Learning Experiences through the Living Lab Approach: A Descriptive Case Study

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ABSTRACT

The Living Lab approach is a method that is still fairly new in South Africa. It encourages cooperative learning that involves stakeholders from diverse backgrounds and disciplines and is aimed at addressing complex societal problems to develop sustainability in the South African society. However, little is known about learning experiences when a Living Lab approach is applied through higher education institutions, particularly in the case of the Well-being Innovation Network (WIN) platform of the North-West University (NWU) where the respective stakeholders' learning experiences are neither identified nor documented. Hence, it is unknown whether stakeholders fully engage with or benefit from the innovations derived from the Living Lab approach in the WIN platform. There is a dire need for qualitative research revealing the effectiveness of cooperative learning approaches utilising methods that promote active engagement of learners in an effort to ensure that learning is translated into practice.

The aim of this research was to engage with the WIN platform stakeholders, namely North-West University, Vaalharts Water, Department of Health and officials and community members from Phokwane and the Greater Taung Municipality in order to explore and describe their learning experiences through the Living Lab approach. The study was a qualitative case study, where purposive sampling was used to gather 21 stakeholders. Data was collected qualitatively using case records and semi-structured interviews. Digital voice-recorded interviews were transcribed verbatim with a view to data analysis. The latter was done manually by means of Creswell's generic (ATLAS-ti) qualitative analysis approach, which was thematically focused.

It was revealed that the majority of stakeholders perceived information dissemination as the main function of the WIN platform. Despite the specific roles played by stakeholders from different disciplines and professions, stakeholders were involved in the co-creation of innovation to promote primary healthcare using a sustainable livelihood approach. Stakeholders had different experiences encompassing social learning, teamwork, good stakeholder relationships, logistical arrangements for the research processes, transdisciplinary professionalism and community mobilisation. Through these experiences, all participants reported to have learnt something, for instance management skills for transdisciplinary research, information sharing and community participation. The WIN platform impacted the learning experiences of the stakeholders involved as is evident from the change in perception, empowerment of community members and self-actualisation. When stakeholders were asked whether they would recommend someone to become involved in the WIN platform, most said they would because it is ideal for solving complex societal problems and empowerment. However, some were of the opinion that the research processes could have been carried out in a different setting because they had to travel long hours to Vaalharts.

It was concluded that stakeholders fully engage with and benefit from the innovations derived from the Living Lab approach in the WIN platform. The transdisciplinary learning approach is effective and can promote active engagement of learners to ensure that learning is translated into practice. The growth and multiplication of Living Labs in South Africa can increasingly benefit users and communities by meaningfully involving them in the co-creation process and addressing health disparities in the country.

Word count: 500

Key terms: learning experiences, Living Lab, WIN platform, South Africa, University, cooperative learning

LIST OF ABBREVIATIONS

AUTHeR	Africa Unit for Transdisciplinary Health Research
BPCE	Best Practice in Cooperative Education
CHBCW	Community home-based care worker
FBO	Faith-based Organisations
HE	Higher Education
ICT	Information Communication Technology
IP	Independent Person
LL	Living Lab
LLiSA	Living Labs in South Africa
NCP	Northern Cape Province
NGO	Non-government Organisations
NWLL	North-West Living Labs
NWP	North West Province
NWU-PC	North-West University Potchefstroom Campus
SA-DoE	South African Department of Education
SA-DoH	South African Department of Health
SA-DoLGHS	South African Department of Local Government & Human Settlements
SA-DoSocDev	South African Department of Social Development
WACE	World Association for Co-operative Education
WIL	Work-integrated Learning
WIN	Well-being Innovation Network
WPC	Win Platform Coordinator

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Serving as a background to the study, this chapter explains the key concepts, offers an overview of what other authors say about these key concepts and sets out the objectives which the study intends to achieve. A brief outline of the structure of the dissertation is provided at the end of the chapter.

1.1 **Background**

Historically, higher institutions of learning exist for the creation and dispersion of knowledge. The true basis of higher education is knowledge which is created and produced through research, transmitted through teaching and acquired by students for the benefit of all (Spronken-Smith, 2012). The social mission of Higher Education (HE) depends on the quality and relevance of knowledge produced (Hénard & Roseveare, 2012). To achieve this social mission, partnerships between the academic community and the various players involved in the cooperation process must be strengthened (Dhamdhere, 2015). The critical role that HE plays in the promotion of social responsibility and awareness among students places increased responsibility on higher education institutions (Parsons, 2014) to produce skilled graduates who can critically analyse issues, have good communication skills, can handle change and diversity and exhibit tolerance towards contrasting views (Stanislavská *et al*., 2014).

According to Raelin (2010), higher institutions of learning now have an edge on enabling students to develop even deeper knowledge within a workplace context through the application of their acquired skills. The South African Higher Education Quality Committee specifically requires that community engagement be integrated with teaching and learning in an accredited and qualitative manner (Osman & Petersen, 2010). According to Newmark (2003), students who learn through on-the-job training and/or participation in community-based research eventually become integrated professionals who can think holistically and create different connections between their work and the outside world. To this, Meyer (2014) adds that a service-learning approach is also paramount to addressing long-standing community challenges and bringing transformation about in the lives of community members by empowering them to contribute meaningfully to the knowledge pool of their respective societies and to serve as co-educators of educational programmes.

The South African Department of Education (SA-DoE) has expressed a concern that "many teachers rely on teaching methods that do not engage learners in active learning" (cited by Teise, 2013:520). This has prompted the SA-DoE to call for a complete change in curriculum delivery. There is a dire need for radical transformative learning which can result in new ways of thinking, an exchange of values, cooperation, more reflexive citizens and the development of a transformed and completely new world view (Jackson, 2011; Wals, 2013 cited by Teise, 2013:520). Martin *et al*. (2006, cited by Teise, 2013:520) assert that such learning should lead to individual behavioural changes, as well as social change. According to Teise (2013:530), working cooperatively enables learners to develop social skills, which they should carry forward into adulthood and into the community. Accordingly, cooperative learning could be a valuable tool in truly uniting people in an effort to realise a sustainable South African society.

According to Brown and Van der Merwe (2015:74), a learning experience entails the following: Any interaction, course, program, or other experience in which learning takes place, whether it occurs in traditional academic settings (schools, classrooms) or non-traditional settings (outside-of-school locations, outdoor environments), or whether it includes traditional educational interactions (students learning from teachers and professors) or non-traditional interactions (students learning through games, collaboration with stakeholders, and interactive software applications). The growing use of the term "learning experience" reflects larger educational and technological shifts that have occurred in the design and delivery of education, and it presents an attempt to update conceptions of how, when and where learning does and can take place.

The Living Lab approach is regarded as a natural means of learning, research and experimentation that holds huge collaborative service performance enhancement prospects for organisations (McPhee *et al*., 2017). According to Van der Walt *et al*., (2009), Living Labs provide a research "think-tank" and innovation platform that can assist communities in the application of user-driven innovation practices. Evans *et al*. (2015) add that Living Labs constitute an experiential setting, which is similar to the concept of experiential learning where users are subjected to a creative social environment in which they experience and co-create their future. For instance, within the African context, one critically important aspect is the rural community's perspective and engagement, as well as their acceptance of the proposed innovation, concept and/or process – the latter often being misconstrued as something that is merely tangible with little regard for knowledge or idea creation (IST Africa, 2012). According to Herselman *et al*., (2015), the Living Lab approach is a user-driven, open innovation in everyday rural and urban communities that fosters multiple stakeholder collaborations at one or several locations. Such collaborations may encompass civic organisations, non-governmental organisations, research institutions and the likes who

inevitably become co-creators of innovative ideas, processes and products within these multi-stakeholder environments (Dell'Era & Landoni, 2014). When effectively applied, the Living Labs approach can yield improved service delivery and new business models and can be replicated in other similar contexts (Schuurman *et al*., 2016).

The concept Living Labs is new in South Africa and is mainly used in the field of information and communication technology (ICT), particularly in development projects, which has led to the creation of a local network known as Living Labs in Southern Africa (LLISA) (Herselman *et al*., 2015). The purpose of this network is to share Living Lab (LL) methodologies and tools to support innovative research in the African context (Pade-Khene *et al*., 2013). In addition, this network has created a platform for planning, monitoring and evaluation, thereby enabling full engagement and stakeholders benefiting from innovation in the Living Labs (Femenias & Hagbert, 2013).

The WIN platform is an integrated community-based project, which was initiated following cross-sector partnership collaboration between the North-West University's Faculty of Health Sciences coordinated by the Africa Unit for Transdisciplinary Health Research (AUTHeR), the Vaalharts Water User Association and the Phokwane and Greater Taung Municipalities along the borders of the Northern Cape (NC) and North West (NW) Provinces. This collaboration has the objective to promote health and well-being through a sustainable livelihoods approach within communities as well as to empower and uplift resource-poor communities by creating some sustainable development strategies with a view to strengthen resilience (Barratt, 2014).

North-West University (NWU), being one of the collaboration partners, works closely with the city councils and other agencies to see how it can contribute to the well-being of all. This entails volunteering for projects in local communities, contributing to decision-making bodies that affect the community and doing research that changes people's lives (NWU Community Engagement, 2017). The Faculty of Health Sciences focuses on rural health with a strong emphasis on building inter-sectoral partnerships to improve rural health and well-being holistically. However, during the past year, several other faculties from the North-West University have joined the Health Sciences disciplines in their endeavour to empower and improve communities through partnerships, with the result that students can now prepare for their professions by way of work-integrated learning and community-beneficial workshops, training opportunities and interventions (NWU Faculty of Health Sciences, 2017).

The WIN platform was created with the aim to address areas of high vulnerability in the Vaalharts community as well as the lack of basic services, which go hand-in-hand with poor health statuses and diminished income-earning opportunities (De Jong, 2014). The areas of high vulnerability in Vaalharts were identified by way of a needs-assessment research

project conducted by Coetzee (2011) with the aim of using the findings as a baseline to inform and direct future community interventions in the Vaalharts region of the North West and Northern Cape Provinces of South Africa.

North-West University (NWU) has a community engagement policy, and the Faculty of Health Sciences, through its research entities, has been striving to implement this policy by actively engaging with communities of interest and communities of practice in order to learn from and be taught by them, and to ensure that both the university's expertise and the rich experiences of the people it serves are put to best possible use (AUTHeR, 2017). NWU has a clear vision for research and innovation, which moves from being a tuition-based university that does focused research towards becoming a balanced teaching-learning and research university. As a leading teaching-learning and research institution, the NWU also recognises that it has a responsibility to ensure that the wealth of knowledge generated via the university's campuses is harnessed to the benefit of the community it serves (AUTHeR, 2017). Figure 1-1 depicts the framework used in the WIN project to guide all project processes, including research (Barratt, 2014).

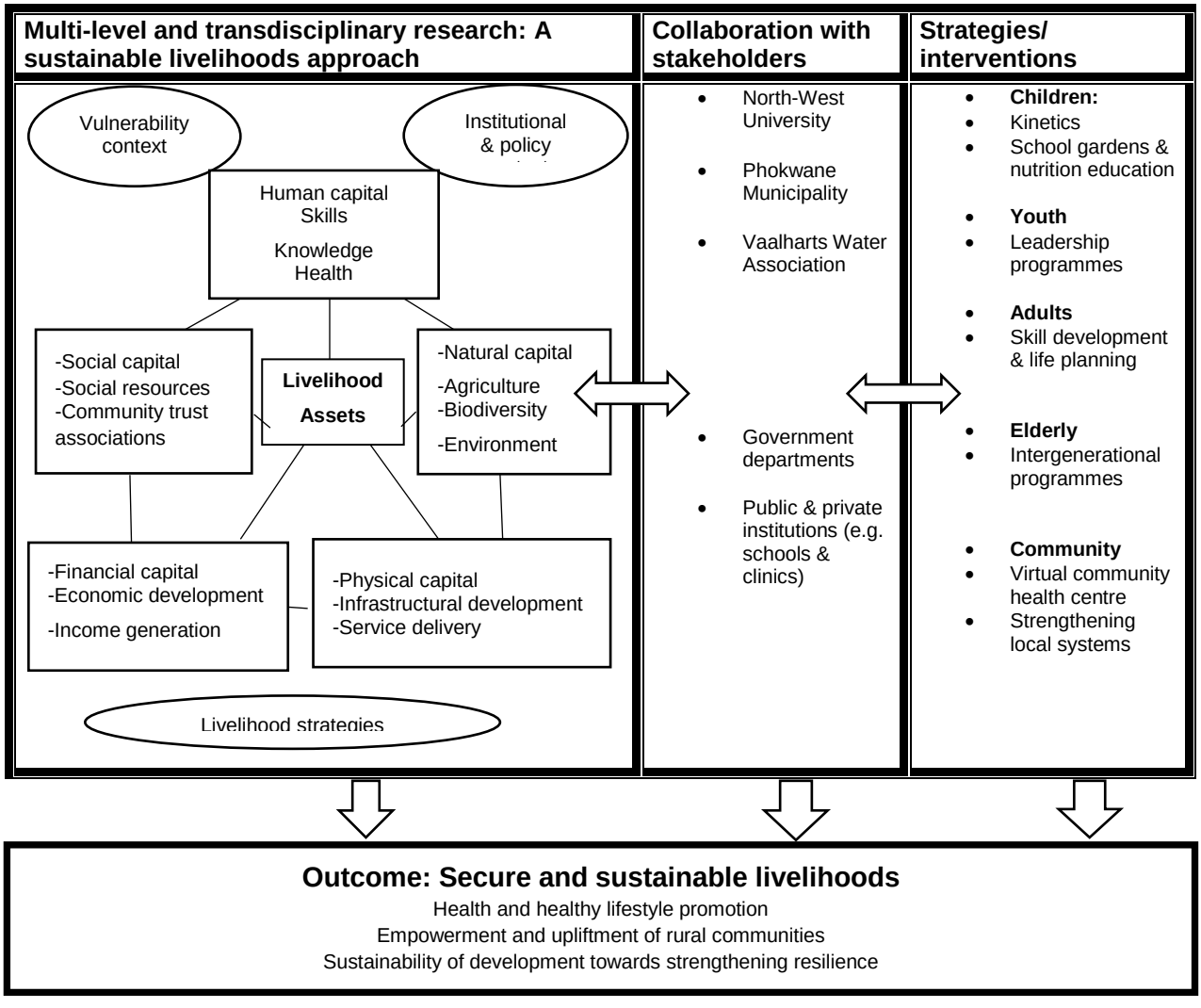

Figure 1-1: Framework for WINLab

NW-Living Lab (NWLL) conducted a needs assessment in the Vaalharts region, and the results showed that most needs are on a very basic level. It was recommended that the needs be studied in detail to identify opportunities and that other stakeholders be engaged to address the overarching issues from a multi-disciplinary perspective, perhaps focusing on existing community resources and strengths (Coetzee, 2011). Based on the findings of the needs assessment, AUTHeR's management initiated the 'WIN platform' which combines several sub-projects of the NWU's respective health science disciplines with a strong emphasis on community engagement and community-based research to improve rural health and well-being and to advance the university's community engagement responsibility (AUTHeR, 2017).

Since its inception in 2011, the respective stakeholders / role players partner to the WIN platform have each contributed in their respective way to ensure that this partnership continues to exist and that its objectives, namely to contribute towards the improvement of rural health and well-being, are realised. Role players involved in the WIN platform include the students and staff of the North-West University, employees of Vaalharts Water Users, municipal councillors of Phokwane and the Greater Taung Municipality, community home-based caregivers, community healthcare workers and community members from Phokwane and the Greater Taung Municipality (Barratt, 2014).

1.2 **Problem statement**

The Living Lab approach is a method that is still fairly new in South Africa. It encourages cooperative learning that involves stakeholders from diverse backgrounds and disciplines and is aimed at addressing complex societal problems to develop sustainability in the South African society. However, little is known about learning experiences when a Living Lab approach is applied through higher education institutions, particularly in the case of the WIN platform where the respective stakeholders' learning experiences are neither identified nor documented. Hence, it is unknown whether stakeholders fully engage with or benefit from the innovations derived from the Living Lab approach in the WIN platform. There is a dire need for qualitative research revealing the effectiveness of cooperative learning approaches utilising methods that promote active engagement of learners in an effort to ensure that learning is translated into practice.

1.3 **Research aim and objectives**

The aim of this study was to engage with the WINLab stakeholders, namely North-West University, Vaalharts Water, Department of Health and officials and community members of Phokwane and the Greater Taung Municipality, in order to explore and describe their learning experiences through the Living Lab approach.

1.4 **Research questions**

The following research questions were posed in order to reach the aim of the study:

1. How do NWU students and staff as well as the WINLab stakeholders, namely the Vaalharts Water User Association and the Phokwane and Greater Taung Municipalities, understand the Living Lab?
2. How do NWU students and staff as well as the WINLab stakeholders, namely the Vaalharts Water User Association and the Phokwane and Greater Taung Municipalities, experience multi- and transdisciplinary learning through the WINLab?
3. How does the Living Lab approach enhance learning and why would it be preferred by learning institutions over the traditional learning approaches?

1.4.1 **Research objectives**

The following research objectives were formulated from the research questions:

1. To explore the understanding of Living Labs as described by stakeholders;
2. To describe the experiences of Living Lab stakeholders; and
3. To describe how the Living Lab approach impacted the learning experiences of stakeholders.

Summary

In this chapter, the motivation as to why the study was conducted – including the research aims and objectives – were described. In Chapter 2, the state of knowledge with regards to key concepts used in this study as well as the application thereof in Living Labs will be explored (these concepts being learning experiences, Living Labs, transdisciplinarity in Living Labs and transdisciplinary health promotion). Furthermore, Chapter 2 will provide a detailed explanation of how the respective stakeholders learn within Living Labs.

To facilitate ease of access to the information contained in this dissertation, please consult the brief outline provided below.

1.5 **Dissertation outline**

This dissertation is comprised of five chapters:

Chapter 1 entails a brief background to the study, the study aim, problem statement and objectives of the study

Chapter 2 outlines the theoretical background and summarises the existing literature in relation to this study

Chapter 3 presents the study methodology

Chapter 4 contains the study findings and a discussion of those findings

Chapter 5 focuses on the evaluation, conclusions and recommendations derived from the study

CHAPTER 2

LITERATURE REVIEW

This chapter outlines the state of knowledge with regards to key concepts used in this study, namely learning experiences, learning experience models, Living Labs, transdisciplinarity in Living Labs and transdisciplinary health promotion. As such, the intention with this chapter is to sketch the research context as well as to illustrate the current study's fit within the grand scheme of studies that have been conducted on Living Labs and learning experiences to date (Botma *et al*., 2010). Having identified which research has been done, where it was done and how it was done, this researcher will continue to point to existing gaps in this field in the chapter/s to follow. In essence, the literature review as presented in Chapter 2 enabled the researcher to gain a fuller, more holistic view of the subject area and to generate ideas as gaps emerged. To begin with, an overview of the search strategies followed in the course of this investigation will be discussed.

2.1 **Search strategies followed**

The author sourced scholarly articles via the search engine Google Scholar, whereas policy documents were retrieved via Google under the government organisation domains. In addition, articles and textbooks from credible health sites listing relevant information relating to the topic of interest were also used. Databases registered under the North-West University library site (e.g. EBSCOhost, A-Z Publication Finder, JSTOR, etc.) were used to retrieve other research papers. The following key words were used to source articles relevant to the subject area: Living Labs, learning experiences, transdisciplinary, health promotion, South Africa.

2.2 **Learning experiences**

According to Brown and Van der Merwe (2015:74), a learning experience entails "any interaction, course, program, or other experience in which learning takes place, whether it occurs in traditional academic settings (schools, classrooms) or non-traditional settings (outside-of-school locations, outdoor environments), or whether it includes traditional educational interactions (students learning from teachers and professors) or non-traditional interactions (students learning through games, collaboration with stakeholders, and interactive software applications)".

Traditionally, the phrase 'learning experience' has been used in relation to more formal learning environments, for instance in a classroom (Groff, 2013). However, from a learner's perspective, both formally and informally, learners experience something that, inevitably,

results in a change in the way they think, comprehend and behave (Maughan *et al*., 2012). Learning experiences also refer to the way one thinks about the nature of a learning intervention, for instance its design, especially given the context of the anticipated outcomes (Fink, 2013). It is this context that forms the basis for choosing the communication channels, learning activities and resources (Gallagher, 2011) and, therefore, given the context of Living Labs, a learning intervention within this context stretches way beyond what has hitherto been regarded as 'content'.

The general perception about learning content is something akin to probably a textbook, which one "reads" and then "interacts with" in a certain way (Gallagher, 2011:1). However, this presents a constricted and inadequate view of the actual depth of a learning experience. In addition, it confines the type of learning to that which is characterised by memorising certain facts, methods and concepts (Looß, 2001). According to O'Neil and Perez (2013), *learning content* is broad and inconclusive, implying that it does not only include the 'whats' but also the 'hows' of learning.

For instance, within the context of learning experiences, *learning content* entails a collection of content resources, content pointers, functional tools and a description of activities and evaluations, which collectively represent a specific educational model (Gallagher, 2011). Actually, a reverse description of this definition would also hold true for the meaning attached to *learning content,* i.e. an educational model describing the kind of learning resources, tools and activities required to realise learning outcomes (Kolb, 2014). In summary, *learning content* can be described as a collection of educational models (Lazarinis, 2010) which, according to Gallagher (2011), also encompasses a collection of resources that contribute to determining an individual's learning experiences associated with learning outcomes and behaviours emanating from that experience.

According to Kolb (2014), one distinct aspect of *learning content* is the artefacts that are created during the learning experience. Ke and Hsu (2015) describe a learning artefact as anything based on a genuine learning experience (for example a model, a computer program, a figure, or the likes) that is created and assessed during the learning process. Subsequently, these artefacts are then translated into learning resources that can be used repeatedly by others in similar experiences (Senbel, 2012; Ashby *et al*., 2017). In support of the descriptions provided earlier on, models of *learning content* should, therefore, foster collaboration with resources and promote activities aimed at enabling learners to work harmoniously towards the generation of learning artefacts (Gallagher, 2011). Ashby *et al*. (2017) support this view, adding that ideas such as these will allow knowledge management and organisational learning to merge and provide substance to the concept *learning content*.

Theoretically, this embodies a move away from the usual view of content management based on content management systems, where the general notion is that learners will simply learn from content presented to them. This move is supported by O'Neil and Perez (2013) who hold that learning experiences can, indeed, provide a practical and sustainable means to design and/or spontaneously order learning activities that are educationally sound and that permit the realisation, evaluation and follow-up of higher-order learning outcomes. Given that this study is positioned within the context of advanced distributed learning, this candidate holds that learning experiences can, indeed, be modelled to enable the attainment of higher-order learning outcomes (Wisher *et al*., 2004).

2.3 **Learning experience model**

In this study, Kolb's experiential learning model (Fig 2-1), which is based on a four-stage cycle of learning and four distinct learning styles, was adopted to describe the learning experiences of the WIN platform stakeholders. In the paragraphs to follow, the elements of this learning experience model will be examined in detail.

2.3.1 Kolb’s experiential learning cycle

In 1984, David Kolb developed an experiential learning theory that operates on two levels: (i) a four-stage cycle of learning and (ii) four different styles of learning (Kolb, 2014). Focusing mainly on the learner’s internal cognitive processes (Tomkins & Ulus, 2016), Kolb’s theory and model have been adopted to gain a comprehensive understanding of stakeholders’ learning experiences in this study. Figure 2-1 depicts the four-stage cycle of learning as conceptualised by Kolb. A brief description of each stage is also provided.

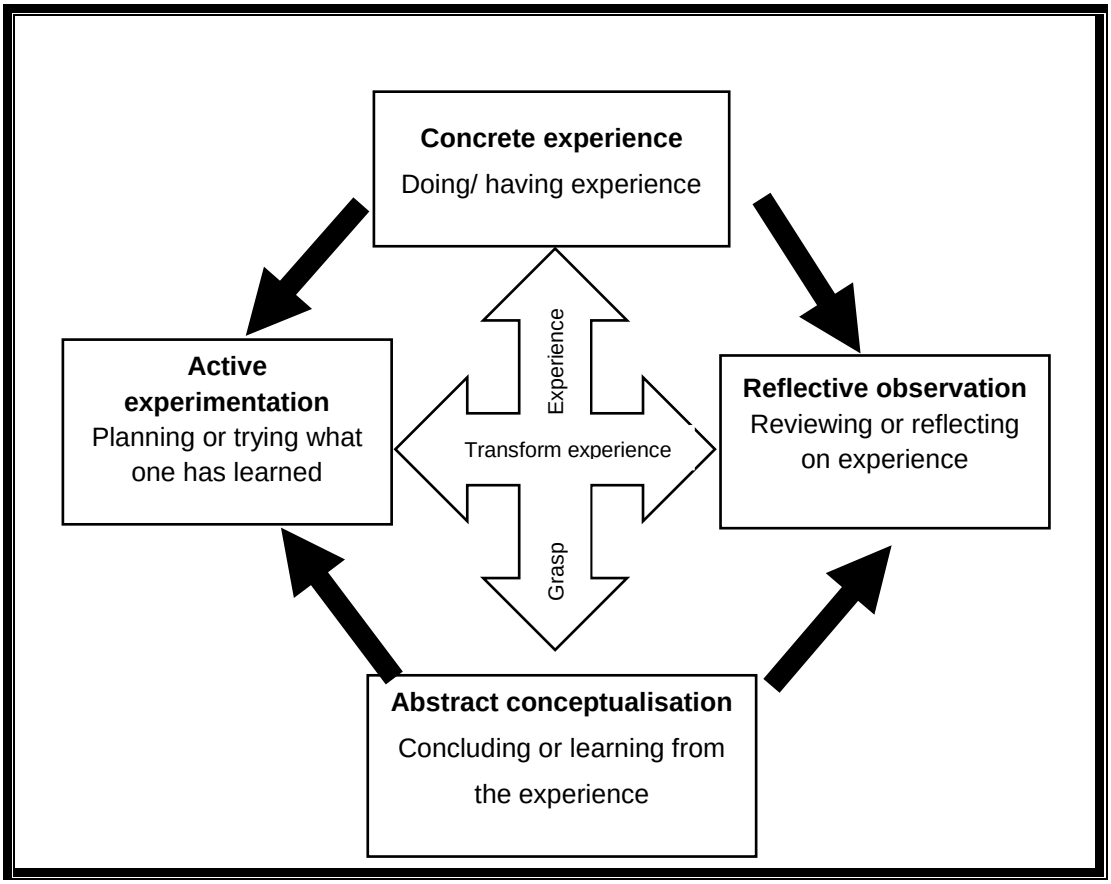

Figure 2-1: Kolb's experiential learning model

Kolb's model represents two dialectically connected means to grasp experience, i.e. *concrete experience* and *abstract conceptualisation*. The remaining two dialectically related means of transforming experience are *reflective observation* and *active experimentation*. This process is depicted here as an ideal learning cycle where learners progress through all four means of learning – experiencing, reflecting, thinking, and acting (see Figure 2-1) – in a perpetual process that is responsive to the learning environment and that which is being learned (Kolb & Kolb, 2009).

Concrete experiences form the basis of observations and a reinterpretation of existing experience (*reflections*). Reflections are then assimilated and refined into *abstract concepts* from which inferences for action can be drawn. Given that experiential learning is a process of knowledge creation that involves constructive tension amongst the four means of learning (Kolb, 2014), these inferences can be tested actively and can assist in guiding the construction of new experiences (Kolb & Kolb, 2009).

To this end, Kolb (2014) holds that learning is an integrated process and each stage in the cycle is mutually supportive of and connected to the next. Thus, although the possibility exists that the cycle can be joined at any stage and that a logical order would then follow from stage to stage, effective learning can only occur when learners go through all four stages in the model.

2.3.2 Kolb's styles of learning

Based on the four-stage model described above (Figure 2-1), Kolb (2014) proposed four different learning styles, claiming that learners naturally prefer one particular learning style. Several factors influence a learner's ideal style, with the inclusion of educational experiences, social environment and the learner's cognitive structures. According to DeCoux (2016), the learning preference ultimately depends on the variables between the *processing continuum* and the *perception continuum*, where the former refers to the way a learner chooses to approach and/or undertake an assignment and the latter to the range of emotional reactions towards the assignment, with inclusion of the learner's feelings and thoughts. Table 2-1 portrays these learning styles.

Table 2-1: Kolb's styles of learning

	Doing (active experimentation – AE)	Watching (reflective observation – RO)
Feeling (concrete experience – CE)	**Accommodating (CE/AE)**	**Diverging (CE/RO)**
Thinking (abstract conceptualisation – AC)	**Converging (AC/AE)**	**Assimilating (AC/RO)**

Accommodating (CE/AE): This refers to the feel-and-do style of learning where the learner uses a pro-active approach. This approach is ideal for intuitive learners as opposed to logical learners. Such learners depend on someone's way of thinking and analysing issues more than their own. Learners are hands-on and are willing to attempt and complete new challenges (DeCoux, 2016).

Diverging (CE/RO): This refers to the feel-and-watch style of learning which is preferred by creative and emotional learners. Such learners view situations from numerous, diverse perspectives and come up with a number of ideas or solutions. They think outside the box and are more people-oriented (DeCoux, 2016).

Converging (AC/AE): This refers to the think-and-do style of learning preferred by technical-minded learners. This group of learners accept new ideas and prefer to depend on their own cognition and learning when discovering solutions to practical situations. They also come up with achievable ways to apply models and ideas (DeCoux, 2016).

Assimilating (AC/RO): This refers to the think-and-watch style of learning suitable for learners who are more concerned with easy explanations as opposed to practical methods and theories that are seemingly logical. Such learners ascribe value to conciseness and logic (DeCoux, 2016).

Kolb holds that distinctive learners actually prefer a specific learning style and that an array of variables will influence their preferred learning styles. Most importantly, though, the experiential learning model characterises the three stages of a learner's progression and suggests that the learner's affinity to put up with and effectively integrate the four different learning styles will improve as he/she progresses through the developmental stages. To substantiate his theory, Kolb defined the phases of learner development as follows:

I. **Acquisition**: This phase spans from birth until the early teens and is characterised by improved cognitive capabilities and important abilities.

II. **Specialisation**: This phase spans work and personal encounters during early adulthood and is characterised by the enhancement of a particular learning style, which is created through social and educational socialisation.

III. **Integration**: This phase spans from mid-career until later life and is characterised by the articulation of unfixed learning styles in a person's work and personal life.

According to ALQahtani and Al-Gahtani (2014), identifying an individual's learning style will facilitate the application of the ideal method to educate that person. Nevertheless, according to Manolis *et al*. (2013), all individuals have their own learning preferences and in the absence of the correct impetus, they will respond to all four learning styles at different levels. The main idea, thus, is to identify a method that best suit an individual's preference. For this reason, educators are advised to use Kolb's model to develop appropriate educational material that will engage learners in such a way that they can systematically progress through every stage (DeCoux, 2016).

As an extension of Kolb's styles of learning, the Living Lab approach has been explored in recent years to assist learners in acquiring a deeper level of experiential learning which cannot take place inside the normal classroom setting.

2.4 **Emergence of Living Labs**

The Living Lab movement emerged from the Helsinki Conference, which was held under the auspices of the Finnish prime minister in 2006 (Niitamo *et al*., 2012). At the conference, the

establishment of an open, user-centric network was suggested to rejuvenate the innovation environment in Europe (Hasselkuß *et al*., 2017). As a result, the number of Living Labs in Europe has increased significantly. The year 2007 saw the first upsurge of the European Network of Living Labs (ENoLL) and by 2013, more than 350 Living Labs were recognised in Europe and globally (Ruijsink & Smith, 2016). Groundbreaking research on Living Labs was conducted by professor William Mitchell from the Massachusetts Institute of Technology (MIT) who also was the first to introduce and apply a Living Lab approach in a leading European ICT company (Niitamo *et al*., 2012).

In Africa, Living Labs emerged predominantly as outputs of Action Research (Cunningham *et al*., 2012a). Looking at South Africa in particular, the concept Living Labs is relatively new and is mainly used in the field of information and communication technology (ICT), particularly in development projects, which has led to the creation of a local network known as Living Labs in Southern Africa (LLISA) (Herselman *et al*., 2015). The purpose of this network is to share Living Lab (LL) methodologies and tools to support innovative research in the African context (Pade-Khene *et al*., 2013). In addition, this network has created a platform for planning, monitoring and evaluation, thereby enabling full engagement and stakeholders benefiting from innovation in the Living Labs (Femenias & Hagbert, 2013).

2.4.1 Defining Living Labs

A “Living Lab” normally takes into account the perspective of all stakeholders engaged in real-life environments, “Living Laboratories” in most instances refer to the application of an organisation’s perspective, and “Living Labs” refer to local stakeholders’ input in innovation (Niitamo *et al*., 2012). However, there is no universally accepted distinction between the three terms and some authors use them interchangeably. For the purpose of this study, the term “Living Lab” will be used.

According to Leminen *et al*. (2012:6), Living Labs mean “reconstructing the interaction space. It can be any space, anywhere, suitable for collaborative design, the application of knowledge for empowerment, upliftment, and development of people and communities for the use of innovation.”

Westerlund and Leminen (2011b) define Living Labs as “physical regions or virtual realities, or interaction spaces, in which stakeholders form public-private people partnerships (4Ps) of companies, public agencies, universities, users, and other stakeholders, all collaborating for creation, prototyping, validating, and testing of new technologies, services, products, and systems in real-life contexts”.

The ENoLL defines Living Labs as “user-centred, open innovation ecosystems based on a systematic user co-creation approach integrating research and innovation processes in real life communities and settings. In practice, Living Labs place the citizen at the centre of innovation, and have thus shown the ability to better mould the opportunities offered by new ICT concepts and solutions to the specific needs and aspirations of local contexts, cultures, and creativity potentials” (Cardullo & Kitchin, 2017).

According to Herselman *et al*. (2015), the Living Lab approach is user-driven, open innovation in everyday rural and urban communities, which fosters multiple stakeholder collaborations in one or several locations. Such collaborations may include civic organisations, non-governmental organisations, research institutions and the likes who inevitably become co-creators of innovative ideas, processes and products within multi-stakeholder environments (Dell'Era & Landoni, 2014). This definition was adopted for this study.

2.4.2 Living Labs in South Africa

Coetzee *et al*. (2012) analysed five Living Labs across South Africa, namely Siyakhula Living Lab, Limpopo Living Lab, North-West Living Lab, and SAP Research Living Labs and Reconstructed Living Lab. These Living Labs are mostly in rural communities of five provinces in South Africa. According to Coetzee *et al*. (2012:4), there are several Living Labs in South Africa but the five listed have been operational for at least two years and were successful. Table 2-1 gives a summary of the five functional Living Labs in South Africa.

An interesting finding is that only the North-West Living Lab directly addresses health issues; the rest of the Living Labs mainly focus on ICT for development purposes. All of the Living Labs identified by Coetzee *et al*. (2012:7-18) are multi-stakeholder in nature, involving government, non-governmental organisations, education institutions and the communities.

2.4.3 Living Labs: How they align with or differ from other innovation research traditions

Innovation studies are grounded in different theories and several notable research traditions are exhibited in organisational studies (Leminem *et al.,* 2015), for example the contingency theory, dynamic capability approach, resource-based view and the transaction-cost approach (Vogel, 2012). According to Leminem *et al.* (2015), research traditions in organisational studies are not isolated. They involve the creation of links with other research tradition theories and disciplines. The link between Living Labs and other research traditions will be described briefly in the sections to follow.

Table 2-2: Summary of functional Living Labs in South Africa

Name of Living Lab	Focus	Level of operation	Beneficiaries
Limpopo Living Lab	Promoting development of businesses and innovation strategy solutions by engaging several stakeholders	Limpopo (provincial level)	All communities
North-West Living Lab	Promoting community development from a wellness perspective through the application of scientific and technological interventions	North West (provincial level)	All communities
Siyakhula Living Lab	Developing and field-testing the model of simple, cost-effective and robust integrated e-business and telecommunication platforms	Eastern Cape (community level)	Dwesa community (rural Transkei)
SAP Living Labs (Rustica, overture)	Researching and developing novel ICT solutions and quantifying and authenticating the socio-economic impact of technologies aimed at removing the challenges of small, medium and micro-enterprises in low-income countries	Mpumalanga and Gauteng (community level)	Gautswane (Mpumalanga) and plumbers in Gauteng
Reconstructed Living Lab	Provision of innovative solutions to address several complex social challenges, for example gangsterism and substance abuse, through the creation of a supportive environment	Western Cape (community level)	Athlone - Bridgetown

2.4.4 Contingency theory and Living Labs

The fundamental principle of contingency theory is "situational influence" which holds that there is no specific way to manage or organise. This theory is context or setting specific (Torkkeli *et al*., 2009). The similarity between Living Labs and contingency theory is the dependence on "situational influence". The difference between the two lies in their real-life environments and also the strategies applied; for instance, Living Labs encompass a myriad of different stakeholders (Budweg *et al*., 2011). This study is partly aligned with contingency theory because it is also focused on "situational influences".

2.4.5 Knowledge-based view

The knowledge-based view is focused on knowledge creation through social interaction (Nonaka *et al*., 2008). Stakeholders share knowledge through their day-to-day interactions, and new meanings are created. The knowledge-based view is similar to the resource-based view in that it is dependent on multiple stakeholders (Nonaka *et al*., 2008). This study can be linked to the knowledge-based view, because it focuses on knowledge-creation processes that benefit all stakeholders in networks based on their day-to-day interactions.

2.4.6 Dynamic capabilities approach

According to Bogers (2011), this is an approach that strives to organise technological, organisational and managerial practises within organisations effectively. However, this study is not aligned with the dynamic capabilities approach because Living Labs bring together activities of different stakeholders and these activities are facilitated beyond the boundaries of organisations (Dutilleul, 2010).

2.4.7 Transaction-cost economics

This approach is mostly used in organisational studies. The fundamental principle of this approach is efficient management of transactions, i.e. at the most minimal cost (Williamson, 1979). This study is linked to this approach as some stakeholders had to travel long distances to Vaalharts, which was expensive. However, Westerlund and Leminen (2011b) argue that the transaction-cost economics approach needlessly limits the multi-stakeholder nature of Living Labs.

2.4.8 Resource-based view and Living Labs

The underlying assumption of the resource-based view is that an organisation does not exist in isolation: It also depends on external resources from other stakeholders apart from its own resources (Madhok & Tallman, 1998). The resource-based view is crucial in understanding Living Labs, which are dependent on the resources of multiple stakeholders (Westerlund & Leminen, 2011b). Table 2-3 briefly summarises the above research traditions in organisational studies and the significance thereof in Living Labs.

Research tradition	Main idea(s) sources	Significance of research traditions for LL
Contingency theory	Approach is dependent on settings and contexts. There is no specific method to organise or manage (Hickson *et al*., 1971).	Living Labs illuminate situational Influence. A wide range of aspects, real-life environments and stakeholders exist (Eriksson *et al*., 2005; Almirall &Wareham, 2011; Budweg, *et al*., 2011).
Knowledge-based view	Knowledge is created in social interaction between tacit and explicit knowledge (Nonaka, 1994).	New meanings are created through interactions. Focus is on the knowledge-creation processes that benefit organisations instead of integration of interactions and knowledge creation for the advantage of all stakeholders in Living Labs networks.
Dynamic capabilities	Internal and external capabilities are combined, built and reconfigured to address ever-changing environments (Teece *et al*., 1997).	Strives to organise technological, organisational and managerial practices effectively within organisations. Living Labs bring together activities of different stakeholders and these activities are facilitated beyond the boundaries of organisations (Dutilleul, 2009).
Transaction-cost economics	Emphasis is on efficient management of resources (Williamson, 1979).	Living Labs cover a wide range of aspects including efficient management of activities and, also more loosely, developing innovation. LLs are commonly linked with multi-stakeholders and mainly the importance of users, who follow a range of goals and targets for different stakeholders.
Resource-based view	Organisations are reliant on external resources instead of having all the required resources and skills. Organisations satisfy the needs of the outside environment, where they develop products and services timely in a cost-effective way (Madhok & Tallman, 1998).	Living Labs are linked with several different stakeholders who bring, share and develop resources together (Westerlund & Leminen, 2011b).

Table 2-3: Relevance of other research traditions for Living Labs (Leminem *et al*., 2015)

2.4.9 Transdisciplinarity in the WIN Lab

It is evident from most studies that Living Labs draw on knowledge from diverse disciplines (multi-disciplinarity) (Gumbo *et al*., 2012). This social laboratory (WIN Lab) adopts a transdisciplinary approach which brings together the community, government departments, municipalities, the university, public and private institutions and healthcare professionals to come up with health innovations using a participatory method. The specific objective of the WIN lab is to promote health and well-being through a sustainable livelihoods approach within communities as well as to empower and uplift resource-poor communities by creating some sustainable development strategies with a view to strengthen resilience (Barratt, 2014). The WINLab is based on a framework (Figure 1-1), linking professionals and users in a cooperative network and involving health stakeholders.

2.4.10 Transdisciplinary approach

The transdisciplinary approach has been defined in different ways by several authors. The concept was first introduced in the 1970's by a researcher called Jean Piaget. He described transdisciplinarity as a superior stage succeeding interdisciplinary relations; it is not limited to recognising the reciprocities between the specialised researches but locates the links inside a whole system with no stable disciplinary boundaries (Piaget, 1972). In 2010, Nicolescu (2010:17) added to the above meaning the aspect "beyond any discipline". Currently, a transdisciplinary approach is regarded as a valid and rigorous way of doing research. It is ideal for comprehending our present world and satisfying the imperative of the "unity of human knowledge" – a concept which was framed by Bohr in 1961. It is an innovative approach to knowledge that goes beyond disciplinary boundaries and is aimed at knowledge that concurrently exists across disciplines, between disciplines and beyond disciplines (Nicolescu, 2010). The transdisciplinary approach has gained impact internationally, particularly in higher education institutions as universities are now open to experimenting with transdisciplinary curricula and research activities, including seminars (Dincă, 2011). According to Femenias and Hagbert (2013), transdisciplinary approaches are more ideal compared to disciplinary research approaches for solving complex problems in a sustainable way. Transdisciplinarity is premised on the notion that complex problems are inter-connected, and different stakeholders from different disciplines have different views regarding those problems (Pade-Khene *et al*., 2013). Such stakeholders need perspectives and knowledge from different societal aspects, for instance non-governmental organisations, government departments and civic organisations (Apgar *et al*., 2009).

2.4.11 Transdisciplinary health promotion

Public health and social problems are becoming more complex, challenging and difficult to understand. Designing interventions to alleviate such problems need perspectives from various disciplines and fields along with cross-disciplinary research and practice teams (Min *et al*., 2013; Elder *et al*., 2014). Haire-Joshu and Mc'Bride (2013) published an article on the transdisciplinary approach to health, which fills the gap in the literature and gives a comprehensive explanation that presents transdisciplinary approaches as innovative ways of solving problems in practice and health research. According to Terblanche (2015), a transdisciplinary approach enables stakeholders who are involved in research to relate their experiences, to understand the dynamics and complexity and to contribute transformational knowledge essential to collaboratively evaluate and address problems in societies.

According to Qudrat-Ullah and Tsasis (2017), improving people's health involves understanding and altering societal structures and functions but, in some cases, opposing forces undermine the changes, hence exhibiting the adaptive complexity associated with public health systems. Tozan and Ompad (2015) argue that this complexity in public health systems requires a *transdisciplinary* approach to interpret and understand the dynamism and interaction. This notion is premised on the fact that public professionals have long realised that health is dependent on several factors grouped into physical, economic, social and cultural categories (Witt *et al*., 2017). The first International Conference on Health Promotion (Ottawa Charter) resulted in a charter for stakeholder participation in health promotion. This charter defines health promotion as follows:

A process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realise aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being. (WHO, 1986)

Transdisciplinary health promotion therefore entails that healthcare professionals should think beyond their particular discipline and learn to function as experts in their discipline in transdisciplinary interventions to improve health in a holistic approach (Aguirre *et al*., 2016).

2.5 **Conclusion**

Literature has shown that most studies on Living Labs are multi-disciplinary in nature, promoting active engagement of learners in an effort to ensure that learning is translated into practice. However, this study adopted a transdisciplinary approach, bringing together the community, government departments, municipalities, the university, public and private institutions and healthcare professionals to come up with health innovations using a participatory method. The specific objective was to promote health and well-being through a sustainable livelihoods approach within communities as well as to empower and uplift resource-poor communities by creating some sustainable development strategies with a view to strengthen resilience. The WIN platform, which is the context of this study, is linking professionals and users in a cooperative network involving health stakeholders. There is a dire need for in-depth research revealing the effectiveness of cooperative learning approaches utilising methods that promote the active engagement of learners in an effort to ensure that learning is translated into practice.

CHAPTER 3

METHODOLOGY

This chapter describes and justifies the methods that were used to collect and analyse data in this study. It focuses on the research design, research instruments, research population, sampling, data analysis, measures used to ensure trustworthiness and ethical considerations that were taken into account.

3.1 **Research design**

A qualitative design was employed in this study. This type of design is mainly used when little is known about a phenomenon and when its context is poorly understood (Mokgwathi & Webb, 2013; Yin, 2003a). It is aimed at acquiring an in-depth understanding of an individual or group's experiences as well as how people make meaning of something and a situation as it exists (Creswell, 2009a). A key qualitative feature is that research questions are typically limited to studying a central phenomenon within a particular context. The researcher's intent is not to generalise from the sample of a population but to explain, describe and interpret (Maxwell, 2013) a phenomenon. Consequently, sampling is not a matter of representative opinions but a matter of information richness (Guetterman, 2015).

3.1.1 Strategy

In order to investigate and describe in-depth the learning experiences of NWU students and staff as well as other WIN platform stakeholders through a Living Lab approach, a descriptive case study design was applied that allowed the description of a phenomenon (e.g. WINLab) in its real-world context (e.g. experiences of students and other stakeholders) (Yin, 2017).

A descriptive case study is one that is focused and detailed and one in which propositions (e.g. students and WINLab stakeholders had learning experiences through the Living Lab approach) and questions (e.g., how they experienced learning about a phenomenon) are carefully scrutinised and articulated at the outset. This articulation of what is already known about the phenomenon is called a descriptive theory. It helps to specify the boundaries of the case, and it contributes significantly to the rigor of the finished case study (Mills *et al*., 2010). The main goal of the descriptive case study is to assess a sample in detail and in depth (e.g. understanding and experiences of students and other stakeholders), based on an articulation of a descriptive theory. It is a method of inquiry where the 'case' holds centre

stage and the researcher explores a programme, event, activity, process or one or more individual in-depth. It is a strategy that seeks to answer 'how' and 'why' questions in instances where the researcher has little or no control over events, seeks to explore a contemporary phenomenon within a real-life context (Yin, 2003b; Yin, 2009) and where the boundaries between the phenomenon and the context are unclear (Yin, 2003a). It uses multiple sources of evidence, whilst benefitting from previously developed theoretical prepositions to guide data collection and analysis (Yin, 2003b). It is usually used for investigating a specific phenomenon (learning situation, technology for learning) among a specific group of people/persons (O'Keeffe, 2012).

In many situations, case studies are used to contribute to knowledge about the individual, group or organisation and arise from a desire to understand complex social, political and related phenomena. Likewise, the case-study method allows investigators to retain the holistic and meaningful characteristics of real-life events such as organisational and managerial processes as well as individual life cycles and the altered environments of neighbourhoods, nations and industries (Yin, 2003). The following aspects should be kept in mind when using a case study approach:

- A case study strategy has limitations, i.e. being interpretative and subject to the researcher (O'Keeffe, 2012);
- Cases are units of investigations, e.g. individuals, communities, groups, et cetera (Henn *et al*., 2010);
- No information is right or wrong (Cohen *et al*., 2007);
- Multiple sources of evidence are used for validity purposes (O'Keeffe, 2012); and
- "The ultimate goal of the case study is to uncover patterns, determine meanings, construct conclusions and build theory" (Patton & Appelbaum, 2003).

3.2 **Study area**

An inter-sectoral partnership (WIN Platform) existed between the NWU Faculty of Health Sciences' research unit AUTHeR (Africa Unit for Transdisciplinary Health Research) and other stakeholders, namely Vaalharts Water, Department of Health and officials and community members of Phokwane and the Greater Taung Municipality. This partnership thus provided a platform for students to effectively learn and execute research as well as to acquire work-integrated learning (Barratt, 2014). This study was conducted at the NWU in the North West Province as well as at the Vaalharts Water User Association and the Phokwane Local Municipality community in the Northern Cape Province.

To avoid travelling costs for the participants, the researcher met with the participants at their most comfortable/convenient place, which is within their reach. For NWU staff and students,

interview meetings were held on campus in a booked room within the Ferdinand Postma Library. For stakeholders from the community, interview meetings were held at their offices or home, depending on which were more convenient, private and more comfortable for them.

3.3 **Study population**

The population of the study refers to all the elements (individuals, objects or substances) or aggregation of cases that meet certain criteria for inclusion in a given universe and in which the researcher is interested (Botma *et al.*, 2010).

The research was conducted in the North West and Northern Cape Provinces of South Africa. The study population comprised WINLab partners/management team which included NWU staff and students, the Vaalharts Water User Association and the Phokwane and Greater Taung Municipalities. Participants were selected purposefully as they met the criteria of the population required.

3.3.1 Inclusion and exclusion criteria

Exclusion criteria are a set of predefined definitions that are used to identify subjects who will not be included. Together with inclusion criteria, exclusion criteria make up the eligibility criteria that rule the participants in a research study in or out. Selection of participants may be guided by emerging patterns over the course of data collection (SA-DoH, 2015). These participants were the best suitable to answer the research questions in this study.

Inclusion – Both male and female participants, aged 18 years and older, who were able to speak and understand Setswana or English and who were willing to participate were included from the following groups:

- NWU students and staff members who have been actively involved in the WINLab;
- Ward councillors, community health workers and traditional leaders as well as community members from Phokwane and the Greater Taung Municipality who actively partake in the WINLab; and
- Representatives from the Vaalharts Water Association who are actively involved in the WINLab platform.

Exclusion – The study participants excluded:

- Persons who were not previously involved in the WINLab;

- Minors; and
- Persons who were not able to speak and follow conversations coherently.

3.3.2 Sampling method

A purposive sampling method was used in this study. This type of sampling was chosen because the participants that were selected had an understanding of the research (Creswell, 2007) and were, therefore, likely to be knowledgeable and informed concerning the phenomena being investigated or to have a lived experience (Botma *et al*., 2010). Patton (2015) explains that purposeful sampling involves selecting information-rich cases. In addition to the purpose of the inquiry, Patton acknowledges the role of resource limitations in determining a qualitative sample size.

3.3.3 Sample size

In qualitative studies, data saturation determines the sample size, e.g. when no new or relevant data is emerging (Botma *et al*., 2010). Sample sufficiency is achieved if there are sufficient numbers to reflect the range of participants and sites that make up the population so that others outside the sample might have a chance to connect to the experience of those in it (Botma *et al*., 2010). Qualitative samples are usually small, and they are selected for their usefulness as rich sources of information (SA-DoH, 2015).

3.4 Recruitment strategy

Processes of recruitment and obtaining informed consent

Recruitment of NWU staff members and students who participated in the WIN platform

The WIN platform coordinator (WPC) fulfilled the role of a mediator/communication link between the WIN management team (academic staff) and the community advisory board of the WIN platform. During the WIN management meeting, the WPC informed all WIN management members of the planned study and introduced the student and independent person (IP) to the committee. The WIN management committee served as gatekeeper 1 and was asked to identify possible participants, particularly student learning supervisors in WIN, who were subsequently contacted by the independent person to set an appointment for an information session. During the information session, the IP explained the aim, purpose and methods of the study and explained the informed consent form. The IP handed out and explained the informed consent form and further allowed time for likely participants to ask questions and informed them that they had one week to consider their participation and sign

the consent form. After the week has passed, the IP contacted the likely participants and asked whether they were willing to participate. Where the IP were unable to answer questions raised by the likely participants, those were referred to the mediator who then reverted to the likely participants. The IP also asked the supervisors whether they could establish contact with students who had been involved in learning activities in the WIN platform. The IP then emailed the students an advertisement inviting the students to an information session. During the information session with students, the IP followed the same procedure as described above: Explaining the aim, purpose and methods of the study and the informed consent form, handing out and explaining the informed consent form, allowing time for questions and informing participants that they had one week to consider participation and signing the consent form. After the week had passed, the IP contacted the potential participants and asked whether they were willing to participate.

After the IP had collected the signed consent forms, participants (including staff and students) were informed that the student researcher would contact them to schedule an appointment for the interview.

Recruitment of community members who had participated in the WIN platform

The Phokwane Municipality (gatekeeper 2) signed a MoU with the NWU that gives permission for the WIN platform to carry out activities within the Phokwane Municipality. The WPC contacted the members of the WINLab advisory board, i.e. the Department of Health and Social Development and Vaalharts Water User Association, to inform them about the study and asked the members to identify possible participants. The IP then contacted potential participants and set an appointment for an information session. The same procedure as above was then followed to recruit possible participants.

In addition, Vaalharts Water User Association (gatekeeper 3) was asked for permission to conduct research amongst employees. Recruitment was carried out in this way until data saturation was reached according to the different groups of participants (NWU students, NWU staff and community members) or up to the point where no more potential participants could be identified by the mediator and gatekeepers. The different roles played by stakeholders are depicted in Table 3-1.

Table 3-1 Different roles of team members and gatekeepers

ROLE	FUNCTION
Win Platform Coordinator (WPC)	As acting WIN Platform Coordinator enabled communication with possible participants from the university and community in Vaalharts
Independent person (IP)	The independent person was the WIN-intern; she was knowledgeable about the academic and community environment of this study.
Student researcher	The student researcher was responsible for data collection after recruitment and completion of informed consent forms.
Gatekeeper 1: WIN management committee	Grant permission to carry out research among students and staff members of NWU who participated in the WIN platform.
Gatekeeper 2: Phokwane Municipality & WINLab advisory board	Grant permission to carry out research within communities in the Phokwane municipality.
Gatekeeper 3: Vaalharts Water User Association (VWA)	Grant permission to carry out research among employees of VWA.

3.4.1 Data collection procedure

After recruitment and collection of signed consent forms (Annexure B) by the independent person (IP), participants were contacted by the research-student to set an appointment for the interview. Interviews were conducted at a time and place suitable for participants and in facilities where the privacy of the participant was secured and where disturbances could be minimised, e.g. offices of participants or booked seminar/group rooms on campus. Before starting the interview, participants were informed of the voluntary and confidential nature of their participation, the study duration and time required for participation, selection criteria (inclusion and exclusion criteria) and how the final study results will be disseminated. Questions from the potential participants were allowed for the sake of clarity and to ensure that the purpose of the study was clearly understood by all potential participants.

Participants were further informed that they could withdraw at any given time. Then the tape recorder was introduced and permission to use it was asked from the participants. Semi-structured interviews were then conducted using an interview schedule (see Annexure A) whereby data was gathered until data saturation was realised.

To manage the conflict of interest, the WPC was not involved during the data collection stage where data was extracted from the case records and during semi-structured interviews with the participants.

3.5 Data collection

Data was collected qualitatively using case records and semi-structured interviews (Annexure A). During the semi-structured interviews, all communication was tape-recorded to allow for proper analysis at the time of data analysis.

i. Case records included the 2011 needs assessment conducted in the Vaalharts region (a North-West Living Lab baseline project), minutes of stakeholder meetings, press clippings regarding the WINLab, the WINLab model and narrative sketches from the project leaders.

ii. Semi-structured interviews included the WINLab management team and the NWU students. An audio tape was used to capture the interviews, allowing the interviewer to focus fully on respondents.

The study leaders trained the student-researcher before and during the practical execution of the study activities.

Hard copies of this study, such as informed consent forms and notes on the semi-structured interview, were/are stored in data storage cupboards that are locked at AUTHeR (G16). The keys to the cupboards are in the possession of the secretary of the Director of AUTHeR. Access to the data could only be granted to research team members.

All digital data, including the transcripts as well as digital audio tapes of the interviews, were stored on password-protected computers, enabling access for the research team working with the data. Recorded data was downloaded, stored and backed-up onto password-protected computers as soon as possible and deleted from the recorder afterwards. Hard copy and digital data is/will be stored for five years and will be shredded, deleted and destroyed responsibly thereafter. These data sources will only be used for research purposes (Creswell, 2008b).

3.5.1 Participants

There are two guiding principles, according to Morse and Field (1995) as cited in Botma *et al*. (2010), in qualitative sampling, namely appropriateness (to identify participants that can best inform the research) and adequacy (enough data to develop a full and rich description of the phenomenon) (Leedy & Ormrod, 2001).

This sample comprised participants from all partners in the WIN platform collaboration being the North-West University (NWU students and staff), the Vaalharts Water User Association (representatives from the VWA) and the Phokwane and Greater Taung Municipalities (primary healthcare practitioners and community healthcare workers, ward councillors and traditional leaders as well as community members partaking in the NWU's WINLab platform). These participants were included because they had first-hand experience of the project and they met the study population criteria required to best answer the study question.

A detailed description of study participants is provided in Chapter 4 as part of the findings of this study.

3.6 Data analysis

Digital voice-recorded interviews were transcribed verbatim with a view to data analysis (Botma *et al.*, 2010). The latter was done manually by means of Creswell's generic (ATLAS-ti) qualitative analysis approach, which was thematically focused (Creswell, 2009a). This includes:

- Assigning initial codes: An initial code can be a word, a phrase or the respondent's own words.
- Revisiting initial coding: At this stage, a large number of codes would have been developed. Some will be redundant and will need to be collapsed and/or renamed.
- Developing an initial list of categories: Modified codes were organised into categories.
- Modifying the initial list based on additional re-reading: After re-reading, a decision was taken on which categories are less important than others and/or can be combined.
- Revisiting categories and sub-categories: The list of categories was revisited with a view to final organising.
- Moving from categories to concepts: Codes were organised into concepts according to the most informative or logical manner of sorting.
- The analytical process was concluded by envisioning the research product

- The researcher approached an experienced researcher who trained her with additional skills needed in order to accurately interpret and code data and report the research findings accordingly.
- The data was co-coded by an experienced researcher at the, North-West University and the final results were only recorded after the conclusion of a consensus discussion.

3.6.1 Trustworthiness

Lincoln and Guba (cited by Botma *et al*., 2010) proposed trustworthiness as an alternative construct for validity and reliability in qualitative research. Trustworthiness has four epistemological standards which will be used as criteria to assist the value of findings according to the standards, strategies and applied criteria to ensure rigour in this research (Botma *et al.,* 2010). A description of how these standards were applied in this study follows:

- *Truth value* – establish confidence in the truth of the findings obtained by using the strategy of credibility to enhance the quality in qualitative inquiry. Self-rapport with participants during the semi-structured interviews was established by the researcher through prolonged engagement with participants.
- *Applicability* – ability to generalise from the findings to a larger population by using the strategy of transferability to enhance the quality in qualitative inquiry. Selection of the sample was described clearly, and saturation of data was sought for and concluded from the sources in the study.
- *Consistency* – consider whether the findings will be consistent if the inquiry was replicated with the same participants in a similar context using the strategy of dependability to enhance the quality in qualitative inquiry. Student-researcher was present during interviews to ensure consistency.
- *Neutrality* – freedom from bias during the research process and results description using the strategy of confirmability to enhance the quality in qualitative inquiry. The student's work was supervised by the study leaders who are familiar with qualitative research designs and ensured that the findings are as neutral as possible in the given context.

3.7 Ethical aspects

Ethics are defined as a study of morality, i.e. a careful and systematic reflection on and analysis of moral decisions and behaviour, whether past, present or future (Williams, 2009 cited by Moodley, 2010). These aspects should, therefore, be interwoven in every phase and aspect of research (Botma *et al*., 2010). It is the outcome of reflection on the meaning of the concepts "good" and "bad" or "right" and "wrong", as well as on a range of ideas about what

confers value or disvalue on human action (Moodley, 2010). The core ethical principles – respect, scientific merit and integrity, distributive justice and beneficence – apply to all forms of research that involve living persons, thereby holding their safety, welfare and other interests as paramount (SA-DoH, 2015).

South Africa's research ethics systems and infrastructure are regularly updated and strengthened to ensure that South Africa's people are fairly and respectfully treated by researchers and that all research conducted in the country stands up to ethical scrutiny. This helps to ensure that research is conducted in accordance with the highest ethical norms and standards (SA-DoH, 2015). The following ethical issues were regarded as significant in this study:

***Permission to conduct the research*:** Approval to conduct the research was sought from the North-West University Dean of Students, AUTHeR Scientific Committee and Health Research Ethics Committee (Annexure E: Ethics number NWU-00367-15-S1), as well as the WIN platform management.

Informed consent: Prior to the research, participants were informed verbally and in writing regarding the purpose of the research as well as possible risks and benefits of participating in the research. The researcher made it clear that participation was voluntary: No-one was compelled by any circumstances to participate and there would be no negative consequences for refusing to participate (King & Horrocks, 2010). The researcher always ensured adherence to research ethics to safeguard herself against any risks that may arise in the process. (Also refer to the consent form attached as Annexure B.)

Confidentiality and anonymity: Confidentiality is the responsibility to protect information entrusted to researchers for research purposes from unauthorised access, use, disclosure, modification, loss or theft, while autonomy is the capacity to understand information, to act on it voluntarily, to use own judgment and to make decisions about own actions, including whether to participate in research (SA-DoH, 2015).

All participants in the study were assured that pseudonyms were to be used in the reports and transcripts to assure anonymity. Numbers were used for identifying respondents to protect their identity during the interviews and in their written responses. The participants were duly informed that the research outcomes would only be made available to them upon request, whilst the full research report would be submitted to North-West University to be stored in its archives.

All data will be stored at the NWU in the Africa Unit for Transdisciplinary Health Research for at least five years in locked cabinets, computerised and protected by a unique password only known to the principal researcher.

Protection from physical and psychological harm: The researcher was cautious of topics that would stir up feelings and thoughts of discomfort long after the research has ended. She explicitly clarified the understanding of main issues in the study and frequently checked the participants' willingness to participate during the interviews. The participants were involved in deciding the most convenient venues for the interviews to enhance comfort.

The researcher-participant relationship: The researcher's obligation to honour ethical or commitments and agreements rests in honesty and openness to enhance healthy researcher-participant relationships. Personal questions were avoided to ensure respect of participants' dignity and privacy.

Risk-benefit analysis

Table 3-2 shows the research procedures that were conducted in an ethically appropriate manner.

Table 3-2 Risk-benefit analysis

PARTICIPANT	**DIRECT BENEFIT**	**INDIRECT BENEFIT**
Phokwane municipality and Vaalharts Water user	None	An opportunity to partake in research which enabled the NWU, in partnership with the community, to enhance the sustainability of the established community development project: WINLab. Any interventions or programmes resulting from this research community members would have a say in.
North-West University students and staff members	None	Following completion of the study, an academic paper can be published, thereby contributing to the mission of the NWU. The study contributed immensely to the larger scientific field. The findings encouraged and revealed the strength of the cooperative learning approach (utilising methods that promote active engagement of learners in an effort to ensure that learning is translated into practice) which

		involves stakeholders from diverse backgrounds and disciplines with the goal of addressing complex societal problems to develop sustainability in the South African society.

Probable risks to be experienced by the study participants:

Participants actively took part in interviews conducted by a trained researcher with the aid of interview schedules. The possibility of physical or emotional pain and discomfort was very low and were not endured in any of the interviews conducted. To minimise possible discomforts, all participants were interviewed at their own homes or offices and did not have the burden of having to travel any distance. The nature of this study posed a low risk of possible harm and only inflicted temporary discomfort or harm to participants since the interview with one participant was likely to take no more than 45 minutes. All questions in the interview schedule were non-invasive.

According to the risk level descriptors used by the North-West University in health and health-related research, risks in this research study have been categorised as follows:

Table 3-3 Risk categories

Risk category	**Definition**	**Explanation and/or examples**
Minimal, low or negligible risk	The probability or magnitude of harm or discomfort anticipated in the research is negligible and not greater than that ordinarily encountered in daily life. ("Daily life" as a benchmark should be that of daily life experienced by the average person living in a safe "first world" country.) Research in which the only foreseeable risk is one of minimal discomfort or inconvenience	- Research in which the investigation of largely uncontroversial topics is undertaken through interviews and participant observation - The research will collect information that would generally not be regarded as sensitive, such as opinions rather than personal information - Use of anonymised data from medical records - The research is age appropriate. The participants are adults and not considered to be a vulnerable research population. - Document analysis

CHAPTER 4

FINDINGS AND DISCUSSION

This chapter presents the findings of the qualitative case study based on the research question: *How is learning experienced in the WIN Project using the Living Lab approach*? The study findings were obtained from 21 semi-structured interviews and two case reports as described in Chapter 3. The first section of this chapter provides a brief overview of the documents that were reviewed, the study participants and the WIN platform. This is followed by a presentation and description of the different themes and sub-themes that emanated from the interviews. These themes will be discussed with literature integration to allow reviewing of the study findings in comparison to other similar studies and to show how the present study contributes to the gap that was identified in literature.

4.1 **Overview of study participants, document analysis and the WIN platform**

4.1.1 Study participants

As discussed in Chapter 3, the study participants comprised stakeholders from all partners in the WIN-Project collaboration being the North-West University (NWU students and staff), the Vaalharts Water User Association (representatives from the VWA) and the Phokwane and Greater Taung Municipalities (i.e. primary healthcare practitioners and community healthcare workers, ward councillors and traditional leaders as well as community members) partaking in the NWU's WINLab Platform.

Table 4-1 portrays the demographic information of the stakeholders who were involved in the study. Twenty-one stakeholders were involved, of which the majority were female (17 out of 21). Most of the stakeholders were affiliated with the North-West University (8 out of 21), followed by the Department of Health (7 out of 21), Vaalharts community (4 out of 21) and, lastly, Vaalharts Water (2 out of 21). The majority (17 out of 21) of the stakeholders were aged 45 and younger. The group of stakeholders was multidisciplinary in nature, as it comprised students and lecturers from different academic disciplines, such as Nursing Science, and Consumer Science. The group also involved community members who acted as facilitators or organisers with varying professions, such as district managers, dieticians, ex-councillors and community-based homecare givers (CBHCGs).

Table 4-1: Basic demographic characteristics of participants

No.	Name	Affiliation	Role	Location	Gender	Age group
1.	Mr A	Vaalharts Water	Community Field Worker	Jan-Kemp	M	50 – 60
2.	Ms B	Vaalharts Water	Community Field Worker	Jan-Kemp	F	35 – 40
3.	Ms C	Vaalharts community member	Community Field Worker	Valspan	F	20 – 30
4.	Mr D	Sekhing community member	Community Field Worker	Sekhing Village	M	35 – 40
5.	Ms E	Vaalharts community member	Ex-municipal councillor	Jan-Kemp	F	40 – 45
6.	Ms F	Vaalharts community member	Ex-municipal councillor	Hartzwater	F	40 – 45
7.	Mr G	Dept. of Health	CBHCG	Valspan	M	20 – 30
8.	Ms H	Dept. of Health	CBHCG	Valspan	F	30 – 35
9.	Ms I	Dept. of Health	Healthcare	Valspan	F	35 – 40
10.	Ms J	Dept. of Health	Dietician	Jan-Kemp	F	35 – 40
11.	Ms K	Dept. of Health	District Manager	Jan-Kemp	F	50 – 55
12.	Ms L	Dept. of Health	CBHCG	Valspan	F	40 – 45
13.	Ms M	Dept. of Health	CBHCG	Valspan	F	40 – 45
14.	Ms N	NWU	Lecturer – Nursing & CHCW trainer	Jan-Kemp	F	50 – 55
15.	Ms O	NWU	Lecturer – Spatial Planning	Potchefstroom	F	35 – 40
16.	Ms P	NWU	Facilitator/ Lecturer	Potchefstroom	F	40 - 45
17.	Mr Q	NWU	Nursing Student	Potchefstroom	M	20 – 25
18.	Ms R	NWU	Nursing Student	Potchefstroom	F	20 – 25
19.	Mr S	NWU	Nursing Student	Potchefstroom	M	20 – 25
20.	Ms U	NWU	Lecturer & Student – Consumer Science	Potchefstroom	F	45 - 50
21.	Ms V	NWU	Lecturer – Consumer Science	Potchefstroom	F	35 - 40

4.1.2 Document analysis

The researcher analysed the two case reports for the WIN platform to get a clear picture of this platform. These documents described the aims and objectives, including the framework, of the WIN platform. An overview of the WIN platform is given in section 4.1.3.

4.1.3 WIN Platform

The WIN platform was started by AUTHeR, which falls under the Faculty of Health Sciences at the North-West University. As part of the community engagement strategy, AUTHeR is working in collaboration with the Vaalharts Water Association and the Phokwane Municipality to improve health and well-being in the Vaalharts rural community holistically through several sub-projects and income generating initiatives. These stakeholders are working together to promote health and well-being through a sustainable livelihoods approach in rural communities. Ultimately, these rural communities are empowered through knowledge transfer to have more control over the determinants of their health and to be more resilient (Barratt, 2014).

The WIN platform seeks to address three significant components of rural health and well-being: (i) health (sport and recreation centre), (ii) socio-economic and psycho-social well-being (local clinics/hospitals) an (iii) food and nutrition security (school and community food security centres). Sustainability and the success of this project are ensured by the building of long-term effective inter-sectoral partnerships with communities, local governments and the private sector (De Jong, 2014).

The WIN platform is ideal for knowledge transfer because it is an umbrella project, merging projects of different health science disciplines from the Faculty of Health Sciences of the NWU. One of the outstanding characteristics of the WIN platform is transdisciplinary, thereby holistically improving the health and well-being of the rural communities. Lately, other faculties have been coming on board to work together with the Faculty of Health Sciences, implying that a wide spectrum of students from different academic disciplines are involved. This is a win-win project as the NWU students benefit through being given the chance to prepare for their professions by way of experiential learning, community capacity building workshops and interventions (Coetzee, 2011).

4.2 Learning experiences of stakeholders

Data on learning experiences of stakeholders was captured during the interviews and presented based on themes and sub-themes that emanated from the six questions as per the interview guide (see Annexure A).

4.3 Findings: Function of the WINLab platform

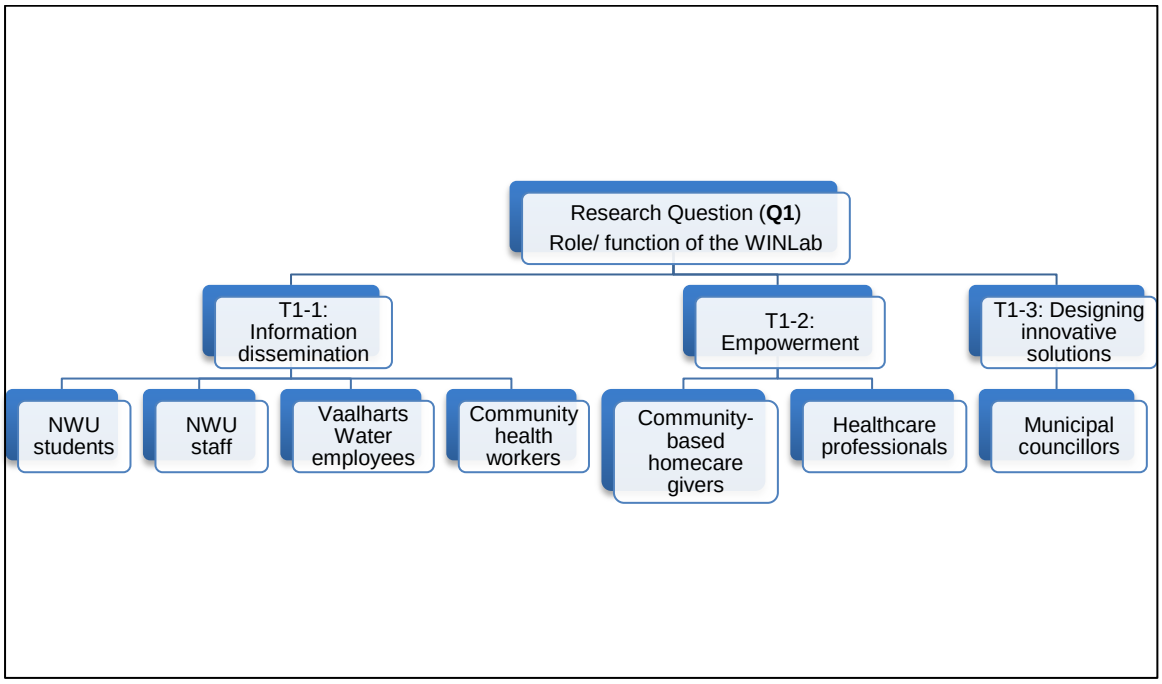

Figure 4-1: Themes according to different stakeholders emerging from question 1

Key: Q1-Q6 refers to interview questions 1-6 (see Annexure A) and T refers to theme.

Figure 4-1 is a diagrammatic illustration of the themes that emanated from interview question 1. To follow is a description of the stakeholders' experiences with the WIN platform (Living Lab).

During the interviews, stakeholders were asked (**Q1**) to describe the purpose and function of the WINLab. This section will start by describing the theme that emanated from the data analysis of the interviews with NWU students, followed by other stakeholders who were involved in the WINLab platform.

Theme 1-1: Information dissemination

A total of four North-West University students from Consumer Science and Nursing disciplines were interviewed and shared their experiences with the WIN platform. All of them mentioned that the WINLab is designed for information dissemination to healthcare workers

(HCWs). Information dissemination emerged as the main theme related to (**Q1**) and it refers to broadcasting or distributing information. In this case, the participants were distributing health information to community health workers in Vaalharts.

> "*Basically it's for us to give our knowledge to them and for us it was the major part, how we can improve health care from a HCW's perspective especially,*" (Mr Q, student in Nursing).

Information dissemination emerged again as the main theme related to question one (**Q1**), during data analysis of the interviews with NWU staff, Vaalharts employees, healthcare professionals and community field workers. Considering that the WINLab involves multidisciplinary collaborations, co-creation of knowledge should be viewed as one of the most important goals of transdisciplinary projects. However, it appears from the interviews that most of the NWU staff viewed knowledge production in the WINLab as one directional, meaning someone has to produce and another receive. This is evidenced by the following statement made by one of the staff members at the NWU.

> *"WIN is a Well-being Innovation Project, in other words to build up community in various areas, and then our part is to assist with the health information, and to build the community's health,*" (Ms. V, NWU staff).

> *"According to the way I understand, the purpose that brought forth the partnership between NWU and Vaalharts as a whole, it was that at the end they should reach out to the community and give information,"* (Mr. A, Vaalharts Water employee).

The above statement shows Vaalharts Water employees had a broader understanding of the WINLab platform, which goes beyond information dissemination alone but also involves the establishment of partnerships.

It can be said from these findings that the WINLab platform extensively disseminated health information across all disciplines involved. The community field workers also added that the goal of the project was to disseminate health information, which translated as enlightenment of rural communities.

> *"I understand that they intend to make a difference in rural villages because mostly in rural villages, health information do not reach them and people cannot reach things easily. I think the university brought different projects to try and enlighten our community especially when they brought a project of 'Sustainable diets' which is the first one I was involved in,"* (Ms. C, Community health worker).

Theme 1-2: Empowerment

Healthcare professionals together with community-based homecare givers were of the opinion that the function of WINLab was to empower the community in health-related matters as some participants were quoted saying:

> *"Ok I…. I…I realised that…what I can say that I think the university is an institution of learning, they have things that they want to help us with, so they can get information about things happening in the community, especially things that appear as problems. So they conduct researches so that they can get more information about whatever that is happening in the community. So, this partnership we have with the university, we people who work closely with the community we should bring forth information and other things that they can use to try and help to identify and find solutions to the problems within the community especially health-related problems,"* (Mr. G, Community based homecare giver).

> *"I think it's to empower the people, the uhh…citizens and also us – help us and also empower us in our work……A certain Doctor is busy with the Community Based Home Care Givers (CBHCG), and she's training them to help us in the community,"* (Ms. K, Healthcare professional).

Stakeholders were exposed to a wide knowledge base through their involvement in the WINLab platform; sharing of information resulted in empowerment of community members. Community empowerment within the context of the WINLab entails the process of enabling communities to increase control over the determinants of their health.

Theme 1-3: Designing innovative solutions

When councillors were asked to describe the function of the WINLab platform, they described the aspect of designing innovative solutions to community problems.

> "*I think it's all about coming up with innovative solutions from different angles or point of view,*" (Ms. F, Municipal Councillor).

Living Labs are positioned in real-life environments to generate innovative, co-created knowledge to solve social problems (Brankaert & Den Ouden, 2017). In the WINLab, some of the health problems affecting the community emanated from social factors and therefore required melding of different stakeholders to come up with innovations to address the problem from different perspectives.

4.3.1 Discussion

The study findings are in line with Witteveen *et al*. (2016), who highlighted that during the Paris Agreement on Climate Change, the impact of higher education institutions will be assessed based on their research on sustainable development. This function of higher education institutions is described in several ways by different authors, including co-creation of knowledge for sustainability, community outreach, collaboration with communities and information dissemination (Wals, 2013; Trencher *et al*., 2013; Dentoni *et al*., 2015). The majority of the stakeholders perceived information dissemination as the main function of the WINLab platform. The function (information dissemination) of the WINLab, which itself is regarded a Living Lab approach of learning, is consistent with other Living Labs in South Africa as reported by Conger (2015). The latter conducted a study on knowledge management for information and communications technologies (ICTs) for development programmes in South Africa and found that information management for technology, internet, computer use and software tool skills involves information dissemination to the local community (Conger, 2015). Schlobach *et al*., (2014), also adds that information dissemination is indispensable when it comes to the development of poor communities, which are normally imbued by complex health problems. However, it was of concern that some stakeholders (NWU) viewed information dissemination as one directional. In order to facilitate transdisciplinary intervention, information sharing should be mutual. There is a need to raise some awareness of mutual information sharing amongst stakeholders involved in transdisciplinary interventions.

According to Harper *et al*. (2008), the complexity of the primary health issues affecting communities in Africa requires transdisciplinary approaches, which entail creation of partnerships between researchers and communities (Wan, 2017). Through such approaches, priority is given to the population for whom the research projects are intended to be beneficial. In addition, the projects have to be meaningful to the community, culturally appropriate and empowering. Parker *et al*. (2013) reiterate that the core belief of Living Labs, particularly in South Africa, is community empowerment. The Ottawa Charter on health promotion also adds that community empowerment is the central theme of all health promotion activities (WHO, 1986). Therefore, the WINLab platform is in line with one of the fundamental principles of health promotion.

4.4 Findings: Role played by stakeholders in the WINLab platform

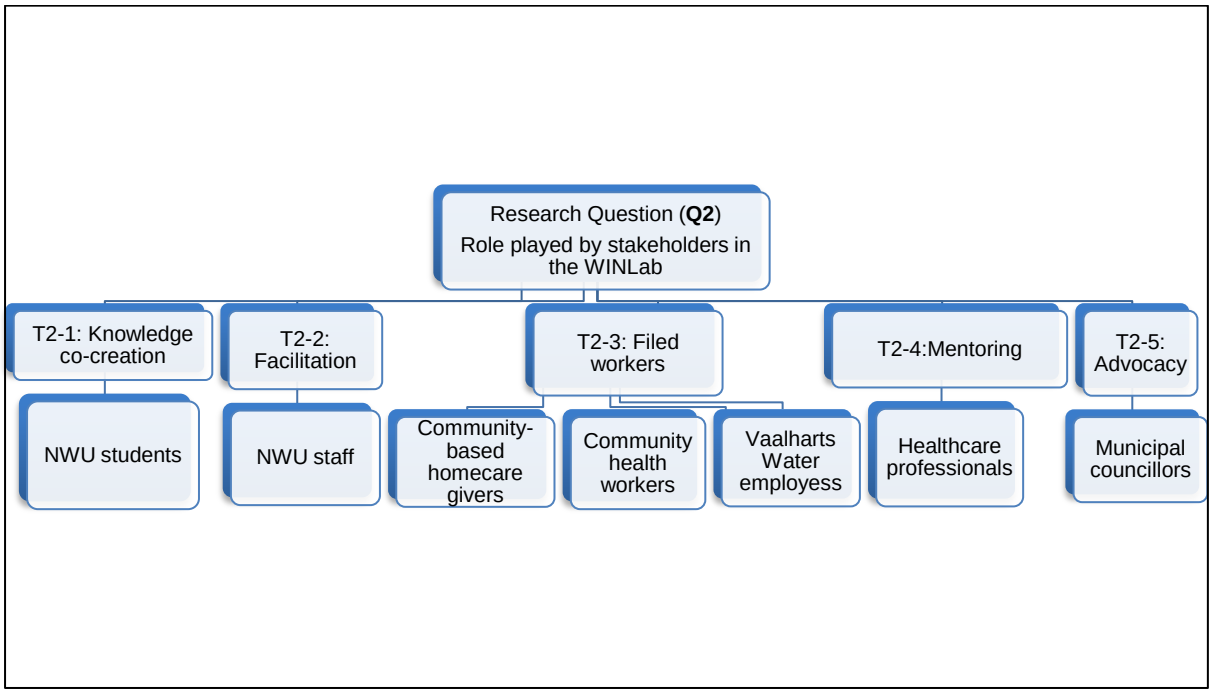

Figure 4-2: Themes according to different stakeholders emerging from question 2

Different themes emerged from (**Q2**), which relates to the role played by stakeholders in the WINLab platform. From figure 4-2, it appears stakeholders in the WINLab platform maintained their daily functions within their respective occupations as evidenced by different themes that emerged from the analysis of the interviews (**Q2**).

Theme 2-1: Knowledge co-creation

Knowledge co-creation emerged as the main role that students play within the WINLab platform. Knowledge co-creation refers to the "synergetic process of combining content and process from disciplinary traditions to synthesise new ways of knowing" (Medema *et al*., 2017).

> "*We were there to assist in the creation of knowledge regarding the health problems affecting the community,*" (Ms. R, student in Nursing).

The above quote clearly shows that students were co-creators of knowledge together with other stakeholders of the WINLab platform. The South African paradigm of Living Labs refers to interdisciplinary spaces where stakeholders can co-create solutions or innovation to address complex challenges (Callaghan & Herselman, 2015) These stakeholders include the community, non-governmental and government organisations, research institutes and universities. The most prominent aspect of Living labs is that they are generally based within the community which the project is intended to benefit (De Arias *et al*., 2014). Hence, in this study the community (Vaalharts) was also involved the co-creation of knowledge.

Theme 2-2: Facilitation

The theme *facilitation* emerged from (**Q2**), in which NWU staff members were asked to describe their specific role in the WINLab platform. It emerged from the analysis of interviews (**Q2**) that NWU staff's main role was facilitation of project activities. Facilitation within the context of the WINLab platform refers to the act of helping other stakeholders to go through the project processes, reach a solution or learn some information related to health. The following quote substantiates this theme:

> "*Well I facilitated the ehh…. students developing a programme to present to the community there, ehh…. different programmes that were developed and delivered but ehh I just facilitated the development of the programme and organising the ehh…...actually I was coordinating with one of the NWU staff members for the times and arrangements,*" (Ms. O, NWU staff).

Theme 2-3: Field worker

The community-based homecare givers, community health workers and Vaalharts Water employees acted as field workers within the WINLab platform. Moyo *et al*. (2017) describe the field workers as the "foot soldiers" of community-based research, implying they play a very significant role in community research. In the WINLab platform, the role of field workers was to do a follow-up on stakeholders for all project activities. One of the home-based caregivers explained their role as follows:

> *"My work was to pursue the participants to take part in the study because it will help them to have direction and not only to look at the government only, but to have info of what to do if they want to do something in the future, they should know what to do and who to contact because if we only look at the government we will end up most of us not employed,"* (community-based homecare giver, M).

From the quotes, it is clear that the community-based homecare givers are the first point of contact with regards to having access to study participants.

Another community health worker had this to say:

> *"I was a field worker looking for people in the community who will be participating in this 'Come and Dine' project,"* (Mr. D, community health worker).

When asked about the role they played in the WINLab platform, the Vaalharts Water employees likewise mentioned that they were involved as field workers. As one of the Vaalharts Water employees stated:

"My main function was to ehh…really ehh…show…. the persons whose subject of study is to…to… connect them with communities because I am well ehh…equipped to…. how can I say it…not equipped…. I've a great knowledge of the area that we operating in," (Ms. B, Vaalharts Water employee).

Field workers play a very significant role in all community-based projects. In the WINLab platform, three different stakeholders (home-based caregivers, community field workers and Vaalharts Water employees) were acting as field workers, ensuring that all project activities were running smoothly.

Theme 2-4: Mentoring

The healthcare professionals reported that they were there to mentor home-based caregivers within the WINLab platform. The theme "mentoring" in the WINLab platform refers to a relationship in which healthcare professionals who are knowledgeable in health issues were helping to guide less knowledgeable community-based caregivers. According to Fam *et al*. (2016), mentoring and support are critical elements of transdisciplinary research as they enhance the learning experiences of stakeholders.

"I'm a professional nurse, I'm the Facility Manager. I think I'm also a mentor to them because they come with their problems to me and uhmm, sometimes once in six months they bring all their equipment to me and I check if it's working," (Ms. K, healthcare professional).

Theme 2-5: Advocacy

According to Crosby *et al*. (2013), one of the emerging best practices of addressing health and improving health disparities in communities is ensuring that academic institutions are engaged with all relevant stakeholders, including community advocates, as equal partners in research processes and interventions. The WINLab managed to involve municipal councillors as research partners, and the following quotes explain their role in the WINLab platform:

"I was a Councillor and I was able to meet with the community, call public meetings so that we can hear the views of the people and that they should say their opinions themselves without us talking on their behalf," (Ms. E, municipal councillor).

"So we went with them and introduced them to the people who were directly involved and the Local Economic Development people, and that was the part…my direct part that I played because as a Councillor, a former councillor for that matter, there were

Departments. That I know they can assist them better than I," (Ms. F, municipal councillor).

The quotes clearly show that involving community advocates in the WINLab platform was paramount because they were the direct link to the community. Normally, community advocates have knowledge regarding the area in which the problem is and have a good understanding of the interventions that are required to address the problem. They are generally respected people in their respective communities and are willing to volunteer in research activities.

4.4.1 Discussion

According Hakkarainen and Hyysalo (2016), the success of Living Labs, which seek to promote learning between diverse participants, is dependent on how the co-design process has been arranged, facilitated and managed. Facilitation stands out as a key aspect in the success of Living Labs. It is clear from the findings that the roles played by all stakeholders within the WINLab platform involved the aspect of facilitation. As explained earlier, this facilitation involves assisting other stakeholders to go through the project processes, reach a solution or learn more about the problem at hand. There was also an element of crossing disciplinary boundaries during the learning process, as stakeholders would turn to different disciplines to borrow ideas. This was driven by disciplinary limitations and the inability of a single discipline to address the health problem comprehensively. The characteristics of the WINLab platform described are consistent with what has been reported in other successful community-based projects in South Africa (Goebel *et al*., 2010), such as Siyakhula Living Lab, Limpopo Living Lab, North-West Living Lab, SAP Research Living Labs and Reconstructed Living Lab (Coetzee *et al*., 2012).

4.5 Findings: Stakeholders' experiences with the WINLab platform

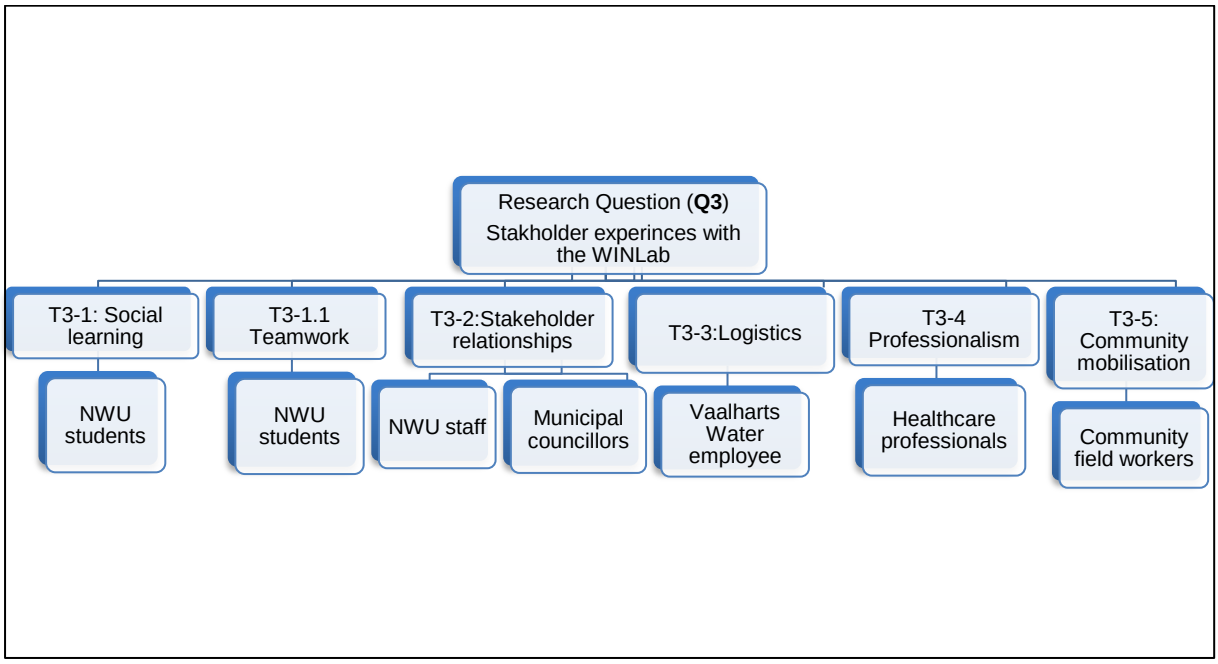

Figure 4-3: Themes according to different stakeholders emerging from question 3

Theme 3-1: Social learning

The third question (**Q3**) relates to the stakeholder experiences during the WINLab platform. NWU students were asked to share their experiences with the WINLab platform, and *social-learning* emerged as the main theme during the interviews with them. Reed *et al*. (2010:1) define social learning as "a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks".

Students described that there was a change in perception due to day-to-day interactions with different stakeholders. They also added that this perception-shift was influenced by the transfer of knowledge from professionals from other academic disciplines.

> "*You know…. ummm, because every time we were interacting socially and sharing ideas with people and professionals from different disciplines we were also learning,*" (Ms. U, student in Consumer Science).

Sharp and Salter (2017) did a study to assess the impact of Living Labs on students in Australia and reported that social learning occurred in different contexts but chiefly through group meetings which encouraged peer-based knowledge sharing. One of the nursing students mentioned:

> "*I think it's a good project especially in our communities because it builds our education from their side and our side and we all benefit,*" (Mr. S, student in Nursing).

Theme 3-1.1: Teamwork

According to one nursing student, teamwork was a direct outcome of social interactions that occurred amongst the various stakeholders:

> "*Because we were interacting and learning from each other we ended up working as a team,*" (Ms. R, student in Nursing).

This notion is supported by Schaffers *et al*. (2009) who state that Living Labs support community building and teamwork.

Theme 3-2: Stakeholder relationships

The NWU staff, community-based homecare givers and municipal councillors mentioned that stakeholder relationships were crucial because they serve as an entry point for all community-based projects. Stakeholder relationships emerged as the main theme related to (**Q3**). The following quote shows how the NWU staff perceived stakeholder relationships as paramount for the success of the WINLab platform:

> "*My project is in partnership with community based organisation: And they are the entrance into the community, the relationship with this organisation it was very positive,*" (Ms. N, NWU staff).

Community-based caregivers reiterated the aspect of stakeholder relationship when they were asked (**Q3**) about their experiences with the WINLab. By nature, Living Labs are multi-stakeholder and participants involved are connected to the network of stakeholders at different level. The participants also mentioned that they had good stakeholder relationships as indicated in the following quote:

> *"You know what, I think we got a good relationship. It's like a puzzle, everybody just fit-in the piece where they need and…and at the end of the day we are a big family and Social Services also, we got a good relationship with them and then,"* (Ms. M, community-based homecare giver).

As alluded to earlier on, the WINLab involve different stakeholders and participants are inevitably connected to the network of stakeholders. One of the participants explained their learning experience as follows:

> *"The different stakeholders have a concern about the community and how they can help the community and how but, they cannot do anything it alone. Only when we work together we can manage to help the community where everybody comes with*

everything that they have to combine and help the community," (Ms. F, municipal councillor).

Theme 3-3: Logistics

Vaalharts Water employees indicated that the WINLab was a multi-disciplinary project, and having different stakeholders meeting in one place definitely posed logistical challenges. The theme *logistical arrangements* that emerged from the interview question (**Q3**) refers to all preparations that were crucial in successfully organising a research project which involved a lot of people and equipment:

"*That was a bit challenging because we had to get the venue, transport, transportation, people who are local who should now provide certain things eehh…to make the event a success and understanding the theme and that was……. a high point of it was that the NWU really supported in that eehh…… I don't know when it comes to budget,…….that I do not know, but I know that there was money involved,"* (Mr. A, Vaalharts Water employee).

Theme 3-4: Professionalism

The healthcare professionals raised the aspect of professionalism associated with the WINLab platform. One of the health workers mentioned:

"The logistics were very professional, the way the NWU operates; I respect the professionalism in them," (Ms. J, healthcare professional).

Professionalism emerged as a theme during the interview with healthcare professionals. According to Cuff (2014:43), professionalism in transdisciplinary projects refers to "an approach to creating and carrying out a shared social contract that ensures multiple health disciplines, working in concert, are worthy of the trust of patients and the public". This kind of professionalism can facilitate better teamwork amongst different professionals and can combine and extend discipline-specific expertise and establish different ways of acting and thinking.

Theme 3-5: Community mobilisation

Community mobilisation emerged as a main theme. Community mobilisation in the WINLab platform refers to the process through which action inspired by members of the community, including external people, was planned, implemented and evaluated by relevant stakeholders on a participatory and continued basis to improve the health of the people in

Vaalharts. One community field worker had the following to say regarding community mobilisation:

> *"It was difficult at first to bring people on board because people didn't understand what is happening. But after the Focus Group when we had meetings telling them about what will be happening, then I saw them developing interest,"* (Ms. C, community health worker).

This entails that the WINLab enlightened community field workers with regards to approaches that can be used to mobilise community members, given that the duties of community field workers involve community mobilisation for research activities (Andersson *et al*., 2017).

4.5.1 Discussion

According to Lapointe and Guimont (2015), both public and private stakeholders are part of the network of all Living Labs (Greve *et al*., 2016). Different stakeholders share perspectives that can be indispensable for the success of community-based interventions. The learning experiences of different stakeholders involved in the WINLab platform encompassing social learning, stakeholder relationships, teamwork, professionalism and community mobilisation epitomise the typical nature of Living Labs. König (2017) contends that Living Labs have the potential to stimulate transformative change necessary for sustainable development through social learning. Considering Living Labs involve several stakeholders, there is need to establish good relationships among the stakeholders. This aspect of stakeholder relationships has been reported by several authors as crucial in the success of Living Labs (Ståhlbröst *et al*., 2015; Paskaleva *et al*., 2015). Schaffers *et al*. (2009) add that Living Labs support teamwork among the stakeholders, and it is as a result of team work that the WINLab platform can be regarded a success.

4.6 Findings: Lessons learnt through the WINLab platform

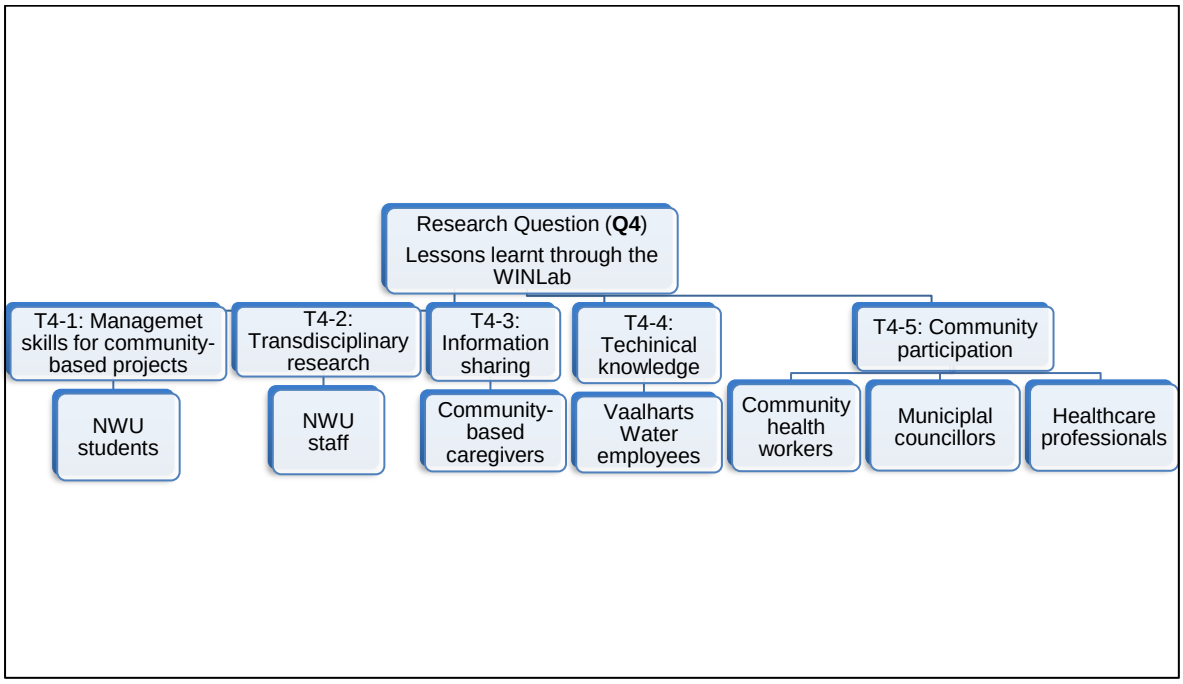

Figure 4-4: Themes according to different stakeholders emerging from question 4

Participants were asked to describe what they had learnt in the WINLab platform, and the following themes emerged from the analysis of the interviews.

Theme 4:1: Management skills for community-based projects

Management skills for community-based projects emerged as a theme, and this theme was based on the lessons learnt by students while they were involved in the WINLab platform. Management skills for community-based research refer to the techniques, practices or science of managing the research project. The students reportedly learnt how to manage community-based research projects, as one participant stated:

> "*I think first of all the students learned how to deal with a group, especially because it was us learning how to work in community service, so it taught me how to approach a community of managing community projects, and it taught me how to eehhh…teach the communities to improve their healthcare,*" (Ms. U, student in Consumer Science).

Theme 4-2: Transdisciplinary research

When NWU staff were asked what they had learnt through the WIN platform, transdisciplinary research emerged as the main theme. Nicolescu (2010) defines transdisciplinary research as an innovative approach to knowledge creation that goes beyond disciplinary boundaries, given that it is aimed at knowledge that concurrently exists

across disciplines, between disciplines and beyond disciplines. The following quote explains transdisciplinary research from the participant's point of view:

> "*Disciplines at the university under various faculties that do a lot of research, most of the time this research projects can assist each other in creating a bigger picture that would provide answers I think in a more holistic and sustainable way and most of the time we get so focused on our own disciplines and forget to look at the whole bigger picture from a holistic point of view. And so…...it is a transdisciplinary approach to research and I think that is something that has been lacking for quite a long time in universities,*" (Ms. O, NWU staff).

Theme 4-3: Information sharing

Information sharing emerged as the main theme related to question 4 (**Q4**). Just like in any other transdisciplinary research project, information sharing is inevitable. One of the community-based caregivers confirmed this finding:

> *"The most important thing I learnt is that 'sharing information is very vital' because if you keep information for yourself, you don't know if the other person needs it, it's very vital to share information with others so that they can have direction in their lives,"* (Ms. L, community-based homecare giver).

Bagnol *et al*. (2016) conducted a transdisciplinary research project in Tanzania and Zambia titled *"*Strengthening food and nutrition security through family poultry and crop integration*".* The authors concluded that understanding and the ability to work effectively within transdisciplinary teams require effective communication among collaborating stakeholders, and this translates to effective information sharing.

Theme 4-4: Community participation

Community participation came out as one of the themes related to (**Q4**), which aimed to understand what municipal councillors, healthcare professionals and community field workers learnt through their involvement in the WINLab platform. Community participation in this study refers "to the process by which a community mobilises its resources, initiates and takes responsibility for its own development activities and share decision making for implementation of all other developments for the overall improvement of its health status" (Abbott, 2013).

One of the participants remarked:

"The most important lesson that I've learned out of this partnership was…., as community members, we need more support from people like the university and staff like that, and I've realised that they care much because as much as they contributed in projects like health, sanitation and staff like that, I've seen that the interests of communities is very important to them," (Ms. E, municipal councillor).

The healthcare professionals reiterated that through the WINLab platform, they learnt the importance of community participation. Community participation is the hallmark of all health promotion interventions. Two of the healthcare professionals in the WINLab platform stated:

"Community participation. Involving the community in projects, they address things at community level and they involved the community in things, I learnt that the benefits are even more if you involve the very people that you want to help (laughs) in what you want to do. So community involvement," (Ms. J, healthcare professional).

"You see, we need each other. When you…. you can't do nothing…you can't do nothing on your own," (Ms. K, healthcare professional).

Through the WINLab platform, community field workers also learnt the importance of community participation in research, as evidenced by this statement:

"So in the community I can say that it was a lesson that we have to work together in order to achieve certain things. So something that I have learned is that partnership will move us forward because I realised that's what the university wanted to instil in the community," (Ms. C, community health worker).

Theme 4-5: Technical skills

Vaalharts Water employees indicated they had gained technical skills to manage health programmes by being involved in projects related to nutrition. They also added that diet can be directly linked to certain health conditions and environmental conditions. The main theme that emerged from the interviews with Vaalharts Water employees was *technical skills to manage nutritious and sustainable diets*. The United Nations Food and Agriculture Organisation (UN FAO, 2017) defines sustainable diets as diets which have very little effects on the environment and contribute to food and nutrition security and to a healthy life for the current as well as future generations.

The following observation echoes this sentiment:

"People now come to understand and realise that our diets has a role and also has an impact, obesity, that's where people also learn the…. the impact of diets on the environment," (Ms. B, Vaalharts Water employee).

This component of educating the communities about nutritious and sustainable diets is similar to the Food & Health Living Lab at València University in València. This Living Lab has different components, which also include nutrition and food security (Food & Health Lab, 2015).

4.6.1 Discussion

According to De Arias *et al*. (2014), Living Labs have to be anchored in communities which the project is intended to benefit. Just like any other community-based project, the anchor can only be supported by effective community participation (Haq *et al*., 2014). Most stakeholders in the WINLab platform indicated they had learned the importance of community participation for sustainability. Given that the Vaal community was actively involved in the WINLab platform, they had ownership of the WINLab project and the decision-making process. This could be one of the reasons why the WINLab platform was a success.

4.7 Findings: Impact of the WINLab platform on learning experiences

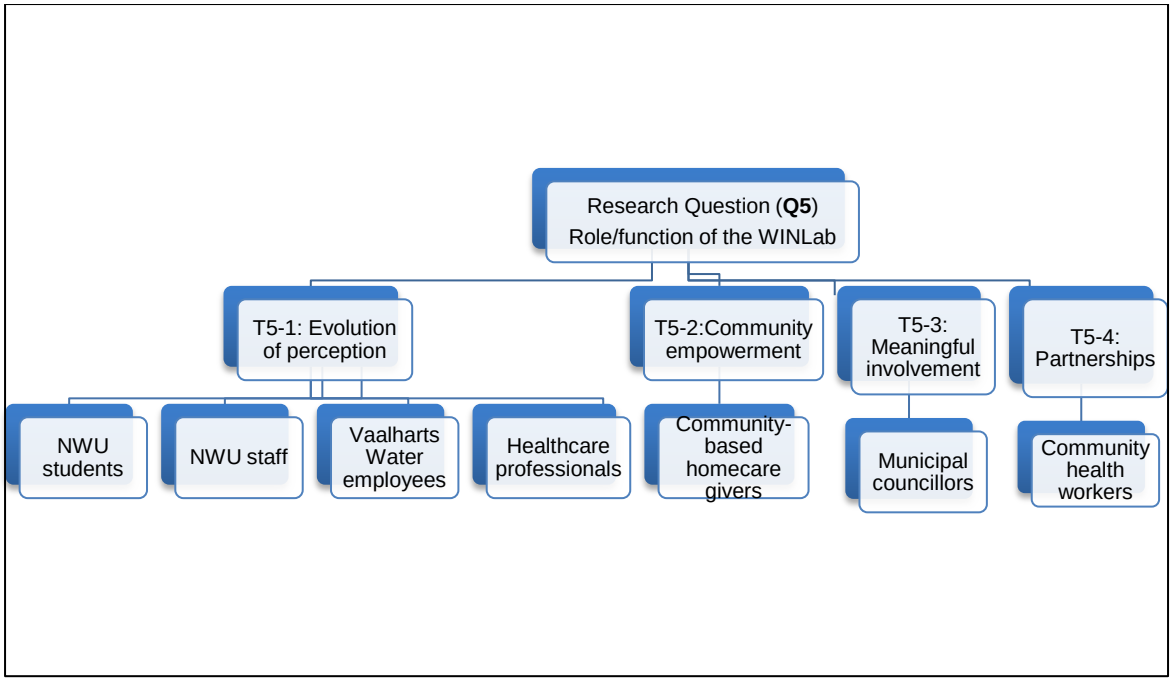

Figure 4-5: Themes according to different stakeholders emerging from question 5

Theme 5-1: Perception of community-based challenges

NWU staff and students were asked (**Q5**) to describe the impact of the WINLab platform on their learning experiences. The following is one of the nursing students' responses:

> "*It teaches the young students who's gonna become nurses especially community ones, not to just go and sit at the community desk or in a clinic somewhere, but actually to involve yourself into the community because this is a learning opportunity for them to open their eyes and see that these people are living in a very rural manner and that is an open invitation for diseases and infections so on. And that is also an open invitation of limited knowledge,*" (Mr. Q, student in Nursing).

This statement clearly shows how the perceptions of the student were impacted by the WINLab platform. Prior to their involvement in the WINLab platform, nursing students in particular perceived nursing as a career that is institution-based. The WINLab platform enlightened them on how, as nurses, they can become part of community-based projects. According to the Institute of Academic Development [IAD] (2017), students gain different pragmatic skills through being involved in issues and challenges outside university circles. The WINLab presented such an opportunity to NWU students. Riva-Mossman *et al*. (2016) did a study on Living Labs, which demonstrated how nursing leadership can impact clinical practice by designing research models which can organise interdisciplinary collaborations capable of producing innovative practices and better patient outcomes.

Just like in the interviews with students regarding question 5 (**Q5**), perception evolution and empowerment emerged as the main theme and sub-theme respectively during data analysis of interviews with NWU staff. The following statement made by one of the NWU staff members clearly shows the change in perception:

> "*Ok, for me personally because it relates to my research I think it's the beginning of a new perspective that on something that we call 'child friendly spaces' and it's something that we didn't even think of it as a research focus area before the Vaalharts exposure that we had. So for me personally it was an eye-opening experience and I think it's a very huge gap in SA,*" (Ms. P, NWU staff).

The WINLab platform served as a tool for perception change as summarised in the following quote.

> *"So, we as the Healthcare professionals we might know that there is a problem of food security but we don't know the extent of how many people are affected, and how big is the problem. So, through their researches going into households, we managed to realise how big this problem is,"* (Ms. J, healthcare professional).

This quote clearly shows how the perceptions of healthcare workers regarding understanding the magnitude of the health problems affecting the communities were changed through their involvement in the WINLab platform.

Vaalharts Water employees were of the opinion that the WINLab platform had an impact on their learning experiences in the sense that it changed their way of thinking, as some participants indicated in the following quotes:

> *"And coming with the interaction with the University I now understand, not in fully but I now came to understand that really agricultural science is very much important,"* (Ms. B, Vaalharts Water employee).

> *"It has made quite a lot of impact. We had a recycling project where we brought young people together, they met and they came up…showing their potential using glass. What I realised is that our youth has potential. You may see them from far and not know what they have until you bring them together, and when they get together, they did beautiful things and we saw the rich talents sleeping in them. We saw the municipality becoming interested and willing to supply electricity, to provide water and taps, but all along because they were not doing anything, it was all quiet while they were crying about unemployment,"* (Mr. A, Vaalharts Water employee).

Theme 5-2: Empowerment

Empowerment emerged as a theme under question 5 (**Q5**). Merriam Webster (2017) defines empowerment as strategies put in place to enhance the degree of autonomy and self-reliance in people so as to enable them to represent their interests in a self-governed manner.

This definition is reflected in the following quote:

> "*Because we can now see things in a different way….and have information related to health now I think we are empowered,*" (Ms. U, student in Consumer Science).

The major objective of the WINLab platform is to promote health and well-being through a sustainable livelihoods approach within communities as well as to empower and uplift resource-poor communities by creating a sustainable development strategies with a view to strengthen resilience. The WINLab platform was empowering is the sense that the participants themselves had to define sustainability in their own environments and, in doing so, contributed to the desired sustainability of the WINLab platform. The student participants were involved in different activities aimed at reducing health risks by, for example, facilitating health education sessions offered to community health workers. According to Schäpke *et al*.

(2017), sustainability-oriented actors are most likely to be engaged when they feel empowered. Consequently, the full participation of CHWs (who are some of the key actors in the WINLab platform) is inevitable when they feel empowered; hence, they had to be trained.

The theme *empowerment*, as described before, enables full participation of stakeholders. The following quote shows how the WINLab empowered NWU staff:

> "*This project itself was empowering……When one is empowered, they have knowledge regarding issues at hand and they can meaningfully contribute to whatever they are involved in,*" (Ms. P, NWU staff).

Community-based homecare givers were of the opinion that the WINLab platform was empowering in the sense that different skills (which included project management skills, data collection skills and the likes) were being imparted to them. One participant said:

> *"First of all, it gives me ehh….like…. the skills that were there, that didn't know of, like I work in the community but I didn't know that I can use skills such as these in my community. So it gives me a learning process for myself, that I can use skills such as these to help my community to develop, and not only to look for the grants or maybe just sit and say the government is not doing anything,"* (Ms. M, community-based homecare giver).

The quote shows how the WINLab platform impacted the learning experiences of the community-based homecare givers. They now possess skills to manage community-based projects without necessarily having to wait for government grants but can work with available resources instead.

Through the impartation of skills, the participants acquired a sense of self-actualisation. Weinberg (2011) defines self-actualisation as the awareness or achievement of individual talents and potentialities, which are regarded as the impetus or need within every individual. This is also substantiated by the previous quote.

Theme 5-3: Meaningful involvement

Meaningful involvement also emerged as a theme during data analysis of (**Q5**). The WINLab impacted the Municipal councillors' learning experiences in the sense that they had to practically take part in community-based research in which they had to learn most of the research processes. This implies that they were meaningfully involved in the research project. According to Minkler *et al*. (2003), meaningful involvement means potentially affected community members have an appropriate chance to contribute to decisions

regarding suggested projects that have an impact on their environment and/or health. The following quote shows how the municipal councillors' learning experiences were impacted by the WINLab Project:

> "*I was involved at every stage, since the people from the University came to this community, I was part of everything…. I got to learn a lot about community projects,*" (Ms. F, Municipal Councillor).

Theme 5-4: Partnerships

Partnerships emerged as a theme when community health workers were asked about the impact of the WINLab platform on their learning experiences:

> *"I also realised that in a long run, we can be able to have the gap closed which was existing between stakeholders like the community and the university, at least it is broken so that the community can realise that whenever they need help, they can work together with other stakeholders to meet that need,"* (Mr. D, community health worker).

The above quote clearly shows how the WINLab platform taught community health workers the aspect of forming partnerships when working with different stakeholders. Nicolescu (2010) argue that transdisciplinary projects involve the formation of partnerships and the creation of knowledge that concurrently exists across disciplines, between disciplines and beyond disciplines.

4.7.1 Discussion

According to Harper *et al*. (2008), the complexity of the primary health issues affecting communities in Africa requires transdisciplinary approaches which entail the creation of partnerships between researchers and communities (Wan, 2017). Priority is given to the population for whom the research projects' benefits are intended. Such projects have to be meaningful to the community, culturally appropriate and empowering. From the findings of this study, it is clear that the WINLab platform met these standards. Findings show that the stakeholders were empowered to have control over the determinants of their health; their perceptions were changed, and this brought a sense of self-actualisation among stakeholders. Perception evolution was a direct product of learning through the formation of partnerships.

4.8 Findings: Recommendations from stakeholders

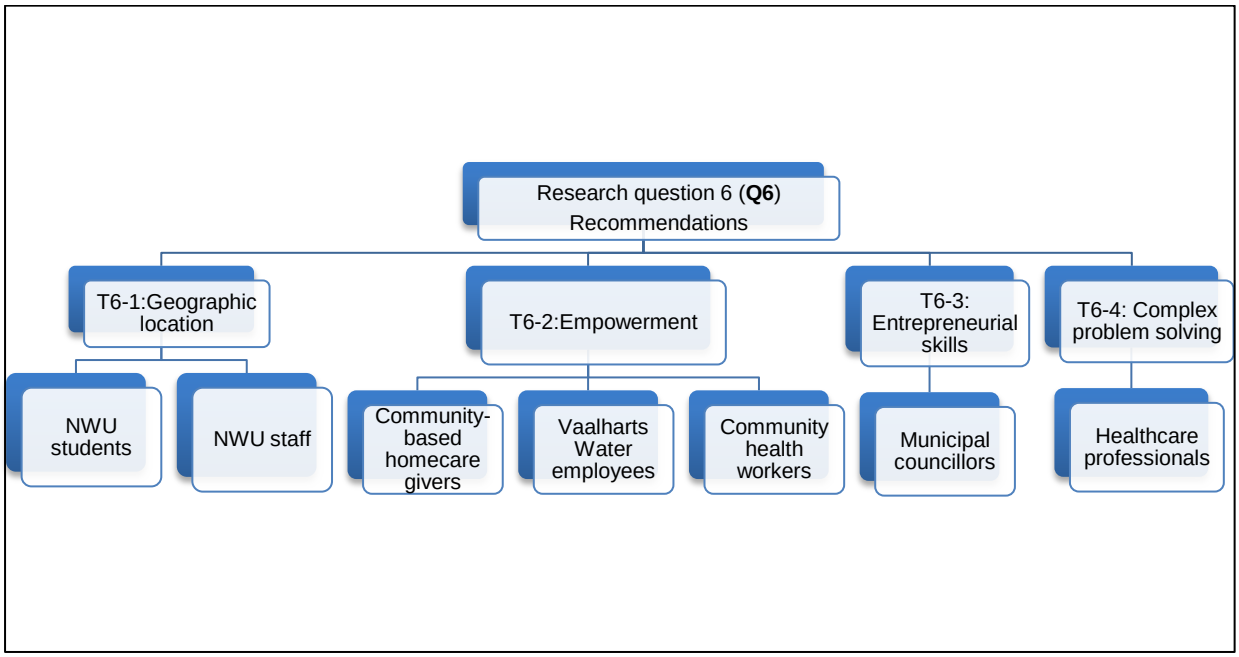

Figure 4-6: Themes according to different stakeholders emerging from question 6

The last question (**Q6**) of the interviews was related to recommendations. Stakeholders were asked whether they would recommend others to be part of the WINLab platform and to give a reason for their answer.

Theme 6-1: Geographic location

Finally, the students were asked (**Q6**) whether they would recommend others to be involved in the WINLab platform, and most of them stated that they would. However, some of them mentioned that they would have preferred the project to be done at the North-West University, considering the university had the same settings. Students did not like the idea of having to travel long distances. As one of them stated:

> "*Ok, I'm just gonna put it like this. I don't know why we went that far (tired face) ok, I had no idea why we went that far because we have the same settings here in Potchefstroom,*" (Ms. U, student in Consumer Science).

The distance between NWU and the WINLab area was pointed out as a disadvantage, and it appears the students did not understand the benefits of going to the project area (Vaalharts community).

The NWU staff, just like the students, mentioned that they would recommend some other person to be part of the WINLab platform. However, they reiterated the aspect of having to travel long distances as being strenuous. One of the NWU staff members mentioned:

"*Uuuhhh that was a long drive (laughs) yoh! That was because of the time and also I was driving the Kombi that with students and it was very stressful (laughs),*" (Ms. S, NWU staff).

Theme 6-2: Empowerment

Most stakeholders mentioned that they would recommend someone to be part of the WINLab platform because it is empowering. This is substantiated by the following quotes:

"I can encourage them to take part in this programme because it's very vital to get different kind of information and skills form different departments so that you can make your life easier than the way you have been living, and the coming generation to benefit something from you," (Mr. G, community-based homecare giver).

"I can recommend them sister. What I have realised especially after the come and dine with me project is that currently we have women who stood up and started business of cultural food. They had the knowledge of cooking these cultural foods, but there was no light that tickled them to start their own small businesses. Now we know where to go in town where there is woman who cooks cultural food, who was inspired by this come and dine with me project," (Mr. A, Vaalharts Water employee).

The Vaalharts Water employees mentioned that they would recommend someone to be part of the WINLab platform as it is empowering, and some had actually made use of the information they acquired to open up small businesses. The WINLab platform brought sustainable livelihoods to the Vaalharts community through knowledge transfer as indicated by the stakeholders.

The community field workers mentioned that they would recommend someone to be part of the WINLab platform because it is empowering communities to have more control, especially over the social determinants of their health:

"Yes people should be part of this project because you get new knowledge to manage health in the community …It opened my eyes to see social problem and the link to health," (Ms. C, community health worker).

The above quote shows that the stakeholders did gain a broader perspective of health i.e. health also has social determinants.

Theme 6-3: Complex problem solving

The health workers mentioned they would recommend someone else to be part of the WINLab platform because it is ideal for solving long-standing community health problems.

This is true for transdisciplinary research projects: They are used to manage complexity in community problems (Klein *et al*., 2012). One of the healthcare professionals was quoted saying.

> "*They give us more knowledge in relation to addressing the problems that we have in our communities, and to….to follow-up on things up, you see. Because while they were doing their projects and they identify a problem, and come up with something (intervention) to address the problem and then they follow it up to see its impact of the intervention in the same people that you wanted to address a problem in. They don't just discover something and just let it dissolve in the air; they go along with it until they see that this helping, this has at least managed to go from here to there and there,"* (Ms. K, healthcare professional).

Theme 6-4: Entrepreneurial skills

Finally, the Municipal councillors indicated that they would recommend someone to be part of the WINLab platform. However, they were of the opinion that the aspect "economic entrepreneurship" should also be incorporated in the platform:

> *"The impact that it made was in the dept. of health side of things. I felt maybe if the university, if we can concentrate more on promoting or giving skills to…not giving skills but as partnership to the agriculture more…...so that we use whatever we have to make a living,"* (Ms. E, municipal councillor).

4.8.1 Discussion

Most stakeholders indicated that they would recommend someone to be part of the WINLab platform mainly because it is empowering the community members to have more control over the determinants of their health. However, it appears some stakeholders did not understand why the project had to be conducted in Vaalharts, which happened to be the WINLab platform site. Others were of the opinion that the WINLab platform was somewhat limited because it did not impart entrepreneurial skills to the community members, specifically the youth.

CHAPTER 5

EVALUATION, CONCLUSION AND RECOMMENDATIONS

This chapter presents an overview of the study's findings, the learning experiences of stakeholders in the WINLab Project and the relationship of the study's findings to other studies on Living Labs, both from a South African and international perspective. The chapter also presents the possible reasons for the findings obtained, limitations of the study, the implication of the research findings and recommendations for future studies.

5.1 **Purpose**

The purpose of this study was to explore the learning experiences of stakeholders in the WINLab platform because there is paucity in literature on learning experiences through a Living Lab approach applied by higher education institutions. This is particularly true in the case of the WINLab platform of the NWU, where the learning experiences of the respective stakeholders are neither identified nor documented. Hence, it is unknown whether stakeholders fully engage or benefit from the innovations derived from the Living Lab approach in the WIN platform. A dire need existed for qualitative research to reveal the effectiveness of cooperative learning approaches utilising methods that promote active engagement of learners in an effort to ensure that learning is translated into practice. The following research questions were asked in this study:

1. How do NWU students and staff as well as the WINLab stakeholders, namely the Vaalharts Water User Association and the Phokwane and Greater Taung Municipalities, understand the Living Lab?
2. How do NWU students and staff as well as the WINLab stakeholders, namely the Vaalharts Water User Association and the Phokwane and Greater Taung Municipalities, experience multi- and transdisciplinary learning through the WINLab?
3. How does the Living Lab approach enhance learning and why would it be preferred by learning institutions over the traditional learning approaches?

5.2 **Summary of findings in relation to the research questions and objectives**

It was revealed that the majority of stakeholders perceived information dissemination as the main function of the WINLab platform. Despite the specific roles played, stakeholders from different disciplines and professions were involved in the co-creation of innovation to promote primary healthcare using a sustainable livelihood approach. Stakeholders had different experiences, including social learning, teamwork, good stakeholder relationships, logistical arrangements for the research processes, professionalism in transdisciplinary projects and community mobilisation. Through these experiences, all participants reported to have learnt something, for instance management skills for transdisciplinary research, information sharing, community participation and nutritious sustainable diets. The WINLab platform had an impact on the learning experiences of the stakeholders involved as evidenced by the evolution in perception, empowerment of community members and meaningful involvement. When stakeholders were asked whether they would recommend someone to become involved in the WINLab platform, most said that they would because it is ideal for solving complex societal problems and empowering. However, there were some who were of the opinion that the research processes could have been carried out in a different setting because they had to travel for hours to Vaalharts. Table 5-1 shows how the findings of this study align with research on innovative approaches followed elsewhere.

Table 5-1: How the WINLab is aligned with other innovative research approaches

Findings of this study	**Other studies on innovative approaches with similar findings**	**Focus or scope**
Stakeholder relationships	Paskaleva *et al*. (2015)	Discussed attempts to involve stakeholders in the co-production of future internet (FI) services in a Smart City Living Lab
Transdisciplinary professionalism	Cuff (2014)	Establishing transdisciplinary professionalism to improve health outcomes
Information dissemination	Buitendag *et al*. (2012)	Addressing knowledge- and information-support services in Southern Africa
Community empowerment	Gumbo *et al*. (2012)	Community empowerment through ICT model for socio-economic development in South Africa
Meaningful involvement	Pyrch (2012)	Characteristics of action research
Designing innovative solutions	Følstad (2008)	Living Labs for innovation and development of information and communication technology
Knowledge co-creation	Levén & Holmström (2008)	Customer integration into the development process as a whole to enhance innovation processes
Social learning	Stewart & Hyysalo (2008)	Intermediaries, users and social learning in technological innovation
Perception evolution	Pierson & Lievens (2005)	Assessing the impact of Living Labs on perception

5.3 **Limitations of the study**

The qualitative study design was contextual, and findings cannot be generalised to other settings. Participation had to be restricted to those who have actively partaken in the WIN platform activities. Some of the potential participants were willing to participate but were no longer attached to the WIN platform stakeholders, e.g. university students who had actively participated in the WIN platform but were not available for the interviews with the student researcher.

5.4 **Conclusion**

Findings of this study clearly show that stakeholders fully engage and benefit from the innovations derived from the Living Lab approach in the WINLab platform. The study also revealed that the transdisciplinary learning approach of learning is effective and can promote active engagement of learners to ensure that learning is translated into practice. Higher education institutions in South Africa can make use of the Living Labs multi-stakeholder platforms to connect the academic world with its surrounding. Considering that Living Labs are experimental in nature, they can provide a place to meet, reflect, discuss, learn, explore and design innovations, concepts and strategies pertaining to sustainability in a most holistic way. This need not be limited to health but can also pertain to considering the lifestyles adopted by communities, which involve political and economic issues along with social practices and innovations. The variety of activities related to the WIN platform allowed the formation of various synergies among stakeholders and projects. Stakeholders had the chance to take part in a community of users outside traditional academic structures. It can be concluded that Living Labs are social ecosystems within the specific context of higher education institutions with a strong connection to their surrounding socio-economic environments, thereby promoting the establishment of transversal educational communities with a significant impact on the move towards a more sustainable community.

5.5 **Implications of the study findings**

The growth and multiplication of Living Labs in South Africa can increasingly benefit users and communities by meaningfully involving them in the co-creation process and addressing health disparities in the country.

5.6 **Summary**

According to Kolb (2014), experiential learning is a process of knowledge creation that involves constructive tension amongst the four means of learning. The process of learning is depicted and explained in Chapter 2 (Figure 2-1), indicating how learners progress through all four means of learning. By evaluating the learning experiences of stakeholders in this study based on Kolb's experiential learning model, it is clear that effective learning occurred through the WIN platform as some stakeholder reached the final stage of *active experimentation*. Some participants reported that through the information they acquired during the project, they were able to open up small businesses. This implies that the WIN platform fulfilled its objective of promoting health and well-being through a sustainable livelihood approach. It appears that most individuals reached the third stage, i.e. *abstract conceptualisation,* which entails concluding or learning from the experience which can be linked to (**Q5**). It is important to note that within Kolb's model, individuals also have their own styles of learning and this could have had an impact on the learning experiences of stakeholders within the WIN platform. Identifying an individual's learning style facilitates application of the ideal method to educate people.

5.7 **Recommendations for future research and practical applications**

Seemingly, most of the few Living Labs operational in South Africa are focusing on information and communication technology (ICT) for socio-economic development. There is paucity in the literature on Living Labs in South Africa which are focusing on improving the health and well-being of communities. There is need to move away from the mono-disciplinary approaches of dealing with complex issues to transdisciplinary approaches, which seek to empower communities in dealing with the problems that plague them.

- The health sector should collaborate with the ICT sector to come up with innovative approaches to address complex health problems.

- Follow-up studies should further explore what is required of Living Labs in South Africa so that they can become more effective and sustainable and how the southern African and African Living Lab networks can best support local Living Labs.

- There is a need to secure multi-stakeholder funding for Living Labs. This can be accomplished by analysing national and regional policies related to skills development and human resource development and aligning these with the Living Labs activities.

- There is need to establish links between existing and emerging Living Labs and with complementary initiatives to enable knowledge sharing and skills transfer.
- There is need to link the WINLab with thematically relevant government and non-governmental organisations or other well-established research institutes to ensure access to complementary resources and skill sets.
- There is need for stakeholders involved in the health sector to move towards transdisciplinarity to design solutions aimed at addressing complex health problems.

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ANNEXURES

ANNEXURE A: INTERVIEW GUIDE

Learning Experiences through the Living Lab Approach – A Descriptive Case Study

Participant Name_____ **Date:**___/____/_____

INTRODUCTION/OPENING

(*Establish Rapport*) [shake hands] My name is Irene Monaisa, a Masters Student at the North-West University, Potchefstroom Campus. As a Master student in Transdisciplinary Health Promotion, I am conducting a research which has been approved by the Health Research Ethics Committee of the North-West University. The aim of my research is to explore and understand people's learning experiences through the Living Lab Approach.
(*Purpose*) I would like to ask you some questions about your knowledge and some experiences you have regarding the WINLab.
(*Motivation*) I hope to use this information to help the learning curricula developers in future developments aimed at enhancing learning.
(*Time, confidentiality, tape recorder***)** The interview should take about 15 minutes. If you agree I would like to tape the interview in order not to lose any information. There are no right or wrong answers. Everything that you tell me will be handled confidential. Your participation is voluntary and you can withdraw at any given time. Are you available to respond to some questions at this time?
(Questions) Do you have any question before we begin the interview?

INTERVIW QUESTIONS

1. You have been involved in the WINLab platform, what is your understanding of the **purpose and function** of the WINLab?

2. When you were involved in the WINLab, **what was your function/role**? (follow-up when and how often participant was/is involved in WIN)

3. **How did you experience your involvement** in the WINLab? (follow up: in terms of relationships and communication between stakeholders, teaching-learning experience, field trips to Vaalharts, logistical support)?

4. From your experience in the WINLab what were the **most important lessons you learnt**?

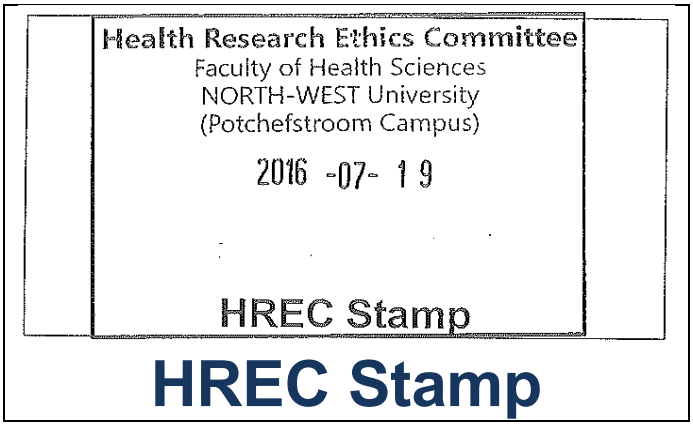
5. How do you think the WINLab **impacts on learning experiences**?

6. Would you **recommend to others** (students/lecturers/stakeholders) to be involved in the WINLab? (probe why/why not)

CLOSING
(*Summary and clarification*) Well, it has been a pleasure finding out more about your experiences with the WINLab. Let me briefly summarize the information that I have recorded during our interview.

(*Maintain rapport*) I appreciate the time you took for this interview. Is there anything else you think would like to add?
(I*n case of follow-up)* I should have all the information I need. Would it be alright to call you at home if I have any more questions? If yes, please provide your contacts: +27 (0)_____

ANNEXURE A: INFORMED CONSENT FORM



NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

Learning Experiences Through a Living Lab Approach – A descriptive Case Study

REFERENCE NUMBERS:

NWU-00367-15-S1

PRINCIPAL INVESTIGATOR:

Ms Irene Monaisa

ADDRESS:

P O Box 1689 Mahikeng 2745

CONTACT NUMBER:

072 246 9474 & 072 091 1940

You are being invited to take part in a research project that forms part of my Masters research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU-00367-15-S1) **and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki and the ethical guidelines of the National Health Research Ethics Council. It might be necessary for the research ethics committee members or relevant authorities to inspect the research records.**

What is this research study all about?

- *This study will be conducted at the NWU, Phokwane & Greater Taung Municipalities, and Vaalharts Water Association and will involve Case records and Semi-structured interviews with the Public Health Masters degree researcher.*
- *The objectives of this research are: To explore and explain why and how the WINLab contributes to student learning and the lives of community members in the Northern Cape's Phokwane Local Municipality.*

Why have you been invited to participate?

- *You have been invited to participate because you comply with the following inclusion criteria: you have had first-hand experience with the WINLab as NWU student or staff member, or as stakeholder from the Phokwane & Greater Taung Municipality (e.g. ward councillors, community health workers, traditional leaders, community member),or as representative from Vaalharts Water User Association. Further, you are over 18yrs of age and you able to speak and understand either Setswana or English language very well.*
- *You will be excluded if: you have not partaken in the WINLab activities or you are a minor.*

What will your responsibilities be?

- *You will be expected to read the study information leaflet and thereafter, complete the consent form if agreeing to partake in this study, avail yourself for the date set for the interview which will take not more than 60minutes.*
- *You will be given a liberty to choose the most convenient place for the interview in order to help you not to be troubled by the travelling costs. The researchers will meet you there.*
- *All the communication between the researchers and the participants will be recorded*
- *You are expected to respond to every question posed by the interviewer as best and honest as possible to assist in maintaining the integrity of the findings of the research study.*

Will you benefit from taking part in this research?

- The indirect-direct benefits for you as a participant will be to gain more knowledge about the Living Lab approach in learning, the WINLab and its benefits.
- The indirect benefit will also be to contribute to knowledge production which will guide future developments.

PARTICIPANT	**DIRECT-BENEFIT**	**INDIRECT-BENEFIT**
Phokwane Municipality & Vaalharts Water User	None There will be no remuneration of participants.	An opportunity to partake in research, which will enable the NWU Potchefstroom in partnership with the community to enhance the sustainability of the established community development project: WINLab. Any, interventions or programmes resulting from this research, community members have a say in.
North West University Students and Staff members.	None	Following completion of the study, an academic journal can be published thereby contributing to the mission of the NWU. The study will contribute immensely to the larger scientific field. The findings will encourage & reveal the strength of cooperate learning approach (utilizing methods that promote active engagement of learners in effort to ensure that learning is translated into practice) which involves stakeholders from diverse backgrounds and disciplines with the goal of addressing complex societal problems to develop sustainability in the South African society

Are there risks involved in your taking part in this research?

- The risks in this study: The risks and side effects of the research study may not be known completely when you start the research study. The possibility of physical or emotional pain and discomfort is very low and will not be endured in any of those interviews to be conducted. To minimalize these possible discomforts, all participants will be interviewed at their own homes or offices and will not have the burden of travel any distances.
- The benefits outweigh the risk.

What will happen in the unlikely event of some form of discomfort occurring as a direct result of your taking part in this research study?

- ***Should you have the need for further discussions after data collection consultations, an opportunity will be arranged for you to meet with the researcher and the study leaders, and then take it from there.***

Who will have access to the data?

- *Anonymity will be ensured by using pseudonyms in the reports and transcripts. Focus group participants are made aware that this type of data collection has no guarantee of confidentiality amongst participants, but can only rely on the commitment of other participants to keep other's information as confidential as possible. Reporting of findings will be anonymous by pooling all data and publishing it in aggregate form only. Only the authorized researchers will have access to data that will be kept safe and secure in a lockable cupboard in the researcher's office and for electronic data it will be password protected. (As soon as data has been transcribed it will be deleted from the recorders.) Data will be stored for 2 years.*

What will happen with the data/samples?

- *This is a once off collection and data willl be kept in a safe lockable place to prevent access by unauthorized people. These data sources will only be used for research purposes*
- Will you be paid to take part in this study and are there any costs involved?

There will be no remuneration of participants. The researcher will meet with the participants at their most comfortable/convenient place which is within their reach,

there will thus be no costs involved for you, if you do take part. For students, interview meetings will be held on campus in a booked room within the Ferdinand Postman Library. For stakeholders from the community, interview meetings will be held at their offices or home depending which is more convenient, private and more comfortable for them.

Is there anything else that you should know or do?

- **You can contact Irene Monaisa at 072 246 9474 or 072 091 1940 if you have any further queries or encounter any problems.**
- **You can contact the Health Research Ethics Committee via Mrs Carolien van Zyl at 018 299 2089; carolien.vanzyl@nwu.ac.za if you have any concerns or complaints that have not been adequately addressed by the researcher.**
- **You will receive a copy of this information and consent form for your own records.**

How will you know about the findings?

- **The participants will be duly informed that the research outcomes will only be made available to them upon request whilst the full research report shall be submitted to North-West University to be stored in its archives.**

Declaration by participant

By signing below, I ……..…….. agree to take part in a research study titled: Learning Experiences Through a Living Lab Approach – A descriptive Case Study

I declare that:

- I have read this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) .....…..……. on (*date*) ……...…….. 20....

..... **.....**

Signature of participant Signature of witness

Declaration by person obtaining consent

I *(name)* ……..…… declare that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (*place*) .....…..……. on (*date*) ……...…….. 20....

....

Signature of person obtaining consent Signature of witness

Declaration by researcher

I *(name)* IRENE MONAISA declares that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (*place*) .....…..……. on (*date*) ……...…….. 20....

....

Signature of researcher **Signature of witness**

ANNEXURE C: AUTHORISATION LETTER FROM PHOKWANE MUNICIPALITY

Fax From :

29-02-12 08:32 Pg: 2

Hertzogstraat / Street 24,
Privaat Sak / Private Bag X 3
HARTSWATER
8570

☎ 053 474 9700
🖷 053 474 1768
www.phokwane.org.za

PHOKWANE
MUNICIPALITY / MUNISIPALITEIT

Our Ref. / Ons Verw.:

Your Ref. / U Verw.:

Dear Elizabeth Barratt

This letter serves to grant AUTHeR (African Unit for Transdisciplinary Health) from the North West University Potchefstroom the necessary permission to engage with the community regarding the Vaalharts Project.

We further give the University the permission to seek funding to the advancement of the project.

Hope you find this in order.

Please confirm receipt with Mr Boikanyo Modise on 053 474 9700 or email at modise@phokwane.gov.za

Yours in development

LED Manager: Mr. BG Modise

ANNEXURE D: AUTHORISATION LETTER FROM PHOKWANE MUNICIPALITY

AUTHeR

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

Private Bag X6001, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Web: http://www.nwu.ac.za

AUTHeR
Tel: 018 299 2093
Fax: 018 299 2186
Email: hesber.berman@nwu.ac.za

5 November 2015

Mr Nikani
Municipal Manager
Phokwane Municipality
Hartswater

FURTHER AMMENDMENTS FOR RESEARCH PROJECTS WITHIN THE PHOKWANE MUNICIPALITY

This letter is to serve as approval for further research that is conducted within the North- West University Potchefstroom's WIN Project.

This research entails the follwoing:

1. Programme to Support Pro-poor Policy Development PSPPD II - Addressing the Poverty and Inequality Challenge:

A partnership programme of the Presidency, Republic of South Africa and the European Union

Overall objective:

To provide empirical evidence on the potential of local food systems (LFS) to contribute to sustainable development among rural resource-poor communities by investigating six sustainability components (economic, environmental, socio-cultural, quality, governance, and health and nutrition) with emphasis on short food supply chains from producers to consumers.

Specific objectives:

1) To conduct a literature review on changing food systems in South Africa and the impact on rural development.
2) To collect empirical evidence on the role of LFS for sustainable development in Vaalharts with its specific implications for economic growth, environmental sustainability, local governance, food safety and quality, socio-cultural aspects, and health and nutrition.
3) To design sustainability indicators for monitoring and evaluating LFS towards sustainable development
4) To design an innovative application for mobile devices that enables the interactive planning of growing sustainable diets at household level.
5) To disseminate knowledge on LFS and sustainable rural development to different actors of the local food system and rural development programs.

Sustainable livelihoods, health and well-being in rural communities in South Africa – a transdisciplinary multi-level approach.

Partnership programme with the Water Innovation Network.

Overall objective:

The overall aim of the WIN Project is to integrate the expertise of different disciplines to holistically promote sustainable livelihoods with emphasis on health and healthy lifestyles at community level in order to empower neglected and underserved communities to take responsibility for their own health and well-being.

Specific objectives:

1) To gain a holistic understanding of rural health and well-being by using transdisciplinary and multidimensional methods in order to support existing and design new interventions for improved rural health and well-being;
2) To reveal the multi-faceted causes of rural livelihood insecurity (including poverty, illness, food insecurity, unemployment, vulnerability) in order to identify indicators which inhibit or advance development strategies for rural health and wellbeing;
3) To assess community and households' livelihood assets (human, social, financial, physical and natural) to support asset-based community development;
4) To monitor and evaluate livelihood strategies and outcomes, the vulnerability context, and transforming structures and processes which enables appropriate adjustment and design of sustainable development programmes.
5) To evaluate the applicability of specialised psychometric measure of psychosocial health and well-being and the precautions and levels of welll-being.

This letter forms as an agreement that the North-West University and the Phokwane Municipality agrees upon the following:

1. This research can be conducted within the Phokwane municipality and on an annual basis be reported back to the Phokwane municipality on the findings of the various research programmes.

2. This letter also forms as an agreement that both parties (NWU and Phokwane Municipality) give consent that the Phokwane municipality, Municipal Manager will be kept up to date regarding research and interventions within these communities throughout the year.

Yours sincerely

Dr Petra Boster
Secretarius to Prof Annamarie Kruger
Director AUTHeR

Mr Nkani
Municipal Manager Phokwane

ANNEXURE E: ETHICS APPROVAL

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

Private Bag X6001, Potchefstroom,
South Africa, 2520

Tel: (018) 299-4900
Faks: (018) 299-4910
Web: http://www.nwu.ac.za

2016-07-19

Institutional Research Ethics Regulatory Committee
Tel: +27 18 299 4849

Email : Ethics@nwu.ac.za

ETHICS APPROVAL CERTIFICATE OF STUDY

Based on approval by **Health Research Ethics Committee (HREC)** on **19/07/2016** after being reviewed at the meeting held on **12/04/2016**, the North-West University Institutional Research Ethics Regulatory Committee (NWU-IRERC) hereby **approves** your study as indicated below. This implies that the NWU-IRERC grants its permission that provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Learning experiences through the living lab approach – A descriptive case study

Study Leader/Supervisor: Dr N Claasen
Student: I Monaisa

Ethics number:

N	W	U	-	0	0	3	6	7	-	1	5	-	A	1
Institution				Study Number						Year			Status	

Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

Application Type: Single study
Commencement date: 2016-07-19 **Risk:** **Minimal**

Continuation of the study is dependent on receipt of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation up to a maximum period of three years.

Special conditions of the approval (if applicable):

x Translation of the informed consent document to the languages applicable to the study participants should be submitted to the HREC (if applicable).
x Any research at governmental or private institutions, permission must still be obtained from relevant authorities and provided to the HREC. Ethics approval is required BEFORE approval can be obtained from these authorities.

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

x *The study leader (principle investigator) must report in the prescribed format to the NWU-IRERC via HREC:*
  - *annually (or as otherwise requested) on the monitoring of the study, and upon completion of the study*
  - *without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.*
x *Annually a number of studies may be randomly selected for an external audit.*
x *The approval applies strictly to the proposal as stipulated in the application form. Would any changes to the proposal be deemed necessary during the course of the study, the study leader must apply for approval of these amendments at the HREC, prior to implementation. Would there be deviated from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.*
x *The date of approval indicates the first date that the study may be started.*
x *In the interest of ethical responsibility the NWU-IRERC and HREC retains the right to:*
  - *request access to any information or data at any time during the course or after completion of the study;*
  - *to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process.*
  - *withdraw or postpone approval if:*
    - *any unethical principles or practices of the study are revealed or suspected,*
    - *it becomes apparent that any relevant information was withheld from the HREC or that information has been false or misrepresented,*
    - *the required amendments, annual (or otherwise stipulated) report and reporting of adverse events or incidents was not done in a timely manner and accurately,*
    - *new institutional rules, national legislation or international conventions deem it necessary.*
x *HREC can be contacted for further information or any report templates via Ethics-HRECApply@nwu.ac.za or 018 299 1206.*

The IRERC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the IRERC or HREC for any further enquiries or requests for assistance.

Yours sincerely

Prof LA Plessis

Digitally signed by Prof LA Du Plessis
Date: 2016.07.19 16:20:06 +02'00'

Prof Linda du Plessis *Chair NWU Institutional Research Ethics Regulatory Committee (IRERC)*

ANNEXUERE F: DEAN'S APPROVAL

NORTH-WEST UNIVERSITY ®
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES -UNIVERSITEIT

POTCHEFSTROOMKAMPUS

Private Bag X6001, Potchefstroom South Africa, 2520

Tel: 018 299-1111/2222

Web: http//www.nwu.ac.za

Office of the Dean: Student Affairs

Tel: 018 299-2830

Fax; 018 299-2833

Email: Rikus.Fick@nwu.ac.za

11 February 2016

Lectori salutem

I was duly informed of the research to be undertaken by Ms Irene Monaisa with the following title: *"Learning Experiences through the Living Lab Approach – A Descriptive Case Study".*

After taking in consideration the extent, methodology and content thereof, I, in my capacity as Dean: Student Affairs, herewith give my consent for the execution and completion of this project as far as the Potchefstroom Campus of the North-West University is concerned.

Kind regards

P.H. Fick