our heads like I recall of a traditional plant called ‘umqaqo’ which was used to treat worms in cattle, but where do we get those plants in these dry weather conditions because they are nowhere to be found”.

Participant: “It must be emphasised that the Department of Agriculture needs to come forth and help in resolving the high death-rate crisis of our cattle and scarcity of food and water”.

4.3.3 Folklores

In this study, folklores were divided into three practices: tangible; intangible and artistic expressions. The tangible folklore that emerged as prevalent in the area of study included beadwork, grass mats, shield work, woodwork, sculptures, African artwork and jewellery. The Khabingwe beadwork focus group of three elderly women above the age of 60 was used as a pilot sample. The intangible folklores included oral poetry and oral history. The artistic intangible folklores included: initiation of girls, ‘Nomkhubulwane’, ‘umkhehlo’ and ‘umemulo’. Some rituals like ‘ukukhipha ucu’ were still embraced, but had disintegrated.

4.3.3.1 Tangible folklores

1) Beadwork

Interviewer. “I realize beadwork is still embraced in Dlangubo and why is still of value to you?”

Enqoleni participant. “It is the part of our upbringing and beaded work is worn during traditional ceremonies, especially initiation ceremonies and others”.

Khabingwe participant. “It is part of upbringing, it is the culture that we inherited from our parents; hence we embrace it”.

Mqadayi participant. “It is part of upbringing and is the culture that reminds me of my past or connects me to my past”.

Nomyaca participant (80-year-old female): “It is part of me I acquired the skill while I was still a small girl”.

Interviewer. “Is beadwork used only for cultural value or you also associate it with economic value?”

Enqoleni participant. “With my family, the financial gains through the hiring and selling has boosted the family in the school fees and other family responsibilities; hence all my children have now acquired the skill”.

Khabingwe participant. “The money gained from both the hiring and selling of beadwork has helped a lot in putting bread on the table, including other family responsibilities”.

Mqadayi participant. “The business is low, but the few pennies one gets help in putting bread on the table”.

Nomyaca participant (80-year-old female): “My grandson school fee has been paid from the beadwork sales and the hiring services; hence I have also transferred the skill to him”.

Interviewer: “Tell me about the mixing of colours, does it have any meaning or did someone teach you about it?”

Enqoleni participant: “With me, the main purpose is to make the item more attractive mainly for marketing purposes”.

Khabingwe participant: “I use my discretion to blend the colours to make the item more attractive for selling purposes”.

Mqadayi participant: “Traditionally the colours used to send messages like the red and white beaded work was used by a matured girl to send the message of love for courtship to her admirer or ‘ukukhipha ucu’ in Zulu language. But nowadays, the mixing of colours has got to do with the importance of marketing the beaded work”.

Nomyaca participant (80-year-old female): “In our olden days beadwork colours were used to send messages, but nowadays things are different; we mix colours mainly to attract customers. For example, I am able to emulate the patterns and even the colours that I see from the television like the beaded work used by the Maskanda singing group”.

Interviewer: “What about the challenges related to your work, now tell me more about that?”

Enqoleni participant: “With me, I am unemployed and have challenges of buying beads as they have become expensive and not to mention transport money”.

Another Enqoleni participant: “Sometimes the sales are low and we suffer a lot during those times as the pension grant is not enough to cover all expenses”.

Khabingwe participant: “Nowadays, beads are expensive. As pensioners, it is challenging to pay for transport and for beads. In addition, the market is seasonal as sometimes the sales are low and quiet. But I am already known in the area and sometimes people flock to buy and hire depending on the cultural event that will take place. The customers include teachers, learners and local community members”.

Khabingwe participant: “In addition, some external people or let me say educated people come here with their own agendas. For example, one came and promised to open cooperatives for us. She took copies of identity documents and some of our beaded work and never returned it”.

Mngampondo and Nomyaca participants: Similarly, participants indicated that external people come in the area, take their certified identification copies and promise to open cooperatives for them and if the process fails they do not return to explain to us the challenges experienced.

Mqadayi participant: “Many people are doing beadwork and the market is low. We wish government can help build us a local central market where the tourist can come and buy our products”.

Nomyaca participant (80-year-old female): “When I was still in a state of good health, I used to go and sell for the cashiers at the supermarkets like Boxer, Checkers, Pick n Pay and Spar and would make a lot of money to support my family. I was known in the area and people would come to hire and buy, but now even my vision is poor and I am not making good money”.

2) Grass mats

Interviewer: "Tell me more why are grass mats still of value to you?"

Enqoleni participant: "It is the part of our upbringing and during my first daughter's wedding I saved a lot because all those that were used as dowry were hand made by my hands".

Interviewer: "How many were they and was it not a challenging job?"

Enqoleni participant: "They were about ten and the innovative wooden tool that you see there helped me in fast-tracking the process".

Mqadayi participant: "Grass mats have cultural value. Women use them for sitting, especially during traditional functions and during the day at home. For example, I have a cultural function here at home in the next few days and they will be used for sitting".

Another Mqadayi participant: "During the traditional ritual of paying ilobola, the small grass mat called 'isicephu' is used to receive the money. There is a belief that it symbolizes that the money is received on behalf of the ancestors".

MngaMpondo participant (80-year-old female): "The pile of grass mats that you see hanging on the inside top corner of the roof of my hut were given to me as gifts from my eldest daughter who makes them because she knows I like sitting on them as well as sleeping on them".

Interviewer: "Do they have any economic value attached to them?"

Enqoleni and Mqadayi participants: "Grass mats have economic value because we sell them in order to get money and use for various family needs".

MngaMpondo participant (80-year-old female): “My daughter sells them in the markets and gets money for her household needs”.

Interviewer: “What are the challenges experienced in maintaining the business?”

Mqadayi participant: “The type of grass called reed has become expensive. The place where we used to fetch is far and it is expensive to travel. In addition, it was also labour intensive to cut reed on your own; hence buying it was a better option”.

Enqoleni participant: “Nowadays reed, coloured cotton and wool used as innovative tools to make grass mats more colourful and attractive are expensive”.

Enqoleni and Mqadayi participants: “The innovative wooden tool helps to speed up the grass-weaving process and it is labour intensive to make it”.

3) Other tangible folklores like shield work, woodwork, sculptures, African artwork and jewellery, and traditional hand-woven and beaded shoes

In order to save space and eliminate the number of pages, the less commonly practised folklores were combined and discussed in one transcript.

Interviewer: “Tell me more about other tangible folklores and why are they important?”

Enqoleni participant: “Here at Enqoleni we have people that make clay pots, amahluzo or amavovo and izinkezo (See Appendix 11 for definitions). Unfortunately, they did not pitch for the interviews but some are at work”.

Another Enqoleni participant: “I make wooden tools and decorate them with electric wire and in Zulu that is called ‘ukucena’. It is important, as the wooden sticks are used by men during traditional dancing and singing. The decorated small dishes are used to cover the traditional calabashes with Zulu beer”.

Another Enqoleni participant: “I do shoe handcrafting and it is of economic value as I sell it in order to make a living. In addition, I do sewing like school uniforms and skirts for the Shembe religion. I sell the stuff but the market is low”.

Another Enqoleni participant: “I make shield work and it is of cultural value because it is used by men during traditional dancing and singing. In addition, I sell it but the market is low”.

MngaMpondo participant (80-year-old female): “In my house I still have traditional tools like amathunga; izinkezo; izigqiki; amahluzo or amavovo and izithebe. Some are used during the traditional ceremonies but some are no longer used. These tools are important as they remind us of our cultural traditions”.

Nomyaca participant (70-year-old male): “I make wooden tools and kitchen utensils and decorate them with electric wire and in Zulu that is called ‘ukucena’. Currently, there is nothing in stock because everything was sold”.

Nomyaca participant: “I make African art jewellery like earrings, bracelets and necklaces. I also do African art paintings, including sculptured artefacts. This is all influenced by my educational and environmental backgrounds”.

Interviewer: “What are the challenges experienced in maintaining the business?”

Enqoleni participant: “It has now become like a song as it has been reiterated more than twice: the challenges include lack of resources and a central market where we can sit together to teach each other handwork and also market our products”.

Nomyaca participant (70-year-old male): “I am now a pensioner and cannot afford to buy needed resources to keep me running with my wooden work and its decoration.

In addition, here people are not supportive, there is lack of cooperation as the elderly woman has indicated in the example of selling vegetable crops”.

4.3.3.2 Intangible folklores (Oral poetry, oral history, folk songs and dances)

Interviewer: “Tell me more about intangible folkloric production and why it was important”.

Enqoleni participant (60-year-old male oral poet): “Firstly, I wish to indicate that I have rich history about the genealogical line of the Zulu kings and the chieftainship of the Dlangubo village. The message is my oral poems emanated from this history and about the community and my family life like one poem is called: ‘Ngenze ngikwazi’, meaning ‘My child helps me to understand you’. The message is directed to my child and any community child who is misbehaving to such an extent that parents are now failing to understand him or her”.

Enqoleni participant (30-40-year-old male oral poet): “I have passion for poetry. I write and recite my own poems. They are created for educational and recreational purposes. I also write stage performance, which are for educational purposes. One of the poems I enjoy reciting is called: ‘Mina ngiyiNgqwele/ngiyiMbongi or I am a proud praise singer”.

MngaMpondo participant (40-50-year-old traditional dance or indlamu group leader): “I am a leader of a traditional dance and singing group. The challenge is that it is now gradually dissolving because people are not committed and everyone wants to be a leader”.

MngaMpondo participant (80-year-old female): “I have rich oral history about the chieftainship of Dlangubo village but the challenge is my memory is not good now I

cannot recall everything. But I know the son of X who has written down some good history and that can be helpful for people like you, who are researchers”.

Interviewer. “Have you had any financial gains from your work?”

Enqoleni participant (30-40-year-old male oral poet): “I have had little financial gains when I am engaged in stage performances in some of the local schools. It is in my wish list to publish my poems and thus gain royalties, but I do not have the know-how”.

Enqoleni participant (60-year-old male oral poet): “I have not had financial gains. I do it for free, especially during the initiation ceremonies. Sometimes I do get donations from the generous community members”.

Mngampondo participant (40-50-year-old traditional dance or indlamu group leader): “There is lack of cooperation and commitment as I have already indicated”.

Interviewer. “What are the challenges experienced in maintaining the business”.

Enqoleni participant (60-year-old male oral poet): “I started poetry while I was still at school, but due to the previous regime I failed to publish my oral poems and until today I have had no fiscal benefits from it”.

Enqoleni participant (40-50-year-old oral poet): “The challenge I once had, is to have some of my two poems lost to the Department of Arts and Culture competition. I was told I won the prize for them and thereafter there was no further correspondence. I tried to follow up unsuccessfully; hence I am keen to know more about intellectual property laws and copyright protection”.

4.3.3.3 Intangible artistic folklores (umemulo, umhlonyana, ukukhehla, ukukhipha ucu and Nomkhubulwane)

The contextualization of certain rituals may be a complex issue, like traditional dances and music. For example, songs and dances may be intangible but for them to be effective they need to be complemented by a tangible musical instrument like a guitar, which has to be an instrument orchestrated by a physical human being. Given that, in this study, folk songs and dances were considered as intangible artistic folklores. This includes rituals like 'umemulo, umkhehlo, ukugeza, Nomkhubulwane and others'. In order for them to be used, they have to be effected by men; hence, some IK authors divide IK into the following three broad aspects: traditional, empirical and revealed knowledge that is largely tacit (Makinde and Shorunke 2013).

Interviewer: "Tell me more about the artistic expressions like initiation rites, traditional wedding, umemulo, umhlonyana, ukukhehla, ukukhipha ucu and Nomkhubulwane. Why they are still important in the area?"

Dlangubo participant: "The traditional wedding or 'udwendwe' is important to the couple because their parents also got married in a traditional way".

Another Dlangubo participant: "It brings two separate families together and certain rituals have to be performed in order to connect the ancestors of the families as well. According to our culture, that is very important including honouring the steps involved accordingly".

Interviewer: "What about 'initiation rites' of girls?"

Mqadayi participant: "During the 'initiation rites' girls are groomed, nurtured and nourished into adulthood through various activities like storytelling, oral poetry, folk

songs, stage plays, et cetera. In order to acknowledge their purity at the end of each year, they are given certificates”.

Interviewer: “What about ‘umemulo, umhlonyana, ukukhehla and ukukhipha ucu’?”

Dlangubo and Mqadayi participants: “‘Umhlonyana and umemulo’ are similar, it is when parents slaughter a goat for a girl-child to appease the ancestral spirits to protect the girl-child as she develops to adult-hood”.

Dlangubo and Mqadayi participants: ‘Ukukhehla or umkhehlo’ were done when a ‘lobola’ had been paid already. The bride’s parents would slaughter a goat and the groom’s family would dress up the bride and crown her with a traditional hat to indicate that she would soon transcend to a level of womanhood and was expected to serve the whole family and not only her husband”.

Mqadayi participant: “We really miss the past, because things were done in a more respectful manner than they happen today. Nowadays things done publicly in love relationships for our children are embarrassing. Traditionally courtship like ‘ukukhipha ucu’ or to issue a ‘beaded Zulu love letter’ was done in a respectful manner. The beaded Zulu love letter symbolized a love message sent to a fully matured boy by a fully matured girl or vice versa”.

Nomyaca participant: “Nomkhubulwane is a ritual where we gather as the Dlangubo community and pray for the rain, especially during drought. I personally believe that as the ritual has been modified or has evolved with time, the results will not be effective as they were traditionally”.

Interviewer: “What are the challenges experienced in sustaining the rituals?”

Mqadayi participant: “Rituals are gradually disintegrating because of lack of interest of the younger generation. Their focus is more on social networking, especially the teenage girls for the initiation rites”.

Dlangubo and Mqadayi participants: “People have adopted Christianity and are gradually moving away from their cultures. In addition, the majority are unemployed and do not have money to honour rituals”.

4.3.3.4 IK-related projects for the knowledge intermediaries

IK-related projects for the knowledge intermediaries were not part of the objectives for this study. They were discussed because knowledge intermediaries emerged as snowball samples from the initial focus group interviews with the sampled community participants. They were engaged in community projects that helped in improving IK management in the area of study. The terms ‘knowledge intermediaries’ and ‘extension officers’ will be used interchangeably in this study.

The knowledge intermediaries comprised the following categories of the participants:

- 1) Senior supervisors of the CoGTA fieldworkers. These included one male and one female between the ages of 30 to 40.
- 2) Fasimba Primary School educators. These included one male and one female between the ages of 40 and 50.
- 3) Mgitshwa High School educator. A female between the ages of 40 and 50.
- 4) The Izulu Orphan Project (IOP) representative. This included one white female. She was above the age of 50.

5) The community health worker for the Sathi Gqi non-governmental organisation. A female between the ages of 20 and 30.

1) Agricultural crop farming, pre-school education, health and social and construction (CoGTA Community Work Project (CWP))

Interviewer: “When I had focus group interviews with some crop-farming groups, it emerged that you coordinated training sessions for them in areas such as agricultural crop farming, education and early development care in pre-schools, health and social, and construction. Can you give a brief background on that?”

CoGTA female supervisor: “Yes, different training sessions are arranged with different service providers. Names are reserved for security reasons”.

Interviewer: “How long are the training sessions and how have they benefited the fieldworkers and the community?”

CoGTA participant: “Training sessions normally run from one day to five days”.

CoGTA female supervisor: “For example, the IOP representative was once hired to offer early development training for one week as the budget was limited”.

Interviewer: “Did the training session benefit the fieldworkers and the community?”

CoGTA participant: “I would say it benefited the pre-school teachers as they are under-staffed. The trained fieldworkers work with them as supplement pre-school teachers”.

Interviewer: “What about in crop farming, how have the training sessions helped?”

CoGTA participant: “The training sessions in crop farming and the supply of seeds depended on the service provider. Some are more supportive than others. Because of budgetary constraints, currently, there is no service provider in place and we

depend on the local Department of Agriculture to provide seeds as and when they have”.

Interviewer: “What initiative do you take to ensure that fieldworkers have seeds?”

CoGTA female supervisor: “We supply to them what has been supplied by the Department of Agriculture. Alternatively, we encourage them to do recycling in order to be able to buy some seeds”.

Interviewer: “What are the challenges experienced in sustaining the projects?”

CoGTA participant: “Sustainability in terms of training and seeds provision was a challenge as the projects relied on the budget and support from the other departments like the Department of Agriculture”.

Interviewer: “What were the advantages of the CoGTA projects?”

CoGTA participant: “Although not enough has been done, the project has helped in reducing poverty, hunger, diseases and unemployment in the area of study”.

2) Agricultural crop farming, plant and animal foods, medicinal plants and folklores (Fasimba Primary School)

Interviewer: “When I had a focus group interview with the Fasimba female crop farmers, it transpired that you help them in managing their gardens. Can you elaborate on that?”

Fasimba participant: “Fieldworkers are educated on how to prepare the gardens for planting and how to make permaculture manure. In addition, we advise them about the recycling methods so that they can be able to get money to buy seeds as and when needed”.

Interviewer: “What other IK projects are you involved in as part of the school projects?”

Fasimba participant: Subjects like: Life Skills; Creative Arts; Languages and Extra-mural Activities serve as a guiding framework when teaching about IK. For example, Life Skills guide us when teaching learners about the importance of traditional foods and traditional plants that can be used to treat various ailments in domesticated animals and also in human beings. We also have a school orchard where we do apprentice education about medicinal plants”.

Fasimba participant: “Learners are educated about the important nutrients found in different kinds of plants and animals like animal foods. For example, eating goat helps in transferring herbs to our bodies through the process of the ecosystem”.

Interviewer: “Tell me more about the methods and tools used in managing and preserving IK”.

Fasimba participant: “When doing research like on the importance of a medicinal plants like ‘ibovu or ibovana’, the type of plant used to protect the face from the sun, we consult local elders and traditional healers for more information. In addition, we also do internet research. We also encourage our learners to do the same”.

Interviewer: “Do you use libraries, databases and ICTs to manage and preserve IK?”

Fasimba participant: “Yes we preserve IK knowledge in the ring-bound files; in our library as you can see our artefacts in the corner there, the clay pots; traditional drums; pictures that are used to tell the biography of Mandela, et cetera. We also preserve IK in the computers as we have a computer laboratory. The cherry on top is

that we also won the prize for being one of the best schools in the district in nature conservation and agriculture”.

Interviewer: “What do you know about the South African intellectual property laws?”

Fasimba participant: “We do not know much about the law, but we acknowledge the work of the authors each time we get information from the book or from the internet. We would like to know more about the law”.

3) Agricultural crop farming, plant foods and nutrition and folklores (Mgitshwa High School)

Interviewer: “When I had a focus group interview with the Dlangubo female crop farmers, it transpired that you help them in managing their gardens. Can you elaborate on that?”

Mgitshwa participant: “Because I have a degree in Agriculture and also am a part-time small scale commercial farmer, I also help educate them on how to prepare their gardens for planting; and also supply them with dry seeds and seed plants if I have surplus”.

Interviewer: “What other IK projects were you involved in here at school?”

Mgitshwa participant: “I am the project leader on the nutrition project that is running at school. I teach about the importance of eating nutritious foods, like fresh vegetables from the garden which are free from the additives and colorants. I share information on what a balanced diet is and why it is important for our bodies. The information is also shared with the CoGTA fieldworkers. In addition, the school is involved in a long-term nutrition project with the international health researchers and the IOP non-governmental organisation”.

Interviewer: “Tell me more about the methods and tools used in managing and preserving IK”.

Mgitshwa participant: “We share knowledge with the CoGTA fieldworkers; the local and the international health professionals, through word of mouth and through apprenticeship. Learners are encouraged to write assignments and also to engage in IK-related activities like traditional ceremonies; oral poetry; dancing and singing”.

Interviewer: “Do you use libraries, databases and ICTs to manage and preserve IK?”

Mgitshwa participant: “No, I do not preserve IK in the school library because it is not yet operational. Information and knowledge is only preserved in my head”.

Interviewer: “What do you know about the South African intellectual property laws?”

Mgitshwa participant: “I do not know anything about the law, but would appreciate to be educated about the law”.

4) Organic farming, nutrition, pre-school, secondary and adult education, community and orphans services (Izulu Orphan Project)

Interviewer: “When I had an interview with the Dlangubo and Fasimba female crop farmers, it transpired that you help fieldworkers so that they are able to help early childhood development. In addition, you were involved in a nutrition project with the Mgitshwa educator. Can you elaborate on that?”

IOP participant: “The Izulu Orphan Project (IOP) was started by my late son and the daughter-in-law about ten years back. The focus was on educating, nurturing and nourishing orphans and the poor in the Dlangubo village. The IOP is involved in various projects like educating, nurturing and nourishing of the orphans; the nutrition project; early childhood development programme; organic gardening; basic health-

care services; Computer and English Literacy Skills Development Programme; Adult Literacy and Bible Study Classes; and Sewing Classes”.

IOP participant: “Yes, I have coordinated various projects about nutrition, some are completed already and some are long-term and ongoing. For example, one that is completed already, was an experimental project where the Canadian doctors collaborated with the South African doctors and dieticians from Ngwelezane Hospital. The Dlangubo elderly community members above the age of 60 were used for the pilot study. The aim was to test the impact of the South African fresh foods from the garden, like leafy vegetables and tubers like sweet potatoes, relative to the fast foods like burgers and fried chips. The study confirmed that the South African fresh foods from the garden were more nutritious and did not have preservatives and colorants. Thereafter, the project was extended to the Mgitshwa High School in the area of study where the female educator, who is a small-scale commercial farmer, is also the coordinator of this nutrition project”.

She elaborated that: “In addition, the IOP sponsored one young male orphan from the area to study a three-year training programme on Agricultural Organic Farming. Furthermore, he cascaded organic farming skills to 20 CWP employees in the area of study”. It was not very clear what entailed the training on organic farming. In addition, the extension officer indicated that: “I also offered two- to five-day training on early childhood education to some of the CoGTA employees; however, the continuation of the projects were only dependent on the availability of funding from government through the CoGTA/CWP project, which was running in the area of study”.

Interviewer: “Tell me more about the methods and tools used in managing and preserving IK?”

IOP participant: “My perception is that the community has to take responsibility of managing and preserving what has been taught to them. I only transfer the skills and do few follow-ups to see if what was taught has been implemented”.

Interviewer: “Do you use libraries, databases and ICTs to manage and preserve IK?”

IOP participant: “No, I do not use a library to manage IK, but we have just been sponsored few computers and in 2016 we will be transferring computer skills to the learners and educators of the local schools”.

Interviewer: “What do you know about the South African intellectual property laws?”

IOP participant: “I do not know anything about the law, but would appreciate to be educated about the law”.

5) Community health services and nutrition (Sathi Gqi and Woza Project)

Interviewer: “When I had an informal discussion with a community member, it transpired that you are involved in a community health work for the Sathi Gqi and Woza Project. Can you elaborate on that?”

SathiGqi/Woza participant: “I have grade 12 and I am in process of improving my subjects. I am new in the project and am not more than three months. We work with the local clinic health professionals and the CoGTA fieldworkers. We do home-based care visit for the sick and bedridden, especially the elders, including the poor members of the community. In addition, we supply them with fresh vegetables and sometimes we assess the situation and also cook for them. The house visits are done three or four times per week”.

Interviewer: “Did you get training on community-based or home-based health-care services”.

SathiGqi/Woza participant: “Yes we were trained for one to three days by the professional nurses of the local clinic and sometimes by the contracted company called Independent Development Trust Institute (IDTI)”.

Interviewer: “What did the training entail?”

SathiGqi/Woza participant: “It is mainly about how to give first-aid services, both the theory and practical part of it”.

Interviewer: “How do you manage and preserve information?”

SathiGqi/Woza participant: “The Dlangubo local clinic officials give us files in which we record the date and time of the visit, including the medication that was supplied and fresh vegetables provided they were supplied”.

Interviewer: “Do you know where that information is kept?”

SathiGqi/Woza participant: “The recorded information is kept in the Dlangubo local clinic. I am not sure whether they put it in the computer or it remains only in the patients’ files”.

4.4 Methods and tools used in managing and preserving IK

The foregoing responses of the participants regarding the various practices that were commonly used in the area of study indicated that the participants worked according to various groups of common interest such as CoGTA crop-farming groups, livestock keepers, bead workers and grass mat weavers. Some individuals performed their activities of interest as individuals (like oral poets; African artists, jewellery maker

and sculpturing; shoe hand weaver and dressmaker; shield maker and woodworker). In addition, there were two elderly women above the age of 80. One was an experienced bead worker and crop farmer from Nomyaca and the other had a rich history in the Dlangubo chieftainship and oral tradition. The forthcoming transcripts will be presented thematically according to the tools and methods that were used in sharing and preserving knowledge.

1) Communities of practice; word of mouth and memory; and demonstration, observation and imitation (CoGTA crop farmers and Enqoleni crop-farming community of practice)

Interviewer: “How did you acquire knowledge about crop farming?”

Dlangubo participant: “We got knowledge from parents; grandparents; neighbours and also here at work. For example, an extension officer was here to deliver green and black soya bean seeds. He also explained to us how to plant it”.

Dlangubo Participant: “Sometimes knowledge is shared with the Mgitshwa High School educator who is a small-scale commercial farmer. Occasionally, she supplies us with dry seeds and plant seeds”.

Interviewer: “How is the knowledge shared, is it through written manuals; through word of mouth or learning by observation and doing?”

Dlangubo participant: “Knowledge is shared by word of mouth, observing and doing the work practically. Some of us can read manuals and translate for others like those with the nutrient contents of the soya bean seeds, which were supplied by the official from the Department of Agriculture”.

Dlangubo Participant: “Unfortunately, even the knowledge acquired from the training sessions is not written down, but is shared orally or learning by doing and observing”

Fasimba participant: “We got knowledge from parents; grandparents; neighbours and also here at work. For example, we also share crop-farming knowledge with the designated educators of the Fasimba Primary School”.

Fasimba Participant: “The educator has educated us on how to fertilize the soil and do clean gardening. He has demonstrated by doing how to do permaculture manure. In addition, he has also supplied us with dry seeds and plant seeds”.

Fasimba participant: “He has been helpful in educating us on how to do recycling so that we can be able to buy seeds as and when they are needed and thus sustain gardening activities”.

Fasimba Participant: “Unfortunately, even the knowledge acquired from the training sessions is not written down, but is shared orally or learnt by doing and observing”.

MngaMpondo Participant: “Crop-farming knowledge is not easy for me to forget, because if I am told “Open the planting line”, “Put the seeds”, “Close and put water”; how can I forget that, because it is always kept in my memory”.

MngaMpondo Participant: “Knowledge acquired from the training sessions is not written down, but is shared orally or learning by doing and observing”.

MngaMpondo; Mqadayi and Nomyaca: “Knowledge is shared by word of mouth; observing and doing the work practically. Some of us can read manuals and translate for others who cannot read” They further indicated that they were not sharing crop-farming knowledge with the educators of the local schools.

Interviewer: “How do you transfer knowledge to the younger generation?”

Enqoleni participant: “I personally transfer knowledge by taking them with me to the garden and show them by doing how to do crop farming. The challenge is that they have short attention span”.

Dlangubo participant: “Knowledge to my children is transferred by taking them with me to the garden and show them by doing how to do crop farming. The challenge is that they have short attention spans. In addition, limited or lack of resources like the scarcity of water; scarcity of seeds; poor fencing and pests and animals that destroy crops make them lazy to focus on crop farming. The priority is their education”.

Mqadayi participant: “Crop farming is one of the subjects we teach teenage girls during the initiation apprentice education camping sessions. The challenge is that their focus is more on social networking than IK-related matters. They have a very short attention span on IK-related subjects”.

2) Communities of practice; word of mouth and memory; and demonstration, observation and imitation and communal meetings or imbizo (livestock keeping)

Interviewer: “How did you acquire knowledge about livestock farming?”

Fasimba participant: “We got knowledge from parents; grandparents; other community members and sometimes from the extension officer through word of mouth. For example, we used to have an extension officer who helped with the inoculation of our cattle against various diseases”.

Interviewer: “How was knowledge shared with the extension officer, was it through written manuals; through word of mouth or learning by observation and doing?”

Fasimba participant: “Knowledge was shared by word of mouth; observing and doing the work practically. But, unfortunately, we do not have resources and cannot imitate what was shown to us”.

Fasimba participant: “Sometimes knowledge is shared through communal meetings or imbizos, which are announced through word of mouth by headmen and their officers”.

Interviewer: “What about the traditional knowledge of treating animals using traditional medicinal plants. How did you gain that knowledge and how do you transfer to the children?”

Fasimba participant: “We got knowledge from parents; grandparents; neighbours. For example, I still have knowledge about ‘umqaqo’, which was used to treat various ailments in cattle. I got that knowledge from my parents. But for my children, I take them along with me to show them how to milk a cow; feed and also treat various ailments. The challenge is that our children have limited interest in the subject”.

Fasimba female participant: “I wish to emphasise on what my brother has raised that our children have short attention span. I also take my children with me when I go for crop farming and also for the livestock keeping. I show them by doing how to do crop farming and also to take care of domesticated animals like chickens, goats and cattle. But they are with you within a short time and then disappear”.

3) Communities of practice; word of mouth and memory; and demonstration, observation and imitation, artefacts (folklores)

Interviewer: “How did you acquire knowledge about folklores?”

Dlangubo participant: “Knowledge about ‘umemulo, umhlonyana ukukhehla’ was acquired from our parents. Traditionally, the rituals were the order of the day as animals were more commonly domesticated and not expensive as they are today”.

Dlangubo participant: “You see the couple that was doing traditional wedding. It is because they observed the practise from the parents and loved it; hence they did likewise”.

Enqoleni; Khabingwe; Mqadayi; Nomyaca participants: “The skill of doing beadwork was acquired from the family line and friends through word of mouth and learning by doing and observing”

Enqoleni participants (Poetry): “The skill was nurtured and honed at school. The poems are written down and also recited”. The other poet indicated that: “In addition to the school education, the poetry skill was honed through education classes that were attended while I was in prison. During incarceration I also entered competitions that were sponsored by the Department of Arts and Culture”.

Enqoleni participant: “The skill of doing shield work was acquired from the father and uncle through word mouth and learning by doing (apprentice learning). During those days, rain was not a visitor but was plenty and it was easy to soften the animal skin. But today, it is a challenge because water is scarce”.

Enqoleni participant: “Shoe handcrafting and sewing skill was seen from a colleague while I was working for a certain industry. But a colleague was not keen to share knowledge and I had to teach myself by buying the material and do trial and error. But the sewing was learnt through the family line and through apprentice education”.

Nomyaca participant: “Knowledge about African art and jewellery and sculpturing was acquired through the then Technikon of Natal”.

Interviewer: “How do you transfer skills to the youth?”

Nomyaca participant: “The challenge we have in this place is that people are not committed including the youth”.

Nomyaca participant (80-year-old bead worker): “The skill was transferred to her 12-year old grandson through apprenticeship”.

Enqoleni; Khabingwe; Mqadayi; Nomyaca participants: “The skill of doing beadwork is transferred to the youth through word of mouth and learning by doing and observing, but they are not committed, they have short attention spans”.

MngaMpondo participant: “Knowledge about singing and dancing or ‘indlamu’ is transferred to the youth by word of mouth; observing; doing and imitating. But the group is gradually dissolving because everyone wants to be a leader”.

4) Communities of practice; word of mouth and memory; demonstration, observation and imitation and written work (knowledge intermediaries)

Interviewer: “Please indicate how knowledge was shared with the community members in various IK-related projects”.

CoGTA knowledge intermediaries: “Knowledge was shared with the fieldworkers through word of mouth; learning by doing and distributing manuals supplied by the service providers”.

Fasimba; IOP and Mgitshwa knowledge intermediaries: “Knowledge was shared with the fieldworkers through word of mouth; learning by doing; demonstrating; observing and imitating”.

Sathi Gqi/Woza knowledge intermediaries: “Knowledge was shared with the community through word of mouth; learning by doing; demonstrating; observing and imitating. But with the local Dlangubo clinic, health officials’ information was shared through word of mouth and written-down information”.

4.5 Ownership protocols and knowledge about the South African intellectual property laws (Dlangubo sampled participants and the knowledge intermediaries)

Responses to the above questions regarding the methods and tools used in managing and preserving IK clearly articulated that the issue of communal ownership was deeply embedded. Participants indicated that IK was shared through communal groups, word of mouth and learning by doing and imitating. Given that, the transcripts in this section were based on what the participants knew about the South African intellectual property laws. Where the responses of the majority of participants were similar, responses were reported collectively.

Interviewer: “The SA-IP law is the South African legislation that protects the original owners of indigenous knowledge including products thereof. Please indicate what do you know about the law or has any official educate you about it?”

Dlangubo; Fasimba; Enqoleni; Khabingwe; MngaMpondo; Mqadayi; Nomyaca participants: “We do not know anything about the law”.

CoGTA; Fasimba; IOP; Mgitshwa and Sathi Gqi/Woza knowledge intermediaries: “We do not know anything about the law”.

Enqoleni participant: “Because I have lost some of my poems to the competition of the DAC, I am aware that there is a law that protects one’s work. For example, I am

keen to get a publisher to help me in publishing my poems and also to help educate me on how I can protect them from abuse and misappropriation. Put differently, I am keen to be educated about the law”.

Nomyaca participant: “Some of my artefacts on sculpturing are preserved at the Vukani Museum in Durban and my name is acknowledged, but still I do not have sufficient knowledge about the law. I am keen to be educated about the law”.

4.6 Role of libraries and information and communication technologies (Dlangubo sampled participants and the knowledge intermediaries)

Similarly, in the forthcoming transcripts, where the responses of the majority of participants were similar or the same, responses were reported collectively.

Interviewer: “Libraries and information and communication technologies are some of the tools that can be used to manage and preserve IK. Please indicate if you were using libraries and ICTs, including, cellphones, television and radios in managing and preserving IK”.

Dlangubo; Fasimba; Enqoleni; Khabingwe; MngaMpondo; Mqadayi; Nomyaca participants: “We do not use libraries and ICTs to manage IK”.

Dlangubo & Enqoleni crop farmers (CoGTA)(20-40): “Occasionally internet laboratory located in one of the local was used to search for jobs but not for IK management”

Mqadayi crop farmers and initiation practitioners: “During initiation ceremonies the little recess offered our girls get glued to social networking sites hence we have

realised that it is imperative that we also acquire skills of using these sites so that we can communicate IK-related matters with them”

CoGTA; IOP; Mgitshwa and Sathi Gqi/Woza knowledge intermediaries: “We do not use libraries and ICTs to manage IK”.

Enqoleni poet (30-40): “I occasionally use my cellphone to preserve my oral poems. In addition, I am a member of the Book Club based at Eshowe municipality. It is sponsored by the Department of Arts and Culture”.

Nomyaca sculpturalist & African artist (30-40): “Some of my artefacts are preserved at the Vukani Museum in Durban. I do not use libraries and ICTs to manage and preserve IK knowledge and products that I am currently busy with”.

Nomyaca bead worker (80-year-old bead worker): “When my vision was still good, I would copy some patterns; designs and colours of my beadwork from the television. I used to love the traditional beaded attires and accessories like necklaces of the Maskanda music group or Isicathamiya”.

Fasimba knowledge intermediaries: “At the Fasimba Primary School, we do make use of our school library to manage IK. As you can see, we have the pictures of our African legends, including Mandela, because we teach our learners about the African history, including the legends. In addition, we encourage learners to do handwork like clay pots; grass mats; beadwork and shield work like African drums that are used to add taste to the African music and dance. We encourage learners to use the school computer laboratory to do internet searches about IK-related topics like plant foods; animal foods and medicinal plants. In summary, libraries, databases and ICTs are used in managing IK”.

4.7 Recommended model for IK management and preservation

(Dlangubo sampled participants and the knowledge intermediaries)

The last question in the questions schedule was a question on the recommended model that can be used in the area of study. Where the majority of the responses were similar or the same then responses were reported collectively.

Interviewer: “What information and knowledge model can you recommend for the Dlangubo community?”

Khabingwe participants: “We desperately need a communal village that would have a space where we can market our products. This has been raised several times to the Chief. We are hoping to be blessed and have it one day”.

Nqoleni participant: “Because it has been repeated several times now by the group members, it has become like a song. But I also agree that we need a communal centre like a market centre where we can sit together in various groups of common interest. I believe that it can encourage us to acquire skills that we do not have from each other, probably at a small rate if need be. In that communal centre, we can also have a central market where we can display and sell our products to the internal and passing-by external members, including the tourists”.

Dlangubo; Fasimba; Enqoleni; Khabingwe; MngaMpondo; Mqadayi; Nomyaca participants: “We do need a market centre where we can sit together to learn from each other and also market our products”.

Mgitshwa knowledge intermediary: “Dlangubo Traditional Council is very rich in IK. My assumption is that the Chief’s tribunal court is small and cannot accommodate all the community members. It can be used on a temporary basis. What is needed is a

communal village where the groups of common interest like beadwork CoP can sit together and share knowledge. In addition, a space can also be provided for them to market their products”.

4.8 Summary

For data collection and analysis grounded theory, focus group discussions, SSIs and observation methods, including participant observation, were used in this study. The key findings in this chapter were summarized thematically in line with the objectives of the study. Regarding biographical information women outnumbered male counterparts, with the exception of livestock farming. Notable, only the Fasimba community practised livestock farming. Overall, the age of respondents ranged from 20 to 80 throughout, with most participants being in the middle-age bracket. The oldest participants were two females who were older than 80 years. With regard to educational levels, participants ranged from no formal education to post-secondary qualifications. Vegetable crops like leafy vegetables, root crops, plant tubers and plant legumes. The vegetable crops were important for various reasons such as food security, nutritional content and for reducing poverty and diseases. Livestock included domesticated animals like cattle, goats and chicken. They were used for food security, cultural and economic values. Folklores included tangible, intangible and artistic expression. IK-related projects for the extension officers included vegetable crop farming, organic farming, nutrition, early childhood education, adult education, construction, community health and home-based health-care services.

The traditional methods and tools that appeared dominant included the groups of common interest (also called CoPs); word of mouth or oral tradition; learning by doing, observing and imitating (apprenticeship) and the use of artefacts like

beadwork, grass work, shield work, et cetera. The modern methods were used at a very limited rate and included television, cellphone, book club, museum, libraries. The majority of responses indicated that IK was transferred over generations through word of mouth, learning by doing and imitating (apprenticeship). Communal ownership and inheritance was common in the system of IK transmission; hence it was concluded that IK was communally owned as many studies have confirmed. The greatest proportion of the sampled participants did not have background knowledge about the South African intellectual (SA-IP) laws, including extension officers. The greatest proportion of the sampled participants were not using libraries, databases and ICTs in managing IK. However, it can be concluded that they were used at a very low rate, because one participant from Nomyaca was using a museum in Durban to preserve some of his artefacts. In the same sub-place, an elderly bead worker was using television to imitate patterns and colours of beadwork. In addition, the Fasimba Primary School extension officers used libraries and ICTs to manage and preserve IK. The majority of the sampled participants recommended a communal village where the groups of common interest can sit together and share knowledge. In addition, a space can also be provided for them to market their products.

CHAPTER FIVE

INTERPRETATION AND DISCUSSION OF RESEARCH FINDINGS

5.1 Introduction

This chapter focuses on the interpretation and the discussion of data presented in the previous chapter. The discussion was guided by the objectives of the study and was preceded by the biographical information of the participants.

5.2 Biographical information of the participants

Post-1994, the South African government's national and provincial departments of agriculture (DOA) made concerted efforts to develop policies and programmes aimed at making South Africa's agricultural sector more robust. Crucial to this strategy was the drive to increase equity among farmers in terms of racial and gender representation and access to land, modern technologies and other inputs (Hart & Aliber 2012). While the initiatives are acknowledged, this study argues they seem to have not been sufficiently realised in other areas as the farmers are still affected by disparities in terms of gender representation in various agricultural activities, including unequal distribution of agricultural resources like modern technologies. With the sampled group of the Dlangubo village, the researcher witnessed a significant disproportionate gender representation with women dominating in almost all IK practices throughout, except livestock farming. In addition, when the age variable was examined, it was discovered that the overall age of respondents ranged from 20 to 80 years throughout, with most participants being in the middle-age bracket (30 to 50 years). The oldest participants were two females who were older than 80 years. With regard to education levels, participants ranged

from no formal education to post-secondary qualifications. Most of those with higher education were young males and females, most of the older ones had lower levels of education and some had no formal education. It was also notable that although the majority was in the middle-age bracket, including those older than 50, women were engaged mainly in crop farming and beadwork where they still remained less educated with very few who indicated that they had completed grade 12. While it is acknowledged that, in South Africa, a number of women had benefited from the government subsidies of commercial agricultural farming, this study confirmed that the majority of women are still stuck in resource-poor subsistence agricultural farming. In addition, these women had low levels of education that hindered them from taking advantage of new government opportunities. For example, one female bead worker from the Nqoleni mixed-gender focus group reported that they failed to register their cooperative because they were not educated. Their leader, who was a nurse by profession, was employed elsewhere and thereafter the group dissolved. This confirms the views of other IK scholars that uneducated women and men need education and training to be able to tap into information and knowledge needed to improve IK management, especially agricultural IK for sustainable development purposes. Hence, Ocholla and Dlamini (2007:7) view IK as a survival instrument to development. It is a tool that can be used to improve the lives of the people, especially in rural communities. However, this study argues that some of the youth seem to view IK differently; hence, their lower representation in IK-related activities (also revealed in this study). Various implications can be linked to that, including the hegemonic culture of undermining or marginalising IK (Ocholla 2007), which diffused to the youth; hence, the focus on modern education and its technologies at the

expense of IK (Stevens 2008). To be able to redress the gap accordingly, this study began by establishing IK practices in the area of study.

5.3 IK practices

The basic principle that guided this study was to first investigate what the local communities know and then design a model relative to the needs of the people (Hart & Vorster 2006:37; Ocholla 2007:8; Ocholla & Dlamini 2007:7). As already highlighted in Chapter Four, two main practices were identified (agriculture and folklore). Two dimensions of agriculture included vegetable crops and livestock. Folklores included tangible, intangible and artistic folklores.

5.3.1 Vegetable crops

In Chapter Two, sub-topic 2.2.2, vegetable crops were explained as domesticated plants, some of which have evolved from being undomesticated wild plants. They included plants like legumes or grain crops, Bambara beans, cowpea, groundnut, jugo beans, mung beans, soya beans and various kinds of maize. Furthermore, the examples included crops like millet, sorghum, amaranth, pumpkin, watermelon, yam and fonio (Dube & Musi 2002:10; Dakora in Normann, Snyman & Cohen 1996:116-118; 123-124). Dakora in Normann, Snyman and Cohen (1996:116-118; 123-124) argue that by the Middle Ages the latter crops had already been domesticated in most savannah areas of Africa. They survived the displacement by the new crops from America such as maize, sweet potatoes, cassava, pineapple, guava and groundnut.

The long existence of leafy vegetables like pumpkin and amaranth (Jansen van Rensburg et al. 2007:317) explains why the pumpkin is still embraced by the Dlangubo community. The other leafy vegetables like cabbages; spinach; green

pepper; chillies; tomatoes and pumpkin; root plants where the root can sometimes be eaten raw like beetroots, carrots and onions; plant tubers like potatoes; sweet potatoes and amadumbes; and plant legumes or grain plants like soya beans and maize emerged as popular in the area of study. To the surprise of the researcher, amaranth (imbuia) did not emerge as popular in the area of study. It is assumed, that the community had forgotten about this species because the area was affected by drought (amaranth breeds in damp areas where rain is common) (Hart & Vorster 2006:23). Contradictory, Hart and Vorster's (2006:23) study reported that amaranth was popular in the Zulu, Shangaan, Swazi, Pedi and Ndebele ethnic groups that were studied. Further their study indicated that the Zulu and Xhosa tribes were consuming amaranth on its own or as part of a mixture of leaves (Hart & Vorster 2006:23). Their results indicated that in the Eastern Cape, KwaZulu-Natal and Venda pumpkin was always in the top five of the preferred vegetables. Its advantage is that its leaves, stems, pumpkin fruit and flowers can all be used when preparing a dish. Further they assert that a plant gained priority if it provided a number of sources of foodstuff and if its leaves could be stored and dried to be used during the dry weather conditions (Hart and Vorster 2006:23). Similarly, this study discovered that pumpkin was also common in the area of study. Despite dry weather conditions, it was observed thriving in the Enqoleni communal gardens and in some CoGTA gardens like Dlangubo, Fasimba and Mqadayi.

Because this study used qualitative research that accommodates probing, it was deemed important to probe regarding the importance of IK practices. Responses indicated that vegetable crops were important because of their nutritional content. In addition, the local health clinic professionals frequently reprimanded them to eat fresh vegetables from their gardens in order to help their bodies fight various

diseases. For example, according to the manual about the soya bean seeds that were delivered during fieldwork, soya beans are rich in protein, vitamin C, K and B6, iron, calcium, magnesium, omega 3 and 6 and fatty acids. The species are good in fighting diseases like breast and prostate cancer, osteoporosis, heart diseases, diabetes, kidney problems, gallstones and high blood pressure.

In the East Asian countries, such diseases were not common because of a high rate of consumption of soya beans. Dakora in Normann, Synman and Cohen (1996:116) also underlined that the soya bean and marama bean were rich in protein and oil. They remain important because of their nutritional value. They can help in improving health quality of the people. In Africa, soya beans were gradually replacing traditional legumes known as cowpea and bambara groundnut (Dakora in Normann, Synman & Cohen 1996:116); hence, the importance of mapping and auditing IK, especially indigenous foods, before much are lost. Hart and Vorster (2006:24) underline that it is important to raise awareness about the nutritional value of these crops, especially among the youth, as it might help to erase the myths and stereotypes they have about some of them, like amaranth and pumpkin. For example, in South Africa, there is a high rate of Vitamin A deficiency and therefore promoting the cultivation of drought-tolerant plants like amaranth and pumpkin, which are naturally high in Vitamin A, is imperative (Hart & Vorster 2006:24). Acipa, Kamateshi-Mugisha and Oryem-Origa (2013:7429) did a scientific study in Northern Uganda and reiterated that African vegetables had a higher nutritional content than domesticated plants; hence, they were much used and were found to be less expensive and easily accessible. Asase and Oteng-Yeboah (2012:614) indicated that, in Northwest Ghana, the use of fruits and leafy vegetables was about 60% and 24%, respectively.

In addition, responses indicated that the preferred vegetable crops were embraced because they were easily accessible and less expensive than exotic vegetables. Similar to the study that was conducted by Hart and Vorster (2006:23) in two rural villages of Limpopo, North-West province in South Africa. Findings of their study indicated that 95% of the 108 households surveyed consumed African leafy vegetables at least twice a day on average. This was due to the fact that they grew easier without much labour and inputs, as compared to exotic vegetables, and because African vegetables relied more on seasonal rainfall as irrigation systems were expensive (Hart & Vorster 2006:23). Furthermore, responses indicated that if there was a surplus, it was supplied to the schools for the school feeding programme and to the poor families. In addition, informal trading was done to generate income, which was commonly used to buy more seeds. While the aforesaid views about the importance of IK for food security and other socio-economic development activities are shared by many (Hart & Aliber 2010; Hart & Vorster 2006; Ocholla & Dlamini 2007:8), a concern was raised by the Department of Agriculture, Forestry and Fisheries report (2013) that most of the African indigenous crops are found and harvested in the wild; their production and consumption have declined and there is limited or no documentation and research about them.

5.3.2 Livestock keeping

For this study, it was remarkable that the livestock farming focus group only emerged in the Fasimba sub-place. It was dominated by males as indicated in Table 4.1. Reddy, Goga, Timol, Mather, Chetty and Wallace (2015) indicate that, in South Africa, small-scale livestock farming was a function that was pursued by both sexes and for varied reasons, such as food security, commercial reasons and others. This is similar to the views of Wenhold et al. (2007:329-330) that in South Africa animals

including domesticated chickens, goats and cattle were commonly used as source of food. In addition domesticated animals were important for cultural and economic reasons. Furthermore, in this context, responses indicated that the significance of cattle was linked to cultural and economic values. For example, participants indicated that they used them to perform rituals like paying lobola, cleansing ceremonies, et cetera. This was in line with the views of other IK proponents that livestock keeping was a significant activity in house-sustaining functions that allow many households in rural and semi-urban areas to remain food-secure and out of extreme poverty. They also underscore that in South Africa the importance of livestock needs to be strengthened as livestock contributes 49% of agricultural output and enables South Africa to produce 85% of its own meat requirements (Reddy et al. 2015).

While the importance of using IK, including livestock for socio-economic development, is entrenched in the South African IKS Policy, the initiative did not seem to be sufficiently realised in the area of study as the livestock farmers were faced with the challenges of high death rate of their cattle due to drought, scarcity of water, scarcity of food and various diseases and no help was forthcoming. In addition, they needed the extension officer that the Department of Agriculture deployed to another area. The participants asserted that he played a critical role in saving the lives of their cattle. The traditional knowledge about medicinal plants was gradually being replaced by the modern innovative medicines the extension officer had diffused relative to the farmers' needs. Similar to the Masaai people of Tanzania, their traditional knowledge was gradually disintegrating due to various reasons such as grazing lands shrinking to become residential areas. Consequently, their cattle were affected by various diseases that were difficult to treat (Mwaura 2008:78-79).

5.3.3 Folklores

In many African countries, folklores were important because they were used as tools to educate younger generations through the use of oral traditions like proverbs, riddles, songs, dances, legends and myths. In order to facilitate discussion, this study subdivided folklores into three practices: tangible, intangible and artistic expressions as illustrated in Table 4.1 of the previous chapter. The results focused on the dominant ones. The less dominant were combined and discussed collectively.

5.3.3.1 Beadwork

In a book entitled *Speaking with Beads* by Morris and Preston-Whyte, beads were referred to as 'voices from the past' because they were seen as linking the past and the present (Xulu 2002:14). Mashiyane (2006:6) and Xulu (2002:6) define beadwork as a string of beads or a single bead worn on almost any part of the body added to a carved figure as decoration or as an offering. Beadwork could be more elaborate with beads strung into complex ropes, sewn into fabric-like panels, applied as covering to figures, clothing and masks or used to embellish everyday items to make them more special. Literature has indicated that beads in Africa had strong aesthetic significance, including cultural value, linguistic and communication value, social value and economic value (Xulu 2002:16-20). Twala (1955:113) argues that the Zulus have taken to beads more than any other Southern Bantu tribe, followed by the AmaNdebele or Mapoko tribes. The Xhosa, Sotho or Swazi tribes were viewed as making little use of beads when compared to the Zulus (Twala 1955:113). In the Zulu culture, the importance of beads was attached to colour and design. The colour codes of beads were meant to communicate messages, including love messages (Biyela 2014:1-10; Mthethwa1988:34-42; Twala 1955:113-123).

For this study, results indicated that beadwork was embraced by the female participants in almost all the sub-places, either as primary or secondary activity. The metaphorical communication significance was superseded by cultural and economic values. Similarly, the Ndebele people associated beads with adornment, ritualistic ceremonies and religious significance, rather than commercial value (Mashiyane 2006: 121-122). Furthermore, Mashiyane (2006: 122) posits that beads contributed to economical enhancement as early as the old trading era, as traders used beads a lot as a means of long-distance trade. Because IK has become a strategic resource for solving economic challenges in this 21st century, beads continue to be of economic and cultural value. For example, results of an empirical survey regarding the role of the 49 cultural villages that were identified by Mearns, Du Toit and Mukuka (2006:35) indicated that, nowadays, handcrafted products were manufactured for commercial purposes, rather than demonstrations only (Mearns, Du Toit & Mukuka 2006:35, 37). Xulu (2002:37-40) in his or her empirical study, reiterates that, nowadays, many centres and institutions keep beads mainly for their economic value. The colours were blended mainly for taste and style in order to increase the market value as knowledge about colour codes has vanished (Xulu 2002:37-40). As already highlighted in this study, since 1994, many policies and legislation have been developed for socio-economic development in South Africa, but this study argues that initiatives have not reached the majority of people in rural areas sufficiently.

5.3.3.2 Grass-weaving, woodwork and its decoration, shield work; shoe handcrafting, African art jewellery and sculpturing

In this study, it became a common pattern for the sampled participants to indicate that handcrafted work was important for commercial value, but the market was low.

This confirmed the views that, nowadays, handcrafted work was mainly made to generate revenue (Mearns, Du Toit & Mukuka 2006:37).

5.3.3.3 Intangible folklores (oral poetry, oral history, folk songs and dances)

In this study, the intangible folklores that appeared as still embedded within the community included folk songs and dances and folk poetry. When asked why the oral poetry, history, songs and dances were still embraced, responses indicated that they were important for educational and recreational purposes. Similarly, many studies have reported that various dimensions of oral tradition can be used to transmit knowledge orally, especially for the purpose of apprentice education, knowledge sharing and entertainment (Mapara 2009:145; Mearns, Du Toit & Mukuka 2006:37; Mpofu & Miruka 2009:90; Ocholla & Dlamini 2007:2; Stevens 2008:26). Khumalo (1974:193) indicates that metaphorical communication through the use of riddles was gradually disintegrating among the Zulu tribe. Similarly, many IK scholars were concerned that knowledge was not documented; hence, it was disappearing at an alarming rate (Kaniki & Mphahlele 2002).

5.3.3.4 Artistic expression folklores (rituals)

The artistic folklores that were still practised in the area of study included: traditional wedding or *udwendwe*; singing and dancing; initiation and puberty rites; *Nomkhubulwane*; *ukweshwama*; *umhlonyana*; *umemulo*; *ukukhipha ucu*; and *umkhehlo*. Some rituals were highlighted because they were embraced by some sampled participants, but they were no longer practised such as '*ukukhipha ucu*'. Some were practised seasonally such as '*ukweshwana* and *Nomkhubulwane*'. When asked about the value attached to these rituals, similar patterns of responses emerged of cultural significance and apprentice education that were carried over generations. For example, one participant who was interviewed about the traditional

wedding indicated that the bride and groom might have seen the same pattern of marriage from their parents; hence the imitation. This confirms the views of other scholars that IK is important for education; cultural and socio-economic development purposes (Mchombu 2007:26; Sirika 2008).

5.3.4 IK-related projects for the knowledge intermediaries

This topic was not within the scope of this research but was addressed briefly because data about the knowledge intermediaries emerged through snowball sampling. CoGTA projects comprised agricultural crop farming, pre-school education, health and social, and construction. The Fasimba Primary School knowledge intermediaries were proactive in instilling love for IK among the next generation. They occasionally worked with the CoGTA crop farmers and shared knowledge regarding good soil management strategies. The Mgitshwa educator confirmed that she offered seeds to the crop farmers in case she had a surplus. She also shared crop-farming knowledge like which nutritious plants that should be planted. At school, she was the coordinator of the nutrition project that involved overseas health professionals, IOP knowledge intermediaries and the clinic. IOP knowledge intermediaries focused on early childhood development, adult education, orphans, sewing and organic farming. The Sathi Gqi/Woza Project knowledge intermediary collaborated with the local clinic to provide home-based health-care services. It was apparent that the projects focused on poverty reduction and community development.

5.4 Methods and tools used in managing and preserving IK

As the foregoing discussion indicated, it was apparent in this study that IK was shared through groups of common interest like crop farmers, livestock keepers and

bead workers. In certain cases, some preferred to work as individuals or to share knowledge with an external member such as a poet who shared knowledge with a book club team based at Eshowe. This confirms Steven's (2008:26) view that indigenous communities have their own tools of preserving and transmitting IK such as oral storytelling, oral tradition and experiential training. Because the traditional tools were gradually disintegrating, it was critical to supplement them with modern methods and not replace them (Stevens 2008:26-27). In this context, when the participants were asked about how IK was acquired and transferred to the younger generation, it became a common pattern to get responses indicating that they acquired knowledge about crop farming, livestock keeping, beadwork, et cetera through word of mouth, demonstration, observation and imitation. In short, these were transferred through apprentice education, either in one-on-one sessions or in group sessions like initiation artisanship, especially of girls.

5.4.1 Oral tradition and apprenticeship

Literature has indicated that there is an overlap in these methods as oral tradition entails the sharing of knowledge through demonstrating, observing and imitating, but knowledge is mainly transmitted orally. Oral history, on the other hand, is usually an academic process of inquiry into memories of living people who have a rich knowledge of oral traditions (Bradsher 1991:150). The findings in this study confirmed that the area of study was rich in IK, which was shared mainly through the oral tradition methods of word of mouth, imbizos and communal meetings. Similarly, the findings of a study that was conducted by Mpofu and Miruka (2009:91) also confirmed that IK skills can be transferred to the younger generation through oral traditions. Furthermore, he or she alluded that it was concerning that elders were still the custodians of knowledge because the culture of sharing was disappearing and

lacking impact; hence, many IK scholars suggest the interface of traditional and modern tools might be a better option (Ocholla & Dlamini 2007:17; Stevens 2008).

5.4.2 CoPs

Another traditional tool that was used to share knowledge by the groups of common interest in this study was through the CoPs. However, on the other side, responses indicated that many CoPs had dissolved due to various reasons such as lack of resources, lack of commitment and cooperation, and low levels of education. Despite that, when asked about the preferred model, the majority of responses indicated that they preferred to have a communal village comprising their local market where various CoPs can display and market their products. One female participant from the Enqoleni mixed-gender group even alluded that it has become 'like a song', because they had all reiterated the issue of a communal village. Findings of a study that was conducted in an informal setting by Mosia and Ngulube (2005) confirmed that the use CoPs and ICTs can play a critical role in strengthening knowledge-sharing activities.

5.4.3 Preservation tools (in-situ and ex-situ)

In the introductory chapter of this thesis, section 1.1 the definitions of the terms in-situ and ex-situ preservation methods or strategies are explained. The results in this study indicated that in-situ preservation strategies were predominantly used for IK management and preservation. It has already been highlighted that the community used memory and artefacts to preserve IK. It was observed that some preservation strategies had disintegrated or were gradually disintegrating like the culture of drying of seeds and plants and the use of granaries. It emerged from the discussion with the livestock keeping participants that although they still had knowledge about traditional medicinal plants and the types of ailments they cured but they were no

longer used. It was indicated that drought has contributed to the challenges as some medicinal plants were no longer growing. While one of the educators or knowledge intermediary who is also a small-scale commercial farmer indicated that she was still using the drying of seeds system but the same could not be confirmed with the sampled crop farming community groups. When the question on how seeds were acquired was asked with the crop farmers from Enqoleni sub-place. Results indicated that we put money together to buy seeds or share among ourselves whatever type of seeds we have. In summary the culture of drying seeds was gradually disintegrating.

It has been reiterated in this study that ex-situ preservation strategies like the use of libraries and ICTs to preserve IK were used at a very low rate in the area of study. For example one elderly woman above 80 indicated that sometimes the television was used to copy patterns and colours and knowledge eventually used for her own beadwork. Enqoleni poet also indicated that occasionally cell phone and documenting by handwriting poems in the exercise book were used as preservation strategy. Nomyaca African artist and sculpturalist used a museum to preserve some of his artefacts. He indicated that artefacts were put there purely for display and preservation and there were no incentives received. Fasimba Primary School stood out as a deviant case as they used the school library to preserve handcrafted work and artefacts like beadwork, pottery, grassmats, wired work and wood work. In line with the school curriculum learners were encouraged to engage in various cultural activities like cultural dances, music and praise songs. Learners were also practically involved in nature preservation and environmental protection. They were orientaed into various kinds of medicinal plants that were available in the school orchard, some of which were practically planted by the learners. Further to that they were also given

assignment to do assignments and research about traditional plants and traditional foods by distilling information from the community members especially the elders and also through the use of the school internet laboratory. Given that this study added to the voice of other IK proponents that although not enough but something was done by the post-1994 South African government including the Department of Basic Education in cooperation with other departments like the Nature Conservation Department. It was impressive that learners were taught how to engage in re-cycling activities in order preserve while also benefiting economically. In summary in-situ preservation strategies were predominately used than ex-situ preservation strategies. Given that this study recommends the diffusion of an innovative model that will encourage the use of both strategies. In this 21st century many studies recommend the integration of both indigenous and exogenous methods for better IK management and preservation results (Chisita 2011, Stevens 2008, World Bank 1998). DoI theory that was adopted for this study also recommend innovations that are compatible to the needs of the community. In addition they need to be simple, observable and of relative advantage to the current needs of the people (Rogers 2003).

5.5 Ownership protocols and knowledge about the South African intellectual property laws

In this study, it was concluded that knowledge was communally owned because it became a common pattern for the sampled participants to indicate that knowledge about IK was acquired from the parents and grandparents through word of mouth, demonstration, observation and imitation. For example a male participant from Enqoleni who practised shield-work indicated that the skill was inherited from his father and his uncle; a female beadworker indicated that knowledge was acquired

from her sister. Beadworkers from Khabingwe indicated that they grew up with knowledge. They also shared it among themselves provided someone one wants to learn about an innovative pattern. Sharing was common in groups of common interests like social structures of the same gender, age, and function. For example sometimes knowledge sharing flowed from top to bottom or was horizontal. Rarely was knowledge from bottom to the top. For example the Chief shared knowledge with headmen who then further cascaded knowledge to the community. Communal gatherings like imbizos were also used to share communal knowledge like allocation of land to a new community member or spreading of a word about an innovative inoculation of livestock against epidemic. Initiation practitioners transferred knowledge to teenage girls through communal group meetings. Some parents also indicated that they took their children along with them for crop farming and animal husbandry activities so that they can tell and show them how things were done. But the issue of documenting knowledge was far-fetched because some parents were not educated and could not read or write. The argument above bears evidence that knowledge was communally owned in the area of study.

Cases of individual ownership were rare. Results indicated that individual owners were not very keen to share knowledge because it was used for specific purposes like commercial reasons hence it became a secret. A good example that transpired was that of a female shoe hand-weaver from Enqoleni. She alluded on how a colleague at work was information selfish regarding the sharing of shoe-weaving skill because it helped her to benefit commercially. Therefore she observed how it was done and then self-taught herself. The study argues that knowledge acquired through informal and formal educational experiences, internet and other sources like the case of Fasimba primary school and their learners can be protected with the

South African copyright laws. This includes skill for writing and reciting poems that was individually owned by a poet from Enqoleni and sculpturalist and African art design skills of an artist from Nomyaca. This study suggests such knowledge can be protected under sui generis. For Mashelkar in Odora-Hoppers (2002:191) geographical indications and trademarks or sui generis analogies can be used as alternative tools for indigenous and local communities wanting to benefit economically from their traditional knowledge. Further he/she underlines that the potential value of geographical indications and trademarks is in protecting plants that are specific and unique to geographical regions (Mashelkar in Odora-Hoppers 2002:191)

The diffusion of IP laws innovations is imperative because the majority of the sampled participants did not know about the South African IP laws, responses indicated that the majority of participants (including the knowledge intermediaries) did not know about the South African IP laws. The educators at Fasimba Primary School indicated that they were keen to be educated about the IP laws. The oral poet from Enqoleni also reiterated that he was keen to be empowered, as that would help when publishing his poems. To reiterate the diffusion of IP laws innovation was critical because South Africa has Intellectual Property Laws Amended Act of 2008 and 2013. In addition the Department of Science and Technology (DST) launched the National Recordal System (NRS), which can be used to document all IK-related assets for the African countries and particularly South Africa (DST 2013). Therefore, by educating the rural communities about the South African Intellectual Property Laws (Masango 2010: 77) they can make informed decisions about putting their IK on the database like the NRS and have knowledge on how to protect various

dimensions like literature, trademarks, designs, geographical specifications and patents

5.5.1 The role of the South African IP laws in improving IK management and preservation

Mukuka (2010b:23) argued that the current South African IP laws did not adequately address the specific needs of indigenous IP such as the cultural products and cultural expressions. Britz and Lor (2004) argue that the communal rights were seldom articulated in the IP regimes. As already highlighted in Chapter One, the debates that took place at the University of North-West in 2008 indicated that traditional communities did not understand the role of databases and ownership protocols issues and thus they needed to be empowered (Saurombe 2009:200-201). Findings of this study confirmed that the greatest proportion of the sampled participants did not have knowledge about the IP laws and needed to be empowered. This was important as in this 21st century, the ability of the community to generate new knowledge and translate it into goods and services that can be traded was critical for the economic benefit and thus for poverty alleviation (Mjwara 2007). Therefore, when the community was encouraged to put their IK on databases such as the NRS, it was important that communities were educated about the advantages and disadvantages (Masango 2010). Britz and Lipinski (2001:240) suggest that social justice based on four categories could be used as a guiding framework for evaluating and re-aligning the assignment of ownership rights. The categories included commutative, contributive, distributive and retributive justice. The reason for choosing justice as the moral tool was to give a person or society what they deserved (Britz & Lor 2004:220). Commutative justice implied that the digitisation of African heritage could not take place without the consent and fair

compensation of the owners of knowledge. Contributive justice explained that individuals or knowledge holders in Africa had a moral responsibility to be active and contribute knowledge to the databases for global sharing. This was important for the benefit of human kind. Distributive justice meant that Africa and its knowledge holders had a responsibility to distribute their knowledge globally and not just locally. Fairness should be done by ensuring that contributors of knowledge had access to their digitised heritage resources. Lastly, retributive justice entailed the execution of fair punishment to the culprits who violated the society's accepted principles of justice by infringing the rights of knowledge protection (Britz & Lor 2004:220-221).

Many studies agree that libraries are the holders of important IK. The recording of IK in various dimensions such as artistic, oral, written and recorded forms provides a wealth of knowledge and assists in the continuation of knowledge (Chisita 2011; Ocholla & Dlamini 2007; Ocholla 2007). Libraries, as custodians of some forms of IK, need to ensure that it is accessed in a regulated manner by protecting it through legislation, or IP laws in the case of South Africa. It was also imperative that they collaborate with other specialists in educating communities about IKS-related legislation and policies, including IP laws.

5.6 Role of libraries and information and communication technologies

For this study, it emerged as a common pattern for the sampled participants to indicate that they were not using libraries to manage and preserve their IK. Some participants knew about libraries and computers, but they did not use them to source manage or preserve IK. For example findings indicated that some participants in the CoGTA crop farming project shared knowledge with educators from local schools

where school libraries were available but did not use those libraries for IK management and preservation. When the crop farmers who were employed for the CoGTA project were asked whether they were using the local school library and internet laboratory to manage IK. Results indicated that they were only given limited time to use internet to search for jobs but not manage IK. They relied on the educators that they were repackaging and preserving shared knowledge in their school libraries. On the other side educators like those from Fasimba Primary School indicated that they only preserved IK-related knowledge for the school work programmes. Mqadayi crop farmers who were employed for the CoGTA but also worked as initiation practitioners indicated that they were concerned that the short recess that their girls get during the ceremonies, they get glued to the social networking sites. Based on that they were keen to be educated on how they can share IK-related knowledge through those sites. It was surprising that Nomyaca African artist and sculpturalist was using a museum to preserve some of his art work and sculptures. In addition he acquired his fine art certificate through the then Natal Technikon today called Durban University of Technology but was not using libraries to search information related to his artwork and sculpturing-related information. Similarly the Enqoleni poet took initiative to share knowledge about his poetry work with book club members at Eshowe and also saved some of his oral poems in his cell phone and in hand-written format, but when asked if the library was used to gather related information, the answer was negative. It was impressive and appealing that an elderly crop farmer and beadworker above eighty indicated that during her old days when her vision was still good she copied some of the patterns from the television even the colours. From that she produced good colourful work that was highly marketable. This confirmed the views of the study that was

conducted by Kwake, Ocholla and Adigun in 2005 as reported by Stilwell (2011:53) that women living in Eshowe, Amatikulu, Gingindlovu and Mtunzini towns and villages of the Umlalazi district of KwaZulu-Natal preferred the use of old technologies such as radio and television than other modern technologies.

The only deviant case out of all the sampled participants regarding the use of libraries, internet and various computer application programs in managing and preserving IK were the Fasimba Primary School learners. Furthermore, they cascaded the skill and knowledge to learners. It was apparent that the use of libraries was unpopular in the area of study. Despite the fact that in one local school there was an internet laboratory that was for dual services of both school learners and community members. The majority of the sampled participants did not know about it except few participants especially those of certain age group and level of education above grade 10. However the limitation of this study is that the question regarding the use of the Enqoleni internet laboratory was not asked with some focus groups. For example the question was asked among those participated that were staying closer to the laboratory like Dlangubo crop farmers, Kabhingwe beadworkers and Enqoleni crop farmers. Results indicated that the majority of women above the age of sixty did not know nor use the internet laboratory. It can be concluded that the internet laboratory was not sufficiently marketed to the community nor used by the local schools learners. In addition, it was difficult to access the official responsible for the interviewing session. This study concluded that it was important to rigorously diffuse libraries as innovations for IK management, sharing and preserving activities. The optimisation of the dual use of available local school libraries was imperative. However, as the project needs to be programme-based Peters (2003:80) recommends. It needs to be done in a regulated manner or structured in line with the

identified needs of the community. Alternatively CoPs can be divided according specific characteristics like groups of certain ages be given opportunities to engage in school-library based programmes while those above the age of fifty be assigned to Community Information Centre (CIC) programmes. In line with the principles of Dol theory innovations need to be compatible, simple, observable and of relative advantage to the communities in order to facilitate and maximise the rate of diffusion.

5.7 Summary

In this chapter the data was analysed and interpreted in line with the objectives of the study. Biographical results of the sampled participants indicated disparities in terms of gender representation in various IK practices that were commonly practised in Dlangubo village. Women outnumbered men except in the livestock keeping function. The age range of the crop farming participants who were employed for the CoGTA project was between 30 to 50, while the majority of the sampled participants who were not employed by CoGTA were above 60. In addition they had no formal education as they used their thumbs for signatures. It was notable that there was low representation of youth among the sampled participants confirming the views that they focused more on formal education and technology than IK-related matters (Stevens 2008). The reporting from the Mqadayi participants who practised dual roles of being crop farmers and initiation practitioners confirmed that young girls used every free time they had for social networking using their cellphones. The identified need stimulated awareness of their need to be educated on social networking so that they can be relevant in sharing IK innovatively and in line with the trend. In line with the objectives of the study findings indicated that IK practices that were prevalent as highlighted in order of priority included crop farming, livestock keeping, and folklores like tangible and intangible including various popular rituals

like rainmaking ritual called 'Nomkhubulwane' and initiation of girls into adulthood. Beadwork was also one of the popular folklores. However its popularity was mainly associated with commercial benefits than cultural values. The importance of the identified IK practices was linked to survival needs like food security, cultural, social and recreational, educational and economic factors. Mearns, Du Toit & Mukuka (2006:35, 37) have indicated that it has become a current trend to prioritise the use of IK for commercial benefit. The South African IKS Policy (2004) has also endorsed the importance of economic factor as it is entrenched in one of the IKS Policy four themes. The four themes were highlighted under section 1.4 of this study. They underscore that the policy aims to promote affirmation of African cultural values in the face of globalisation; develop services provided by IK holders and practitioners; maximise contribution of indigenous knowledge to the economy; and encourage integration of IK with other knowledge systems (DST 2004). In addition the SA-IP Laws (2008) have certain clauses that underline that protection of IK is critical as it has financial implications hence it needs to be protected from financial exploitations (Masango 2010:75-77). But this study argues that the initiative has not been sufficiently realised in Dlangubo village as the majority of IK practitioners including crop farmers, livestock keepers and bead-worker are still resource-poor practitioners. Given that this study underscores that diffusion of innovations in line with the identified needs is imperative. Regarding methods and tools that were used in managing and preserving IK, results indicated that oral tradition, memory, artefacts and social groups called CoPs in this context were commonly used. However challenges experienced contributed to the weakening of social cohesion within the social structures. Challenges included drought, lack of or limited resources, lack of or limited trust and limited or lack of time. Ex-situ preservation strategies were used at a

low rate by deviant cases that have already been highlighted in this chapter. In this study it emerged the majority of the sampled participants were not using libraries, ICTs and South African intellectual property laws to manage their IK. It was apparent that communal ownership was not the only factor but there sometimes IK was individually owned like in the cases for the sculpturalist and the oral poet. It was apparent that intervention programmes to educate the community about related IP domains were critical.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

Mathipha, Gumbo and Ngulube (2014:191) assert that the last chapter of the thesis needs to focus on the conclusions and recommendations about the main findings of the study. A researcher needs to reflect on the research journey that was travelled and be able to show how the research plan and problem have been addressed, and then make conclusions. In this chapter, the reflecting journey was guided by the data that was presented in Chapter Four, the results analysed and interpreted in Chapter Five and the objectives of the study.

6.2 Summary of research findings

As in the previous chapters, the discussion of the biographical information of the respondents preceded the discussion of the conclusions and recommendations of the study.

6.2.1 The demographic information of the participants

In this study, results indicated that the ratio of female to male was 109 (78%) to 31 (22%). Women dominated crop farming and beadwork and men dominated livestock keeping. The overall age of respondents ranged between 20 to 80 years. With regards to educational level, participants ranged from no formal education to post-secondary qualifications. The majority of those with higher education were young males and females. As expected, the majority of the older participants had lower levels of education and some had no formal education. It was notable that two

participants above the age of 80 participated in the study. Both indicated that they had no formal education. One participant from Nomyaca indicated that she had acquired the skill of signing her name through adult education. However, the adult education programme did not last long due to lack of community commitment.

6.2.2 IK practices

In terms of gender representation in IK activities, women outnumbered their male counterparts in almost all IK practices, with the exception of livestock farming. The two main IK practices that were prominent included agriculture and folklores. They were further subdivided into various dimensions that were still embraced by the community. It must be noted that IK practices discussed in this study represented some of the IK practices in the Dlangubo village, but were not only limited to them.

6.2.2.1 Vegetable crops

Similar to other studies in the Dlangubo village, agricultural farming was found to be the most important asset because of its importance in food security and poverty alleviation. The findings of the study indicated that the types of vegetable crops that were prevalent in the area of study included leafy vegetables, root plants, plant tubers and plant legumes or grain crops. It was discovered that the surplus crop yields were donated to schools for the school feeding programmes and to poor families and elderly community members. In addition, vegetables were traded informally in order to generate income to buy more seeds or to cater for other household responsibilities, provided crops were not for the CoGTA project.

6.2.2.2 Livestock keeping

The types of animals that emerged as their domesticated animals included cattle, chickens and goats. It was indicated that these domesticated animals were kept for food security, cultural and economic value. Like vegetable crops, it also transpired

that domesticated animals were occasionally traded informally in order to generate income to pay school fees or to cater for other household responsibilities.

6.2.2.3 Folklores

Folklore practices that emerged as popular in the area of study included tangible, intangible and artistic expression folklores. Beadwork was the most popular tangible folklore in the area of study. The other tangible folklores that were practised included grass mat weaving, shoe handcrafting, shield work, woodwork, African artwork and sculpting. Intangible folklores included oral poetry, oral history, folk songs and dances. Artistic folklores included rituals like traditional wedding, initiation rites, umhlonyana, umemulo, ukukhela or umkhehlo, Nomkubulwane and ukweshwama.

6.2.2.4 IK-related projects for the knowledge intermediaries

In this study, knowledge intermediaries emerged through the snowball sampling. They consisted of the extension officers that were engaged in the CoGTA crop-farming projects, extension officers from the local schools who shared information with the CoGTA crop-farming fieldworkers, the Sathi Gqi / Woza project community home-based health-care services and the IOP extension officer. The educators were from the local schools called Fasimba Primary School and Mgitshwa High School. The extension officer for the Izulu Orphan Project emerged as a knowledge intermediary who also shared knowledge with the CoGTA fieldworkers about organic farming, early childhood development and adult education. However, the main focus of the IOP was to look after the orphans. Lastly, the Sathi Gqi / Woza non-governmental organisation (NGO) extension officer focused on the community-based health-care services, nutrition and balanced diet. Although some of the projects were not related to IK management, they played a critical role in improving the lives of the

community. The challenge was that knowledge was not sufficiently documented or not documented at all for posterity.

6.2.3 Methods and tools used in managing and preserving IK

The traditional methods that emerged as commonly used in managing IK included oral tradition, apprenticeship, CoPs and artefacts. As already highlighted the in-situ preservation strategies were predominantly used while ex-situ preservation methods were used at a very low rate. It was surprising that similar results emerged with the knowledge intermediaries, with the exception of the Fasimba Primary School extension officers as they used both traditional and modern methods of knowledge sharing. Traditional methods included oral tradition like engaging IK in research with the local community elders and other knowledge holders like traditional healers, apprentice education and artefacts. In addition, the school library, the computer laboratory and internet searches were used to manage IK and to cascade knowledge to the learners.

6.2.4 Ownership protocols and knowledge about the South African intellectual property laws

Responses indicated that knowledge was communally owned, as it emerged as a common pattern for the participants to indicate that knowledge was inherited from the parents and grandparents through word of mouth and apprenticeship. Consequently, it was transferred to the youth in a similar way. Few deviant cases considered their knowledge as individually owned. But, when the sampled participants were asked what they knew about the South African intellectual property (SA-IP) laws, it became a common pattern to indicate that they did not know anything about the legislation. Therefore, this study concluded that the community studied had no knowledge about the SA-IP laws.

6.2.5 Knowledge about the role of libraries and ICTs in managing and preserving IK

This study concluded that ex-situ preservation strategies including and ICTs were used at a limited rate.

6.3 Contributions of the study

The focus of this study was to explore the challenges and opportunities of managing and preserving IK in Dlangubo village. As indicated in Chapter One many theoretical and empirical studies have been conducted regarding IK management in Africa. Therefore scientific findings for this study will add a voice to the empirical evidence of other studies in order to strengthen argument about IK management in Africa particularly South Africa. Similar to other countries, in South Africa although a lot has been done in the area of IK and its management but empirical evidence regarding challenges of IK management is limited. It is therefore envisaged that results for this study will contribute to the existing literature on what can be done to improve IK management for the better. For example Raphesu (2010) argues that South Africa boasts of many IK-related policies but it still experiences IK management challenges like other countries like scarcity of taxonomists and organisational structures to mobilise communities in managing IK for sustainable development purposes.

Hart, Jacobs, Letty, Ramoroka, Mangqalaza, Mhula and Ngwenya (2014) assert that a lot has been done by the South African government in order to improve IK management but with limited desired impact. They contend that in South Africa the innovation policy framework has given little attention to innovation systems that are heavily localised and informal (Hart et al. 2014). This study is important because it has provided empirical evidence in line with this argument. For example results for

this study confirmed that the community studied especially women had low levels of literacy skills. They had challenges in accessing relevant government opportunities in order to improve IK practices. They were still practising resource-poor agricultural farming and were not benefiting economically from their IK. They also did not know about the SA-IP laws that can help them protect their IK. In summary innovative methods of managing IK like the diffusion of libraries were not yet adopted in the area of study. Therefore, this study was significant because its results or the identified needs can serve as base or determinant regarding the type of innovations that need to be diffused in Dlangubo village. Ngoepe (2012:206) argues that for the research findings to be useful they need to be connected to the larger picture like what people already know or believe about the topic. In addition they need to inform and guide relevant stakeholders including policy makers on what can be done to improve the situation in line with the problem studied (Ngoepe 2012:206).

6.4 Originality of the study

In section 1.6 of Chapter One of this thesis Phillips & Pugh (2005:62) indicate that there are a number of routes to demonstrate the originality of research, including the development of new methodologies, tools and/or techniques, new areas of research, new interpretations of existing material, new applications of existing theories to new areas, or new blends of ideas. As already reiterated in this study in South Africa many theoretical and empirical studies have been conducted regarding IK management. However they have tended to focus on specific areas. For example Berkmoes (2008); Masango (2010); Mukuka (2010) looked at the protection of IK using SA-IP laws. Dahlberg and Trygger (2009); Keirungi and Fabricius (2005) explored the importance of medicinal plants. Hart and Aliber (2010) addressed the issues of engendered approach to agricultural technology. Hart and Vorster (2006)

focused on the management of agricultural IK. Hart et al. (2014) explored innovations that can be used for inclusive transformation. Mosia and Ngulube (2005) studied the sustainable use of estuaries in the Eastern Cape. Ocholla and Dlamini (2007) examined the use ICTs for IK management and preservation in KwaZulu-Natal province. Therefore the new area this study explored was to look at the wider spectrum in IK management. The objectives of the study served as a guiding framework. The first one looked at various IK practices that were commonly used in the area of study. The second one focused on methods and tools used to manage IK. The third one explored ownership protocols and what the community knew about the SA-IP laws. The fourth examined whether libraries, ICTs and databases were used to manage IK. Lastly what model can be recommended that best fits the needs of the Dlangubo community.

In addition this study explored the use old methods and theories in a Dlangubo rural setting which in this context is considered as new. The methods used were qualitative and grounded theory methods. These methods helped the researcher to distill primary data from the sampled participants in their natural setting. The advantage of using these methods is that they also give an opportunity to the researcher to interpret data in a reflexive manner. The researcher strived to eliminate biasness in order not to distort or taint data that was gathered. SECI model and DoI theory helped the researcher to gain insight regarding the knowledge management processes that were prevalent in the area of study like oral tradition, memory and CoPs. In addition what innovations needed to be diffused relative to the needs of the Dlangubo community. Similar to other studies, this study concluded that the integration of both indigenous and exogenous methods were needed in order to invigorate IK management activities in the area of study.

6.5 Conclusions about research objectives

In this section, conclusions made were based on the research findings as highlighted above. Similarly they were discussed in line with the objectives of the study.

6.5.1 Conclusions about biographical information of the respondents

The conclusion made was that with the sampled participants there was disproportionate gender representation in all IK practices. Females outshined males except in livestock keeping farming. Overall, the age of respondents ranged from 20 to 80 across the board, with most participants being in the middle age (30-60) bracket. The majority of the sampled participants especially women who were above 60 had low levels of IL skills.

6.5.2 Conclusions about IK practices

IK practices that were prevalent included agricultural IK like vegetable crops, plant tubers and legumes. Livestock farming of animal types like cattle, goats and chicken were popular. Folklores including tangible, intangible and artistic were also popular in the area of study.

6.5.2.1 Conclusions about IK-related projects for the knowledge intermediaries

The findings of this study concluded that CoGTA was the main provider of various projects like agricultural farming, education especially pre-school education, primary health care and social and construction. Crop farming projects were also supported by some local schools like Fasimba Primary School and Mgitshwa High School. IOP provided support on organic farming depending on the contract agreement with the Department of Agriculture.

6.5.3 Conclusions about the use of IK management methods and preservation tools

In this study, it was apparent that in-situ preservation methods like oral tradition, memory and CoPs were predominantly used and exogenous methods were used at a very low rate.

6.5.4 Conclusions about IK ownership protocols and knowledge about the SA-IP laws

This study concluded that knowledge was communally owned. But, they were few deviant cases that indicated that their knowledge was their intellectual property like the oral poet from Enqoleni and the African artist and sculpturalist from Nomyaca.

6.5.5 Conclusions about the participants' level of knowledge about the role of the libraries and ICTs in managing and preserving IK

In this context, although some local schools had operational libraries but their importance in line with IK management activities was not sufficiently realized. The local school libraries and the local internet laboratory called Enqoleni Computer Laboratory were not accessible to the community or rather were accessible at a very limited rate. The same can be said about the ICTs. Very few deviant cases used ICTs for managing IK.

6.6 Recommendations

The recommendations of this study are discussed in line with the objectives of the study as indicated in the next section.

Recommendation 1: Biographical information of the respondents

Similar to other studies (Hart & Aliber 2010; Lwoga 2010; Sirika 2008), this study concluded that there was a need to balance gender representation in various IK

practices in Dlangubo vilage. In addition training programmes to improve IL skills of the community especially women practitioners were a cornerstone to improving IK management in the area of study

Recommendation 2: IK practices

Two of the key areas of the South African IKS Policy (2004) underscore the importance of supporting the development of services provided by IK holders and practitioners; and the importance of IK in contributing to the economy (DST 2004) are important for inclusive rural development. This study recommends that the policy should include the stipulations that strengthen the sustainable use of nutritional plants and highly harvested medicinal plants as Dahlberg & Trygger (2009) have recommended in their empirical study. For example soya beans are rich in protein, vitamin C, K and B6, iron, calcium, magnesium, omega 3 and 6 and fatty acids. The species are good in fighting diseases like breast and prostate cancer, osteoporosis, heart diseases, diabetes, kidney problems, gallstones and high blood pressure. Amaranth and pumpkin are known to be highly nutritious in Vitamin A and in South Africa, there is a high rate of Vitamin A deficiency (Hart & Vorster 2006:24). Therefore lobbying and advocating for the cultivation of nutritious rich plants and drought-tolerant plants like amaranth and pumpkin, which are naturally high in Vitamin A, and rich in proteins like soya beans can help in improving the health and thus curb the scores of various diseases in the country. This study recommends that training programmes should be offered so that IK practitioners are able to commercialise their resources as the IKS Policy recommends. In addition IK-related projects that were offered by the knowledge intermediaries were important for poverty alleviation in the area. The challenge was that even the extension officers

did not document knowledge hence the diffusion of exogenous methods was critical. This study recommends that the projects should be intensified. In addition, they should respond to the information needs of the community.

Recommendation 3: IK management methods and preservation

tools

The diffusion of exogenous methods was imperative in order to strengthen indigenous methods of IK management and preservation. The early adopters like Fasimba Primary School and unemployed youth with grade 12 could help in educating and attracting late adopters.

Recommendation 4: Ownership protocols and knowledge about

SA-IP laws

This study adds to the voice that in the area of study there is a need for educational programmes that should focus on IP regimes that are compatible with information needs of Dlangubo community like trade secret or trademarks, design acts, copyright and geographical specifications. For example in China they have a sui generis law that protects their ethnic folklores. In India they have created a database that preserves their patented traditional medicines. South Africa also advocates for the putting of IK on the database called National Recordal System (NRS). In line with the findings this study recommends that communities need to be educated first before putting their IK on the NRS database. This is crucial for contributive, commutative, distributive and retributive justice.

Recommendation 5: Knowledge about the role of the libraries and ICTs in managing and preserving IK

As already highlighted in this study Chapter 8 of the South African IKS Policy clearly supports new models of library and museum services that can involve local community members in IK management processes (DST 2004). This study reiterates that there is a critical need for the diffusion of new model libraries and resources like ICTs that are compatible with the information needs of the rural communities. This study adds to the voice that innovations should supplement the existing IK management methods but not replace them.

6.7 Proposed model for the area of study

In this study, the last objective was to develop a recommended model for IK management and preservation in the area of study. Lwoga (2010:64) defines a model as a hypothetical description of a complex entity or process. It is viewed as a simplified representation of relationships between and among concepts. It is also viewed as a representation of reality. It can help in getting clarity regarding key issues in the nature of phenomena. The findings of this study indicated that social structures were weak and some had dissolved due to many challenges experienced in the area like drought, low levels of information literacy skills and lack of resources. In Figure 6.1 below the recommended model for this study comprises of four circles named circle one to four. They explain how the SECI model and DoI theory can help in diffusing innovations among various social structures from circle one to four as indicated in the proposed model below.

1) Circle One (1): Dlangubo Community

This platform represented the community; various IK practices that were practised in the area of study. In addition the traditional methods and tools that were used to manage, share and protect IK. Results indicated that knowledge creation and transmission through the use 'socialisation' mode was prevalent in the area of study. The other three modes of knowledge creation and transfer like externalisation, combination and internalisation took place at a very low rate. Results indicated that ex-situ preservation were used at a very low rate. This study concluded that the diffusion of innovations in line with IK management needs of the Dlangubo community was imperative. Empirical evidence confirmed the the South African IKS policies for managing and preserving IK had not reached the area of study. While the South African government had implemented a number of rural development projects to upgrade the economic level of farmers IK practitioners in Dlangubo village were still resource poor.

2) Circle Two (2): Social structures

Findings indicated that social structures in Dlangubo village were weak and fragmented. Despite challenges some social groups continued to share knowledge by holding face-to-face oral discussion meetings (socialisation). In some cases when there was new knowledge to be diffused like new soya bean seeds obtained from the government officials the Enqoleni women crop farmers indicated that their advisor would convene them in order to diffuse new knowledge and demonstrate to them how the seeds were planted (apprenticeship). Results from this deviant group indicated that they held their meetings at least three times per week. When asked what the recipe of sustaining social cohesion was, results indicated that they had a

co-ordinator they respected who helped them maintain strong social cohesion. However one male participant from MngaMpondo indicated that their social group for traditional music and dances called 'isicathamiya' had dissolved because everyone wanted to be a leader. A need for the diffusion of innovation to galvanise socialisation knowledge sharing activities was realised by the community and the researcher. Results from the sampled participants recommended the diffusion of a communal village centre. In line with the objectives this study recommended communal information centre that would facilitate the provision of spaces for knowledge sharing through the SECI model.

3) Circle Three (3): Libraries/Communal village centre/Community information centre and knowledge intermediaries

The role of the libraries / communal village centre (CVC) / community information centres (CIC) and knowledge intermediaries would be to facilitate the diffusion of innovations like ICTs, SA-IP laws that are compatible with IK management needs of the community. Findings of this study indicated that knowledge intermediaries had limited or lacked knowledge management skills. However Fasimba Primary School was a unique case as educators had already adopted the innovations like libraries and ICTs for IK management purposes. As early adopters they could be requested to share knowledge about the advantages of the adopted innovations. According to Rogers (2003) innovations diffuse quickly if introduced by other members of the community. From circle three (3) arrows move in and out to indicate the co-ordinating functions of the libraries by ensuring that socialisation sharing activities are strengthened while knowledge creation and transfer through the processes of externalisation, combination and internalisation also take place. The tools recommended for usage during the knowledge exchange and creation processes

include new model libraries as recommended by the South African IKS Policy (2004), ICTs, databases and SA-IP laws.

4) Circle Four (4): Policies and legislations

In this study results indicated that the community did not have knowledge about the South African IKS policy and the SA-IP laws that can be used to manage and protect IK in the area of study. Libraries and knowledge intermediaries were viewed as facilitators that could play a significant role in diffusing these innovations in line with the identified information needs of the community. They can help in repackaging and simplifying them so that they can easily diffuse to the community.

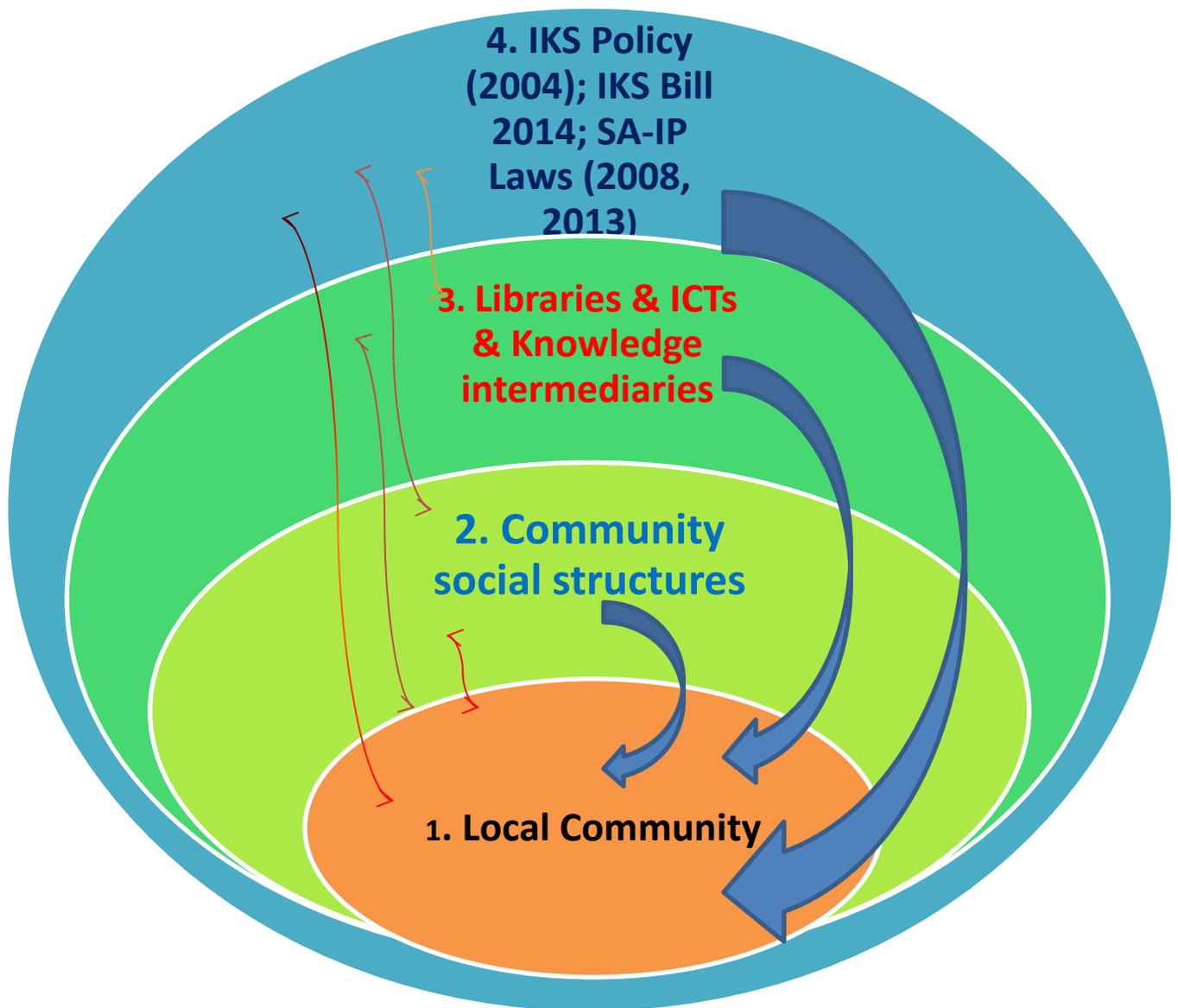


Figure 6.1: The proposed IK model informed by the SECI model and Dol Theory

6.8 Further research

In this study, further research is recommended in line with the objectives of the study and in the following areas:

(1) What specific engendered educational and training programmes are needed by the majority of the community members including the women agricultural farmers and the knowledge intermediaries in order to improve their IK management skills for sustainable development purposes.

(2) One of the key areas of the South African IKS Policy (2004) is to develop services provided by IK holders and practitioners. It is envisaged that further studies regarding the mapping and auditing of specific IK practices like indigenous foods; folklores, traditional medicines and languages as separate entities are imperative. In addition their importance (like soya beans, amaranths are nutritious plants, important in fighting various diseases; livestock keepers and their needs) and innovations needed to develop services of IK practitioners might help in the introduction of relevant programmes and projects with desired impacts.

(3) The South African intellectual property law (2008, 2013) comprises of various domains like copyright; design; patents and trademarks. Further studies might focus on getting in-depth understanding regarding the specific IP regimes or domains that the community need to be educated about.

(4) Chapter Eight of the South African IKS Policy (2004) recommends the need for innovative libraries that will help rural communities transform their knowledge into strategic resources for socio-economic development. It is crucial to do a feasibility study of the role of the CIC that will resemble the community village centre and its functions as recommended by the sampled participants.

6.9 Limitations

Hofstee (2011: 117) explains limitations as what separates the researcher from performing his or her study according to the chosen method. Secrecy as one method for IK preservation remains a challenge in knowledge sharing. Guided by the objectives of the study various areas of IK management were explored like IK practices, methods and tools used in managing and preserving IK, ownership protocols and what knowledge practitioners knew about SA-IP laws and the role of libraries and ICTs in managing IK that focused only on Dlangubo village. The study would have gained more insight about these areas if it they were compared with one of the African countries. Because of the principle of sacredness and secrecy the researcher tried unsuccessfully to engage with traditional healers but appointments were not successful. Based on that information about traditional medicines could not be gathered except limited data that was gathered from Fasimba Primary School.

Qualitative method and open ended questions were used for this study. The number of sampled participants (140) was big, 14 focus groups nine of which were crop farming groups. This study showed some biasness in having nine crop farming groups. The lesson that was learnt was that it was easy to probe in focus group where participants were less than six hence Krueger and Casey in Wholey, Hatry and Newcomer (2010:382) recommend smaller groups of five to eight especially for sensitive or personal topics and when participants have experience with the topic. The danger with a bigger group is that it might be difficult to control and to get in-depth responses (Krueger & Casey in Wholey, Hatry & Newcomer 2010:382-383). For this study data gathered using open-ended questions was overwhelming and difficult to analyse manually for a novice researcher. To facilitate data analysis in addition to manual data analysis, NVivo programme was used. Some questions

needed further probing but it was not done like when the participants were asked how do they get seeds? It emerged as a common pattern to say we put money together or do recycling in order to get money to buy them or we get them from the Department of Agriculture (DA). In some cases, the researcher did not probe further in order to gain more insight whether participants of various sub-places were still drying seeds and if not why. It emerged from the focus group of livestock keepers that granaries were no longer used. In other focus groups and for using the basic principles of grounded theory for constant comparison, similar questions were not asked. For this study data collection was done using the language of the participants which was 'Zulu'. It is anticipated that biasness and misinterpretation of some statements might have taken place during data analysis. Given the above-mentioned arguments this study cannot claim to be completely unbiased.

6.10 Summary

Chapter 1: Chapter One provided background information about the challenges of IK management and preservation as the integral focus of this study. In this chapter, the following sub-topics were discussed: introduction; contextual background; definition of terms; problem statement; purpose; research questions; research objectives; significance of the study; originality of the study; summary of research methodology, which covers the research approach, research design, study population, sampling procedure, data collection procedure, and data presentation and analysis; limitations and delimitations, structure of thesis and summary.

Chapter 2: Chapter Two discussed the literature review in line with the objectives of the study. It also highlighted the two theories that were adopted for the study, which were the SECI model and the DoI theory. The SECI as the main model assisted in

understanding how IK was shared by the community members. The DoI theory as the ancillary model to augment the SECI model assisted in obtaining the perceived views of the community about the diffusion of innovations at both lower and higher levels. Lower levels entail the diffusion of new knowledge within the communities like apprentice education during the initiation rites and other knowledge. The higher level mainly entail the diffusion of innovations between the local community members and external members.

Chapter 3: This chapter discussed the research methodology that was used for this study, which was the qualitative inductive approach and GT method. This chapter also elaborated on the research approach, research design, population, sampling procedure, data collection procedure and data analysis. It was briefly explained how the basic functionalities of the NVivo programme were used to analyse data thematically for this study.

Chapter 4: Chapter Four presented the empirical findings in line with the objectives of the study.

Chapter 5: This chapter elaborated on the interpretation of data presented in Chapter Four. The data gathered was analysed thematically using qualitative methods and the basic principles of GT.

Chapter 6: This chapter provided a summary of the conclusions, the recommendations and the areas identified for further research. The model recommended for this study was also presented.

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APPENDIX 1

Proposed title: The management and preservation of indigenous knowledge (IK) in Dlangubo village in KwaZulu-Natal, South Africa.

Principal investigator: Nomusa Zimu-Biyela

Student number: 45910227

Reviewed and processed as: Class approval (see paragraph 10.7 of the UNISA. Guidelines for Ethics Review)

Approval status recommended by reviewers: Approved

The Research Ethics Committee of the Department of Information Science in the College of Human Sciences at the University of South Africa has reviewed the proposal and considers the methodological, technical and ethical aspects of the proposal to be appropriate to the tasks proposed. Approval is hereby granted for N. Zimu (45910227) to proceed with the study in strict accordance with the approved proposal and the ethics policy of the University of South Africa.

In addition, the candidate should heed the following guidelines:

- To only start this research study after obtaining informed consent from the interviewees
- To carry out the research according to good research practice and in an ethical manner
- To maintain the confidentiality of all data collected from or about research participants, and maintain security procedures for the protection of privacy
- To notify the committee in writing immediately if any adverse event occurs.

Kind regards

A handwritten signature in black ink, appearing to read "SC Ndwandwe".

Mr SC Ndwandwe
Chair: Research Ethics Committee
Department of Information Science
Tel + 2712 429 6037

APPENDIX 2

Biyela-Ndlangubo Traditional Council District: UThungulu UThungulu Local House, KwaZulu-Natal Province, South Africa	
P. O. Box 57227; Empangeni; 3880	Telephone/Ucingo : 0786756617
Enquiries / Imibuzo : F. F. Langa	Date / Usuku : 2014/11/12

This letter serves to confirm that Nomusa Zimu (Biyela) has been granted permission to conduct research on the topic entitled: "The management and preservation of indigenous knowledge (IK) in Dlangubo Village". Chief Biyela granted her permission to collect data from the area with effect from 01 November 2014 to 31 December 2014.

Your help in making the research work a success is appreciated.

Yours faithfully

F. F. Langa

Secretary

APPENDIX 3

CHECKLIST OF ETHICAL ISSUES	
Adapted according to Creswell (2008:23); Tapela, Buscher, Maluleke, Twine and Steenkamp (2009) and UNISA Policy on Research Ethics (2007)	
Date	18 November 2014
Name of the researcher	Nomusa Zimu (Biyela)
Name of the fieldworker	Sphumelele Biyela
Title of the research study	The management and preservation of indigenous knowledge (IK) in Dlangubo Village
Purpose of the study	To establish the challenges and opportunities of managing IK in Dlangubo village. Furthermore what model can be developed to improve IK management if need be.
Principle of disclosure and respect	Community to be informed about the purpose and objectives of the research study. The importance of the principle of mutual respect to be emphasised
Principle of secret and sacred information	Respect of secret and sacred knowledge was of outmost importance in this study and was in line with the UNISA Policy on Research Ethics (2007)
Principle of confidentiality	Protection of personal identity was also acknowledged. Participants were encouraged not to use their names.
Principle of reciprocity, mutual benefit and equitable sharing	Both parties should benefit in this research. The anticipation was that the results of the study would help in informing government policy makers regarding the identified IK management needs in the area of study. In addition what model can be used to improve them.
Principle of data access and ownership	The results of study were to be shared as per agreement with the Chief, his traditional council and the community of the Dlangubo village.
Principle of compensation	After the sessions a small token of appreciation were to be shared with the participants like enjoying cookies and juice together.
Ethical right of a participant	Participation was voluntary and not compulsory. The ethical rights of the participants were explained before the consent form was signed. Confidentiality was maintained and names were not used. The discussions and interviews were voice recorded and the recordings were confidential.

	<p>The researcher and field worker wrote down field notes on all matters discussed by the team</p> <p>The interviewing session did not last longer than two and half hours</p> <p>The participants who agreed to take were asked to sign oral consent form and the discussions and interviews proceeded.</p> <p>The findings and the results of the research were to be shared with the community members as per our agreed policy. The results were also to be shared with the organisations that funded this work like the University of South Africa (UNISA) and the Human Sciences Research Council (HSRC).</p>
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APPENDIX 3.1

ORAL CONSENT FORM	
Adapted according to Ulin, Robinson and Tolley (2005:221-222)	
Date	18 November 2014
Name of the researcher	Nomusa Zimu (Biyela)
Name of the fieldworker	Sphumelele Biyela
Title of the research study	The management and preservation of indigenous knowledge (IK) in Dlangubo Village
Purpose of the study	To establish the challenges and opportunities of managing IK in Dlangubo village. Furthermore what model can be developed to improve IK management if need be.
Objectives of the study	<ul style="list-style-type: none"> • To find out about various IK practices • To establish methods and tools used for managing and preserving IK • To determine the ownership protocols for the various IK practices and what they know about the South African intellectual property law system • To determine the use and role of libraries, databases and ICTs in managing and preserving IK.
What is the role of the participant in the research study	<ul style="list-style-type: none"> • To answer questions honestly and in line with the objectives of the study • To respect each other and do not talk simultaneously • To speak freely so that we can together contribute ideas on how we can improve the management of indigenous knowledge for socio-economic development purposes
Ethical rights	As explained in Appendix 3
Principle of compensation	A small token of appreciation were to be shared with the participants like enjoying of cookies and juice together.
Informed Consent Agreement	The researcher first ensured that participants understood the ethical rights before requesting them to agree verbally to take part in the study

APPENDIX 4

PRETEST QUESTION GUIDE	
PRELIMINARY QUESTIONS	
A	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
1	Tell me more about the various IK practices that were commonly practised in the Dlangubo Village?
2	Tell me more about traditional foods, what types did you eat and why were they important to you?
3	What about traditional utensils, what did you use them for?
4	Were you still using traditional foods and utensils today? If not why?
5	Let us also talk briefly about the history of chieftainship. Why was this knowledge important to you?
6	What did the initiation of girls entail or what could you tell me about it that is not secret? Remember you have the right not to share all information.
7	Why was the ritual still important in the area of study?
8	Tell me more about 'Nomkhubulwane', what was it all about?
B	To establish methods and tools used for managing and preserving IK
9	Where and how did you acquire knowledge about the rituals?
10	How did you transfer knowledge to the youth?
11	How did you share knowledge among yourselves as community members?
12	Tell me about the challenges and opportunities of managing IK
INTERMEDIARY QUESTIONS	
C	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
13	Tell me more about the IK domain/s that you embraced more than others?
14	Why bead-work was important for you?
15	Tell me about the mixing of bright colours, why was it important and where did you learn about it?
D	To establish methods and tools used for managing and preserving IK
16	Where and how did you acquire knowledge about the rituals?
17	How did you transfer knowledge to the youth?
18	How did you share knowledge among yourselves as community members?
19	Tell me about the challenges and opportunities of managing IK
E	Ending questions
20	Tell me do you use libraries to look for more information about IK or to preserve the knowledge you have about IK?
21	What about your cell-phones, do you use them for IK-related activities?
22	What do you know about the South African intellectual property laws?
23	What model can you recommend for IK management and preservation at Dlangubo village

APPENDIX 4.1

PRETEST OBSERVATION GUIDE	
Non-participant observation (Creswell 2008:223)	
A	Body Language
1	Observed the use of eyes, hands, head and body language when expressing agreements or disagreements
2	Observed non-verbal cues when expressing agreements or disagreements
B	Tone of voices
3	Observed tones of voices when emphasizing ideas or when in disagreement
	For example an idea stated forcefully may be emphasizing the strength of a participant's convictions while the hesitant and sceptical manner may indicate the participant's uncertainty, scepticism or disagreement with others in a group
C	Artefacts or Finished products
3	Observed the quality of the finished products
4	Observed the sizes and colours of beads used
5	Observed the storage spaces used for the beadwork
6	To clear the misunderstandings with the participants

APPENDIX 5

QUESTION GUIDE (FOR THE CROP FARMING FOCUS GROUPS)	
PRELIMINARY QUESTIONS	
A	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
1	Tell me more about the various IK practices that are commonly practised in the area?
2	Tell me more about 'umemulo'; 'umhlonyana'; 'umkhehlo or 'ukukhehlisa'; 'ukukhipha ucu'?
3	What is 'umemulo' and why is it important?
4	What is 'umhlonyana' and why is it important?
5	What is 'umkhehlo or ukukhehlisa' and why is it important?
6	What is 'ukukhipha ucu' and why is it important?
B	To establish methods and tools used for managing and preserving IK
9	Where and how did you acquire knowledge about the rituals?
10	How do you transfer knowledge to the youth?
11	How do you share knowledge among yourselves as community members?
12	Tell me about the challenges and opportunities of managing IK practices like the rituals?
INTERMEDIARY QUESTIONS	
C	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
13	Tell me more about crop farming now, what kinds of vegetable crops do you normally plant?
14	Where do you get seeds or seedlings including the training on how to plant the seeds?
15	Why are the highlighted vegetable crops important to you?
D	To establish methods and tools used for managing and preserving IK
16	Where and how did you acquire knowledge about the vegetable crops?
17	How do you transfer knowledge to the youth?
18	How do you share knowledge among yourselves as community members?
19	Tell me about the challenges and opportunities of managing the vegetable crops?
E	Ending questions
20	Do you use libraries to look for more information about IK or to preserve the knowledge about IK?
21	Do you use cell phones for IK-related activities?
22	What do you know about the South African intellectual property laws?
	What model can you recommend for IK management and preservation at Dlangubo village

APPENDIX 5.1

OBSERVATION GUIDE (CROP FARMING FOCUS GROUPS)	
Non-participant observation (Creswell 2008:223)	
A	Body Language
1	Observed the use of eyes, hands, head and body language when expressing agreements or disagreements
2	Observed non-verbal cues when expressing agreements or disagreements
3	Observed the sizes and colours of beads used and clear the misunderstandings with the participants
4	Observed the storage spaces used for the beadwork
B	Tone of voices
5	Observed tones of voices when emphasizing ideas or when in disagreement
	For example an idea stated forcefully may be emphasizing the strength of a participant's convictions while the hesitant and sceptical manner may indicate the participant's uncertainty, scepticism or disagreement with others in a group
	Transect walks
	Observed the types of crops planted in the gardens whether they were the same as those that were highlighted
	Observed how they were thriving in the dry weather conditions
	Observed water in the artificial dams whether it was sufficient for the watering of the gardens
	Observed how the vegetable gardens were fenced

APPENDIX 6

QUESTION GUIDE (FOR THE LIVESTOCK KEEPING FOCUS GROUPS)	
PRELIMINARY QUESTIONS	
A	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
1	Tell me more about the various IK practices that are commonly practised in your area?
2	What types of vegetable crops do you normally plant and why are they important to you?
3	What about the initiation rites, what does it entail?
4	Why is the cultural tradition of puberty rites important?
B	To establish methods and tools used for managing and preserving IK
9	Where and how did you acquire knowledge about vegetable crops?
10	How do you transfer knowledge to the youth?
11	How do you share knowledge among yourselves as community members?
	Tell me about the challenges and opportunities of managing IK
INTERMEDIARY QUESTIONS	
C	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
13	Tell me more about the various kinds of domesticated animals that were kept?
14	Why were these domesticated animals important to you?
15	Tell me about the treatment of various ailments, were you using traditional plants to treat them?
D	To establish methods and tools used for managing and preserving IK
16	How do you transfer knowledge to the youth?
17	How do you share knowledge among yourselves as community members?
18	Tell me about the challenges and opportunities of managing livestock
	Ending questions
	Tell me do you use libraries to look for more information about IK or to preserve the knowledge you have about IK?
	What about your cell-phones, do you use them for IK-related activities?
	What do you know about the South African intellectual property laws?
	What model can you recommend for IK management and preservation at Dlangubo village

APPENDIX 6.1

OBSERVATION GUIDE (LIVESTOCK KEEPING)	
Non-participant observation (Creswell 2008:223)	
A	Body Language
1	Observed the use of eyes, hands, head and body language when expressing anger about the deployment of an extension officer
2	Observed non-verbal cues when expressing anger about the deployment of an extension officer
B	Tone of voices
3	Observed tones of voices when unanimously emphasizing their agreement about their unhappiness about the deployment of an extension officer
	For example an idea stated forcefully may be emphasizing the strength of a participant's convictions while the hesitant and sceptical manner may indicate the participant's uncertainty, scepticism or disagreement with others in a group
	Transect walks
	Observed the types of animal corpses lying dead in the field
	Observed how the artificial dams had dried out
	Observed how the dipping tank had dried out
	Observed how the grazing fields had dried out

APPENDIX 7

QUESTION GUIDE FOR THE FOCUS GROUPS (FOLKLORES)	
DATE :	
PRELIMINARY QUESTIONS	
A	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
1	Tell me more about the various tangible folklores that were commonly practised in the Dlangubo Village?
2	Tell me more about beadwork, why it was still of value to you?
3	Tell me about the mixing of bright colours, why is it important and where did you learn about it?
4	Tell me more about grass-mat weaving and why it was still important to you?
5	What about shield-work and why was it still of value to you?
6	What about wood-work and its decoration and why was it important for you?
7	What about shoe hand-crafting and why it was important to you?
8	What about African art jewellery; painting and sculpturing, why were all these activities important to you?
9	What about the traditional wedding and rituals like 'umemulo'; 'umhlonyana'; and 'umkhehlo' and why these ritual were still important to you
	What about oral poetry and why it was of value to the knowledge holder and the community?
INTERMEDIARY QUESTIONS	
To establish methods and tools used for managing and preserving IK	
	Where and how did you acquire knowledge about the folklore knowledge?
	How do you transfer knowledge to the youth?
	How do you share knowledge among yourselves as community members?
	Tell me about the challenges and opportunities of managing folklores
Ending questions	
	Tell me do you use libraries to look for more information about IK or to preserve the knowledge you have about IK?
	What about your cell-phones, do you use them for IK-related activities?
	What do you know about the South African intellectual property laws?
	What model can you recommend for IK management and preservation at Dlangubo village?

APPENDIX 7.1

OBSERVATION GUIDE (FOLKLORES)	
Non-participant observation (Creswell 2008:223)	
A	Body Language
1	Observed the use of eyes, hands, head and body language when expressing agreements or disagreements
2	Observed non-verbal cues when expressing agreements or disagreements
B	Tone of voices
3	Observed tones of voices when emphasizing ideas or when in disagreement
	For example an idea stated forcefully may be emphasizing the strength of a participant's convictions while the hesitant and sceptical manner may indicate the participant's uncertainty, scepticism or disagreement with others in a group
	Artefacts or Finished products
	Observed the quality of the finished products
	Observed the sizes and colours of beads used
	Observed the storage spaces used for the beadwork
	Observed grassmats and innovative coloured cotton and wool used
	Observed innovative tools that were used to speed up the process of grass mat weaving
	Observed shield-work; wood-work; handcrafted shoes; African artwork & jewellery; sculptured work
	Observed the traditional wedding and cultural rituals performed

APPENDIX 8

QUESTION GUIDE FOR THE SEMI-STRUCTURED INTERVIEW (ORAL POETRY)	
DATE :	
PRELIMINARY QUESTIONS	
A	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
1	Tell me more about oral poetry, what does it entail?
2	Tell me more about oral poems, why were they important?
3	What about drama and stage performances why was that important ?
B INTERMEDIARY QUESTIONS	
To establish methods and tools used for managing and preserving IK	
4	Where and how did you acquire knowledge about oral poetry?
5	How do you transfer knowledge to the youth?
6	Tell me about the challenges and opportunities of managing IK
7	Tell me more about the Book Club in Eshowe, what was all about?
C Ending questions	
8	Tell me do you use libraries to look for more information about IK or to preserve the knowledge you have about IK?
9	What about your cell-phones, do you use them for IK-related activities?
10	What do you know about the South African intellectual property laws?
11	What model can you recommend for IK management and preservation at Dlangubo village?

APPENDIX 8.1

OBSERVATION GUIDE (ORAL POETRY)	
Non-participant observation (Creswell 2008:223)	
A	Body Language
1	To observe the use of eyes, hands, head and body language when expressing agreements or disagreements
2	To observe non-verbal cues when expressing agreements or disagreements
3	To observe the sizes and colours of beads used and clear the misunderstandings with the participants
4	To observe the storage spaces used for the beadwork
B	Tone of voices
5	To observe tones of voices when emphasizing ideas or when in disagreement
	For example an idea stated forcefully may be emphasizing the strength of a participant's convictions while the hesitant and sceptical manner may indicate the participant's uncertainty, scepticism or disagreement with others in a group

APPENDIX 9

QUESTION GUIDE FOR THE SEMI-STRUCTURED INTERVIEW (MNGAMPONDO ELDERLY WOMAN ABOVE EIGHTY (80))	
PRELIMINARY QUESTIONS	
A	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
1	Tell me more about the history of the Dlangubo Village?
2	Tell me more about the traditional foods, what types did you eat and why were they important to you?
3	What about traditional utensils, what did you use them for?
4	Are you still using traditional foods and utensils today? If not why?
5	Let us also talk briefly about the history of chieftainship. Why is this knowledge important to you?
B INTERMEDIARY QUESTIONS	
To establish methods and tools used for managing and preserving IK	
6	Where and how did you acquire knowledge about the rituals?
7	How do you transfer knowledge to the youth?
8	How do you share knowledge among yourselves as community members?
9	Tell me about the challenges and opportunities of managing IK
C Ending questions	
10	What model can you recommend for the management and preservation of IK in the Dlangubo village?
OBSERVATION GUIDE	
A	Body Language
1	To observe the use of eyes, hands, head and body language when expressing agreements or disagreements
2	To observe non-verbal cues when expressing agreements or disagreements
3	To observe the sizes and colours of beads used and clear the misunderstandings with the participants
4	To observe the storage spaces used for the grass-mats
B Tone of voices	
5	To observe tones of voices when emphasizing ideas or when in disagreement
	For example an idea stated forcefully may be emphasizing the strength of a participant's convictions while the hesitant and sceptical manner may indicate the participant's uncertainty, scepticism or disagreement with others in a group

APPENDIX 10

QUESTION GUIDE FOR THE SEMI-STRUCTURED INTERVIEWS (KNOWLEDGE INTERMEDIARIES)	
DATE :	
PRELIMINARY QUESTIONS	
A	To identify various indigenous knowledge practices commonly used in the Dlangubo Village
1	Tell me more about the IK-related projects that you were running in the Dlangubo Village?
2	What were you doing in the various CoGTA projects like early childhood education; social and health; construction and crop farming?
3	What was the importance of these CoGTA projects in the area?
4	Tell me more about the Sathi Gqi/Woza community health work, what was it all about?
5	Why was the project important for the community?
6	What about the nutrition project at the Mgitshwa High School. What was it all about and why it was important for the community?
7	Tell me more about the IK-related projects run by the Izulu Orphan Programme and why they were important for the community?
	Tell me more about the IK-related projects that were run by the Fasimba Primary School and why they were important for the learners and the community of Dlangubo village?
	To establish methods and tools used for managing and preserving IK
	What were the traditional IK management and preservation tools that were used to manage knowledge and what were their advantages and disadvantages?
INTERMEDIARY QUESTIONS	
C	To identify various indigenous knowledge practices that were commonly used in the Dlangubo Village
13	Tell me more about the specific project that was more IK -related?
14	Why the CoGTA crop farming was more important for the community?
15	Tell me more about the community health visits, what was happening and why it was important?
16	Tell me more about the Mgitshwa High School nutrition project. What was it all about and why it was important for the community
17	Tell me more about the IK-related projects that were run by the Fasimba Primary School and why they were important for the learners and the community of Dlangubo village?
D	To establish methods and tools used for managing and preserving IK
16	Where and how did you acquire knowledge about the rituals?
17	How did you transfer knowledge to the youth?
18	How did you share knowledge among yourselves as community members?
19	Tell me about the challenges and opportunities of IK management and preservation methods?

E	Ending questions
20	Tell me do you use libraries to look for more information about IK or to preserve the knowledge you have about IK?
21	What about your cell-phones, do you use them for IK-related activities?
22	What do you know about the South African intellectual property laws?

APPENDIX 10.1

OBSERVATION GUIDE (KNOWLEDGE INTERMEDIARIES)	
Non-participant observation (Creswell 2008:223)	
A	Body Language
1	To observe the use of eyes, hands, head and body language when expressing agreements or disagreements
2	To observe non-verbal cues when expressing agreements or disagreements
3	To observe the sizes and colours of beads used and clear the misunderstandings with the participants
4	To observe the storage spaces used for the beadwork
B	Tone of voices
5	To observe tones of voices when emphasizing ideas or when in disagreement
	For example an idea stated forcefully may be emphasizing the strength of a participant's convictions while the hesitant and sceptical manner may indicate the participant's uncertainty, scepticism or disagreement with others in a group
C	Transect walks
6	Observed the types of crops planted in the gardens whether they were the same as those that were discussed
7	Observed how they were thriving in the dry weather conditions
8	Observed water in the artificial dams whether it was sufficient for the watering of the gardens
9	Observed how the vegetable gardens were fenced

APPENDIX 11

ZULU-ENGLISH VOCABULARY	
PLANT FOODS	
Igama / Term	Incazelo / Description
Isangcobe or izinkobe	Maize that was preserved in the pit under the ground or in a granary until it changes colour or gets stale. It was usually used during winter months when the crop yields were not good. The grinding stone was used to grind it into what is called 'isangcobe'
isithwalaphishi	The mixture of 'sangcobe' and bean-like legumes called 'izindlubu'
isijingi	The mixture of mealies and pumpkin
isijabane	The mixture of mealies and leafy vegetables
izindlubu	The traditional bean-like legumes cooked and mixed other legumes like maize and used as relish
umbhushi	The mixture of mealies and bean-like legume called 'indlubu'
umbhuqwa	It is the mixture of pumpkin seeds; peanuts with other bean-like legumes like 'izinkobe' and 'izindlubu'
umcaba	The mealies resulting from the grinded maize which can be eaten with sour milk. In some villages they eat it with cooked leafy vegetables used as relish"
ANIMAL FOODS	
Inyama yembuzi	Goat's meat
Inyama yenkukhu	Poultry
Inyama yenkomo	Beef
Inyama yenhloko	Cow head's meat
Inyama yegusha / yesiklabhu	Lamb / chops
BEVERAGES	
utshwala besintu / besiZulu	Zulu traditional beer
amasi	sour milk
umlaza	watery substance / liquid drained from the fermented milk that has turned into sour milk
MEDICINAL PLANTS	
isihlahla sebhoqo kumbe sempongozelo	The bark of a tree is used to finish the traditional hair style commonly done by Shembe women. This type of tree commonly grows along the river banks
uzi	A type of a bark that is used to plate the hair of Shembe women
utshodo	A type of a cloth that is combined with 'uzi' to make the traditional hat rest firmly in the head of a

		Shembe woman
	intshoyi	A reddish substance from a certain kind of plant that is used to change the colour of the plated head and hat into reddish
	isihlahla somganu	A kind of traditional tree of which its leaves are boiled and used as medication to treat flu in human beings
	isilwazi	A kind of tree of which an avocado-like seed is boiled and used as medication to treat blood clotting in domesticated animals especially cows.
	icema	A kind of plant used as medication for detoxification in animals and human beings
	umsululu	A kind of plant that produces white watery substance when it is cut. After the death of a family head its stem was cut and planted next to the graves with a belief that it would prevent re-curing deaths or the series of deaths in the household
	ibozana	A kind of plant that is boiled and used as medication to treat flu in children. In addition it helps in chasing away insects that destroy crops in the garden
	Ibovu or ibovana	It is a reddish substance that is commonly used to protect the skin especially the face from the sun
	umlahlankosi	A kind of tree of which its part / branch can be used to carry the spirit of the dead home or to its grave
	izimbali zamathuna	Type of flowers that produces white and pink flowers. These flowers are boiled and used as medication to treat high blood pressure
	ishaladi lezinyoka	A kind of plant like green onion leaves and when planted around the home yard it helps to chase snakes away from the home yard
	isigqiki somkhovu	An aloe-like plant used to chase away bad omens; bad lucks and bad omens from home
	FOLKLORES (ARTISTIC; TANGIBLE AND INTANGIBLE)	
	udwendwe	Traditional wedding
	inqola	Ox-wagon
	umhlanga	initiation ceremony for teenage girls / the term is also used to mean a sugar-cane like plant that grows on the river bank
	isidwaba	Traditional animal-skin skirt for women. But today the term is also used for the beaded skirts worn by teenage girls and adult women
	ibheshu	Animal skin for men used to cover buttocks
	isibhamba / isifociya	A thick beaded or animal skin belt for women. Traditionally it was worn by a married woman with a belief that his husband and male children will be protected from dangers
	ibhayi	It is term used for the wrap-around cotton skirts for females

	amadavathi	Animal skin pieces used by males to protect ankles
	isinene	Animal skin used by males to protect the front abdominal parts
	isembatho	Animal skin used by males especially of royal family to cover shoulders
	izingusha	Animal skin used by males to cover ankles
	ukweshwama	A season which was used to celebrate fresh produce from the gardens. Traditionally the first produce was given to the king or chief as the owner of the land. It was celebrated in February but in some villages it was celebrated in April. As time evolved nowadays some celebrate it in September
	Nomkhubulwane	'Nomkhubulwane' was regarded as a powerful female intercessor during times of catastrophe such as drought. The Zulu believed that before Nomkhubulwane implores and communicate request with God for rain. She went to the mountain where she would be surrounded by virgin girls marked with strings of white beads around their lower waists. This was important because Nomkhubulwane was also viewed as a virgin who also wore a string of white beads around her waist.
	amaqoma	
	Izingqoko or izithebe	Wooden trays or plates used to serve meat
	ubuhlalu	beads
	Itshe lokugaya	Grinding stone
	amagula	Traditional milk fermentation calabashes / pots
	umbhotshozelwa	A small hole found underneath the calabash
	umungwe	A stopper used to close the small hole of a calabash
	amathunga	A wooden-bucket that was traditionally used to milk the cow
	amahluzo / amavovo	A tube-like sieve made from a certain kind of grass-like plant used to sieve traditional Zulu beer. Nowadays it is replaced by a sack-like sieve
	izimbenge	Wooden small dishes, nowadays they are decorated by an electric wire and used as lids for the Zulu beer calabashes
	izinkamba	Calabashes used for Zulu beer
	amacansi	Traditional grass-mats
	inqolobane	granary
	NAMES OF PEOPLE; PLACES; SCHOOLS	
	iqhikiza	A fully matured girl who is a leader for the young girls
	itshitshi	Young teenage girls
	Nandi	Name for King Shaka's mother
	Bulawayo	Name of place not far from Dlangubo village. It is known as the birth-place of the Zulu kings

APPENDIX 12

Umlando weNkosi uPhangifa Biyela umtwana wakaMpukane Zibunga

(authored by Bafanyana Biyela) confirmed by an elderly woman participant from MngaMpondo

uMtwana / iNkosi wazalwa ngo 10 March 1936 waphangalala ngo 01 December 2010. Wazalelwa eNdlangubo / Dlangubo emanxiweni amadala eNkosi. Wabe ezalwa iNkosi uZwelempi kaNkomo kaMgitshwa kaMvundlane, kaXhoko, kaNdaba esitholeni samaPhephethe (MaGwala) uBaHwaqile kaMaHlehla onjengenqama.

UmtaneNkosi wafunda eNteneshane Primary wabe esedlulela eMoyeni Secondary, waya eMbizwe High School (eNkandla). Inkosi yagidelwa oNdluknulu abayisithupha (06), uMaMhlongo; uMaNene;(ongasekho); uMaXulu (ongasekho); uMaMnguni; uMaQwabe (ongasekho); Kanye noMaZuma. UMvelinqangi wayibusisa iNkosi ngantwana abangamashumi amathathu (30); nabazukulu angamashumi amahlani nambili (52); nabazukulwana ababili (02).

Inkosi yathatha umsebenzi wokuhola isizwe kusukela ngo 1966 kwaze kwaba iyakhothama ngo 01 December 2010. iNkosi isiholile isizwe ngobuqotho nokuthembeka iminyaka engu 44. uMtwana / iNkosi yabe iyingqwele ekuphatheni nasekwelulekeni isizwe. Isebenzile iyilunga lomkhandlu wesishayaMthetho kuHulumeni waKwaZulu. uMtwana / iNkosi yabe iyisekela likaSihlalo kaMaziphathe waseMkanyezini isikhathi eside.

Uma iphangalala iNkosi yashiya imizi emithathu noNdlunkulu abathathu. Ubuqotho, inkuthalo, ukuzinikela, iqiniso yikona abumba ngakho isisekelo esiyinqanawe esizweni saMaKhosi awandulelayo. “Ndabezitha wena WeNjezi kaXhoko”

APPENDIX 13: DOMESTICATED & UNDOMESTICATED FOODS

DOMESTICATED & UNDOMESTICATED FOODS			
Scientific name	Local name	Country	Categories of use & how used
Pennisetum typhoideum (millet) Pennisetum americanum (L.) Leeke) (millet)		Malawi & South Africa Ghana	Cooked & eaten as crop
African leafy vegetables	Imifino (in isiZulu)	Ghana, South Africa & Africa	Cooked & eaten as relish crop
Sorghum bicolor L & Sorghum vulgare	Amabele	Burkina Faso / Ghana / South Africa	Staple food, cooked & eaten as crop
White sorghum Red one	Amabele amhlophe Amabele abomvu	Ghana	White sorghum used as a source of food; Red sorghum used to brew beer called 'ipito'
Oryza glaberrina		South Africa	Brown rice & cooked
Cucurbita pepo	Ithanga	South Africa	Pumpkin, cooked as vegetable
Lagenaria vulgaris	Ibhece	South Africa	Calabash, cooked as vegetable
Cucumis sativus	Ibhece	South Africa	Cucumber not cooked & eaten as vegetable
Cacumis melo		Kenya, South Africa, Swaziland & Tanzania	Pumpkins cooked, eaten as vegetable
Citrullus vulgaris		South Africa	Watermelon eaten as fruit & vegetable
Dioscorea rotunda		South Africa	White guinea yam cooked & eaten as tubers
Dioscorea cayenensis		South Africa	Yellow guinea yam cooked & eaten as tuber
Dioscorea alata		South Africa	Water yam cooked & eaten as tuber

Manihot esculenta	Plant food	Kenya, Malawi, Senegal, South Africa, Swaziland & Tanzania	Cassava cooked and eaten as crop; used as famine safety crop in Tanzania, sometimes leaves can be used as relish after good preparation because they contain hydrogen cyanide which can be poisonous to humans
Phaseolus multiflorus	Isihumanya (Zulu in South Africa)	Kenya, South Africa, Swaziland & Tanzania & Senegal	Cowpeas, cooked and eaten as crop
Colocassia spp	Magimbi in Tanzania	Kenya & Tanzania	Cooked & eaten as crop. Used as famine safety crop in Tanzania
Bambara groundnuts; jugo beans	Tindlubu & mngomeni (Tanzania)	Kenya, Ghana, South Africa, Swaziland & Tanzania	Cooked and eaten as legumes
Maize, beans, pumpkins, sweet potatoes, onions, green vegetables, tomatoes, peas, & yams		Malawi & South Africa & Senegal	Cooked and eaten as crops & legumes
Tobacco & ground nuts		Malawi	Commercial crops
VEGETABLE OIL			
Butyrospermum parkii	Shea butter	West Africa	Semi-cultivated
Elaeis guineensis	Palm fruit oil	West Africa	Semi-cultivated
Elaeis guineensis	Palm kernel oil	West Africa	Semi-cultivated
Sesamum indicum	Sesame oil	West Africa	Cultivated
FRUITS			
Annonaceae (Annona senegalensis)	Fruit Tree	Uganda	Fruit eaten raw & fresh. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.

Anacardiaceae (Rhus vulgaris)	Woody shrub	Uganda	Fruit eaten raw & fresh. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.
Apocynaceae (Carrisa edulis)	Woody shrub	Uganda	Fruit eaten raw & fresh. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.
Arecaceae (Borassus aethiopicum)	Fruit Tree	Uganda	Fruit eaten raw & fresh. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.
Caesalpinaceae (Tamarindus indica)	Plant food & Fruit Tree	Africa & Uganda	Fruit eaten raw & fresh or cooked tree. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.
Cucurbitaceae (Cucumis figarei)	Fruit Tree	Uganda	Fruit, seed cooked creeper. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.
Fabaceae (Vangueria apiculata)	Fruit Tree	Uganda	Fruit eaten raw & fresh. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.
Loganiaceae Strychnos innocua	Fruit Tree	Uganda	Fruit eaten raw & fresh. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.
Mangifera indica	Fruit Tree	Uganda	Fruit eaten raw & fresh. Rich in dietary fibre, nutrients & Vitamins A, B complex & C.
Sclerocarya birrea Sclerocarya caffra	Marula tree	Kenya, Namibia, South Africa, Swaziland &	Used as a source of food; used to make jam, juices & traditional beer.

		Tanzania	Fruit help to lower incidences of degenerative diseases like cancer, heart disease, inflammation, arthritis, immune system, brain dysfunctions and cataracts. Fruit used also for commercial purposes.
Strychnos cocculoides	Monkey orange	Namibia	Wild & cultivated fruits used as source of food. Fruits are also used to make juice & jam. The flavour in fruits is used in yoghurts, sour milk, ice creams, juices & jams. Fruit help to lower incidences of degenerative diseases like cancer, heart disease, inflammation, arthritis, immune system, brain dysfunctions and cataracts. Fruits used for commercial purposes
Berchemia discolor	Eembe	Namibia	Wild & cultivated fruits used as source of food & for commercial purposes. Fruit help to lower incidences of degenerative diseases like cancer, heart disease, inflammation,

			arthritis, immune system, brain dysfunctions and cataracts.
Tamarindus indicus	Tamarindus indicus	West Africa	Cultivated fruit
Blighia sapida / Akeesia africana	Akee-apple	West Africa	Semi-cultivated fruit
Adansonia digitata	Baobab	Africa	Wild & tropical fruit
Balanites aegyptiaca	Desert date	West Africa	Semi-cultivated fruit
Avocado pears; Bananas; Guavas, Mangoes, Oranges, Pineapples & Sugar cane		Malawi & South Africa	Cultivated fruits
Deciduous fruits	Apples	South Africa	Cultivated fruits
Flowers, fruits, nuts, gums, berries		Swaziland, Kenya, Tanzania, South Africa, Uganda	Cultivated & Semi-cultivated fruit, Rich in nutrients & Vitamins A, B complex & C.
Hyphaene thebaica	Dum palm	West Africa	Wild fruit
Ziziphus jujube mauritaniana	Jujube	West Africa	Wild fruit
Ficus sycomorus	Sycomore	West Africa	Wild fruit
Ficus carica	Fig	West Africa	Wild fruit
Butyrospermum parkii	Shea fruit	West Africa	Semi-cultivated
Elaeis guineensis	Palm fruit	West Africa	Semi-cultivated
Annona senegalensis	Wild custard apple	Africa	Wild & tropical fruit
Landolphia kirkili	Wild peach	Africa	Wild & tropical fruit
Rubus rigidus	Bramble	South Africa	Wild fruit
Lantana rugosa	Chameleon berry	Africa	Wild & tropical fruit
UNDOMESTICATED FOODS			
Sphenostylis stenocarpa		East & West Africa	Cooked & eaten as seeds & tubers
Acanthaceae Asystasia gangetica	Leafy plant	Uganda	Leaves cooked
Asystasia mysurensis	Leafy plant	Uganda	Leaves cooked

Capparaceae (Cleome gynandra)	Leafy plant	Uganda	Leaves cooked or used as a herb
Compositae (Sonchus oleraceus)	Leafy plant	Uganda	Leaves cooked or used as a herb
Cajanus cajan	Leafy plant	Uganda	Seeds cooked or used as a shrub
Labiatae Hyptis spicigera	Leafy plant	Uganda	Seeds cooked or used as a shrub
Malvaceae Sida rhombifolia	Leafy plant	Uganda	Seeds cooked or used as a shrub
Amaranthus spp (amaranth)	Imbuya, isheke, indwabaza (in isiZulu); unomdlomboyi, imbuya, umtyuthu (in isiXhosa); theepe (isiPedi); mohwa (in Shona)	South Africa	Wild leafy plant, and cultivated, cooked & eaten as relish
Amaranthaceae (Amaranthus graecizans)		Uganda	Leaves, seeds cooked or used as a raw herb
Amaranthus dubius		Uganda	Leaves cooked or used as a herb
Cleome gynandra L. (Spider flower)	Amazonde (in isiZulu); African cabbage (in English); lerotho (isiPedi); nyere or tsuna (in Shona)	South Africa & Uganda	Wild leafy plant, and cultivated, cooked & eaten as relish. In Uganda, it is used for its richness in iron & has medicinal value.
Brassica rapa L. subsp. Chinensis (Chinese cabbage)	Chinese mustard cabbage (in English); mushaina (inTshivenda)	South Africa & Zimbabwe	Wild leafy plant, and cultivated, cooked & eaten as relish
S. nigrum complex (Nightshade)	Umqumbane (in isiZulu); umsobosobo (in isiXhosa); lethotho (isiPedi)	South Africa & Uganda	Wild leafy plant, and cultivated, cooked & eaten as relish. In Uganda, it is used for iron.
Corchorus olitorius and	Thelele & ligusha	South Africa &	Wild leafy plant, and

<i>C. tridens</i> (Jew's mallow)	(in Sepedi)	Uganda & India	cultivated, cooked & eaten as relish. In Uganda it is used for iron.
<i>Vigna subterranean</i> (L.) Verdc)	Bambara beans	Northwest Ghana	
<i>Vigna inguiculata</i> L (Cowpeas)	Isihumanya (isiZulu); iimbotyi (isiXhosa); monawa (isiPedi); dinawa (isiNdebele); koertjie (Afrikaans)	South Africa & Africa	Wild leafy plant, and cultivated, cooked & eaten as relish
<i>Tylosema escaletum</i>		Southern Africa	Cooked & eaten as seeds & tubers
<i>Tylosema fassoglense</i>		Southern Africa	Cooked & eaten as seeds & tubers
<i>Bauhinia petersiana</i>		Southern Africa	Cooked & eaten as seeds
<i>Vigna lobatifolia</i>		Southern Africa	Cooked & eaten as tubers
<i>Vigna fischeri</i>		Malawi; East & Central Africa	Cooked & eaten as tubers
<i>Vigna ambacensis</i>		Zaire & Tropical Africa	Cooked & eaten as tubers
<i>Vigna reticulata</i>		Malawi, Zaire & Tropical Africa	Cooked & eaten as tubers
<i>Vigna vexillata</i>		Tropical Africa	Cooked & eaten as tubers
<i>Mucuna pruriens</i>		West Africa	Cooked & eaten as seeds
<i>Mucuna sloanei</i>		West Africa	Cooked & eaten as seeds
<i>Dioclea reflexa</i>		West Africa	Cooked & eaten as seeds
	Bowa or uwasi	Malawi	Edible fungi, cooked & eaten as relish

Roots, tubers, stems, rhizomes, leaves, cereals and legumes		South Africa & Africa	Cooked & eaten as crop; Roots & tubers sometimes eaten raw
Spinosis		South Africa	Dried and ground to be used as snuff (mostly by women)
Sphenostylis stenocarpa (Horst. Ex A. Rich)	African yam bean	Gabon, Ghana, Nigeria, Ivory Coast, Togo, Ethiopia & South Africa	Uncultivated & Cooked and eaten as crops & legumes
Tylosema esculentum (Burchell) A. Schreiber	Marama bean	Africa	Uncultivated & Cooked and eaten as crops & legumes
Macrotyloma geocarpum (formely Kestingiella geocarpa)	Kersting's bean	Africa	Uncultivated & Cooked and eaten as crops & legumes
Animal Foods			
Cattle or livestock farming		Tanzania (Maasai people); Ghana, South Africa; Swaziland; Zimbabwe; Africa, Ethiopia, Syria & Vietnam	Used for meat & milk consumption. Also used for commercial value
Animals hunted wildlife, fish, birds and insects		Kenya, Malawi, South Africa, Swaziland & Tanzania	Used for meat, cooked and eaten as relish
Pigs, goats & sheep & cattle	Izingulube, izimbuzi, iziklabhu nezinkomo	South Africa	Used for meat & milk consumption. Also used for commercial value
Chicken farming	Izinkukhu zasekhaya	South Africa	Used for meat & eggs; cooked & eaten as relish. Also used for commercial value
Mopane caterpillar,		Malawi	Cooked and eaten as

locusts, termites & stink-bug			relish
Edible caterpillars (Army worm; processionary caterpillar (Anaphe panda); hawk moth (Acherontia atropus); large colourful caterpillars of the emperor moths (Saturnidae)	Mphalabungu; ntchiu; chilumphabere; mabwabuna, aplomb, chilungulungu, mpala, matondo and kawidzi	Malawi	Cooked and eaten as relish
Nezara robusta (Green shield bug or stink-bug)	nkhunguni	Malawi	The bug is washed several times in tepid water until it loses its green colouration and becomes pale golden yellow. Thereafter it is ready for eating
Mammals like Rats, mice, gerbils, shrews, and elephant shrews	Mbewa or inyama	Malawi (Thyolo & Neno districts)	Cooked and eaten as relish
Pelomys fallax (Creek rat)	Mende	Malawi	Cooked and eaten as relish
Saccostomus campestris (Pouched mouse)	Chitute or Jugu	Malawi	Cooked and eaten as relish
BEVERAGES / DRINKS			
Athrixia phylicoides (Bush tea)		South Africa	Boiled & consumed as nutritious medicinal drink or beverage. Also used for commercial value
Athrixia elata (Daisy tea)		South Africa	Boiled & consumed as nutritious medicinal drink or beverage. Also used for commercial value.
Aspalathus linearis	Koopmanstee, naaldetee &	South Africa	Medicinal & therapeutic beverage. Also used for

	speldtee (in Afrikaans)		commercial value
Camellia sinensis		China / South Africa	Most widely consumed beverage in world. It is second to water because it is refreshing and has mildly stimulating effects
Marula juice		Namibia; Swaziland & South Africa	Consumed as nutritious beverage. Also used for commercial value
Monkey orange juice		Namibia	
S bicolor seeds	Red sorghum	Northwest Ghana	Beer called 'ipito' is brewed using red sorghum

APPENDIX 14: TRADITIONAL MEDICINES

TRADITIONAL MEDICINES				
Name of ailment	Scientific name	Local name	Country	Categories of use & how used
Abdominal pains (Horse & Mule)	Cannabis sativa (Bhang- Cannabaceae)	Peit School	India (Uttarakhand)	Resins obtained from the leaves of cannabis sativa and leaves of Nicotiana tabacum mixed and burn over flame and smoke is used (Phondani, Maikhuri & Kala 2010).
Abdominal pains (Horse & Mule)	Saccharum officinarum (Ganna- Poaceae)	Peit School	India (Uttarakhand)	Rhizome of Curcuma domestica, Zinger officinale and bulb of Allium sativum, seeds of Trachyspermum ammi and Brassica juncea is milled and mixed with goor of Saccharum officinarum provided to animal to eat for curing abdominal pain (Phondani, Maikhuri & Kala 2010).
Abdominal pain (Humans) Diarrhoea & gonorrhoea Abdominal pains & infertility	Loganiaceae (Strychnos spinosa Lam); Fabaceae (Elephantorrhiza goetzei (harms); Loganiaceae (Stychnos	Mutamba (Tree) Ntorani (Shrub) Muzumwi (Tree) Mutengeni	Zimbabwe	Roots extract drunk as remedy for abdominal pains and gonorrhoea. Fruits extract drunk as remedy for gonorrhoea and genital warts (Maroyi 2013).

	cocculoides Bak); Olacaceae (Ximenia Americana L.)	(Shrub)		Leaves extract drunk as backache medicine (Maroyi 2013).
Abdominal pain (Humans)	Hypoxidaceae (Hypoxis obtuse Ker Gawl)	Nhidiri	Zimbabwe	Bulb chewed and sap swallowed as remedy for abdominal pains (Maroyi 2013).
Abdominal pain & stomach disorders (Humans)	Alepidea amatymbica Aristolochia heppili Cassia abbreviate Dicoma anomala Dichrostachys cinerea Elephantorrhiza goetzei Hoslundia opposite Vernonia amygdalina Zanha African Zingiber officinale	chitsinga	Zimbabwe & East & West Africa & Zaire	Mavi in in Norman, Snyman & Cohen (1996).
Abdominal pain, coughs, & colds (Humans)	Salvia Africana cocruiea	Bloublomsalle (wild sage)	South Africa (South- western Cape)	Leaves, stem and flowers used in an infusion / tea (Ferreira, Charlton & Impey in Norman, Snyman & Cohen 1996).
Arthritis (Buffalo,	Calotropis	Jod dard	India	Leaves of Calotropis

cow, oxen, sheep, horse, mule)	procera (Aak-Asclepiadaceae)		(Uttarakhand)	procera and bulb of Allium saliva fried with mustard oil and rubbed on infected part (Phondani, Maikhuri & Kala 2010:-199-204).
Arthritis & Pulmonary complaints (Humans)	Peucedanum galbanum (several species) Mentha aquatica	Berg/wild celery family / member of the carrot Kruisement (wild water mint)	South Africa	Leaves & stem used in an infusion tea (Ferreira, Charlton & Impey in Norman, Snyman & Cohen 1996:-96-98).
Anti-diarrhoea Diarrhoe, Bilharzia & Gonorrhoea Diarrhoea & wounds	Astaraceae (Sonchus oleraceus) Anarcardiaceae (Magnifera indica L) Anarcardiaceae (Lannea edulis Kirkiaceae (Kirka acuminata Oliv.) Hydnora solmsiana	Rurimiwemombe Mumango Mutsambatsi Mubvumira	Zimbabwe	Leave extracts drunk as remedy for stomach problems (Maroyi 2013:-3-10). Bark extract drunk as diarrhoea medicine Roots extract drunk as bilharzia, diarrhoea and gonorrhoea medicine (Maroyi 2013:-3-10). Bark extract drunk as diarrhoea, cholera, dysentery and constipation medicine. Fruit juice applied to bitten part as snake antidote and also applied on wounds (Maroyi 2013:-3-10). (Mavi in Norman, Snyman & Cohen 1996:-69).

Coughs (Buffalo, cow, oxen, sheep, goat, horse, mule, & dog)	Dendrocalamus strictus (Banss-poaceae) Oryza sativa (Dhan-Poaceae)	Khansi	India	Green leaves of Dendrocalamus strictus grind with seeds of Hordeum vulgare and used to eat. Seeds are boiled with water and juice (Mund) is applied (Phondani, Maikhuri & Kala 2010:-199-204).
Coughs & colds (Humans)	Salvia Africana coerulea Agathosma betulina Helichrysum (several species)	Bloublomsalle Buchu Hotnotskoolgoed	South Africa	Leaves, stem and flowers used in an infusion/tea. Leaves are rich in oil glands and used as infusion in tea. Dried leaves, stem and flowers are used as infusion in tea (Ferreira, Charlton & Impey in Norman, Snyman & Cohen 1996:-96-98).
Coughs & colds (Humans); chest pains; pneumonia; and tuberculosis.	Apocynaceae (Carisa edulis)	Muruguru	Zimbabwe	Roots extract drunk as cough and diarrhoea medicine (Maroyi 2013:-3-10).
Coughs & colds (Humans)	Ebenaceae (Euclea crispa)	Muvhinji	Zimbabwe	Roots extract drunk as cough medicine (Maroyi 2013:-3-10).
Coughs & colds (Humans)	Carissa edulis Sterospermum kunthianum	Muruguru	Zimbabwe East Africa Tanzania	(Mavi in Norman, Snyman & Cohen 1996:-60-70)
Immune-related	Sutherlandia		South Africa	(Mwaura 2008:-98-

disorders (HIV/AIDS opportunistic sickness)	frutescens			102)
Bladder problems		Boiled crab	South Africa	Water from boiled crabs used as medication (Mwaura 2008:-98-102)
Poisoning by witchcraft (idliso)		Boiled octopus	South Africa	Water from boiled octopuses used as medication (Mwaura 2008)
Warding off of evil spirits (self-fortification)		Sea shells; Amakhubalo	South Africa	Sea shells used to ward off of evil spirits; Roots & barks of certain trees worn around the neck or nibbled on (Mwaura 2008)
Power hunger (emotional sickness)		Medicinal charms (Umkhando)	South Africa	Used to gain influence, supremacy or ascendancy in positions or in love matters (Mwaura 2008)
Teething problems in infants		Limpets	South Africa	Limpets cooked, ground and fed to babies to quicken the development of their milk teeth (Mwaura 2008)
Stomach ache & ulcers & stomach problems in pregnant women	Adansonia digitata; Acacia nilotica; Lannea schweinfurthii	Mbuyu Kilorit	Tanzania	- Kilorit bark & fruit is used (Mwaura 2008)
Stomach ache,	Cannabis sativa		Swaziland	Leaves are used

chest problems, high blood pressure, asthma, colds & headache				(Mwaura 2008)
Chest pain	Cannabis sativa Sclerocarya birrea	umganu	Swaziland	(Mwaura 2008)
Lung infection & bronchitis	Alepidea amatymbica		South Africa	Drinking of decoction made from Alepidea amatymbica
Stomach ulcers	Cannabis sativa seeds Vangueria infausta fruits		Swaziland	Seeds are used Fruits are used (Mwaura 2008)
Uterus problems (Humans & Livestock)	Gunnera perpensa	Gobho	Swaziland	(Mwaura 2008)
Fracture (Humans & Livestock)	Ficus natalensis	Intfombe or Umhlabelo	Swaziland	(Mwaura 2008)
Continuous menstruation; Painful menstruation (dysmenorrhoea)	Psidium guajava	Guava tree roots umgwaava	Swaziland	Roots of the guava tree (Mwaura 2008)
Painful menstruation; to prevent abortion; infertility	Cissampelos mucronata		Zimbabwe	Mavi in Norman, Snyman & Cohen (1996)
Erection problems	Carica papaya;	Pawpaw tree	Swaziland	(Mwaura 2008)
Tooth ache & burns	Carica papaya;	Pawpaw tree	Swaziland	(Mwaura 2008)
Coughs	Mimussops spp.;	Umgwaava;	Swaziland	

	Psidium guajava	Guava tree		Leaves of the guava tree (Mwaura 2008)
Colds & flu	Siphonochilus aethiopicus	Umphushane Lemon grass	Swaziland	Bulbs of Siphonochilus aethiopicus Leaves of lemon grass (Mwaura 2008)
Sore eyes & Toothache	Euphorbiceae (Richus communis L)	Mupfuta	Zimbabwe	Teeth washed with root decoction as remedy for toothache. Seed oil applied on sore eyes (Maroyi 2013:-3-10).
Hysteria	Cannabis sativa		Swaziland	Plant warts & roots used (Mwaura 2008)
Diarrhoe	Elaeodendron transvaalense; Sclerocarya birrea; Prunus persica; Psidium guajava	Umganu Peaches tree Umgwaava	Swaziland	Bark of Elaeodendron transvaalense Peaches of Prunus persica (Mwaura 2008)
Reducing mortality in chickens	Dombeya rotundifolia		Swaziland	Flowers of Dombeya rotundifolia (Mwaura 2008)
High blood pressure Diabetis & hypertension	Helichrysum aureonitens; Mormodica involucrata	Inkakha	Swaziland	Stems of Helichrysum aureonitens (Mwaura 2008)
Wounds & bile	Sclerocarya birrea; Carica papaya;	Umganu Pawpaw tree	Swaziland	(Mwaura 2008)
Wounds on backs (Buffalo, cow, oxen, horse, mule,	Brassica comperstris (Sarsoo- Brassicaceae)	Peeth per phodae hona Ghaw per keera padna	India	Oil is used externally Leaf paste is externally used to cure germs on

sheep & goat)	Prunus persica (Aaru- Rosaceae)			wounds (Phondani, Maikhuri & Kala 2010:- 199-204).
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I will put each examiner's comments separately and where you can find the rework in the thesis:

Examiner A

- Ex A asks for more clarity and reflection concerning the coding process. I followed the guidelines the person provided and described the coding process in detail with practical examples – SEE THE WHOLE 5.4 (P 170-180)
- I read the suggested work from Jennings and others (not a theologian) and included a fourth well-being factor to the other three, namely Social-Emotional well-being of teachers (SEE 2.3-2.4 p 49-54). I also used quotes from her work for example 2.1 (p43).
- Under point 3 of the recommendations, I corrected the technical and grammar mistakes
- The examiner also suggested a deeper reflection of the findings of the research which I included in chapter 7 in the conclusion

Examiner B

- Asked for more critical reflection on my engagement with teachers. I put this under point 1.9(P17) limitations of the study.
- I was also asked to do a critical reflection on the rainbow metaphor by African theologians which I did in 3.8.4(p126)
- There was a request for more information around the ethical process of the research, which I provided in detail in 1.1.7.1; 1.1.7.2 and Appendix A&B
- The use of my personal notes were questioned as an ethical issue and I elaborated more on the methodology and science behind my decision in 5.5.1 (p 181-182)
- I corrected the technical writing style mistakes as well as mistakes in the bibliography
- The question was asked what "new knowledge" was brought. I tried to answer that in the conclusion in chapter 7
- Regarding some "weak refencing". I removed some of them with better sources
- There was, however one point from this examiner that did not make fully sense to me, i.e. the comment at the beginning of the report that the person sometimes struggles to follow the logic of the chapters, but then on at least three other places the person comments that my "argumentations" were "clear" and "logic", the "terms" and "themes well explained" with "contributed to the flow of the dissertation", was "presented in a systematic way"

Examiner C

- The remark was made that the title of the study should be "more specific in terms of ...certain aspects of the lives of female teachers". I agree to some extent, but I would prefer to keep the title "wider" to support the exploration theme

- The question why males have not included themselves in the study and the focus on female teachers is explained within a scientific grounded manner in 1.17 (p 37)
- Ethics protocols were described in 1.1.7.1 & 1.1.7.2 & Appendix A & B
- I have included a 'Dialogue between Theology and Postmodern epistemology' using the work of Janse van Rensburg and others to add "theological depth" as was suggested (see 3.6.1.1 p 103)
- I corrected all the notions that were not well substantiated, I included Benefits to the limitations of the study (see 1.9) and corrected the technical and writing style errors
- *please note that bell hooks is an African American feminist who prefers to write her name in small letters – she has a whole philosophy around that. The result is that when she is quoted in literature, her name and surname appear in small letters