

**Transformative ICT Education Practices in Rural Secondary Schools for
Developmental Needs and Realities: The Eastern Cape Province, South Africa**

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by

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"We must continue the fight for liberation of our communities against poverty, against under-development, against marginalisation and ... information and communication technology ... is a critically important tool in that struggle"

President Thabo Mbeki (Imbizo for African Youth, 2001)

Abstract

The perceived social development significance of Information and Communication Technology (ICT) has dramatically expanded the domains in which this cluster of ICTs is being discussed and acted upon. The action to promote community development in rural areas in South Africa has made its way into the introduction of ICT education in secondary schools. Since rural secondary schools form part of the framework for rural communities, they are being challenged to provide ICT education that makes a difference in learners' lives. This requires engaging education practices that inspire learners to construct knowledge of ICT that does not only respond to examination purposes but rather, to the needs and development aspirations of the community. This research examines the experience of engaging learners and communities in socially informed ICT education in rural secondary schools. Specifically, it seeks to develop a critique of current practices involved in ICT education in rural secondary schools, and explores plausible alternatives to such practices that would make ICT education more transformative and structured towards the developmental concerns of communities.

The main empirical focus for the research was five rural secondary schools in the Eastern Cape Province in South Africa. The research involved 53 participants that participated in a socially informed ICT training process. The training was designed to inspire participants to share their self-defined ICT education and ICT knowledge experiences. Critical Action Learning and Philosophical Inquiry provided the methodological framework, whilst the theoretical framework draws on Foucault's philosophical ideas on power-knowledge relations. Through this theoretical analysis, the research examines the dynamic interplay of practices in ICT education with the values, ideals, and knowledge that form the core-life experiences of learners and rural communities.

The research findings of this study indicate that current ICT education practices in rural secondary schools are endowed with ideologies that are affecting learners' identity, social experiences, power, and ownership of the reflective meaning of using ICTs in community development. The contribution of this thesis lies in demonstrating ways that reframe ICT education transformatively, and more specifically its practices in the light of the way power, identity, ownership and social experience construct and offer learners a transformative view of self and the world. This could enable ICT education to

fulfil the potential of contributing to social development in rural communities. The thesis culminates by presenting a theoretical framework that articulates the structural and authoritative components of ICT education practices – these relate to learners’ conscious understandings and represented thoughts, sensations and meanings embedded in the context, and actions and locations of using their knowledge of ICT.

Declaration

I affirm that the Thesis titled, *Transformative ICT Education Practices in Rural Secondary Schools for Developmental Needs and Realities: The Eastern Cape Province, South Africa*, which I hereby submit is my own work. Furthermore, I declare that this Thesis has not been submitted by me, for a degree at this or any other higher institution of learning, and that all references that I have used have been accurately recorded.



Clement Simuja

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List of Abbreviations

Abbreviation Meaning

CAL	Critical Action Learning
CAT	Computer Application Technology
DoE	Department of Education
ICT	Information Communication Technology
ICTs	Information Communication Technologies
ICT4D	Information and Communication Technologies for Development
IS	Information Systems
IT	Information Technologies

Research Out Puts from the Study

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Chapter One: Background to the Research

This chapter introduces the research study. The chapter commences with an elaboration of a research context in order to put the study in perspective, as well as to provide a background. The goals of the research, and the methods, procedures, and techniques employed are summarized.

1.1 Introduction

Information Communication Technology (ICT) education in basic education particularly in secondary school education in developing countries, is considered important because of perceived benefits such as providing knowledge that builds up and strengthens the learners in relation to the needs of their communities and the rest of the world (Mbogo, Anne and Kirathi, 2014; Spaul, 2013; Gudmundsdottir, 2010; Bush and Heystek, 2003). ICT education in secondary school education also helps learners to develop various practical knowledge-skills and opportunities which can be used to contribute to the social development in communities (Mkimbili, 2018; Hamidi and Chavoshi 2018; Purohit, Patel and Gadhavi, 2016; Lemon, 2004). The benefits of ICT education have made ICT knowledge and skills provided in secondary schools an enduring legacy of governments' commitment to quality education in the 21st century.

The presence of ICT education in secondary schools in South Africa, which is also a developing country, is also evident. ICT education in secondary schools in South Africa, especially those in rural communities, plays a vital role in supporting learners in developing knowledge for the 21st century and creating informed societies. The presence of ICT education in rural secondary schools is part of the South African Government's goal of achieving universal basic education (Chisholm, 2005) and to continue to invest in education (Phahlamohlaka and Lotriet, 2018; Engelbrecht, 2006). However, despite such commitments by the government, studies have shown that there continues to be low school turnout, high dropout rates and the under-education of learners in rural schools (Adler and Pillay, 2017; Ginsburg and Megahed, 2011; Reddy and Sinha, 2010; Van Der Berg, Arentze, Timmermans, 2008; Taylor, 1997). This is due to constraints such as insufficient insight into pedagogies, a lack of support in respect of schooling conditions in communities where schools are located, lack of resources, and an absence of the will to provide relevant knowledge to learners by the schools (Tieken, 2017; Spaul, 2013; Vandenbosch, 2007; Case and Deaton, 1999). Unfortunately, these issues and resultant high dropout rates also impose serious constraints on national development as it undermines national human capital and community development efforts (Amabo, 2017; Tikly, 2011; Archambault, 2009).

The assumed purpose of secondary schools in rural communities, which include social development, creating an informed society, and interpreting the values and needs of the community (Gunderson, 2017; Burns, and Gibbons, 2013) remains as important as ever. Moreover, the presence of secondary schools in rural communities conforms to the Dakar 2000 demand for *Education for All* by 2015. It was framed on the principle that “education is a human right that enables people to improve their lives and transform their societies” (UNESCO, 2000 p8) a purpose that is potentially strengthened through engagement with technologies (Bray and Tangney, 2016; Jantjies and Joy, 2015; Stromquist, 2002; Burbules and Torres, 2000). Given this view, significant effort by the South African Government is focused on employing ICTs to leapfrog educational challenges within developing and developed communities (Ejikeme and Okpala,2017; Odero and Chinapah, 2016; Wagner and Kozma, 2005). Similarly, there is much enthusiasm for how ICT could help learners attain the knowledge and skills needed for sustained economic development and social transformation in developing countries (Ganapathi, 2018; Islam and Grönlund, 2016; Partnership for the 21st Century, 2005; Lall, 2000).

Proponents for ICT in education assert that the past decades have seen the emergence of ‘technology enabled basic education’ (Hoadley, 2017; Dzansi and Amedzo, 2014; Rubagiza and Sutherland, 2011; Gudmundsdottir, 2010) with particular effects in less developed and marginalized rural schools (Ganimian and Murnane, 2016; Kenea, 2014; Fleisch and Shindler, 2012; OECD, 2004). Furthermore, literature points out that ICT in education does not only produce knowledge for creating an informed society, but it is also essential for inducing knowledge reforms that transform learners into productive citizens in society (Pruet, Ang and Farzin,2016; Newby,Hite and Mugimu, 2013; Pade, Mallinson and Sewry, 2009). ICT is seen as a way to promote educational change, improve the skills of learners, and prepare them for the global knowledge economy (Eynon and Geniets, 2016; Letseka, 2014; McNamara, 2003; UNESCO, 2002). In a report on ‘reforming pedagogy to reduce poverty through basic education in South Africa’, Hoadley (2017) asserts that ICT and ICT education have vital roles to play in improving the standard of learning, teaching, access to relevant information, social inclusion and modernisation of marginalised schools in rural communities (Hoadley,2017). This challenges schools in rural communities to develop education practices informed by

ICT, which can make a difference for learners, not just for learning purposes but also to promote knowledge that has a developmental impact in their communities. In this research, ICT education means teaching learners practical techniques for their efficient use and application of ICTs to solve everyday life problems. In particular, ICT education in this study adopts the view of presenting education practices adapted to the needs and values of community.

Conversely, the availability of ICT in basic education schools underscores the importance of socio-economic and skills development. It also highlights the importance of a better understanding of the potential effects of ICT on social development (Andrade and Doolin, 2016; Avgerou, 2009; Walsham, 2006; Heeks, 2002) and the empowerment of rural communities (Bock 2016; Krauss, Simuja and Conger, 2015; Pade et al., 2009). These propositions are, however, challenged by sceptics who suggest that introducing different forms of ICT in schools is not as straightforward as expected (Toure,2016; Miller, 2014; Blignaut,Hinostroza, Els and Brun,2010; Bovée, Voogt and Meelissen, 2007; Herselman,2003). Some argue that there is no practical evidence that technology has resulted in any changes to basic education (Farrell, 2007; Hollow and Masper, 2010) and this is evident in many schools in South Africa (Karaseva,2017; Uluyol and Şahin, 2016; Conger et al 2015; Nkula and Krauss,2014; Gudmundsdottir, 2010). For instance, most technologies that are implemented in schools are not utilised due to lack of technical support in updating and upgrading software. ICT projects in most schools are implemented without proper policy guidelines, which would help teachers, learners and school administrators in improving and sustaining the technical support of ICT. Moreover, the shortage of well-trained ICT teachers results in the fact that most schools do not provide ICT education despite implementing ICT projects. Thus, the presence of ICT in schools needs to be critically examined to appropriate them within a usable context.

Contradictory arguments also exist on whether the inclusion of ICT in education has prompted enough intended changes, such as skills, knowledge, opportunities, and improved education standards (Gudmundsdottir, 2010; Dlodlo, 2009; Hawkins, 2002) of basic secondary school education in the South African context (Van Niekerk, 2018; Bornman, 2016; Anthony and Majid, 2016; Leseka, 2011; Simuja et al, 2016; Conger,

Krauss and Simuja, 2015). Introducing ICTs in basic education therefore remains fraught with difficulties, because contrary to the perceived improvement of pedagogies and other benefits described above, the use of ICT in rural schools has also seen hidden agendas and political motives (Benade, 2017; Toure, 2016; Hlalele, 2012; Shields, 2011; Kabamba, 2008). For instance, the implementation of different forms of ICT in rural schools appears to be driven by the rational perception of technologies. ICT in education are characterized as neutral and to some extent as autonomous, deterministic, and homogenizing force acting on education and society. This tendency is largely influenced by prevailing norms and values, that influence people in rural communities, which leads to common assumptions on how ICT in schools relates to learners and also determines how education practices involving ICT must be conducted (Brookfield, 2017; Kalema, Motsi and Motjoloane, 2016; Taylor, 2014; Giroux, 2008). This traditional approach forces ICT education in rural schools to follow rigid practices that fail to advance a reflective view of ICTs (Røkenes and Krumsvik, 2016; Leask and Pachler, 2013) and discourages both learners and teachers from critically questioning the social realities presented in ICT education (Duță and Martínez-Rivera, 2016; Mezirow, 2015).

Other challenges include the imposition of ICT integration and ICT education practices without proper consideration of local values and the needs of communities (Neira, Garcia and Seguel, 2018; Tchameni, 2018; Krauss et al., 2015), reinforcing the dependencies on donor needs (Krish and Zabidi, 2017; Kruger, 2010) and deepening digital skill inequalities (Reisdorf and Grosej, 2017; Correa, 2016; Eynon and Geniets, 2016). Many ICT projects in rural schools focus on the use of ICT in teaching and learning (Mills et al., 2018; Foreman and Arthur-Kelly, 2017; Pruet et al., 2016; Islam and Grönlund, 2016) whilst not appreciating how knowledge of ICT can transform learners life experience (Takasaki, Otani, Ishida and Mori, 2018; Mthethwa and Munyoka, 2017; Simuja, Krauss and Conger, 2016).

The essence of the problem is that ICT education is introduced into rural school situations without consideration of the contexts and existing practices, and political and ideological agendas, and hence, there is a lack of critical reflection regarding assumptions, values, and meanings embedded in ICT education (Giroux, 2017; Perumal, 2016; Young, 2015; Krauss, 2013; Barton, Corteen, Davies and Hobson, 2010). This

research leads us to ask questions regarding how one can make sense of misguided assumptions in ICT education and the practices it enforces in rural secondary schools (Fook,2017; Adams and Bell,2016). Such an understanding is critical in this study as a means to advance the question concerning the significance of ICT education in the lives of learners in terms of using ICT knowledge as a social developmental practice. This concern responds also to the idea that there is a need for reflective appreciation of the reflexive nature of ICT intervention (Avgerou and Walsham, 2000; Avgerou, 2010; Krauss 2013). The emphasis is on the assumption that capturing social realities and ICT education as a whole, might contribute to reflective intentions of ICT in rural communities.

Nevertheless, an increase in the number of ICTs for education initiatives with varying degree of success and failures (Livingstone, 2012; Jimoyiannis and Komis, 2007; Kozma, 2005), has created knowledge gaps, and unexplored problem issues related to the relevance of ICT education. Consequently, many initiatives in rural schools in South Africa simply focus only on providing Internet access, computer resources and ICT training to teachers (Rahamtalla, 2017; Mooketsi, 2016; Mojapelo, 2016; Adomi and Kpangban, 2010; Hawkins, 2002) while little attention is given to issues related to context and even less to misguided assumptions and the ideology embedded in ICT education initiatives (Ganapathi, 2018; Dalal et al., 2017; Howie and Blignaut, 2009; Akinsola, Helseman and Jacobs, 2005). As such, these problems can also be argued to be potentially grounded in a non-understanding of local assumptions, values, culture, and the role of ICT education to local communities involved with rural schools. Thus, the assumptions inherent in current practices of ICT education fails to provide exploration of the various aspects of how ICT education can be seen as part of learners' lives (Karaseva, 2017; Perrin, 2014). This seduction leads to a common belief that the value and merit of ICT is that it is a universal, general and neutral.

Further to the challenges presented above, a growing body of research in ICT education and ICT in secondary schools in South Africa, only provides more insight into the integration of ICT, into the use of ICT in learning and teaching and into the demographic presence of ICT in rural schools. For instance, studies by Chigona et al., 2010; Nkula and Krauss, 2014; Tarling and Ng'ambi, 2016, reflect on the integration of ICT in rural

schools and pedagogies with little or no demonstration in respect of the ways ICT education practices are *manifested* in learners and their communities, and particularly how it reinforces the values, assumptions, and cultures of its designers (Majchrzak, 2016; Girvan, 2015; Tour, 2015). Moreover, much less is presented or understood on what learners make of ICT knowledge and what practices they value in ICT education (Comi, Argentin, Gui, Origo and Pagani, 2017; Masoumi, 2015; Mama and Hennessy, 2013). Thus, without the critical examination of the current realities of ICT education in rural schools, it is difficult to identify practices of ICT education that people (including learners) in rural communities value in their contexts and which merit transformation.

These above issues imply a particular orientation to knowledge that could highlight oppressive ICT education practices, its causes and hidden agendas. Therefore, in this study, a particular means of extracting knowledge from the empirical is needed, thus more than conventional means may allow. The study intends to engage a critical orientation of knowledge that will be used to not only question the problem issue, but also question the ways in which one can gain understanding and respond to the latter. The critical orientation will also be underpinned by a theoretical understanding of ICT education practices, in particular, how learners connect ICT knowledge to life experience and the meaning of reflective use of ICT to further the various interests of their community. Furthermore, the critical orientation will be used to develop new perspectives in ICT education that values local knowledge practices. Thus, the aim is to empower learners with ICT knowledge and skills that open opportunities and overcome social developmental challenges in their communities, and the implications of hidden and oppressive agendas embedded in ICT education.

1.2 Critical Orientation

Critical orientation as a framework to research is well grounded as a distinct approach and has been employed by critical researchers in the field of Information Systems, such as Ngwenyama (1999), Myers and Klein (2011), Krauss (2013), Doolin and Lowe (2002), and in the field of Education such as Murphy (2001), Avgerou (2008), Giroux (2008), Mezirow (2000), Taylor (2007). These authors used the critical approach that is underpinned by different critical theories to construct knowledge in qualitative and quantitative research (Fairclough, 2013; Kincheloe and McLaren, 2002). Critical

theories are used in research to examine the realities of the society from critical viewpoints.

Research in Information Systems qualifies as critical if its task is to critique and transform practices that form alienating and restrictive social conditions in the society (Klein and Myers, 1999). The investigation conducted in critical IS research is classified as transformative if it helps the participants (both the researcher and people participating in the research) to eliminate the cause for unwarranted social conditions and enhance their capability to realise human potential (Doolin and Lowe, 2002; Ngwenyama, 1999).

Therefore, critical researchers in Information Systems assume that technologies can help people to consciously transform their economic and social conditions. Although people can use technologies to change social circumstances, critical IS researchers recognise that political, social and cultural domination constrains their ability to do so. Thus, critical IS research seeks to provide transformative practices that can displace the structures of dominant power and open alternative social conditions that facilitate the development of human potential (Avgerou, 2008; Orlikowski and Baroudi, 1991).

In the education context, critical researchers assume that the realities of society are historically constituted by dominant education practices (Giroux 2008; Mezirow, 2000; Freire, 1996). Within this framework, critical theorists in education assume that debate, participatory democracy and awareness may help people to transform unwarranted education practices and create meaningful social change (Darder, 2017; Popkewitz, 2009). According to Kincheloe and McLaren (1994, pp 138), critical research in education therefore seeks to

“transform the taken for granted values, beliefs and practices of education by revealing the implications they produce, by developing reflective and emancipatory practices”.

The aim is to create awareness and understanding of the fact that society is a product of specific education practices that need urgent transformative actions. Thus, the framework of critical theory encourages researchers and participants to “deconstruct

the hidden agendas of education practices and search for *truth* and understanding within the social context” (Reeves and Hedberg, 2003 p 33).

The focus of critical theory in this research is on revealing and reconstructing powers, culture, and social relationships in our society (McLaren, 2016; Marcuse, 2009). Different social relationships, powers and cultures are used by people to shape identities of society. These identities define legitimized social practices, and the behaviour of peoples within a particular society (McLaren, 2015; Johnson and Morris, 2010; Kincheloe and McLaren, 2002). Thus, accepted social practices in society can lead to situations where certain individuals are denied privileges that others have in terms of relevant ICT education practices and ICT knowledge. For instance, rural school’s ICT education practices are far and away different from those presently offered in urban schools (Simuja et al., 2015; Krauss, 2013).

It is therefore more important in this study to critique using questions commonly asked by critical theorists, such as *how can communities in rural areas be influenced in order to transform unwarranted social practices?* (Mezirow, 2013; Giroux 2008). Furthermore, of particular importance is finding answers that can help transform social practices such as ICT education in rural schools (Ladson-Billings and Tate, 2016; Popkewitz, 2014). Moreover, as a discipline it seems like we have become less concerned with issues related to the social consequences of the diffusion and adoption of technology and knowledge of ICT in schools. Instead most research today is focused on contributing to the technological development in different kinds of collaborations with industry as well as promoting new ICT applications and services. Therefore, critical reflection on current secondary school ICT education – which comprises formal (in school) and informal practices (out of school), and specifically the role of ICT knowledge in society. It is important to challenge the taken-for-granted assumptions, practices, and outcomes of the dominant culture of conventional rural school education (Goodson,2013; Cecez-Kecmanovic, 2001; McGrath, 2005; Gay and Kirkland, 2003).

To improve such educational situations, we should therefore question and deconstruct the taken-for-granted assumptions inherent in the status quo of rural school education, and formal ICT education in particular, and transform the practices that constitute

them. For instance, the impact that ICT education has on culture, values, identities, and social practices in rural communities. This amounts to a willingness to ask often-difficult questions about whether ICT education initiatives in rural schools are actually increasing equitable access to the freedoms and life changing prospects that form the basis of modern developmental initiatives – or whether they are merely creating or exacerbating further unwarranted social conditions (Krauss 2013; Avgerou, 2008) in rural communities. The aim is to reshape ICT education practices and impose a more prominent role of creating and transmitting social reality. And not to destroy the system by which they are enframed but to alter its direction of development through possibilities that can and do arise when learners use ICT in their communities.

In order to adequately understand what the transformed nature of ICT education practices should mean and do and how pedagogy should take place given the contexts presented above, one should draw understanding from critical theories. Understanding of ICT education practices from a critical perspective may provide affirmative action to approach social injustice and transform inequitable institutions and social relations (Ledwith, 2011; Kincheloe and McLaren, 2000). For this reason, it is imperative for this research to critique, reflect on constructs and power structures of social institution such as secondary schools, since ICT education represents the type of phenomena that validates the use of critical theory. In addition, critical theory in this study is employed to offer informed practices that should enable learners to have ‘real and meaningful’ access to ICT and allow them to appropriate these technologies as an instrument for their emancipation and society change (Lin and Myers, 2015; Livingstone, 2012; McGrath, 2005). Thus, the study seeks to critically examine the direct relations of ICT education and community realities through developing reflective ICT educational practices as a catalyst for expanding the human and social capabilities of the learners. In other words, helping learners to understand their own ICT experiences within a broader construct of social and developmental practices.

1.3 Goals of the Research

As it has been explained in the previous sections, this research intends to address critical concerns of ICT education in rural secondary schools. The study uses theoretical concepts from critical philosophy and a sociological perspective to explain the

relationship between community-social realities and rural school ICT education practices. The critical philosophy is employed to critique and consider how ICT education practices can be a cause and expression of wider social problems in rural communities. As such, the research plan to critique current accepted practices of ICT education in rural schools, is to show that it replicates inequalities, and to unveil transformative, reflective assumptions that need to be reconsidered. For instance, like any other forms of power, ICT education practices are used for the subtle control of learners by the teachers who also follow dominant practices and have no sovereignty to engage relevant content and materials to use in ICT education. Thus, learners usually remain powerless to resist the ICT knowledge imposed on them unless they choose to stop attending the class entirely.

While these practices ignore the influence of rural schools in creating ICT knowledge that favours the interests of domination, this research work is undertaken to deconstruct such practices. The research further aims to:

- Suggest critical reflection on the role secondary school practices should play in deconstructing social stratification in rural communities specifically on the knowledge-practices (both formal - in the classroom and informal - out of the classroom) to enhance the human and social capabilities of learners in their communities.
- Develop a distinctly critical research methodology, which can be used as an overall strategy for motivating, conceptualizing ICT education as a transformative practice, and for conducting an inquiry, engaging with subjects or objects in a community context, as well as constructing and justifying socially relevant knowledge claims.
- Develop a theoretical framework that aids the exploration of the meaning of reflective ICT practices, which shape the transformation, and expectation of developing rural communities.
- Explore the interdisciplinary link between Information Systems (IS) and Social Science in explaining ICT education as a relevant reflective practice for addressing developmental challenges in rural communities.

1.3.1 Research Questions

In light of the discussions and arguments in the above sections, the problem domain that is related to this research is on how the reflective nature of ICT education practices can be envisioned. In order to approach the reflective conception of ICT education, the research questions in this thesis are formulated within a framework that would allow the conception of this research to serve the ends of freedom. Therefore, in this thesis it is assumed that critical IS researchers must reconsider approaching ICT as something unknown. In other words, ICT education should be regarded as an appealing domain that participants, as well as researchers, need to know well. Based on such assumptions there seems to be a hidden knowledge sphere which must be approached by questioning, *“How ICT education in marginalized rural secondary schools should be transformed into a transformative conception of existing social development practices and realities?”*

The guiding research question above seeks to unravel how ICT education can be improved to reflect transformative practice that directs knowledge of ICT to act as a catalyst to change social order. The question also intends to uncover some unfamiliar positioning of ICT education as a tool to transform marginalized groups and communities. As such to fully answer this question I have set four broad and interrelated sub-questions, which are informed by Myers and Klein’s (2011) principles for critical research and specifically the elements of critical research of *gaining insight, critique and transformation (See Chapter 3 and 5)*.

Q1. How do existing secondary school ICT education practices contribute to the social stratification of marginalized rural communities in the Eastern Cape Province? (Correspond to Chapters 1 and 2)

Here the purpose is to understand the historical status quo of ICT education in rural schools and how it contributes to oppression and its causes. This question also intends to guide how the research situation should be problematized. This question intends to critically reflect on the inherent interest of practices in ICT education in rural schools which may, or has, led to disparities in rural communities. Particular priority in this question is placed on formal and informal ICT initiatives, school practices, and procedures.

Q2. How do education practices effect the potential of disempowering or empowering communities with ICT knowledge linked to social realities? (Corresponds to Chapters 2, 6 and 7)

The question explores the practical implications of abstract qualities of power that are conceptualized as embedded factors underpinning the practices involved in ICT education and ICT knowledge. The question intends to affirm the central importance of ICT knowledge in informing social practices or experiences.

Q3. How should the meaning of reflective ICT practices shape the transformation and expectations of communities? (Corresponds to Chapters 6 and 7)

This question aims to critically reflect on the meanings that ICT education acquires in the process of changing the ways learners and people in rural communities organise themselves. Particular focus is on transformation that enables learners to create new reflective knowledge of ICT for themselves and communities. The question also seeks to analyse the corresponding dissimilarities in social, technical and cultural resources that are required for reflective ICT knowledge.

Q4. How should a critical research methodology be used as a strategy to conceptualise ICT education as a transformative practice, particularised for local community contexts? (Corresponds to Chapters 5, 6, 7 and 8)

This question intends to present a critical research methodology that provides processes for analysing the complexity of phenomena such as ICT education. The processes are presented together with justifications for developing and using this method, and its limitations to analyse data for this research. The credibility and trustworthiness of this method leads to the build-up of a theoretical framework that explains a new perspective of ICT education practices in rural schools.

1.4 Background to the Research Problem (personal narrative)

To understand how ICT education and its practices have come to be problematic, I begin from the notion that in a critical research “critical reflection (self-reflection) must be at the heart of research praxis, since it has the potential to lead to calling into question existing practices, power structures and ideologies that impede the

development of a sense of responsible agency” (Mezirow, 2000, p. 8). Critical reflection constitutes the foundation for critical research since it provides a sense of historical background in respect of the problem being investigated. According to Marshall and Rossman (2014), critical reflection is an approach used by critical theorists to contest and challenge domination. The first step of presenting critical reflection in this thesis is a personal narrative in which I recount the life experiences that provoked my interest to question how ICT education has inherent properties that determine the way learners and communities think and act.

The assumptions imposed by the narrative in this thesis are that narrating the present empirical practices could provide a starting point for articulating and particularising the research problem (Squire, 2008). This section therefore attempts to narrate how I came more concerned with issues related to the social consequences of the diffusion and adoption of practices involved in current ICT education in rural schools. The narrative is written in the spirit that there is a growing suspicion that the use and spread of technologies is affecting our conceptions of our self, our identity of time and of wellbeing. The point, however, is that of presenting unfamiliar perspective that has an essential knowledge domain if we are to gain a deeper understanding of the significance of the increased presence of information technology in our society. In doing so, I engage narrative as approach to problematize the practices of ICT education in a way that does not reproduce the dominant interest and locate the interest of this study as central to transform the practices. As such this section is presented here in order to direct attention to some unfamiliar aspects of ICT education, that I assume hold important knowledge of its role and importance in rural schools and communities. This exploration should not, however, be understood as an argument for the substitution of other approaches and attempts, but rather as a complement and an advancement of particular intentions and ambitions within the critical IS research.

This thesis presents the research project that responds to ICT education for Development Projects in the Alexandria and Joza communities facilitated by the Department of Information Systems (IS) at Rhodes University in South Africa. This research forms part of the researcher’s community engagement project in the Alexandria and Joza communities in the Eastern Cape Province. The project started in

2014 as a response to the need to provide contextualized ICT training for teachers in marginalized rural secondary schools, since secondary schools are regarded as learning and knowledge centres and form part of the framework for rural communities. The first training with the first secondary school focused mainly on training teachers on the use of Microsoft Office software in their teaching practices. Through the outcomes from the first training, it was observed that most teachers and learners from schools within the area lack ICT knowledge and skills despite the schools having modern computer laboratories. Such challenges were also highlighted by Bladergroen (2012). The outcomes motivated the project to change its objective to contextualize the ICT training with knowledge and skills that are informed by the needs of participants and engage more rural secondary schools and community members in the area. The project became a means to understand the realities that affect teachers and learners in effecting ICT and knowledge of ICT as a modern way to overcome continual social stratification in their society. The project targeted schools with ICT (computer) labs such as Alexandria, Ukhanyo and without ICT equipment installed such as Makana and Bhongweni. The project training included teachers, secondary school leavers (those who completed the last grade of secondary school or those who dropped out) and community members in the vicinity of the relevant schools. More about the approach to this research project is outlined in Chapter 4 and 5.

The presence of the project in the selected schools presented practices that are associated with context-based ICT education, the presence of ICT in developing rural communities, the reflective use of ICT, and assumptions that teachers and learners have in rural schools. The practices guided the discovery of the topic for this research and helped the researcher not to confine the research to a firmly structured study with a prior structured design (Patten and Newhart, 2017). In addition, the project engaged activities that directed the inductive approach to inform the classroom (training) activities (Tracy, 2012). The inductive research strategies are particularly used in a critical and interpretive approach when the intention of the research is to establish the complexity of a social phenomenon (Neuman, 2014).

Our observation during the initial stages of the project was that rural schools in the two areas face many challenges that differ from their urban counterparts, such as an

increase in the gap in terms of access to both formal and informal ICT education. This confirms findings from several authors such as Chitiga, Meyiwa, Nkondo, Sithole and Nyamnjoh, 2014; Dzansi and Amedzo ,2014; Ncanywa,2014; Chigona et al., 2010; Dlodlo,2009; Armstrong and Moore, 2004; Pauw, 2015, who explained that rural learners lag seven years behind their urban counterparts in basic skills like reading, access to information, resources and writing. Moreover, the communities of Alexandria and Joza face challenges such as lower levels of community development, high unemployment, high crime rates, lack of knowledge of tertiary education opportunities, and the need for small business development (Kraus et al.,2016; Conger et al.,2015).

Previously the communities of Alexandria were thriving farming communities however very little social economic activities are left to stimulate growth and development. This has created chronic poverty in and economic challenges to communities which include learners and teachers in the area. Such pervasive poverty and socio-economic problems pose adversities to numerous households which also fail to meet their social responsibilities such as supporting learners' needs and other social developments in the community. However, very little is being done to support the communities to resolve poor economic development and enormous basic challenges exist in the area (Butler,2017; Shackleton, Bonnel, Fletcher,Jamal, Allen, Mathiot and Viner,2017; Musemwa, Muchenje, Mushunje, Aghdasi and Zhou,2015) and other communities in Eastern Cape Province (Maylam,2017; Jones and Muller, 2016; Sender, 2016; Ruwanza and Shackleton, 2015).

Given the issues described above, the communities are faced with social-economic adversities with detrimental effects on the community, its livelihood, and empowerment. The communities, while seeking to address these challenges through secondary school education have failed, and this has created some challenges for the community's livelihood (Kenea, 2014; Mncube and Harber, 2010) and schools (Hoadley, 2017; Ndlovu, 2016). The communities have expectations from learners and schools. For example, parents provide the resources, and expect their children to gain knowledge that will make their life better off after learning, and expect them to then plough back knowledge into the communities. However, this is not the case as current formal learning practices focus on an exam-driven educational system and only on what

is to be tested and not on developing knowledge and skills that connect learners to life experiences. This is also the underlying reason for secondary schools not providing context-based learning and teaching (Hismanoglu, 2012; Perin, 2011; Worrell and Profetto-McGrath, 2007). Also evident from the project is that without explicating the relationship between current ICT-education practices in rural schools and the desired community social- realities and outcomes, and building these outcomes into a context based (reflective) ICT education, it is less likely that ICT education in rural schools will add to the overall national economic and social development efforts and have the ultimate intended effects. Thus, ICT education, ICT knowledge and skills in rural schools are not treated as important spheres that affect the learners' life aspirations, access to social services, access to relative education, and access to opportunities within their communities.

From the initial challenges observed in the two areas involved in the project, I became politically and socially motivated to critically examine why new forms of social development, that engage knowledge of ICT and use of ICT, are not presented in current ICT education in rural secondary schools. My view suggested reflective use of information technology within everyday life contributes to the emergence of new social realities to which learners and communities could establish a sense of belonging. I refer back then to the community surrounding the schools for not doing enough to transform the practices of ICT education and knowledge of ICT in order to become a catalyst for combating the existing political and social problems. Keeping this in mind, I realized that perhaps people were scared to question practices presented in current ICT education and knowledge in rural schools. However, through the project activities teachers and other participants (community members) became aware of the problems attributed to current ICT education practices (Refer to Chapter 5,6 and 7). They became aware of dominant education practices that are presently adding more to the problem, and they became aware of the effect ICT education has on community social practices. They became aware of the practices they could engage with to resolve the problem. Moreover, they became aware that new social development and realities depend on a relational understanding of human experience and information technology. Thus, the project allowed my thoughts and those of participants (members of communities) to effect change in respect of our assumptions of ICT education and transform its practices

without causing political activities. In this study the 'dominant education practices' refer to activities involved in ICT education that do not relate human experience with the use of information communication technologies. For instance, learning activities that encourage and support a learner to separate ICT from his or her cultural and community context.

In this instance, I emulated the thoughts of Foucault and employed his set of tools to address the problem in our project (more on Foucault's thoughts is covered in the last section of this chapter and Chapter 3). This was done in relation to how other scholars in the IS field such as Willcocks (1998) Myers and Klein (2011) applied Foucault's work in their research. Equally, my objective was not to steep the participants in critical philosophical thinking as suggested by most scholars, who adopt Foucault's thoughts but to understand the relationship between power and knowledge at the heart of our attempts to transform practices that affect communities. Although it was not the wish of communities seeking power to critique (Foucault, 1988), the research helped them to become aware of the challenges they are facing.

The transformation of practices in ICT seems to me to encourage and enable rural secondary schools to acknowledge the transformative knowledge of ICT learners can use to effect the social progressive function of ICTs. In transforming ICT education practices, rural schools may present knowledge that reinforces the values, culture, identity and assumptions of rural communities. The intention is to re-construct the practices of ICT education from being just about exam-oriented practice to consciously allowing them to have a whole range of relevant transformative ICT experiences. Thus, such experiences have to be underpinned with the practical and theoretical knowledge in experiencing ICT and of particular importance in this research is how learners value the transformative ICT experience, how learners have relevant experiences through practices presented in ICT education. In this regard, I turn now to discuss the premises of how the Critical Information Systems approach can be employed to understand and transform the empirical case presented in this section.

1.5 Critical approach in Information Systems Research

The use of critical theories in the Information Systems field in recent years has been widely acknowledged as a means to facilitate the development of alternative social organisations (Meyrs and Klein, 2011; Cecez-Kecmanovic, 2001; Myers 1999). Critical theories are also employed in IS research to critique and change the use of technologies in changing the society (Ngwenyama and Lee, 1999). This differs from traditional theories which are adopted in IS discipline to explain or understand the empirical case investigated in a research study (Stith, 2014; Duchesne and McMaugh, 2013). The interest in traditional theories lies in preserving reformation of the society (Watson,2016) and fails to recognise the social functions and conditions (Mackelprang and Salsgiver,2016; Masoodi and Pillai, 2012). In other words, the activities engaged in traditional theories seek to reproduce or maintain the status quo in society. It is therefore, the agenda for critical research to encourage critical theorists in IS to know and transform what is wrong in the world (Walsham, 2005).

Critical theories in Information Systems also denote a critical process of inquiry that seeks to achieve emancipatory and reflective social change. This goes beyond the apparent to reveal hidden agendas, concealed inequalities and tacit manipulation involved in a complex relationship between ICTs and their social, political and organisational context (Ngwenyama and Lee, 1997; Grey, 2005). The adoption of critical theories in this research therefore (Alvesson and Deetz, 2000 p1):

“aims to disrupt ongoing social reality of ICT education for the sake of providing impulses to the liberation from or resistance to what enforces unreflective ICT knowledge”

It is within this framework that this study seeks to further the agenda of critical theory to reveal the interests and hidden agenda of ICT education practices in rural schools. Moreover, the importance of engaging premises for critical theory is to transform dominant practices that aim to deceive, manipulate, exploit, dominate and disempower learners in rural schools. By doing so the research is done to inspire participants to resist these attempts, hinder such misuse of ICT education and promote liberating ICT education practices and emancipation.

On the other hand, proponents of the critical paradigm in Information Systems have long been aware of its weak empirical and methodological grounding particularly the lack of appropriate empirical methods at community level (Krauss 2018; Klein, 1999; Lyytinen, and Klein, 1985; Lyytinen, 1992). Most notably, critical IS researchers themselves identified a problematic relationship between critical theory and empirical research methods. (Klein, 1999; Morrow and Brown, 1994, Forester, 1992). The criticism of the critical research approaches in IS, even among its followers, has often focused on the lack of distinctly critical research methods and even the neglect of methodological issues (Cecez-Kecmanovic, 2011; McGrath 2005; Klein 1999). It has been claimed that much community research in IS informed by critical theory and some critical poststructuralist theorizing, adopted variants of interpretive or hermeneutic methods (Cecez-Kecmanovic, 2011; McGrath 2005, Avgerou, 2002, Walsham 2001, Klein 1999). This proves the point that the critical research approach relies on the appropriation of interpretive (and perhaps some other) methods without having methods of its own (Kress, 2011). The charge is that the critical research approach does not have a clear methodological identity (Stahl and Brooke, 2008). This calls for critical IS researchers to develop critical research methodology in the IS field since the approaches of critical research are not separated like in other traditions. So, while critical theory is appropriate, more is needed to articulate an appropriate methodology and method as suggested by research question four in this thesis.

As a critical researcher in the Information Systems field I am challenged by calls to develop methodological practices that reinforce best practices of critical IS research in society. Therefore, the best practices of critical approach in this research require a thorough theoretical understanding of ICT educational experience, in particular of how learners make sense of this experience. The experiences in a broad sense contribute to a new philosophical understanding of ICT education so that its practices can be supported by methods that are not separated from the theory. For these reasons, emerging results from this research address methodological challenges in critical research by creating a methodology (see chapter 5) with a broad critical theory - informing the inquiry (see Chapters 5, 6,7 and 8).

The methodology is understood here in its philosophical sense as an overall strategy of conceptualising and conducting a critical research inquiry, and constructing scientific knowledge (Cecez-Kecmanovic, 2011; McGrath, 2005; Avgerou, 2002). The methodology developed through this research, therefore, refers not only to research methods or techniques (such as case studies or interviews), but also to the epistemological assumptions of critical research methods and how they are linked to critical theories. The ultimate concern of this critical research methodology is the impact that critical inquiry has on social practices and the use of ICT (Kaplan, 2017; Thompson, 2016; McNiff, 2013). Furthermore, integral to critical IS methodology and approach in this research is to examine the role which secondary school ICT education plays in maintaining the social stratification of communities and creates possibilities for social change (O'Cadiz,2018; Mthethwa and Munyoka,2017; Ndlovu,2016). In addition, employing a critical approach in this study not only aims to address impassive ICT education practices, but also supports the definition of more emancipatory technological practices, services and products (Eynon and Geniets,2016; Krauss 2013; Ngwenyama,1999). This further encourages this research to develop a methodology which can be used as a practice for searching, questioning and reflecting upon the emancipatory connection of ICT education to society.

In addition, the research intends to develop the methodology and its methods within the concepts of a theoretical framework of power-knowledge suggested by Foucault. Foucault's thoughts on power-knowledge are well known as a strategic means for understanding the historical use of repressive and reproductive powers in society (Burrell and Cooper,2015; McNay,2013). For Foucault, power is always caught up in the unbiased or neutral relation to knowledge. The relationship between power and knowledge influences the rules that determine what can be legitimized as truth in a particular moment, according to Foucault (1988). Therefore, Foucault's theoretical framework is adopted here as a theory to provide the necessary methods for contesting the methodology in a community based critical IS research. Moreover, the intention of this study is not on critiquing Foucault's thoughts, nor is it to contest the use of his ideas in the IS field. Even though such debates are considered in this thesis, this is only done to support the development and testing of the theoretical framework in Chapters 7 and 8.

1.6 Foucauldian Perspective

In recent years, the work of Foucault has been frequently adopted in many philosophical research studies that seek to examine power through practices that penetrate invisibly and visibly all sectors of society. For Foucault to understand the existence of power, he studied the events that shaped the processes of creating power and called them “knowledge” (Foucault, 1988). Foucault’s interest in connecting power and knowledge was to criticize the universal truth that forces human beings to normalize practices in society. Foucault’s thoughts led this research to question how practices are formed in current ICT education in rural schools and what kind of practices direct learners to gain transformative knowledge of ICT. Thus, Foucault’s contribution to this research also lies in unveiling the power- knowledge relations in the ICT education practices of rural schools that we have come to view as normal in our society (Cecez-Kecmanovic, 2011).

Foucault looks at modern human sciences, the practices and power relations by which they are founded, and the knowledge and behavioural technologies they produce, and how these operate, allied to structures, designed space, and use of tools and equipment (Lauw, 1991). Foucault acknowledges that the operations of these new technologies of power “are not ensured by right but by technique, not by law but by normalization, not by punishment but by control” (Foucault, 1976/1978, p. 138). Furthermore, the technologies of power function anonymously—they are implemented by everyone and no one, and autonomously, as Foucault once commented in an interview (Foucault, 1980, p. 219);

“While people know what they do, and may know why they do what they do, they do not know what they do”.

Therefore, Foucault’s theory helps the researcher and participants in this research to critique, reflect upon the research processes, and understand better the role of power and knowledge in relation to the effect of ICT education practices in the Alexandria and Joza communities.

An understanding of the knowledge and power raises important issues regarding education practices that produce transformative knowledge of ICT for learners, not only

to understand and engage ICTs in their communities, but also to exercise the courage needed to change or address social development, and community realities and needs. Foucault's ideas are not used in this study as a general account of the impact of modern technology but rather to reveal specific histories of technological practices overlooked in other accounts of modern forms of power such as ICT education practices. The presence of ICT education in rural schools is largely taken for granted and the significance resides in the ICT knowledge that can empower human actions (Hull, 1997; Joerges and Czarniawska, 1998). Therefore, to avoid an unreflective engagement with technologies of power such as ICT education, this research seeks to retain a view of reality in which the practices involved in ICT education and community needs mutually define one another. In this sense, ICTs and ICT education may "offer unexpected opportunities that learners in rural schools could seize upon to construct innovative visions and practices" (Doolin, 2002, p. 22). Thus, the alternative visions and practices cannot be seen as located outside the knowledge and power domains.

A contrasting view of power is based on the conceptualization of power as a generative force, with a focus on the positive energy of people 'to be able' to transform their lives and to motivate others (Hartsock, 1990). This generative force creates both the people's ability to make choices and the process of change in the achievement of their abilities. It stresses that technology only receives meaning once it is being 'enacted' by users and thus people can exert control over its use by interpreting and appropriating it to their specific realities (Orlikowski, 2000). In essence, power places human action rather than technology at the centre and emphasizes the interdependencies between technology and the social context (Orlikowki, 2000; Avgerou, 2001). Importantly the power-knowledge theory is employed in this thesis to help people to develop their full range of human capabilities using the practices and knowledge involved in ICT education. Therefore, it is the intention of this research not to realise philosophical ideals in practice, but rather to make people aware of those forms of knowledge, norms and ideals that constitute their lives, thus to get them to reflect (Popkewitz and Brennan, 1998).

1.7 Advisory note to the Reader

Having drawn the critical perspective of this study, I found it necessary to add an advisory note to the reader. This thesis contains the use of philosophical and sociological perspectives which are hardly realised in context such as educational practices that are dominated by government and political interests. The normative practice of unquestioning the adoption of education practices in rural schools has motivated me to develop arguments that aim to critique the dominant power claims. It is important to note that many of the fears noted and expressed by individuals who participated in this research were later realised as consequences of adopting imposed social developments in rural communities. This was particularly relevant in light of the application of impractical ICT education practices that renders learners powerless when facing community realities. Thus, ICT education constitutes knowledge in which politically organized and socially institutionalized power avidly seeks to realise its desire to appear as moral and legitimate.

The concept of power that I am discussing in this thesis does not reside in access to various forms of ICT but rather it defines the role that institutions use to create values, assumptions and beliefs of ICT in rural communities. It is the power that makes knowledge of ICT and ICT education unquestionable. An institution in this study represents the established social space that endows people with emancipation, resources, power and position (Bourdieu, 1999) in their community. The educational practices and technologies discussed in Chapters 2 and 3 are sanctioned by an institution to control the knowledge of ICT, use of ICT and are legitimized as such by communities. This suggests that ICT education is not just about the use and access to different forms of ICT but rather it is a mechanism through which the communities abide by the authoritative influence of an institution such as a rural secondary school. This thesis therefore provides practical experiences that reveal forms of power and disparities that constitute ICT educational practices in rural secondary schools. It also demonstrates the acquisition of transformative knowledge of ICT that society ensures the encouragement of the development of learners as good citizens who could contribute to the social developmental needs of a rural community.

Irrespective of the context, the wider infusion of ICT serves to promote the consequential threats across communities, with varied potentials for manipulation and emancipation (Feenberg, 1995). Nevertheless, in spite of such aspects there is a philosophical void of what constitutes an appropriate response to possible opportunities, power and the dangers extended by ICT. This reality demands more than acknowledging the rational intentions of technologies, but also the furthering of emancipatory focus for its users. Such an undertaking is paramount in this thesis and constitutes the rationale for the least harmful use of ICT education practices in the context of social-developmental practices. The emancipation is being attempted in this thesis as a concept to liberate deprived communities by revealing the conforming tendencies in ICT education practices and use of technologies. This is done with the intention to open up new alternative forms of ICT knowledge and practices that are connected with the aspired developed state of rural communities. It is also important to note that the discovery of such an abstract possibility has a dependency on revelations from this study.

The emancipation notion is commonly attached to the critical philosophy approach (Honneth, 2014) and to normative ideals of shared intentions (Laclau, 1996). The emancipation idea is true to the critical stance committed in this thesis, which is distanced from the modern capitalist view, and instead emphasises the urgencies of poor and marginalized rural communities. However, I believe that the formation of critical philosophy provided herein offers a renewed understanding of modern philosophical thoughts. To make sense of such liberation for modern struggles, the thesis has reconceptualised a critical account of emancipation to one that is transformative, thus, developing alternative ICT education practices that are sensitive to context and transformation interests. By making use of emancipation, the critical notion of transformative practice of ICT education is turned on. These aspects should guide the reader of the thesis to recognize them as a feasible break in the practical cause of unwarranted events and as the beginning of ICT education practices that are capable of social change.

The critical philosophy engaged within this thesis should not just be seen as an explanation of the varied natures of freedom and conditions for transformation in ICT

education. Rather, the features form part of further analysis of reflective practices and critical research methodology. As I have argued in Chapter 4 and 5, the critical attention of this thesis is also on addressing the shortcomings of critical research methodology in the field of Critical Information Systems, hence critical reflective and the culture of practices have been adopted as the two traditions for engaging critical research in ICT for development discourse. The practical concerns of reflective practices in this study are the application of meanings and perspectives of people as they involve themselves in the practical use of ICT knowledge in various social experiences. This is extended in the proposed theoretical framework as a practice for ensuring ICT education practices which reflect the political and social conditions of learners and their communities. Moreover, such a reflective stance ultimately depends on the possibility of understanding the existing culture of practices in the empirical context and the emergence of participants who can achieve this critical reflective ideal in reality. By culture of practices on the other hand, I mean the desires, assumptions, values, attitude and ownership of knowledge that commit people to an alternative interpretation of ICT education.

As I will show in this study not all participants were comfortable with the critical philosophy approach. This thesis invites the reader to examine the mode of truth that exists in current ICT education and social context in rural communities. In other words, as an emerging critical philosopher in the IS field, I suggest that rigorous thinking and reading should be applied to precisely understand the discussions. Therefore, this thesis is presented following the objectives of the research study. The standard way of presenting a thesis proposes that problem statements, research methodology and a literature review must follow each other. This could not be followed in this research since qualitative research is mostly unstructured, unpredictable in respect of results and uncertain on the outcome (Koro-Ljungberg, 2015). For instance, in the initial stages of the research, I myself and the participants could not predict or promise the outcomes from this research. The results presented in chapters 5, 6, and 7 emerged over a period of time since myself and research participants were learning from the practices involved. In addition, as a critical IS researcher aiming to address the methodological challenges in the field, I could only present this thesis in the format more favourable to critical research inquiry. As such, the process of crafting this thesis is flimsier but this

does not obviate me from presenting a well-planned critical research study. In addition, this includes my personal interest in and experience of the topic as I have written in *Appendix A*. Furthermore, the experiences expressed in this research might cause me to be acknowledged as a Critical Information Systems Philosopher. This might be presumed from my questioning of taken for granted concepts and beliefs to think otherwise. The content of this thesis therefore assures the reader of the suitability of the theoretical base, and the importance of the knowledge contributed.

1.8 Definitions of Key words and Concepts

This section presents the definition of concepts and keywords that are often used in literature and also on how they are understood by the researcher in the context, aims and goals of the current research.

Rural areas refer to sparsely populated areas in which people farm or depend on natural resources, including the villages and small towns scattered across these areas (South Africa, 1997, p192). They include large settlements in the former homelands which rely on social grants from the government for daily living. The population in rural areas are heavily characterised by socio-economic problems and poor basic public services such electricity, water and education.

Rural development refers to positive advancement of communities in rural areas through improvement of rural institutions, rural infrastructures and growth of economic activities (South Africa, 1997, p192). This rationale recognises development in rural areas to include poverty alleviation and other activities to improve the economic conditions of people. For the purpose of this research, the definition of rural development borrows a notion from Sen (1999) who claimed development as freedom. Therefore, rural development in this research means using the ICT knowledge and skills to increase learners' access to opportunities, and to things they have reason to value in their communities, thus, emancipating learners in rural secondary schools to participate in developments which meet the current and future needs of their communities.

Information Communication Technology (ICT) refers to various technologies that are used for communication such as the computer, networking, multimedia and internet,

among other technologies. In recent years, ICT has become easily accessible to people in developed and developing communities and incorporated into most sectors of society.

1.9 Structure of the Thesis

This thesis is divided into eight chapters. In Chapter 1, the research study is introduced. The chapter commences with an elaboration of a research context to put the study in perspective, as well as to provide a background. Also, the goals of the research, and the methods, procedures, and techniques employed are summarized.

Chapter 2 presents an overview of the literature that informed the research. This literature stemmed from both a prior investigation as well as from emerging knowledge that became relevant as the study unfolded. Serving to act as a form of framing the research problem, the initial literature review reflected on understandings, suppositions and dispositions and biases in relation to the study of ICT in education.

Chapters 3, 4 and 5 represent the frameworks and critical theory of Foucault that guided the study to examine the current positivists view of discussion and knowledge about the implications of the power in ICT education. I explore the link between power, knowledge and truth (reality), to introduce the concept of making meaning and argue that the meaning of ICT education in rural secondary schools is radically different from that of learners and communities. The data collection and analysis processes are explained, as well as the limitations associated with this critical and philosophical investigation. There is particular focus on the proposed methodology developed to support the analysis of the empirical experiences. Moreover, this chapter has introduced trustworthiness in and creditability of the research.

In Chapter 6, the textural descriptions of the ICT education experiences are presented. Here the results are presented to allow the reader to come to know the participants' experiences, the activities and contexts they described as related to ICT education, their understanding of ICT education practices and knowledge of ICT. To gain an insight into the nature of ICT education experiences, and a selection of shared (common) descriptions are also presented.

Chapter 7 continues the examination of the experiences of ICT education, reporting on the core essences that draw the diversity of individuals to a shared understanding of the elements which were common to all. In this chapter the various results previously discussed in Chapter 6 are brought together into a whole and the essence of ICT education is presented. Here three core elements of transformative ICT education experiences are identified and a theoretical framework is developed.

Chapter 8, examines the validity and consistency of the theoretical framework against data collected in research activities and events, such as interviews and the reflective journals from co-researchers. The focus in this chapter is on identifying any further considerations of the implication of the research for our understanding of the transformative ICT education, the importance and potential of ICT education, and the relevance of critical and philosophical review that can expand our understanding of the ICT educational experience. The chapter presents a theoretical framework that includes four elements of transformative ICT education - power, identity, social experience and ownership. I discuss how this framework adds new dimension to existing frameworks of ICT in education and advocates a critical perspective on the transformative role of ICT education in society.

Chapter 9 provides a conclusion to the research. It highlights the contributions made, and points out areas for future research.

Chapter 2: Framing the Research Problem

This chapter presents an overview of the literature that informed the research. This literature stemmed from both a prior investigation as well as from emerging knowledge that became relevant as the study unfolded. Serving to act as a form of framing the research problem, the initial literature review reflected on understandings, suppositions and dispositions and biases in relation to the study of ICT in education.

2.1 Introduction

When examining any topic of understanding there is a temptation to claim prior knowledge. Realistically however, knowing is rarely divined from one source or one perspective, rather it is contextualised, personalised, informed by multiple realities and interpretations and, as those in the fields of the Information Systems and Education have recognised, mediated between the individual and the environment (Williamson and Johanson,2017; Urquhart and Fernandez, 2016: DePoy and Gitlin,2015; Charmaz, 2011). Thus, to explore any topic, construct, meaning or way people exist in the world a range of information is useful. This range can be found through the research questions and methods used and as ontological and epistemological perspectives are uncovered. It can also be sought through willingness and the ability to understand what has come before, to explore what others have said, how others have understood and the knowledge that prefaces any new research interest.

This chapter therefore intends to serve in part to answer those questions by examining what we already know about ICT education and framing the current research in the body of knowledge that underlies critical practice and understanding. It is also a form of solidifying conceptual grounding of the study, as I, as researcher, used the process to consider my own cognitions and assumptions of knowledge. Combined, this chapter sets the foundation for the research and provides a common point of understanding from which to consider both the choice of methodological approach selected (further discussed in Chapters 3 and 4) and the descriptive findings that characterise the essential nature of the lived experience of the ICT and ICT education that follows in Chapters 6 , 7, 8 and 9.

The review of past research in this chapter was done using critical perspectives to position this research within other related research studies that explore the knowledge available within the field of ICT education and ICT in education. This approach was considered because of the need for critical research in the study area (Webster and Watson, 2002; Hart,1998) and to support the researcher with approaches used by others that attempt to answer research questions similar to ones being investigated in

this research (Boote and Beile,2005). The critical review of literature is also important to adequately conceptualise the critical philosophical stance that underpins the research problem.

To effectively review the existing studies that are associated with the phenomenon investigated in this study, the following **Table 2.1** was developed as a guide. Table 2.1 contains a wide range of authors that have researched in the areas of ICT in education and educational studies. The authors were selected based on the literature review of key research on ICT in Education, ICT education, and the emerging issues that have been presented in different cases of using technology for educational purposes. Table 2.1 partly serves to provide guidance to the study in answering two research questions, and examines what researchers listed in the table presented in relation to the phenomena and framing of the current research in the body of knowledge that underlies ICT education and understanding.

Table 2.1 Guideline for review of existing studies

Guideline	Related Authors	Related Research Question
The review critically interrogates themes derived from the research objectives and questions of this study, including social practices, power and knowledge, ICT and education	Giroux 2008; Ferreira 1999; Mezirow 2000; Schumacher,1973; Veak, 2000	Research question (1) <i>How do Secondary school ICT education practices contribute to the social stratification of marginalized rural communities</i>
The review interrogates research that has empirical situations similar to this study. Research done in rural developing communities and focuses on ICT in schools.	Keengwe and Onchwari,2011; Kafyulilo,2014; Bulman and Fairlie,2016; Khan, Hossain, Hassan and clement, 2012	Research question (1) <i>How do Secondary school ICT education practices contribute to the social stratification of marginalized rural communities.</i>

		Partly related to research question 2; <i>How do ICT education practices affect failure and the potential of empowering communities with knowledge</i>
Review interrogates the contradictions of presenting knowledge differently in the field of technology, ICT education and its relation to social practices.	Kozma,2005; Adomi and Kpangban, 2010; Tolani-Brown et al.,2010; Keengwe and Onchwari,2011; Kafyulilo,2014; Bulman and Fairlie,2016; Khan et al., 2012	Related to research question 2; <i>How do ICT education practices affect failure and the potential of empowering communities with knowledge</i>
Sourcing reports and articles from government, non-governmental organisations that are presenting the status of ICT education in rural schools in South Africa Context.	Department of Education policies 2001,2003,2013,2015. Whitepaper 2004, 2013	
Narrowing down the review to trends and ways on how knowledge has built up in the field of ICT for development, ICT education and rural communities.	Kozma,2005; Adomi and Kpangban, 2010; Tolani-Brown et al.,2010; Keengwe and Onchwari,2011; Kafyulilo,2014; Bulman and Fairlie,2016; Khan et al., 2012	Partly related to research question 2; <i>How do ICT education practices affect failure and the potential of empowering communities with knowledge</i>

The chapter is structured in different sections. It begins by examining the presence of ICT in education, followed by reviewing the connection between ICT and education in

rural schools in South Africa. Then it presents different rationales for adopting ICT in rural schools and critiques the prevailing practices surrounding ICT in education. It also highlights the connection between rural schools' practices and social development in rural communities. The chapter concludes by critiquing the existing literature in order to provide understanding, which may inform the existence and the nature of ICT education practices and presents the 'truth' in a form that I deemed to exist in current ICT education and schooling in rural schools. Thus, my aim is to have an open mind that would accommodate not just what has been written, but also that which is also still to be discovered.

2.2 Presence of ICT in basic Formal Education in Developing Countries

Basic education in primary and secondary schools is commonly recognised as a key development priority (Modisaotsile, 2012) and holds an important position within the social practices of communities. Schools are also known to be a workplace for teachers and other professionals who support learners to access specific learning environments and education (Kim and Roth, 2011; Ngcobo and Tikly, 2010). To strengthen the importance of schools and education in developing countries, many initiatives are introduced to help the schools, such as the integration of ICT in school activities, connecting schools to the Internet, and training teachers. These initiatives have created profound beliefs among educational researchers that ICTs have positive influences in the processes of teaching and learning. This can also be evident in several long and short-term projects in schools that are being implemented as experiments or pilot studies on the application of ICT in basic education (Mohlala, 2012; Kruger, 2010; Kozma, 2003).

The evidence from research and experiences indicates that some changes occur when ICTs are integrated in school and classroom practices (Mohlala, 2012; Mwalongo, 2011; Pritchard, 2007; Reil, 2000), such as access to online learning materials, sharing of information between learners and teachers thereby removing barriers to teaching and learning processes. Similarly, the integration of ICT in basic education is also seen as a means of changing the image of schools to show their willingness to improve educational practices. Consequently, many changes resulting from the application of ICTs are not merely expected as beneficial since there are also unexpected

consequences that are related to the adoption of technologies (Radder, 2008). For instance, a study conducted in 2012 in Swaziland, on introducing ICT in secondary schools, shows that most technologies in rural schools were implemented based on the fact that they could manage classroom activities and not on the educational needs thereof (Mndzebel, 2013).

Another study conducted by Mbodila, Jones and Muhandji in 2013 in South Africa, focused on the integration of ICT in basic education, and revealed that most schools in rural areas that have computers lack access to internet services due to poor funding (Mbongo et al., 2014). Other studies done by UNESCO (2003), Ngimi (2013), Ghavifekr, Kunjappan, Ramasamy, Anthony (2016) show that the lack of teacher training in ICT, the lack of appropriate ICT equipment and the lack of maintenance for ICTs are some of the challenges faced by schools.

Relatively, the challenges that schools face in integrating ICT in their practices can also have an impact on the way the knowledge of ICT is presented to learners (Johnson, Raye, Mitchell, Touryan and Noren, 2006; Lai and Pratt, 2004; Pelgrum, 2001). This concurs with some authors who acknowledge that the availability of various forms of ICTs in rural schools does not guarantee the successful acquisition of relevant skills and knowledge (Bertram and Waldrup, 2013; Bahati, 2010) for the 21st century. Haijun, Weifeng, Jinghua and Rong (2015) and asserts that

“the implementation of relevant knowledge in rural schools is a complex process, determined by revealing the formal education systems that disadvantage learners in exploring flexible opportunities of applying their knowledge to community life experiences” (p41).

Given that there is a lack of understanding in this complex process, most schools continue to face pupil drop outs, since learners do not appreciate the use of their knowledge in solving the social and economic challenges of their communities (Bush and Heysterk, 2003; Mezirow, 2000; Case and Deaton, 1999). It must be acknowledged that communities are not only lacking in educated learners to solve socio-economic developmental challenges, but they also face inequalities that exclude them from knowledge relating to society, resulting in marginalised communities (Desai and Potter,

2013; Khan et al., 2012). Sharma (2014) notes that marginalized communities suffer severe inequalities that position people on persistent social-developmental disadvantages. Marginalization is perpetuated through institutionalized disadvantages developed by practices and policies that suppress particular groups of people or individuals (UNESCO, 2010) and is mostly experienced in rural areas in South Africa (Ruto, Ongwenyi and Mugo, 2009).

The report by the UNESCO in 2013 also indicates that over 30 million children living in sub-Saharan Africa have no chance of access to formal education and most likely will not be able to access schools in their lifetimes (UNESCO, 2015). Such challenges increase the growing number of illiterate people in developing countries such as South Africa. Moreover, it is estimated that three quarters of the 1.9 billion people who are in extreme poverty live in rural areas, according to the United Nations (2014) and account for a margin of the world's population. This reveals that the population in rural communities continues to be vulnerable, and have no opportunities to explore practices that can improve their communities.

Dauda (2010) notes that basic education can be used as a tactical instrument to improve the wellbeing of communities in developing countries, such as South Africa. In his research *on the realities of education in social development*, he concluded that basic education has had evident inherent values for so many decades which improve ways in which people participate in social development activities. This infers knowledge building to enable learners with relevant objectives for attaining social and economic changes (Fadiya, 2010). Additionally, basic education such as secondary schooling, can equip learners with the necessary knowledge and skills relevant to their personal and community development (Hart, 2013; Dauda, 2010). This implies that any type of education has the potential to instil change and development in a learner. Such an aspect is important to promote education as an instrument for eradicating poverty but also incorporating various tools in education to develop new knowledge relevant for learners. In respect to developing countries, ICTs are seen as tools for social and educational development (Ertmer and Ottenbreit-Leftwich, 2010; Avgerou, 2009; Wilson and Heeks, 2000). Therefore, linking education and ICTs requires strategic interventions that go beyond the formal and centralised settings of education in schools,

in particular those in developing communities. This is because most schools in developing countries such as South Africa are at experimental application levels of using different forms of ICT and this calls for a paradigm shift to reveal and reconstruct knowledge produced through ICTs (Simuja et al., 2016; Van Zyl, 2013).

Hague and Williamson (2009) identify that schools have a role to play in preparing students for participation in the technology-rich environments of their future jobs and society, and therefore it is important that schools make use of ICT to support teaching and learning. Hawkrige (1990) identifies four rationales behind the use of ICT in schools and, despite the age of Hawkrige's writing, these rationales are still evident within education policy today (DfE, 2011). They are:

- social – to prepare students for the use of ICT in everyday life;
- vocational – to prepare students for using ICT at work;
- pedagogic – ICT improves teaching and learning;
- catalytic – ICT can change what is taught and how.

It is evident that ICT has enabled change in both the process and content of learning. It has provided new tools for education that facilitate students' learning and enabled new or more efficient ways of doing things (Abi-Raad, 1997; Boshuizen & Woperis, 2003; de Winter et al, 2010; Hennessy et al, 2005).

Lehtinen's (2010) meta-analysis of ICT based studies identified four common themes in terms of students' learning – they learn more, learn faster, gain in terms of motivation and improve social interaction – but that the inclusion of ICT does not inevitably lead to the enhancement of learning. The positive motivational effects of ICT on pupils in terms of behaviour, learning and achievement are most likely experienced when ICT is used to support both learning and teaching (Passey et al, 2003; Holley & Dobson, 2008). Hill et al (2012) state that students express preference for the use of multimedia and 'entertainment' and a number of authors identify the use of the Interactive Whiteboard (IWB) to present media-rich content to students (Reedy, 2008; Liang et al, 2012; Slay et al, 2008; Twiner et al, 2010; Hennessy et al, 2007; Heemskerk et al, 2014). However, teachers within Hill et al's study (Hill et al, 2012) suggest that this conflict between education and entertainment detracts from 'learning' where students are not actively engaged in reflection, discussion and interacting with others when consuming

multimedia content. When students care about and enjoy what they are doing, they are more likely to learn and more likely to take part in 'difficult' activities (Resnick, 2004).

This section briefly outlined the general discussion on the presence of ICT and its use in basic education in developing countries context. The discussion noted that this integration is not straightforward, with a number of authors contesting the compatibility of ICT and education. ICT is important within basic education in providing new or more efficient ways of doing things, and by motivating and engaging students through this use of ICT. However, the integration of ICT use is not a solution to improve schooling in basic education and the way to support education practices requires consideration of its use. The following section addresses the use of ICT in basic education practices.

2.3 The use of ICT in Basic Education Practices

The use of ICTs in various fields of society is recognised as a trend for accelerating shifts in individual lives and societies. This apparently is attributed to the belief that ICTs have social and economic development potential benefits to both developed and developing countries (Assar, Amrani and Watson, 2010; Duncombe, 2006; Heeks, 2009) and therefore become a necessity for human daily living. As such most developing countries are pushing to enforce the implementation of ICT related initiatives in different social sectors (Ghavifekr, Razak, Ghani, and Ran, 2014) including the education sector and to use ICTs as a highway for transferring knowledge (Grabe and Grabe, 2007). The inclusion of ICTs in education has encouraged the development of various education related technologies that are aimed at transforming teachers, learners and school practices (Barrera and Linden, 2009). These technologies include digital learning materials, online teaching and learning, sharing of learning materials using computers and the Internet, and access to real time information et al. This suggest that the availability of different forms of ICTs such as tablets and laptops, has diversified the potential to structure the procedures of operating teaching and learning, and force educational institutions to react and transform their practices (Kozma, 2002).

Rezaei, Nazarpour and Emami (2011) identified that the application of ICT in education is founded on practices of incorporating different technologies that support the process

of the delivery of instructions to learners. In this process, teachers play a key role in the use and introduction of ICTs within the classroom, and determine skills and knowledge for learners to acquire. This is heightened through the capability of ICTs in serving the classroom with proactive and dynamic teaching and learning environments (Charbonneau-Gowdy, 2015; Capan, 2012; Hammond, Reynolds and Ingram, 2011). Although the adoption of ICT in classroom practices is determined to improve the delivery of learning instructions, it can also support learners in networking with other learning communities that provide knowledge for resolving recurring global challenges (Clothey, 2015; Bang and Luft, 2013). Moreover, Bertram and Waldrup (2013) claim that the presence of ICT in classrooms can represent the continuous process of providing information resources that enhance teaching and learning. Thus, by adopting the use of ICT in education, it serves as a base for incorporating modern practices in teaching and learning.

Omollo, Indoshi and Ayere (2013) points out that most learners in basic education are familiar with some of the technologies and technology-based learning environments. The learners' prior knowledge of ICT can provide a vital element in the process of integrating ICT in classroom activities, according to Clothey (2015). However, the revolution in ICT has been so tremendous in recent years and is such that the application of ICTs in the classroom has become so complex with various emerging learning practices (Chigona and Chigona, 2010). This force both teachers and learners to acquire the necessary expertise and information on the use of different technologies for teaching and learning.

Over the years, the application of technologies in education has had a great impact on pedagogical aspects to the point that learning becomes effective through various ICT components (Jantjies and Joy, 2016; Capan, 2012; Kozma, 2002). Hare (2007) affirms that ICT- based platforms and tools promote effective learning for all ranges of subjects in schools. In particular ICT aids teachers and learners in engaging in effective learning practices such as online learning and task allocation. In addition, Barrera and Linden (2009) emphasize that ICTs in education are functional tools used to supplement teaching and learning rather than replacing quality teachers and learners. Therefore, the application of ICT and technologies in education presents crucial factors for teaching

and learning. This creates a proactive learning environment even in physical distanced space learning (Hammond et al., 2011; Chigona and Chigona,2010; Duncombe, 2006).

A study conducted by Hermans, Tondeur, Van-Braak and Valcke (2008) on the impact of computers in primary school classrooms, reveals that the successful application of ICT in classroom practices is closely related to the intentional use of ICT. The authors identified the three significant approaches which are valued by teachers in adapting to and adopting ICT in classrooms as: *integration*, *enhancement* and *complementary*.

The *integration approach* focuses on applying ICTs within a particular area of a subject which demands complex and high order skills in order to support learners in learning more, and more effectively. This approach requires the teacher to review the curriculum and incorporate ICT resources, such as specific software, that can be used to achieve objectives stipulated in the curriculum. The *enhancement approach* uses ICT in a classroom to provide a more prominent position of introducing particular topics to learners. For example, Microsoft Power Point presentations can be developed in some creative ways to present a particular topic in a classroom.

A *complementary approach* is mainly concerned with the application of ICT as a tool for developing active learning in a classroom. In this approach learners are stimulated to participate in learning through organized and efficient ways of obtaining classroom notes and extra-curricular information using various sources such as emails, and the Internet to achieve particular given tasks. Most teachers in basic education, however require support and training in ICT to effectively adopt the use of technologies in classroom practices, using either of the approaches mentioned above (Bovée, Voogt and Meelissen, 2007; Bauer and Kenton, 2005; Zhao, and Cziko, 2001). However, these authors only focus on using teaching as a single variable to measure the effect of ICT in a classroom and school context. As such, Ghavifekr, Razak, Ghani, Ran, Meixi and Tengyue (2014) rejected the isolation of teaching as the only variable that can be used to measure the practical use of ICT in an educational context. In their research, they proposed that different variables are needed to better understand the effective usage of ICT and the underlying motivation for adopting ICT in most schools. In conclusion, these authors asserted that the compelling usage of ICT in basic education should ultimately

be related to the learners' attitude toward ICT, the teachers' knowledge of ICT, the classroom setting, and community support. These attributes serve to position ICT in basic education as subservient to the improvement of education practices. It is therefore necessary to advocate incorporating ICT in the frameworks that define practices in education in schools.

Chen (2008) argues that the effective implementation of ICT in basic education would demand proper planning of policies that guide school and classroom practices. He suggested that policy makers and researchers must have clear insight into strategic plans that exist in schools before implementing ICT related initiatives. ICT policies in education serve a functional vision of systems that can support educational practices, learners, and teachers according to Chen (2008). Similarly, Dedeney's (2010) analysis on the use of ICT in basic schools reveals that many developed and developing countries have formulated policies for integrating ICT in education. The policies aim to promote equal access, and the use of ICT by learners and teachers to reduce the digital divide. Accordingly, these policies are adopted in schools without understanding the role and functions that ICT plays in different education settings (Chan, 2002). It is therefore, necessary that education policies should also emphasise the use of ICT as a productive means for learners to access relevant information and communication.

On the other hand, the research conducted by Khan, Hossain, Hasan, Clement (2012) shows that the integration of ICT in most basic education schools in developing countries face many challenges. They argue that many developed countries have evidence of the successful implementation of ICT in schools, yet it is a different case in developing countries. The challenges are magnified in schools that are located in remote areas of developing countries. Table 2.2 lists the factors that constitute challenges in implementing successful ICT in basic education in developing countries, identified by Khan, Hossain, Hasan, Clement (2012).

Table 2.2; Factors impacting on successful ICT use in basic education schools

(Adapted from Khan, Hossain, Hasan, Clement,2012)

Challenges	Cause and impact on rural schools
Dearth of proper ICT trained teachers	<ul style="list-style-type: none"> • Teachers fail to use and integrate ICT in teaching and learning, and introduce ICT education, due to lack of adequate and quality ICT training that imparts relevant knowledge and skills. • The education authorities fail to involve teachers in regular quality and formal ICT training.
Unfavourable school organisational culture and beliefs	In most schools, the authorities and teachers fail to acknowledge the importance of ICT which often results in teachers unwilling to adapt to teaching and learning that involves ICTs.
Shortage of time to adopt and adapt ICTs in education	Most teachers are mostly tasked with teaching subjects that engage ICT with no proper training or time to design or develop strategies for incorporating technologies in teaching and learning.
Dearth of ICT technical support	<ul style="list-style-type: none"> • Most schools fail to optimize the use of ICTs due to a shortage of technical specialists who can provide timely support to teachers and learners on practical uses of ICT and servicing ICT devices. • The absence of in-house or external technical support in schools which results in most ICT devices not being used.
Maintenance and upgrade of ICT equipment	<ul style="list-style-type: none"> • With restricted government budgetary

	<p>constraints and economic woes in most developing countries, most schools get less funding to support the acquisition of and upgrade to the latest technologies and equipment.</p> <ul style="list-style-type: none"> • Projects initiated by governments and the private sector in schools fail to live up to expectations due to lack of sustainability and funds to maintain the initiatives by teachers and students.
Language and content presented in ICT	The majority of ICT equipment, technologies and software presented in education are produced in English, which creates a barrier to students and teachers who are not familiar with the use of the English language.
Social and cultural factors	Social and cultural factors represent external challenges that have an impact on some schools in the adoption of successful ICT usage. In most rural areas community leaders and members do not have an interest in supporting school ICT initiatives which affects proper integration and the safety of project equipment and sustainability. Such challenges require much effort to create awareness of the importance of ICT in schools and the communities that form part of rural schools.

The challenges outlined in the table above, represent the continual educational divide that essentially requires government and private sector intervention to support the integration of ICT in basic education practices (Khan et al., (2012). In addition, Dzidonu (2010) asserts that schools should align their education system with practices in communities to gain support from community leaders. Thus, the social practices of communities should form part of the framework of rural school's education practices.

2.4. ICT and Education in Rural Secondary Schools in South Africa

Over the years the advent of ICTs in most rural communities in South Africa has strongly been acknowledged together with varied technologies (Baduza and Khene, 2015; Ford, Botha and Herselman, 2014; Chigona and Chigona 2010; Ruxwana, Herselman and Conradie, 2010). Most ICT such as mobile phones, internet, tablets, digital displays and computers have been integrated into daily activities in rural communities. The availability of varied ICTs in rural areas has also been directed to rural schools with the aim of collaborating, and incorporating learners and teachers in a knowledge-based society (OECD, 2001). This transition is also linked to addressing the digital divide and channelling the life experiences of learners (Sey,2013) towards improving marginalized schools that were deprived during the past apartheid regime (Motala,2011).

During the apartheid regime, most schools in rural areas were marginalized in terms of access to and the use of technologies (Evoh, 2007). The apartheid government created two levels of economies that had different social and economic impacts on South African communities. The first economy was more advanced and developed with highly skilled people and advanced educational systems. Meanwhile, the second economy was characterised by informal, unskilled people, and marginalized communities who could not access any of the benefits from the first economy (Bond, 2014). The communities that were part of the second economy lagged behind in social development, justifying why it has been the present government's key developmental priority to address problems of inequality (Maringe, Masinire and Nkambule, 2015) in social sectors such as secondary school education.

The need to develop education also explains the inequalities rural schools face in access to and usage of ICT in the country. In order to support rural schools and their communities, government and private sectors have initiated several ICT projects such as SchoolNet, AwareNet, eKhaya ICT, and ICT for Rural Education, Khanya Technology Project, Sentech Project, Mind-set Learning (Dzansi and Amedzo, 2014; Gudmundsdottir, 2010). These initiatives have simply been attempts to introduce more ICT infrastructure and educational development into rural schools. The improvement of

educational systems is seen as a primary way in which rural schools can prepare learners for global, technology-based changes (Fleisch and Shindler, 2012; World Bank, 2003; OECD, 2001). At a more formal level, some schools in rural areas have taken the advantage of ICT initiatives to introduce ICT education into their curricula as well as to involve informal ICT training for teachers, and ICT leadership training for education managers (Kenea, 2014; Mncube and Harber, 2010; Pade et al, 2009; Schools networking, 1997). Such developments in rural schools are creating what the Department of Education White paper of 2013 noted as “an inclusive learning society” (DoE, 2013).

The profound shift in terms of ICT in rural schools can be traced back to President Nelson Mandela’s initiatives in 1995 that called for incorporating ICTs in government as a tool for socio-economic development. The call concurred with other developmental partners such as the United Nations Development Programme (UNDP), and the World Bank that are supporting the government in implementing ICT projects in rural communities especially in the education sector. Overall, the Department of Education (DoE) in 1995 established the National ICT Policy Framework to guide schools and players in education on the application of technologies in schools. The ICT policy framework focused on presenting a strategic direction for implementing new technologies in schools within the country. However, the report of 1996, on a review of the first ICT policy framework titled ‘*Technology-Enhanced Investigation in South Africa*’, found that there was a lack of clear planning in the implementation of proposed ICT initiatives in schools.

The framework failed to support the systematic application of technologies in rural schools (DoE, 2001). Consequently, the ICT policy framework was further enhanced to incorporate other strategies that could support the implementation of ICTs in teaching and learning. The DoE noted the need to devise learning that is enhanced by technologies in basic school education. The improved ICT policy framework was later commissioned as a guideline for introducing technologies in all educational related activities and at all levels in schools (Blignaut and Howie, 2009). This framework further incorporated four key areas of technology focus in schools: provision of study materials supported by technologies; technologies for teaching and learning processes;

support for the school management using technologies; and paying all costs involved in integrating technologies in schools. In 2004, the DoE adopted the improved ICT policy as a framework for coordinating the private sector and government in providing ICT for basic education.

Since the adoption of the second ICT policy framework in 2004 by the DoE, there have been compelling benefits which ICTs are bringing to schools especially in rural secondary schools (Dlodlo,2009; Mfum–Mensah,2003) such as basic ICT skills for teachers, ICT integration, and ICT leadership for education managers. In most rural secondary schools, the persuasive evidence is seen in learning, teachers' access to quality teaching and learning information and improved interaction between teachers and learners (Chigona, Chigona, Kayongo and Kausa, 2010; Amedzo, 2007). Moreover, most learners are able to create choices and opportunities through ideas and information found through the use of various technologies such as the Internet. Indeed, the availability of ICTs in rural schools can be highly appreciated for improving teaching and learning.

Notwithstanding the above, Maringe et al., (2015) argued that some schools in rural areas still have no access to any form of ICT and ICT education. This is attributed to the fact that ICT projects initiated by government and private organisations are mostly based in urban areas. The urban areas possess attractions in the form of good infrastructures, improved social developments, and businesses that provide financial support to projects. This provides added advantages to learners in urban schools in terms of access to various technologies and formal ICT education. In sharp contrast learners in rural schools struggle to access the same opportunities as their urban counterparts (Mireku, 2016). It is clear that such inequality undoubtedly holds consequences for learners in rural secondary schools, especially in the Eastern Cape Province as evidenced in the report by the Department of Education as seen in **Table 2.3** below:

Table2.3. Provinces and computers in Secondary schools (DoE 2014)

Province	Number of Schools (Report on 2009/2010 Annual Survey)	Number Schools with Computers for admin (NEIMS Report 2011)	% of schools with computers for admin (NEIMS Report 2011)	Number Schools with Computers for Teaching & Learning (T&L) (NEIMS Report 2011)	% of schools with computers for T&L (NEIMS Report 2011)
EC	5745	1427	25%	592	10%
FS	1712	1191	70%	295	17%
GP	2483	1796	72%	1571	63%
KZN	6008	2462	41%	992	17%
MP	1927	977	51%	288	15%
NC	617	364	59%	297	48%
LP	4084	1751	43%	427	10%
NW	1678	1349	80%	366	22%
WC	1616	1350	84%	1280	79%
National	25870	11319	44%	6107	24%

Table 2.3 confirms Ncanywa's (2014) claim that learners in rural secondary schools in the Eastern Cape lag up to seven years behind their urban counterparts in basic skills like computing and writing. The schools in rural areas fail to meet the basic needs for learners' education such as textbooks, proper classrooms and basic infrastructure development (Hollow and Masperi, 2009). Furthermore, Herselman and Botha (2014) explain that rural schools in the Eastern Cape face numerous challenges that hinder ICT project implementations. From their study, three critical challenges were found to have a great impact on the implementation of ICT initiatives in rural schools in the Eastern Cape Province:

- Poor school infrastructure and resources

The schools in rural areas do not have adequate resources for teachers to use in teaching and the buildings are in too dilapidated a state to be used as classrooms. The schools face challenges in accessing extra funds for infrastructure development as they are located in extremely poor communities.

- Lack of ICT resources

In most rural schools, there are shortages of teachers with proper ICT skills and knowledge to teach learners, let alone ICT resources such as computers, Internet and laboratories for computers. The upshot is that most rural schools do not provide

informal or formal ICT education in their curriculum and disadvantaged learners face more digital divides (in terms of ICT knowledge and skills) and challenges in appreciating the importance of technologies available in their communities.

- Poor and remotely located

Schools in most rural areas are located in poor and inaccessible areas with no proper roads and communication facilities which create difficulties in providing the facilities and resources needed to improve educational services. Learners in such schools walk long distances to schools.

The challenges identified by Herselman and Botha (2014) present the integration of ICTs in rural schools as less important. Nevertheless, some schools in rural areas are putting much effort into getting the support from communities to initiate different ICT projects (Gudmundsdottir, 2010). Such initiatives have led to the acquisition of ICT resources from various sources such as universities, companies and government departments. This development is also linking schools with some private sector institutions that are refurbishing used computers and donating these to rural schools as part of their partnership with government in the 'ICT for rural education programmes'. Furthermore, teachers who have partial or informal ICT skills and knowledge in some rural schools are increasingly using different forms of ICTs in supporting their teaching and learning practices (Chigona et al., 2010). This ultimately demonstrates the interest shown by rural schools and communities in trying to improve education through ICT.

2.4.1 Rationale for Adopting ICT in Rural Schools in South Africa

The prevailing need for improving education in developing communities is encapsulated in rapid technological changes and well skilled people (DoE,2013) that provide high value-added knowledge to socio-economic development (Yigitcanlar,2009). This widespread notion positions basic education as central in supporting government efforts to improve socio-economic development (Harber, 2010). To improve such education, the government in South Africa is imperatively incorporating ICT as a catalyst for quality education (Bauer and Kenton, 2005). This view further creates a belief among educators that ICT could provide a positive impact on knowledge and skills that learners attain in schools. However, Voogt and Knezek (2008) assert that educators and policy makers must consider the rationales for

promoting ICT in education. They proposed six rationales as vital to the introduction of ICT in education;

1. **Vocational rationale** - It affirms the need to provide learners with relevant ICT skills for future careers or jobs.
2. **Catalytic Rationale** - It supports the role ICT plays in promoting educational change in schools.
3. **Cost Effective Rationale**- Entails the assumption of using ICT to reduce the cost of education.
4. **Pedagogical Rationale** - Concentrates on enhancing teaching and learning through ICTs.
5. **Information technology industry rationale** - Emphasizes the need to promote ICT as a form of industry in education.
6. **Social rationale**- Prepares learners with ICT knowledge that supports them in functioning as citizens in society or communities.

The rationales identified by Voogt and Knezek (2008) represent the important values ICT can add to both education and learners. It is, however, within this research that the social rationale, supported by pedagogical rationale and vocational rationale is very prominent in the adoption of ICT education in rural secondary schools. The presentation of ICTs in rural secondary schools currently does not start with social rationale – thus supporting students or teachers learning to use ICTs. Instead it focuses on pedagogical rationale - utilizing ICT as a medium to learn. It must also be pointed out that pedagogical rationale inherent in the introduction of ICT in rural schools, at most reflects the view taken for granted through the transformation of education using technologies. Hence more critical articulation of the rationales represented by Voogt and Knezek (2008) is needed.

2.4.2 The Social Rationale (learn to use ICT) in Rural Secondary Schools in South Africa

The introduction of computers and technologies in communities, businesses, offices and education in the 20th century has enabled many people to acquire basic ICT knowledge and skills (Bahati, 2010). This resulted in the government, through the Department of Education, calling for education reform that equips learners to acquire 21st century skills (Ncanywa (2014) such as computer skills. The schools in turn started to provide

computer learning that focused on computer literacy which later changed to information literacy. The change was to cover basic ICT skills and knowledge that could support learners in coping with the global technology revolution. Some schools in rural areas further created different levels of learning to accommodate the ICT syllabus in their curriculum while others are using ICT in teaching.

The ICT knowledge and skills that are part of the curriculum in rural Secondary schools only stipulate the development of a basic understanding of computers while ignoring the need for proficient knowledge of using technologies both in and out of schools, which is providing ICT knowledge that corresponds to social practices and the life experiences of learners (Simuja et al., 2016). For instance, the current syllabus of Computer Application and Technology (CAT), which is regarded as an ICT subject in rural schools, has been disputed by several scholars such as Simuja et al., (2016); Conger et al., (2015); Hollow (2010); Gudmundsdottir (2010); Amedzo (2007). The scholars advocate a comprehensive review and contextualized CAT syllabus. ICT learning in the current syllabus of CAT introduces learners to a basic understanding of Microsoft Office applications (such as Power Point, Word processing) with no concepts that reflect the application of ICTs in the learner community and ethical implications (Simuja et al., 2015). This suggests the need to investigate what constitutes appropriate ICT learning in rural schools, according to Hollow (2010). The basis for understanding the description of the desired ICT learning warrants the need to question the dominant ICT education and its practices.

Indeed, the assumed consensus of ICT learning would mean to envision a reflexive nature of practices involved in order to formulate a new foundation for further investigations of political, ideological and qualitative changes occurring when ICTs are, to an increasing degree, becoming a natural and intrinsic part of our everyday lives (Ross, 2014). This further suggests that teachers have to critically reflect on social, pedagogical and catalytical rationales to communicate the purpose of learning various ICT concepts to learners (Voogt and Knezek, 2008). However, I believe such demands can be uncomfortable for teachers as it requires specific ICT knowledge, skills, and the potential understanding of how to facilitate teaching and learning using the ICTs.

2.5. Critiquing Rationale of ICT Education in Rural Secondary Schools

The provision of ICT education to learners in rural schools can be perceived as a worthy investment that supports the national development agenda (Kozma, 2005). This conception is founded ultimately upon the information communication for development (ICT4D) discourse that values ICT knowledge as a basis for using ICT in socio-economic development. The promotion of education growth in rural areas is prioritised in the government agenda (May and Govender, 1998) and ultimately ICT education forms an important aspect in attaining such goals. On the other hand, unequal access to relevant ICT education and the use of technologies in rural schools by learners poses some critical challenges. For instance, the digital divide in the form of ICT skills and ICT knowledge is worse amongst the learners despite the presence of ICTs in most rural schools. This is evident in rural schools that are already marginalized and face exclusion from informed society (Bauer and Kenton, 2005; Freire and Freire, 2004). Such challenges mostly emanate from implementation levels and policies set by authorities in the educational sector. This in turn fosters the disregard of students' worldviews, values, languages and traditions that form part of knowledge development in rural schools (Bahati, 2010).

The introduction of ICT education in rural schools is a cause for concern despite largely being accepted by both education authorities and communities. The nature and consequences of ICT education and practices in rural schools has been distorted within the education policies that guide learning. In short, the content and context of ICT education curriculum is unquestioned by learners as well as teachers (Hollow, 2010) and policy makers focus on ICT adoption rather than developing relevant ICT knowledge and skills. Such perceptions create beliefs among teachers that the presence of ICT in classrooms and schools is of inherent interest to the learners (Department of Education, 2013). However, Hollow (2010) explains that providing ICT resources in schools is not adequate since issues such as language, context and learners worldview needs to be considered in order to assure the relevance and quality of ICT knowledge.

Going further, Ross (2014) suggested the need to formulate education in rural schools that effectively serves the needs of learners and communities. Replicating ICT education within this form of education places the importance of critical reflection on forces that

drive education in rural communities. This is critical for asserting liberal ICT education that is free from political, and disempowerment ideologies imbedded in curriculums approved by education authorities (Freire, 2018; Mezirow, 1997). The critical challenge in the context of rural education is on an inherited form of learning which is decontextualized. This impacts on ICT education, which forces learners to develop passive ICT knowledge and skills. As such it warrants the need to critique agendas imposed on ICT education in rural schools and to establish alternative rationales for ICT education that is inclusive to learners, who have to deal with socio-economic developments in their communities (Freire, 2018; Giroux, 2008; Hursh and Ross, 2000). Furthermore, providing alternative perspectives of ICT education should ascribe to values that learners inherit as worldviews and for community good (Freire and da Veiga, 1970).

2.6. Motivating ICT Education in Rural Secondary Schools as Social Development Practice

It is widely acknowledged that communities promote education if they see the potentials of knowledge gained by learners rather than the school infrastructure (Modisaotsile, 2012; Lombardi, 2009). This further serves as a starting point to position rural school ICT education as a socio-economic agenda for rural communities. Similarly, education in rural communities is accustomed to every child having the tools to acquire knowledge that sustains and promotes the advancement of social development (Department of Education, 2013). Although schooling is recognised as such, a priority in rural communities (Dinkelman, 2011), recently increasing numbers of enrolments in schools has created challenges that have resulted in a decrease in levels of attainment (Maringe et al., 2015). These dwindling levels of attainment, results in most learners failing to connect the significance of formal school knowledge with common issues in their communities (Blakemore and Cooksey, 2017). Indeed, putting the emphasis on improving equity and quality education poses more challenges than increasing attendance in rural schools (Modisaotsile, 2012). Therefore, education in rural schools requires more critical attention to support the goal of schooling required by the communities (learners and people in rural communities). Thus, we must critically reflect on what constitutes the practices and curriculums in rural schools.

The studies presented in previous sections show that schools in rural areas are increasingly engaging in ICT education and ICTs to help learners realise the potential of formal school education. This could also serve as the opportunity to reduce the digital divide through ICT knowledge and skills which the learner obtains in schools, thus, empowering the learner to communicate their knowledge to the community and become part of informed society. This shifts the conventional educational purpose to critically engage learners in developing ICT knowledge that will serve as an emancipatory tool (Christie, Carey, Robertson and Grainger, 2015). In addition, such forms of ICT education provide freedom which Sen (1999) suggested as an ultimate purpose of education to help learners make informed choices and frame their own destiny.

Livingstone (2012) explains that promoting autonomy and ability in order for learners to critically approach the world, goes hand in hand with teaching facts about reality. Whilst this abstract represents vital practice in ICT education, it is crucial to consider the hidden areas of disconnects inherent in ICT education and practices in rural secondary schools. On the other hand, Hollow (2010), acknowledges that current ICT education practices in rural schools are predominantly repressive in terms of accommodating learners' voices. Thus, most schools in rural areas present ICT as a tool to support teaching and learning rather than as an independent subject, according to Gudmundsdottir (2010). This raises concerns encompassing the promotion of digital skills and knowledge that respond to learners and community desires.

2.7 Critique of Studies Reviewed in this Chapter

The evidence from literature reviewed in this chapter shows practical challenges with respect to the way technologies and ICT education are presented in rural schools and communities. There is noticeable irrelevance of ICT knowledge and skills embedded in ICT education that is presently available in rural schools in the South African context. The default assumption is that such forms of education are utilized to maintain the status quo of rural communities and adopted without any substantive attempt to question its importance (Giroux, 2008; Darder, 2003). This aspect serves to exploit and destruct the practical application of ICT knowledge in social realities and education respectively. It is noted that the presence of technologies in rural areas does not

correspond to chaotic realities in respect of usage of ICT and skills of people, according Shirazi, Farid, Ngwenyama and Olga (2010). This calls for critical orientation that facilitates critical engagement and acknowledgement of potentials that ICT education has in achieving the desired end in rural schools and communities respectively.

Proponents of critical engagement of ICT in developing communities (Avgerou,2010; Feenberg, 1999) argue about assumptions that technologies have a passive philosophy of offering only condemnations and no direction for the future (Baskerville and Wood-Harper,1996). Further, ICT in recent years has been positioned as a primary structure of societies (Wilson and Heeks, 2000) and warrants more attention than just uncritical adoption. Associated with these attributes, ICT education is to be used in serving the interests of those in authority or reproducing a nature of power relations (Feenberg, 2004). This emphasises the need to acknowledge that there is, inherent in our relationship with ICT, some particular ability, potentiality and quality to transform our lives.

O'Donnell and Henriksen (2002) note that experiences in the recent history of ICT have been on the usage of technologies to subdue the democratic participation of people. In their argument, they foresee that the critical engagement of ICT practices can also develop technological civilisation in our societies. However, this stance forces the redefinition of current ICT education in rural secondary schools to point more towards emancipatory and transformative potentials. This supports the gaining of deeper understanding of the importance and the role that learners' experiences play in defining what ICT education means to the communities. Indeed, these notions in this study reject the de-contextualization of ICT education in rural schools, but the intention is to help learners attain imaginative and projected real-world ICT experiences. This can be further realised by engaging critical perspectives as a practical orientation for practices involved in ICT education as well as the discovery of relevant knowledge that represents realities (experiences) in rural communities (Freire,1996). The practical steps for critical perspective in ICT education could further bring about transformed rural communities that are firmly dependent on a shift induced by various forms of technologies. Therefore, castigating the hidden agendas in ICT education would become

necessary to form liberal education principles such as power transparency, learners' freedom, and social creativity.

2.8 Summary

The review of past research in this chapter has provided a framework for understanding how ICTs in education are variously used and integrated. The review acts as both a foundation for the research and a means of bracketing for I myself as a researcher. The literature review has demonstrated the potential knowledge that needs to be researched in ICT education. However, in order to address the knowledge gap identified in this chapter, the study introduces a theoretical perspective in the next chapter. The theory will be employed to provide a lens in which I can practicably analyse the problems identified. The theoretical framework guiding this research is presented in the next chapter.

Chapter 3: Theoretical Position

In this chapter the framework and critical theory of Foucault that guided the study is presented, to examine the current positivists view of discuss and knowledge about the implications of the power in ICT education. The chapter explores the link between power, knowledge and truth (reality), to introduce the concept of making meaning and argue that the meaning of ICT education in rural secondary schools is radically different from that of learners and communities.

3.1 Introduction

The purpose of this chapter is to explain the theoretical foundation of the research. Thus, it explains what has been taken as its key ideas, why they are important, and what I understand by them, what makes critical approach suitable to study the phenomena investigated. Furthermore, this study is guided by a set of beliefs that are underpinned by critical research orientation in the information systems field. The critical orientation is deployed here to understand the nature of the worldview that defines the possible relationships in the world and its parts as described by its proponents. This view must be acknowledged by faith as a way of establishing reality or ultimate truth of the world at the moment. Although there are multiple paradigms which can be adopted in research to represent the same worldview, it is not practical to raise one paradigm over others, according to Guba and Lincoln (1988).

To gain a richer insight into social practices using the critical orientation in Information System Research, Myers and Klein (2011) propose the six principles for conducting critical research as follows:

1. The principle of using core concepts from critical social theorists;
2. The principle of taking a valued position;
3. The principle of revealing and challenging prevailing beliefs and social practices;
4. The principle of individual emancipation;
5. The principle of improvements in society;
6. The principle of improvements in social theories.

The six principles suggested by Myers and Klein (2011) are not particularly general principles for conducting or informing IS research and can be debated further. Therefore, as a critical IS researcher I wish to exercise my “judgement and discretion in deciding whether, how, and which of the principles should be applied in any given research project” (Myers and Klein, 2011 p18). On a theoretical level of this study, three principals were adopted to inspire critical ideas.

The first *principle of taking a value position* is adopted to guide this study to abandon the ambition inherited by most academic research of producing predictive and cumulative theories. This is done to allow the research to develop alternative ideas that

can allow results to emerge. For example, the significance of ICT in the social lives of people in rural communities is not fully discussed or argued much in Chapters 1 and 2 of this thesis. Such shortfall I understand is normally considered as a weakness by most academic researchers. But in this study, I suggest that it must be noted as an initial analysis that evolves to give potential room for alternative views. It is also important that such incompleteness must be valued in this thesis in order for the reader to be receptive to what is discussed or suggested. Therefore, to understand what is argued in the theoretical framework for this study, one must part ways with the traditional practices of crafting knowledge in academic research.

The traditional academic research processes start with defining a problem, a question and a purpose. What is revealing in the initial stage is the object under study and why it should be further investigated. Subsequently, a suitable method is deployed in order to validate and support the research process. Thus, theoretical and methodological sections in most academic writings are devoted to motivating, elaborating, and evaluating the chosen, in accordance with some well-defined problems and aims. This study is in some respects different, mainly because it is in the later stages of the research that the study discovers explicitly the study-objective set in the research question. As such the knowledge developed in this study has not been consciously designed. It has been created through participation in various research activities that involve different intentions and questions, and by allowing these activities to be closely linked to philosophical theories. This has allowed the study to uncover alternative forms of understanding the relationship between ICT education, ICTs and human social experiences. The theoretical foundation is also advanced in this particular way as a problem related to the objective of creating a theoretical framework that supports the transformative nature of ICT education (refer to Chapters 6, 7 and 8).

The *third principle for revealing and challenging the beliefs of practices* is used to provide an account (inform) of the research problem to those who are concerned. For instance, the research problem raised in this study is a concern for people in rural communities as well as Information Systems Research practitioners. Various research questions that I advance in Chapter 1 are mainly influenced by both literature on critical theory, and by engagement in ICT education and ICT4D projects in rural communities. The concerns

arising from such encounters can roughly be summarized into research questions that relate to *how ICT education in marginalized rural secondary schools should be transformed to transformative conception of existing social developmental-practices and realities*. In this respect, this thesis intends to establish emancipatory practices of ICT education and critical methodology in IS that can be used to frame the base for answering such questions. The sixth *principle of improving the social theory* is adopted here to provide potential feedback to concerned communities in specific ways. As explained in Chapter 1 and in this section, during my PhD programme I have been involved in presenting some of the emerging results from this research at various conferences and collaborating with other researchers in publishing the findings. I have also used my research as a project to train people in rural areas in the use of ICT available in rural schools. Moreover, the feedback from the participants and interaction with other researchers in the field has also enabled me to clarify my intentions and improve the research questions through practical and reflective means of improving the subject matter.

3.1.1 Why Critical Approach?

In general, the theoretical framework of this thesis finds support in critical theory. This research is potentially defined as critical research since the tasks intend critiquing the social practices and bringing to light the restrictive conditions. Critical research is commonly characterised as emancipatory practice that aims to reject the causes of unauthorized domination (Myers and Klein, 1999) and encourage human beings to realize their potential (Giroux, 2008). While human beings can potentially act to improve their social settings, critical theorists understand that the ability to improve social conditions is restricted by different forms of natural laws, cultural, social and political dominations. Critical research therefore must be associated with attempts that aim to confront social injustices within a particular society.

In critical research, the researcher is mandated to take up the position of changing the society for better rather than inheriting the neutral assumptions of traditional research. To avoid confusing the participants in respect of the position of the researcher within critical research, the researcher must be conscious of his knowledge and assumptions about the phenomenon under investigation. While a researcher in a traditional research

seeks to describe or interpret part of reality, critical researchers use their research to engage political action to transform the social injustices, as well as practices involved in the research itself. Thus, critical research is not always satisfied with common knowledge for interpreting the way the society and research is known.

3.2. Critical Theory

Critical theories were originally formulated by theorists such as Habermas (1971), Theodor W Adorno (1947), Walter Benjamin (1921), and Marcuse (1964). While the ideas of these theorists are integral to critical theory, it is the Frankfurt School in Germany that is mostly accredited with influencing various academic institutions to embody critical philosophy in knowledge developed from economy, sociology, psychology and more recently technologies. Critical theory, in its broadest sense, refers to a set of ideas or thoughts that concern and transform the society. The philosophy of critical theory is more influential in turning research into a social activity that encompasses deliberation, critique and reflection (Landow, 1991). In this environment, the moral construct is to reduce inequalities, disparities and injustices that people face in the world (Calhoun, 1995). In the same vein, critical theorists believe that every human being should be empowered to realize his or her potential (Walsham, 2012; Giroux, 2008). While human beings can potentially act to improve their social settings, critical theorists understand that the ability to improve social conditions is restricted by different forms of natural laws, cultural, social and political dominations. Critical research therefore is associated with attempts that aim to confront social injustices within a particular society.

Proponents for critical theory recognise that *emancipation* and *enlightenment* are core concepts in critiquing the social practices and are brought to light in restrictive conditions (Habermas and Levin, 1982; Geuss, 1981; Horkheimer, 1972). In their study Habermas and Levin (1982) consider 'enlightenment' as a process in which people participate collectively to effect change that supports their freedom or interests. They acknowledge that the effect of political and social forces, restrains people in terms of rationally reconstructing the conditions that make enlightenment possible. Indeed, the continual existence of unwarranted conditions in the society forces people to adopt a false consciousness. Other advocates for critical theory claim that people deeply subject

themselves to restrictive accounts with justified beliefs that the systems represent their interests (Peca, 2000; Popkewitz, 1984). Therefore, it is within this context that critique as an element of critical theory is devised as (Foucault, 1981, p154)

“not a matter of saying that things are not right as they are. Rather to point out on what kinds of assumptions, what kinds of familiar, unchallenged, unconsidered modes of thought the practices that we accept rest”.

The critique is intertwined with social and political motivation to replace that of neutral objectives in the society. This act of questioning allows a critical researcher to develop critical thought and action that does not follow inflexible methods in exploring social relations (Dews, 2007). Similar, critical theories are inherently emancipatory practices that aim to help people reject the causes of unauthorized domination (Myers and Klein, 1999) and encourage them to transform existing social arrangements (Giroux,2008; Fischman,2005). I discuss in more depth these notions of critical theory in the next sections of this chapter.

On the other hand, the practices of critical theory are adopted in a theoretical framework that guides participants and the researcher in interpreting and transforming the functioning of society (Mayes, 2010; Johansson and Lindhult, 2008; Borden and Rendell, 2000). As such critical theory at research framework level focuses on providing an alternative understanding of structures, culture and social liaisons taken for granted as existing in society (Kincheloe and McLaren, 2002). The differences in powers, culture and social relationships are used by people to create different social identities in the society. Such forms of social identities could also help in defining acceptable values and beliefs within a culture (Thompson, 2013; Horkheimer, 1982). For instance, acceptable values and beliefs create practices that support a particular society to dominate while others are refused the same privileges in terms of knowledge of what ICT can do beyond schooling and ICT education practices that are informed by realities in communities. In response to such inequalities, critical theory is adopted in this study as a framework to critique practices that escalate exclusion of learners in rural secondary schools from experiencing ICT education practices that have the potential for emancipation, enlightenment, and the transformation of communities in rural areas. Critical theory is employed in this research to further socially informed practices and address inequality

inherent in ICT education practices in rural schools (Calhoun, 1995; Kemmis, 2001; Dews, 2007). Critical theory is also adopted in this study to advance the question concerning the significance of the increased presence of ICT in society in terms of the critical intentions of introducing ICT education in rural secondary schools.

The critical theory as a framework is fitting to this study as it advocates an approach that values and supports the researcher to critically reflect on and adequately understand the empirical and grounding of experience. This research is also characterised as critical research because of its interpretative and qualitative tasks of acquiring the empirical social practices. Similarly, the research questions in Chapter 1 are formulated with the intention to examine the social conditions while rejecting dominant assumptions that inevitably repress the society, particularly the view of ICT education in rural secondary schools as inherently good, helping learners to obtain insights into desired life paths. Such knowledge enquiry attributes of critical theory are most appropriate to reflect and reconstruct ICT education practices and developmental needs of communities involved in this research. Moreover, critical theory is chosen to induct the methodology used in this research (Anyon, 2008). While this is integral to the practices of qualitative and interpretative research (Denzin and Lincoln, 2011), it must be acknowledged that as a researcher I am bringing in different assumptions at both theoretical and methodological level (refer to Chapters 1, 4, 6, 7 and 8). This is done to acquaint this thesis with varying critical philosophical intentions, which are both derived from a research approach and technique and from my motive and suppositions as a researcher. To understand this further, my intentions and perceptions are placed in order to critically examine the empirical, and meanings that are derived from the empirical experience. As such, an examination of the epistemology and ontology of critical IS research is required.

3.2.1 Epistemology and Ontology

In light of the above outline for critical theoretical perspective, it is necessary that I explain the epistemological and ontological positions used to contribute to knowledge in this research. The term Ontology is defined by Dilts and DeLocier (200) as the study of the fundamental nature of existence. It deals with “what kind of world we are investigating, with the nature of existence, with the structure of reality as such” (Crotty,

2003p10). Creswell (2003) explains that the ontological assumptions in a research are those that respond to questions such as “what is the nature of reality and what is there that can be known?” This study therefore uses an ontology which consists essentially of socially constructed meanings. The assumption here is that people in rural communities have their own interpretation, meanings and thoughts on how ICT education practices are (should be) nurtured. Moreover, with respect to ontological perspectives, critical IS researchers believe that the design and implementation of ICT produces or reproduces the organisation of the society. Therefore, to understand the presence of ICT in society we must critique the historical, ideological, and contradictory nature of the relationship between ICT and existing social practices (Doolin and Lowe, 2002; Baskerville and Wood-Happer, 2000; Myers 1997). Part of this process, in this study, is manifested in the critical examination of “what it is” in terms of “what holds” reflective or transformative meaning of ICT education and its practices in rural communities. Moreover, the study adopts a realistic ontology with assumptions that there are some realities in people’s social experiences “i.e the use of ICTs in rural communities by learners” that may affect the meaning of practices involved in ICT education. So, it is necessary in this study that such experiences be viewed as causal realities for transforming ICT education in rural secondary schools. Rather than viewing reality as something to be found out there (Denscombe, 2014), this critical IS intends to uncover alternative realities that are co-constructed through the experiences of people in rural areas. In other words, the ontological assumptions in this study acknowledge that reality is neither true or less true, wrong or right and that it is rather more or less informed (Foucault, 2000), dynamic and contextual (Krauss,2013) and evidence of the best understanding achieved so far (Krauss et al, 2016).

In effect, the ontological assumptions used in this study form part of the theoretical framework in explaining what is the reality of learners’ knowledge and experience of ICT education in rural secondary schools. These ontological assumptions are related to epistemological assumptions with the intention to propose methodological considerations such as data collection methods and instruments. According to Robson (2002), epistemology studies the knowledge construction. Traditionally in Critical IS research, the epistemology is concerned with what distinguishes different kinds of knowledge claims specifically with what the criteria are that allow distinctions between

'knowledge' and 'ignorance' to be made (Usher, 1996 p.11). The study has taken this turn to relate the ontological and epistemological assumptions since "claims about what exists in the world imply claims about how what exists may be known" (Usher, 2002 p20) **See Table 3.1 below.**

Table 3.1: Theoretical Assumptions, Adopted from Denzin and Lincon (2000)

Knowledge claim	Concerns
Epistemological	Assumptions and beliefs about the link between the reality and theory
Ontological	Assumptions and beliefs about reality
Methodological	Assumptions and beliefs that direct choice of methodology

The establishment of both epistemological and ontological assumptions supports this research to construct its own nature and kind of knowledge (Crotty, 1998). Such knowledge is important in understanding the significant constructs and validation of ICT education practices that are attuned to a critical theory perspective. On the other hand, research related to ontology and epistemology assumptions in ICT educational practices is limited by questions that favour positivist notions such as 'how ICTs or specific technologies are integrated and used in teaching and learning?' (Mooij and Smeets, 2001; Kozma,2005; Tondeur et al,2008). This creates difficulties in interpreting what critical theoretical assumptions ICT education must contain.

To this effect, the epistemological assumptions and questions are constructed to direct the research and I myself to a consideration of philosophical issues involved in working out exactly what can be counted as evidence of knowledge in ICT education research. Brown et al., (2010) explain in their research of connecting epistemological perspectives to classroom practices that

"...unheralded importance of activity and enculturation to learning suggests that much common educational practice is the victim of an inadequate epistemology. A new epistemology might hold the key to a dramatic improvement in learning and a completely new perspective on education" (p41).

This claim suggests that the context in which education practices are applied contributes to the formation of the nature of ICT knowledge and experience. The

knowledge in this aspect is not just an abstract but also something that is transferable between different settings such as classrooms and society. As such the ontological and epistemological concern for education practices must necessitate the process of allowing learners to develop knowledge as they participate both in and out of the school setting. On the other hand, Foucault (1991) asserts that knowledge must help individuals to see the reality or truth as something that can be found in society. In this study, the knowledge developed through ICT education is assumed as a way of constructing reality that has its base on individual experiences (Mezirow and Taylor, 2011; Mezirow, 1997). Such ontological perspectives suggest that true perspectives of reality cannot be assumed by correctness of existing terms of understanding. Therefore, the prevailing lapses of description and theorisation are deemed to be more descriptive than open. Such assumptions are adopted in this study to support the engagement of critical theory that is grounded in established ontological and epistemological foundations. Thus, the foundations provide a platform to articulate what is currently known and support the research to develop new meanings that are built on elements that can be accepted as knowledge in critical research.

Table 3.2: Knowledge Foundation of the Study

Knowledge claims in a critical research	Theoretical interests of this research
Ontological	Understanding the organisation of existing ICT education practices. Problematizing the use of ICT education practices to exploit and dominate social realities. Critiquing ideologies existing in current ICT education practices.
Epistemological	Dialect reasoning about ICT education practices in relation to social realities. Dialect tension of emancipation and transformation.
Methodological	Establish the truth about ICT educational practices. Engage ethical research practices in

	critical IS research conducted in a developing community context.
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The underlying approach to create meaningful ICT education and theoretical problems in this research is merely supported by critiquing the ideologies existing in ICT educational practices. As such, research questions were ontologically constructed to examine whether ICT education practices in rural secondary schools are imposed by external forces or conforming to community realities. Therefore, it was necessary to link the ontology and epistemology through dialectical reasoning as a practical process of exposing and excavating the nature of practices available in rural secondary schools. So, in order to pursue such interest, the research embraces the notion that problems of social development in rural communities are multi-faceted and epistemic solutions would require dialect reasoning on the prevailing knowledge produced in secondary schools to enable learners to pursue the desired life experiences or social realities. In other words, the notion of dialect reasoning is paramount to epistemic concerns of a critical theory. Hence it is used here in order to support the participants in recognising rural secondary schools as social institutions with both potential for empowerment and oppression (Freire, 2014; Schissel and Wotherspoon, 2003). Hence, the study engages theoretical frameworks that stimulate people to articulate various ambiguities and complexities of realities in society. The practical emphasis here is to attempt the transformation of taken for granted practices, such as knowledge, values and ideals of learners own life experiences in ICT education in rural secondary schools (schools participating in this study) that do not originate from methods of acting and recognition in a rural community (Foucault, 1988).

Respectively, the transformation process is a promotion of action that persists over time (Ponterotto, 2005) and involves epistemic knowledge (Schwandt, 2000) in this study. This knowledge is often theorized in critical research as subjective evidence that is collected based on individual perspectives of the subject matter (Martens, 2003). However, epistemology has far reaching challenges which constitute knowledge in critical information systems research, according to Silva (2007). This is mainly attributed to "trivial attempts to clinch knowledge as something possessed by

individuals, partly as the mental activity” (Toulmin, 1999, p57). Thus, epistemological knowledge in critical research is failed by the presence of a limited theoretical framework (Swinton and Mowat, 2016; Eriksson and Kovalainen, 2015). Therefore, the theoretical framework in this study intends to reformulate the epistemological knowledge in critical information systems research (refer to Chapters 1, 7 and 8). This is conducted in relation to social ontology assumptions that refer to knowledge as a reflection of an existing social entity (Schatzki, 2003).

With such a theoretical foundation invested in this research, the transformation of ICT educational practices is not formulated only to provide knowledge and skills but rather to emancipate learners to become what they perceive through the lens of community social practices. This concurs with Packer and Goicoechea’s (1991) remarks that “we must continually remake ourselves, and in doing so we make society and history” (p231). It is therefore necessary here to turn ICT education practices into a cohesive aspect of ontology rather than just epistemology alone. Moreover, ontology and transformation in this context are not passive entities but form transitional changes. As such ICT education practices imply the emancipation of learners, in context and meaning of experiencing ICT in rural community living. This process of “what it is” holds for socially informed ICT education practices. Thus, ICT education practices in rural schools should not only be related to knowledge production but transit learners to the desired empowerment.

While the ontological and epistemological perspectives are integral to practices in this research, it should also be acknowledged that critical IS researchers and participants bring in a number of assumptions to a chosen methodology and theoretical framework. Critical IS research is informed by varying philosophical intentions, both those derived from supposition and the intentions of the researcher, and those derived from the research approach and technique. Within this research, the perspective and intentions are grounded in a desire to study the way in which learners and people in marginalized rural communities experience the practices of ICT education and the meaning they give to those experiences. To understand this further, I discuss in the next section the assumptions that are adopted as part of information in the practices involved in this research.

3.3 Theoretical Assumptions

It is essential to note that despite the fact that this research is informed by the theoretical perspective of critical theory, the intentions and assumptions of the researcher and participants are also important to the chosen methodology. As a critical IS researcher there are a number of assumptions which are informing the practices involved. These include the assumptions that learners in rural secondary schools are regarded as educated people since the secondary school certificate allows one to be employed in the formal sector. Learners are considered in this study as intentional and active participant capable of constructing meanings using their life experiences. These learners are assumed here to be people that have the freedom to make choices (situated freedom) and the ability to think, and are reflectively aware of themselves and their world. The self-reflective processes undertaken by the learners are seen to occur at both pre-reflective and reflective levels and are one of the ways that humans develop knowledge and experience of ICT. In order to understand learners' experience of ICT education and ICT we must then understand their contexts, situations and experiences of being in the world with self and others (Dweck, 2013; Lave, 2009; Taylor, 2008).

Relatively, the critical intentions of this research also dwell on the belief that learners co-create changes and meaning in their lives through reciprocal response to structural forces. In this aspect learners, as everyone else in society, create meaning as they relate experience, phenomenon and the possibilities and limitations of meaning (Crotty, 1998). In these ways, it can be seen that this research places the focus on the individual learner and the power of the learner to construct meaning for himself or herself. Therefore, the reflexive views, interpretations and discussions in this thesis are applied with respect to the experiences of each participant and not as a group. The individual experience is the central focus and source of data and analysis presented in chapters 5, 6 and 7. Only once this individual knowledge has been examined, is it possible to shift from the individual, to the shared, to understand the nature of the unique experience from the perspective of its universal essences or lived qualities (Van Manen, 2016; Wojnar and Swanson, 2007). This is also based on the foundation that the reality of the world or meaning is subjective to individual views and in some way fashioned by the beliefs, assumptions and values of the interpreter (Orlikowski and Baroudi, 1991).

Moreover, there is no one, clear reality of human understanding, but rather that there are multiple and competing explanations, interpretations and understandings, none of which comprise the truth (Foucault and Faubion, 2000). In this critical research, this is referred to as “insight understanding” whereby any individual experience is being accepted as knowledge from a particular and limited standpoint. Just as the use of critical theory in critical IS research is one perspective of social reality, an individual’s reality is one perspective of interpreting social reality.

With respect to the epistemological assumptions of this research, the experience of individuals both in the research and subject matter constitutes the formation of how knowledge is assimilated (Best and Kahn, 2016; Sarantakos, 2012). While this knowledge is influenced by the belief, assumptions, values and interpretation of the recipient, it can also be deepened by interacting with that perspective in a detailed, reflective and focused manner. As such, the aim here is not to discount the realities but rather to create an alternative understanding of reality by immersing myself and participants in a critical way of inquiring and experiencing the perspectives of individuals in their real world (Krauss et al, 2016; Cecez-Kecmanovic,2011; Walsham 2008). Thus, the findings presented in this thesis have no claim to generalization but rather they are embedded in an understanding that knowledge resides in the subjective self (Krauss, 2013; Giroux, 2008). On the other hand, to access subjective realities is not an easy task and within critical IS research literature there has been an on-going debate regarding whether researchers can achieve this or not. The foundation of this concern stems back to the notion of reflexivity, reflective and critical reflection that sets aside presumptions in order to allow the researcher to examine directly the empirical, as it appears prior to thinking, interpreting or attributing experiences with predetermined meanings (Cecez-Kecmanovic, 2011).

The complexities and subjective realities of achieving the intentions of this research were recognised adequately by Krauss, Simuja and Conger (2015), who emphasised embedding the researcher in the study rather than trying to step aside. Consequently, evident within critical IS research literature is an acknowledgement of the challenges of presentation and the application of diverse practices of critique in respect of taken for granted issues in society (Myers and Klein, 2011; Myers 2009; Ngwenyama 1999), and

also an awareness of the shared intentions of the approach. In most critical IS research these challenges continue to be noticed, although in this study the complex practice involves the process of the insightful and accurate description of a participant's meaning, since it requires a receptive and immersed researcher, free from suppositions, (Krauss et al ,2015) and a willingness to step into the realities of the participants (Krauss,2013). For most critical IS researchers, the latter remains a challenge, but the researcher in this study intends to explicitly identify and acknowledge the way in which his experience or values relate to the phenomenon of interest (Marshall and Rossman,2014; Rossman and Rallis, 2003).

To guide the activities involved in this study, the principles of conducting critical research needed to be negotiated. Whereas the main intentions and perspectives of the philosophy were easily accessed and acknowledged as appropriate for the type of knowledge being sought, the breadth of applications and distinctive methodological practices were more flexible. Although critical IS research can be recognised as interpretive (Myers, 2009), such understanding serves only to locate the practices in IS research design and methodology with other qualitative models. Initially more distinct choices needed to be made and the theoretical underpinnings of critical research and information systems were chosen to guide the overall research approach and conditions. In other words, this consolidation reflects the intentions of this research to remain true to the philosophies of critical IS research without locking itself into the techniques or confined to outcomes of particular research methods.

3.3.1 My Critical Perspective of this Study

The critical scholarship in this research further indicates ways of identifying how existing social organisations, such as secondary schools and their practices, are used to enforce social developmental challenges in rural communities. As such, it is necessary that as a researcher I must step away from preconceptions of what is commonly known about the empirical and to focus on what is present in the participant's awareness (Cecez-Kecmanovic, 2011). As mentioned in previous sections, this is particularly important as the aim of critical IS research is to reveal the hidden cause of unwarranted experiences of ICT, and not to remain neutral. Once this is achieved, it is then possible

for the research to transform the phenomenon with alternative practices that have the perspective of the people who are living in the situation or experiencing it.

Krauss (2013) suggested that it is possible in critical IS research to surpass presuppositions and to experience a state of pre-reflective consciousness, which allows the researcher to describe the phenomena as it is presented by the participants themselves. While eliminating assumptions throughout the process of pre-reflective consciousness, it provides the researcher with the opportunity to step away from predetermined realities. This process also requires the raising of knowledge based on the institution and essence. Not only does the researcher endeavour to set aside predispositions, but they are asked to critically examine the events and people's actions with a critical lens (theories) to see them as they are and as they present themselves (Krauss et al 2015, Walsham 2012). Therefore, the critical commitment of the researcher and participants (co-researchers) in this study is to critically engage practices to examine ICT education practices and discover whether they are escalating social inequalities of knowledge and empowerment in rural secondary schools.

Foucault usefully recognised the crucial value of validating the structural arrangements under which knowledge is produced in our society (Popkewitz and Brennan, 1997). Foucault (1988) argues that "knowledge can be productive in generating different kinds of power and behaviour" (p12). He further refers to this knowledge as a relationship in which one guides the behaviour of others (Foucault, 1988). It is within this debate that we have to articulate the political significance and relationship between power and knowledge reflected in ICT education practices in rural schools. While the theoretical analysis in this study develops its own aspect of how power and knowledge relate to each other, the ideas of Foucault offer a practical viewpoint for defining power within socially informed ICT education practices. However, we must recognise that the "productive" manner expressed by Foucault does not necessarily mean that power produces repressive outcomes. Rather, *productive* referred to in power-knowledge theory means generating behaviours, actions or structures that are both positive and negative.

The implications of the power and knowledge philosophy presented by Foucault in this study, lead to a requirement for the researcher (myself) not only to be cognisant of his own prejudices and premises, but also to assist the participants to be intuitive in their insight into the phenomenon. For Krauss (2013), the underpinning interest of such practices in critical IS research is to pursue various ways of emancipating and expanding the freedom of the participants. With the focus on the personal experience of the phenomenon, the researcher in this study heightens an individual participant's own experience and confirms the experience through the eyes of other participants. It is within this process that meaning is derived from experience and truth from the intentional and a reflection of self (Foucault, 1988). Thus, the individual participant's experiences and meanings are all equally valid and integral to phenomenological knowledge.

In addition to the critical concepts discussed thus far, a theoretical concern here is linked to an emancipatory critique of a social institution cushioned with a notion of promoting human capability. Though this concern is related to a research process, it is also an indicator of the conceptual framework for this research in that it contextualised the way empirical experience was interpreted and viewed by participants and myself, as a researcher. Moreover, the inclusion of critical thought is far more than an academic theory but rather it is a mode of mapping the normative, relational and historical dimension of understanding social inquiry (Giroux, 1997).

It is also strongly connected here to a political vision of positioning rural secondary schools and society as products of dynamic relations rather than isolated institutions. In this way it is anticipated that both the participants and researcher can become aware of what makes the experience what it is - the thoughts involved, the feelings, fears and needs (Corbin and Strauss, 2014). On the other hand, this process has obviously a dialect implication on how other researchers in IS argued on the role of theory and how data is envisaged in critical IS research. Reflecting on the philosophy of critical theory as being the first method of critical IS research, this critical research acknowledges that understanding the essence of what something is, epistemological comes before why something occurs or is experienced. Thus, the research endeavours to remain faithful to

the perspective of the participants, rather than explain or describe the phenomenon using external frames of reference.

Relatively, the theoretical aspects employed in this study further the commitment of critical IS research that aims to describe not only the individuals' experiences but also to critically examine the insights which make experiences what they are, that is the essence which makes up that experience (Holloway and Todres,2003). In effect, this requires critical reflection processes that reveal the nature and significance of the experiences in a way not considered by most researchers in the IS field. This process is done not in order to fail the methodology, but rather to advance the philosophical heritage of the critical approach in IS that allows the researcher to search for the meaning of self and world, object and subject, and evidence and prediction. As Krauss (2013) and Cecez-Kecmanovic (2011) suggest, a critical approach in IS does not so much have appropriate methodology to follow, but a creative approach to understanding, which is appropriate to the aspects of the phenomenon under investigation. The methodological concerns in the IS field and utilisation of proposed critical IS methodology is discussed further in chapters 1 and 5.

Remaining true to this interpretation and based on the philosophical foundations of critical theory, the study endeavours to critically examine the phenomenon of ICT education practices in a holistic way. Many efforts have been made to search for the individual participant and group meaning of experiencing practices involved in current ICT education and ICT, and to develop phenomenological knowledge from the perspective of the participants, and not from my own suppositions. Thus, the critical intent is to critique the essence or existence of the experience in a critical way. To accommodate this, the general characteristics of critical theories which are used in this study are discussed in the following sections. These characteristics explicate the philosophies of critical theory that are engaged in this study, to provide more foundation for the research processes utilised. Serving more to differentiate the critical theoretical approach used from criticism variants, these descriptions represent the core ideals that guided the research.

3.3.1.1 Dialect as an Epistemological Challenge of Dominant Ideas

One of the core themes for most critical research is its approach to inspiring both the researcher and participants to question prevailing ways of knowing, acting and thinking in society. So, in order to create relevant and interesting interpretations of ICT education in this research, the principle of dialect reasoning is engaged. This practice is employed to negate and challenge the established ideas, notions and the truth in ICT education practices (Giroux, 1994). The 'truth' represents concrete and provable ideas that pass binary argumentation (Giroux, 2015). The central actualized interest in dialect reasoning is on helping the communities question their connections with the truth of realities presented in ICT education in rural secondary schools. It is thus by dialect reasoning in respect of the connection between ICT education and social practices, that learners become conscious of their connection to community realities (Freire, 1993). In my experience, such dialect concerns that arise in critical research determine our common assumptions concerning how ICTs are related to social needs and how research in the Information System discipline is conducted. Subsequently, some of the asperities associated with dialect reasoning in critical IS research are further explained in Chapters 6 and 7 of this thesis.

According to Popkewitz (1999), researchers who are inspired by critical theories should consider formulating research questions that oppose established patterns in society. The research questions in this study are framed to contribute some kind of thinking that is radically different. In this respect, the arguments raised dwell on dissolute but related themes that are outlined as a practice of critical information systems, as a critical conception of ICT education, and create the conception of how ICT education practices affect social realities in marginalized rural communities. Therefore, the discussions and themes are reflections of my critical attempt to advance thinking that is qualitatively different. In addition, by locating critical reasoning we can begin to understand that schools represent social, cultural and political ideologies which are characterized in the choice of education practices.

Baskerville (1999) and Gregor (2006) commended that Critical Theory in Information Systems research should engage the urgency of addressing social issues and expand practices of democracy. Nevertheless, such realities are often undervalued and not

revealed in most ICT education related research (Giroux, 2015) and results in researchers being unaware of the social influences of their research. Likewise, the manipulation of ICT education practice is not challenged to understand the knowledge and related society being created as part of a school system. Thus, learners and their societies are confined to certain prisons of knowledge practices that lead to conformity and passiveness. As such, critique and dialect reasoning are engaged here to acknowledge that human beings are capable of self-creation and act in different directions. Critical reason employed in this thesis aims to place human beings as a mystery and open to dialect reason that leads to critique and therefore prioritises their needs.

3.3.1.2 Emancipation

The emancipation constitutes the core intentions of a critical research. In critical Information Systems, the idea of emancipation is related to practices that liberate people from injustices or domination associated with technologies. Relatively this *study advances the emancipation idea that claims to explore the potential and possibilities inherent in the learners' relationship with ICT education practices by transforming this relationship in some new transformative way*. Behind these ideas is the need to combine the constructive emancipation with dialect expression as a practical way of demonstrating our limits of experiencing socially informed (reflective) ICT education and ICT knowledge. Indeed Gottardis (2014) asserted that “emancipation is associated with the ability to become aware of domination in order to open up the possibility of self-creation” (p 82). In this sense, emancipation is reflected in this study through examining the possibilities that limit our ways of liberating the potential of individuals. In addition, the emancipation ideas advanced here are not primarily confined to freeing communities from dominant practices alone. Rather the ideas are further exploring alternative practices that frame the understanding of social structures and social institutions and differ from prevailing perspectives. It is necessary therefore that the research dialect includes the nature of social facts to enable critical theory reveal inherent in dominant practices to be reconstructed and known.

Nevertheless, the critical thought of this thesis is to address the inappropriateness of ICT education practices and social experiences. This suggests a critical approach that

contradicts the prevailing notions and ideas that fail to relate social development to rural schools' education practices. This is theoretically conducted to emancipate the research in order to become a practical way of changing the social realities and frame a new meaning of ICT education practices in rural secondary schools and communities. Moreover, the extended purpose is to emancipate myself as a researcher and to develop a methodology for conducting critical Information Systems research. I intend therefore to expand more emancipatory interest in this thesis with empirical evidence from the communities which participated in the research.

3.3.1.3 Transformation

The theoretical perspective of this thesis is also characterised by social transformation. This is highlighted through the use of a critical theory as a political strategy to examine potentials and possibilities for social transformation. Equally, the critical intentions of this thesis inform issues such as inequalities, power and alienation (Walsham, 2005) that are inherent in education practices. These intentions of critical research are relevant here, particularly in changing the perspective of ICT education practices. This primarily demands critical thoughts on revealing the dominant practices that force learners to become subjects of unwarranted ICT knowledge produced through ICT education practices (Giroux, 1997). To transform these practices, it is necessary that critical theory should be engaged to expose the underlying objectives of ICT education and the practices that produce ICT knowledge in rural schools and values of education practices that support the interests of the community. Therefore, the transformation starts when acknowledging that learners have the potential to exercise power that produces knowledge (Foucault, 2004) and we must examine how they exert the power-knowledge relationship using knowledge of ICT.

Respectively, to maintain the merit of a critical agenda as part of transformation, the critical theory is embedded as an underlying principle to disrupt research practices that are neutral to power relations. This forces the transformation process to allow adoption of principles for conducting critical information systems research in education research. As a researcher, my belief is on taking up the role of thinking critically to bring about changes in the research. This concurs with Foucault (1988, p155), who emphasised that intellectuals should go beyond slight reforms to bring about 'real' transformation.

Therefore, the discussions in this thesis challenge the protocols for transformation that runs within neutral patterns of thinking. Thus, the practical role of this research is to transform the “ideas for research practice” in ICT education and make such transformation imperative to a community that might want to adopt.

3.3.1.4 Conceptualise the Empirical Incompleteness

The final task for critical theory in this thesis is conceptualising the prevailing practices in the empirical setting as incomplete. The critical theory in this sense is used at an abstract level of distancing the research questions, aspects and interpretations that characterise the empirical as neutral. Critical research approaches in the IS field are commonly accused of not being clear or are ambiguous in explaining empirical circumstances. However, the merits for critical theories function to outweigh the neutral understanding of dominant social concepts and phenomena (Kemmis, 2001). Subsequently, my intention is to present thinking and reflection that is different in some way from established practices, therefore the empirical weaknesses and ambiguities are adopted as necessary preconditions for employing a critical approach in this study.

Such aspects of critical theory are conspicuous in this thesis. The empirical discussions and arguments presented in thesis to some extent might appear more rigorous and unsystematic. This is due to the fact that alternative views of social realities are often not easy to examine empirically. For instance, to focus on the specific setting of the empirical could concentrate this study on conceptualising different utilizations of technologies in education. This is done to avoid complicating the results in order to focus on the use of a particular technology rather than engage ideas that support critical theory to reveal emancipation and the reflexive nature of ICT. My experience in writing such an alternative view of ICT has been very difficult in this thesis and I believe the discussions in this chapter provide the preliminary understanding of my intentions for conducting this critical research. Nevertheless, the fundamentals of critical theory are incorporated and discussed in this chapter to provide a lens for examining alternative images of the empirical. As such, Foucault’s theory of “Power-Knowledge” is used in this thesis to critique the ideologies (intentions) of ICT education practices and reveal the consequences of the knowledge it produces. Foucault’s theoretical thoughts on power and knowledge share the common characteristics of a critical framework since they

focus on how power-knowledge relations shape the experiences of human beings in society. The focus in this thesis is based on concepts such as *discipline, self, truth* and the *technologies of government*. Furthermore, Foucault's theory has much in common with the aspirations of the critical information systems that this thesis adopts and proposes to revitalize. Thus, the 'power-knowledge' theory is employed to liberate this qualitative research to allow my imaginative, interpretative and analytical abilities to be used more freely in discussing the empirical setting. I devote the next section to the elaborate theoretical position of Foucault's work.

3.4 Power-knowledge Theory as a Lens to the Empirical

In this section, I intend to discuss how Foucault's thoughts on power and knowledge are theorised as a valuable tool for understanding the political and social influence of ICT education practices in rural communities. This is under the premise that since ICT education and its underlying practices has the potential to create knowledge then it is likely that knowledge of ICT shapes the experiences of learners as they live in rural communities. Foucault's thoughts are suitable to the study of power-knowledge relations in this interdisciplinary research (ICT education and information systems) for three reasons. Firstly, the interest of this research is related to 'power and knowledge' practices that socially construct and modify humans, so that they obtain certain attitudes about themselves and others. Secondly, the theoretical ideas of Foucault are adopted in this study as a way to understand how current ICT education practices in rural schools have been structured with ideologies of political interest rather than the fact they could have been structured otherwise. Thirdly, by treating the knowledge of ICT as related to power we will be able consciously understand how practices presented in ICT education construct unacceptable identities of communities. Moreover, instead of seeing power-knowledge shaping every event, as in a conspiracy, Foucault's theory is used in this study to form a new set of (rarer) structural relationships.

The perspective here is on extending Foucault's view of schools as not only social structures for producing power and knowledge of dominant practices but also for producing practices that resist suppression. As such resistance can open up space to develop educational practices that are socially informed and reduce inequalities.

Moreover, the multiple interpretations of the function of schooling are vital here to critically contest the nature of ICT education practices.

3.4.1 Foucault's Power-Knowledge Theory

In pursuing the understanding of the notion of power and its effect, Foucault (1988) expressed that it is a challenge to think of power by using the conventional analysis thereof. His concern was on forms of power that reside in various institutions and within the social relationships of individuals, and in society. For Foucault (1979) "power is not an institution and not a structure, neither is it a certain strength we are endowed with, rather is it the name one attributes to complex strategic situations in a particular society" (p93). He went on further to express the view that power is only exercised on others when possessed by people (Foucault, 1977). His view of power expresses a mode of action that does not immediately oppress others but acts through actions (Foucault, 1994). In this regard for power to exist there must be various relationships of power at all levels of the society (Elden, 2016). The existence of power according to Foucault (1980) "is not only noticed as it is circulated by individuals between levels of society but individuals are always in positions of simultaneously and continuously exercising the power" (p98).

In his belief in respect of power, Foucault explains that "power is everywhere not because it embraces everything, but because it comes from everywhere" (p98). He suggests that power should be seen as everything in our society since it carries more value than matter. Thus, Foucault sees power as an essential component for defining the structures of society. Foucault suggested further that people should desire and seek diligently to acquire power. He also viewed motives that exist within individuals in the society as power. Thus, to understand the notion of power people must not recognise power as something negative or associated with words such as *repression* or *injustice* but rather as something productive. In his further remarks on power, Foucault expressed the view that power is always successfully exercised since it is not *obviously* accepted (Foucault, 1978). The elements of power therefore need to be hidden and not limit freedom for others to accept its existence in society. According to Foucault (1979) the presence of power is related to *resistance*. His beliefs were that resistances are found in every source of the power network. As such there is no single source of power

that is not strictly related to the character of resistance. He urged that “resistances do not derive from a few heterogeneous principles but neither are they a lure or a promise that is of necessity betrayed. They are the odd term in relations of power and they are inscribed in the latter as an irreducible opposite” (Foucault 1978, p78). The existence of resistance in power relationship therefore plays different important roles in individuals or groups such as that of support, target and adversary. On the same level, Foucault emphasises that power can only be applied where there are potentials of resistance. However, Foucault noted that all relationships in society have the opportunity to exercise power and resistance. This makes power acceptable “because it is not just a force that says ‘no’, but one that also produces things, induces pleasure, forms knowledge, enables discourse” (Foucault 19778, p79). Foucault believes that the acceptance of power in society creates positive forces that have more purpose than solely to suppress. Thus, the individuals cannot escape the regime of power and instead they just move from one form of power to another.

Table 3.3 Foucault’ s Interpretation of Power Adopted in this Research

• Power is related to resistance
• Power is accepted by the individual
• Power is not obvious (hidden)
• Power depends on relationships
• Power is everything
• Power is productive

More importantly in using power as a theoretical framework of this research, Foucault’s beliefs of power should be seen as numerous influences that force learners in rural schools to become subjects of educational practices as well as responses. His argument in respect of this notion shows that power is exercised in practices that define the kind of knowledge learners in rural secondary schools must have. On the other hand, the presence of power in education practices is something that is based not only on oppressive interest but must rather be seen as productive in order to generate knowledge and behaviour (Foucault, 1980). Power as a productive notion has the capacity to create and produce subjects that are interested in accepting it. In this view, the subjects are seen as historical and productive in ways that power is exercised.

Consequently, with uncertainty and changes in society, there are always potentials for resistance at every level. This can inhibit power from successfully achieving its complete objectives and purposes. The intentions of power are not subjective such that it is not obvious to explain or reduce the goals of its application in society.

Foucault (1982) subdivides power into three simple forms. These are:

- *The Sovereign Power*. Foucault sees this as a centralized control of people using the law and regulations. This power aims to punish and create fear that discourages citizens from resisting sovereign power. The punishment is carried out to re-enforce the regime's authority or the interests of those in power. Moreover, the intention of this power is to limit access to resources that can support human beings in taking control of their territory. In recent years this power has become a form of corrective practice and less violent in nature. This makes *Sovereign Power* more of an act that responds to particular circumstances initiated by known agents of power. As such, when *Sovereign Power* is exerted, we can easily identify the source and its ways of acting. This power is particularly important in this study as it provides a framework for understanding the factors that influence rural secondary schools in adopting ICT education practices that fail to produce the reflective knowledge of ICT.
- *The Judicial Power*. This power was most predominant in the Middle Ages. It was mainly used by the government to produce social order through techniques (technologies) of power and forms of knowledge. It was naturally drawn from the interest of frameworks of law to centralise a range of strategies and techniques that could control people. Foucault sees this power, as represented by legislation, as stubborn and dangerous to society. Interestingly, Foucault emphasises the importance of using the law for the establishment of our forms of experience. His view of this power is that it is populated by technologies (techniques) of the government and we must investigate its source to understand the truth (reality). This power plays an important role in this study in enforcing a theoretical framework that creates order for activities, and

for transforming practices in ICT education in order to become social experiences of using ICT in rural communities.

- *The Disciplinary Power.* This power is regarded as a progressive form of sovereign power. It emerged with the interest in rehabilitating criminals to adopt normative morals. For Foucault, this power is fondly circulated in institutions such as schools, prisons and the hospitals where human beings are required to use certain knowledge. This power is exercised over individuals with the intention of disciplining the body. Equally, the institutions use disciplinary power to correctively constitute certain knowledge and behaviour in individuals. Upon doing so the individuals are put under pressure to conform to different examinations (norms). Within disciplinary power, Foucault subdivides it into three instruments - hierarchizing observation, normalizing judgment and examinations as characteristics for disciplinary power. These three principles produce ingrained conditions for individuals to act or think in certain ways. This notion of power is particularly important for examining the domains of ICT education and ICT for development that have been subjected to different forms of problematisation and strategies created by authorities. It is used here to scrutinise the range of programmed practices that affect or shape learner's knowledge of ICT in rural secondary schools. The aim is to understand if these practices have become normative controls, shifting learners into compliance, and into what the authorities believe to be the only type of knowledge needed by learners in rural secondary schools. The outline of current ICT education provides the standard of practices that a teacher must use in an ICT classroom. It is necessary therefore that the study must critically analyse the extent to which such practices have become normalised or institutionalised as the regime of truth.

The effect of all these forms of power is more prevalent in certain socio-political contexts and time. The tactics for these different forms of power are not used consecutively but rather they complement each other to institutionalize conditions for executing power. On the other hand, the three forms of power are productive and create forces that produce and

shape knowledge in human beings, according to Foucault (1973).

Foucault's understanding of knowledge is

" simply the outcome of the interplay, the encounter, the junction, the struggle, and the compromise between instincts. Something is produced because the instincts meet, fight one another, and at the end of their battles finally reach a compromise. That something is knowledge "(Foucault, 2000 p8).

The concept 'knowledge' in Foucault thoughts opposes some order in the society. To illustrate his view of knowledge more fully, Foucault uses genealogical methodology to detach knowledge from traditional philosophy, and to provide epistemological understanding of knowledge. His intention was to prove that knowledge can be understood differently from ways that are used by traditional philosophers. Knowledge as described by Foucault "can only be a violation of the things to be known, and not a perception, a recognition, an identification of or with those things" (Foucault,2008 p8). This suggests that knowledge does not only represent the interpretation of our experience of reality in the world. Thus, Foucault adopts knowledge as a product that has importance in understanding the effects and subjects of power. Foucault's thoughts on linking knowledge and power are regarded as problematic among his critics and opponents.

Apparently, Foucault's expression of reducing knowledge to struggles was to connect the power that forces knowledge to play. He defended this further in his book '*Discipline and Punish*' the relationship between knowledge and power (Foucault, 1995):

"Perhaps we should abandon a whole tradition that allows us to imagine that knowledge can exist only where the power relations are suspended and that knowledge can develop only outside its injunctions, its demands, and its interests. Perhaps we should abandon the belief that power makes mad and that, by the same token, the renunciation of power is one of the conditions of knowledge. We should admit rather that power produces knowledge (and not simply by encouraging it because it serves power or by applying it because it is useful); that power and knowledge directly imply one another; that there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations. These 'power-

knowledge relations' are to be analysed, therefore, not on the basis of a subject of knowledge who is or is not free in relation to the power system, but, on the contrary, the subject who knows, the objects to be known, and the modalities of knowledge must be regarded as so many effects of these fundamental implications of power-knowledge and their historical transformations. In short, it is not the activity of the subject of knowledge that produces a corpus of knowledge, useful or resistant to power, but power-knowledge, the processes and struggles that traverse it and of which it is made up, that determines the forms and possible domains of knowledge" (p 28)

In this passage Foucault shows the relationship which exists between knowledge and power and how the two themes are not entirely negative in their implementation. As such there are positive responses that can be achieved in relating power and knowledge. For instance, in *Discipline and Punishment*, Foucault shows how knowledge was used as a motivation by workers to exercise or use their power to improve conditions in their work place. In his subsequent remarks, Foucault sees the two notions as integral to the formation of the social life of individuals. He concluded that there is no position without the existence of knowledge and power, as there is no social life that is not shaped by knowledge and power. As such power and knowledge reinforce each other.

However, Foucault (2000) expressed the view that the effect of power-knowledge relations is only realised when certain institutional arrangements are enforced. In this regard, Foucault connects power as similar to the notion of Panopticon (watch tower) that has an architectural type of a constant human observation and gaze (1979). He described the Panopticon as a central tower which was designed to allow prison guards to watch over inmates in their cells. The tower acted like a back light to constantly observe the prisoners without their knowledge. In such a setting, the prisoners were behaving as if they knew they were being watched. This was done to enforce self-regulations, self-controls and discipline upon the inmates, according to Foucault (1977, p22). Similarly, Foucault noted that schools in modern times are also operating with elements of Panopticon discipline. His observation was on how schools organize classes in hierarchical order, where they follow a strict timetable of lessons, and they place

students under the gaze of teachers and education authorities. In response Foucault concluded that schools, hospitals, societies, and barracks, all resemble prisons (Foucault, 1977, p 228). Indeed, in all these aspects, it reflects the tactics of forwarding interest of exercising power in indirect ways with no violence and forms that are bound to sovereignty (ibid). The key notion to the Panopticon's operative is the ability to expose both the population and the government.

Moreover, Foucault explained that the cases of power-knowledge show certain technologies of government that controlled individuals to be concealed under certain conditions which were more or less visible. The tactics of hierarchical and surveillance were mainly aimed at rendering people subjects of government in a discontinuous way. Equally, the tactics of prisons and schools exposed people to wider social issues that have government legitimacy and stakes. These tactics were connected to what Foucault (Foucault, 1991) termed as *totalising* "knowledge that works or operates to exercise some kind of coercion and violence against local and particular knowledge, with intentions to subsume the individual under its universal and totalizing structures" (Hewett, 2004 p,56). This knowledge constitutes the population in some ideological construct that works through normalisation and classification techniques (Chini, 2010). These techniques form knowledge that enables an individual to gain power over a population.

3.4.2 Technologies of Government

Having expressed much about the relationship between power and knowledge, Foucault (Foucault, 1988) explained further how these two notions produce actions that have potential influences in society. He named the actions *technologies of government*: an attempt to present particular types of techniques used by government in producing knowledge, power and dominance (Foucault, 2007, p107). Foucault uses the term *technologies* in different ways, however for the purpose of this study the word *technologies of government* is understood more broadly as both knowledge and tools used to enforce specific conduct. This concept should be understood differently from the concept of 'ICT'. Therefore, for Foucault, the technologies are a whole array of things that an individual use to exercise the desired power or practices. He emphasised that it is necessary to acknowledge that "institutions, procedures, analyses and reflections,

calculations, and tactics allow the exercise of this very specific, albeit very complex, technology of governance” (Foucault 2007, p108). He proposed various types of technologies such as technologies of power, technologies of production, technologies of significance and technologies of self (Foucault (1988). Foucault’s argument was that all these types of technologies influence each other and do not act independently.

In defining these technologies, Foucault refers to *technologies of power* as subjecting individuals to controls and scrutiny that have certain desired ends, *technologies of production* as a means of production that permits the use of power to transform, or manipulate things, while *technologies of significance* are practices that allow the use of symbols and signs to construct meanings in our society, and *technologies of self* permit individuals to reflect using their own ways, or with the help of others in respect of a particular operation on their bodies and souls, thoughts, and way of being, so as to transform themselves, in order to attain a certain state of happiness, purity, wisdom, perfection, or immobility(Foucault ,1988 p18). His view of these technologies was to differentiate technologies that are imposed on people (technologies of power) and those used by people to transform themselves or their society (technologies of self). However, it is important to note that despite *technologies of self* being related with governance, and forms of practices in this thesis it is being used as the potential an individual develops after being liberated from unwarranted power or knowledge. This is related to what Foucault (2007, p109) described as a ‘progressive process of government’, the awareness and usefulness of tactics that govern an individual to experience possible transformational ways. Furthermore, it may be argued that such tactics of governing people fail to resolve the continuity of modern political power. It must be viewed in this thesis as a mode of governing people to exercise power that utilizes the best possible ways of transforming themselves.

Nevertheless, the important aspect of *technologies of self* is the government that replaces the state interest with human attention and action (Dean, 2010). In this notion, the human being is shaped with knowledge that produces responsibilities and the ability to act in the interest of preferred power. In other words, the individuals are given freedom to respond to agents of power that work in their best interest. It is important within such perspectives of government, that humans are allowed to reflect on their

own the relationship that exists between technologies of self and technologies of power (Foucault, 2007). It is within this inscription that human beings are encouraged to see themselves as active subjects responsible for enhancing their own wellbeing (Larner, 2000). Consequently, the technologies of government constitute the most important aspect of effecting governance in our society (Lemke, 2002; Dean, 1996; Burchell, 1993). Bunton and Petersen (2002) argue that technologies of government often provide various elements that individuals overlook in visioning the arrangement of society. The elements encompass rules of conduct, procedures, devices, mechanisms and concern programmes that enable immediate effective governance. Through such elements “authorities of various sorts have sought to shape and normalize the conduct, thought, decisions and aspirations of others in order to achieve the objectives they consider desirable” according to Miller and Rose (1990, p.8).

3.4.3 The Regime of Truth (reality)

It is within the ideas of relating power and knowledge that Foucault introduces the notion of ‘truth’. The configuration of truth dwells on “*different ways in which people develop knowledge about themselves [...] this truth is used by people to understand themselves*” (Foucault, 1988, p17). Foucault states, “truth is linked in a circular relation with systems of power that produce and sustain it, censor it and to the effects of power which induces it, conceals it and which extends it” (2000, p132). As Foucault explains, truth should be conceptualised as a *regime of truth* that includes politics. Using Foucault’s perspective, the truth is linked to the characteristic of a society that is controlled by systems of power, hence it conceals social practices.

Foucault approaches truth as a way of identifying practices or social realities that are accepted by the citizens living in a particular society (1988) as legitimate. As such the behaviour and action of people determine the way we can define the realities (truth) of a community of interest. To access the truth, Foucault (1988) urged that we must identify the unstructured behaviours of agents of power that control the structures of society. In this sense Foucault shows that the truth has a close relationship with both power and knowledge. This relationship is in the form of the *product of the truth*. The truth is produced in the same way as power and knowledge are produced through stifling that limit and disciplining potential ways of acting. Equally, “through what we

know and what we do, we produce our truth that gives shape to power and knowledge” (van de Ven, 2012 p16). The reality forms the truth since the whole process of producing the truth, knowledge and power is in essence circular related.

Whereas Foucault later fails to show how the society comes into existence in the presence of truth, the case in this study involves the arrangement which intends to use the realities in rural communities as the truth for transforming the practices in ICT education in secondary schools. The study uses Foucault’s perspective of truth to understand how power is presented in knowledge practices involved in ICT education. Thus, the productive relationship between power and knowledge is recognised in this study as a framework to direct the experiences of transformative ICT education practices (discussed further in chapters 6, 7 and 8).

3.5 Framing the study using Foucault’s thoughts

This thesis is influenced by the thoughts of Foucault, as explained above, to critically reflect on how ICT education practices are shaped by ideological and political ideas. Rather than focusing on the perception of my own reality or those of individuals in this research, I seek to examine the hidden factors that have exerted influences on ICT education practices, knowledge and learner empowerment in rural schools. Foucault’s ideas shape this thesis with particular emphasis on understanding the reproductive functions of ICT education’s domain, which has been the subject of both political and social development interest. Within such perspectives, Foucault’s ideas form the response to existing programmed strategies of conducting critical IS research in a developing community context. Therefore, the theoretical stance of power-knowledge is being used in this study to critically understand the historical existence of ICT education practices in rural secondary schools and the underlying relationship in respect of the needs of rural communities.

In this light Foucault’s work is drawn on here to reveal certain social orders that have come to be accepted in rural schools as reality. Foucault (1984, p10) explained that:

” It is one of my targets to show people that a lot of things that are part of their landscape; that people are universal; are the result of some very precise historical changes. All my analyses are against the idea of universal necessities in human

existence. They show the arbitrariness of institutions and show which space of freedom we can still enjoy and how many changes can still be made”.

It is therefore very important to note that the theory is not being used to explain the researcher's experience with the empirical, but rather to advance Foucault's thoughts of using critical reflection of experience to shape what it is that experience means in this research. Also, the theory here functions to highlight Foucault's paradoxes, contradictions and his conflict approach of understanding which have been prevailing in both ICT education and critical IS research. Therefore, my attempt in using power-knowledge theory is to shape the meanings made of empirical experience such as on what can be said of ICT education practices, on who can talk about ICT education and on what an individual has to say about ICT education.

Foucault's theory is further applied in this study to understand the role of the education practices in transforming (ethical disrupts of the self) the learner in becoming part of the formation of social development activities in rural communities. In this instance, Foucault's views on the importance of *technologies of the self* are applied in transforming the learner in terms of becoming aware of the ethical primacy of ICT education in his/her life (self) and others in the community (the self through the other). This aims at restructuring the relationship between the learner (self), and obligations to others (community) through the reflective use of ICTs, codes of behaviour supported by ICTs and the practices of the self that are a result of the knowledge of ICT. The result from this scheme provides a useful alternative to the theories of empowerment that underpin transformative practices in ICT education. This further offers an account of the ways in which the learners potentially undertake practices in ICT education as frameworks to enhance their ability to develop knowledge related to the community reality (truth claims). This relates to suggestions by Foucault (2000) that we should seek for alternative frameworks that offer “modern people ways of seeking self-fulfilment” (p261). In this study, therefore the learners are offered socially informed ICT education that has the potential to suggest ways to make their lives an endeavour that relies less on rationality and more on ‘creative’ relations with themselves and others (p262).

What is essential in employing Foucault's thoughts on *self* in this study is that it guides, and places emphasises on conducting the development of the self through others within the community. Foucault represents a reframing role of the 'other' as support, guide and a challenge to the self. As such the participants are engaged as co-researchers in achieving the objectives of the research in this study. Moreover, the research is conducted within the communities that are seeking ways of transforming self using ICT education. Likewise, my role as leading researcher is to guide and support the participants in effectively transforming *self* and practices in ICT education. Foucault insists that others must be seen as important in helping *self* to learn to care for himself/herself, and the locating of the conversion to *self* in a community. The community is not involved in transforming pre-established practices, such as the practices defined in current ICT education. Instead, the study engages practices that are logically connected to the 'needs of the community' created by critique and the practice of freedom.

Relatively, Foucault (1984) writes "each society has its regime of truth, its *"general politics" of truth: that is, the types of discourse which it accepts and makes function as true*" (p73). This suggests that rural communities have their own truth claims (social reality). This study therefore understands that rural communities establish certain institutions, such as secondary schools, with the purpose of promoting and safe guarding their truth claims. In other words, the truth in schools is revealed through concepts (knowledge believed to be true) taught in various subjects, such as ICT, that support learners' access to particular ways of thinking and acting. In this regard, the knowledge taught in schools shapes learners' thinking in the same manner as their school. According to Foucault (ibid) "*in every society the production of truth is at once controlled, selected, organized and redistributed by a certain number of procedures whose role is to ward off its powers and dangers, to gain mastery over its chance events, to evade its ponderous, formidable materiality*" (p109). This presupposes that organisations such as secondary schools presently available in rural communities use various tactics to influence a certain understanding of truth. As such ICT education in rural schools can hide certain versions of truth from learners through ideas and practices. This means the study envisages secondary schools as sophisticated social structures with the possibility of integrating learners in new forms and patterns of thinking.

In this study the disciplinary power outlined by Foucault (1977), suggests that practices in ICT education are formulated to represent the hidden instruments of oppressive disciplinary power. The practices create learners who are subjects, who are educated, regimented and have knowledge of ICT that is not connected to their immediate needs. In this study, the links between ICT education practices and community development needs are important in relation to learners' behaviour and the knowledge of ICT that should be valued in ICT education classrooms. For instance, in this study community life experiences of learners are incorporated in ICT education to reinforce practices that support learners to develop reflective ICT knowledge or that supposedly empower them in the face of social developmental challenges. As such in Chapters 5, 6 and 7, I will explore the ways in which learners negotiate with current ICT education practices and how they can develop transformative knowledge of ICT.

3.6 Critiques of Foucault's thoughts

Using Foucault's ideas as a theory in any thesis creates its own traditional challenges in understanding the language play and meaning that he uses to describe certain words. For example, Foucault (1990) wrote in his lecture:

" In studying the rationality of dominations, I try to establish interconnections which are not isomorphisms [...] when I speak of power relations, of the forms of rationality which can rule and regulate them, I am not referring to Power – with a capital P – dominating and imposing its rationality upon the totality of the social body. In fact, there are power relations. They are multiple and they have different forms [...] It is a field of analysis and not at all a reference to any unique instance...I in no way construct a theory of Power" (p,38)

He sees power as something that is part of the basic social order which cannot be theorised independently. His approach to social concerns is to trace back the history of the fundamental components of social organisation. As such he writes to critique the historical era of society rather than a discipline directly, something which most historians enjoy, to relate the past to the present. We can therefore argue that Foucault's interest was just to play with historical data and time available in society. According to Shilling (2003) the work of Foucault has been criticised by historians, who consider the suggestive basis of his concepts and writings as odd and incomplete to

describe the historical subsistence. Davidson (1994) argues that people who accuse Foucault of corrigendum fail to understand the judgement of the objectives of his work. He proposed that Foucault's text should be treated as political writings to champion post modernism. Such views of Foucault's work can support us as readers of Foucault to diagnose the present realities of society, by questioning 'how did a society reach the point it is at now?' This requires critical reflection and deviates from discourses which are selective and inaccurate.

However, opponents of Foucault such as Paras (2006) criticise his work for not providing an order of steps to promote social changes. Foucault's interests were on the transition that the individual makes to effect changes in their vicinities. Escobar (1999) added that Foucault's work focuses on enlightening individuals rather than instructing those who are interested enough to undertake social or political actions. Moreover, Foucault claims that power necessarily offers resistance to examining events that the prevalent authorities encounter by exposing their historical formations. Although the notions of power and resistance are seen to play a critical role according to Foucault's thoughts, they are mostly misconceived. His idea in respect of power and resistance is often associated with a harmful and a repressive operation but Foucault "gives the impression that resistance is generally contained by power and poses no threat" (Fairclough, 1992). Similarly, Foucault (1977, p119) considers power as a productive means to produce knowledge, things, truth and discourses. Such articulation is important for my research to pursue Foucault's thoughts in analysing and effecting possible change in ICT education practices in rural secondary schools. This could also provide hope for other researchers who feel there is little to gain in applying Foucault's ideas to surmount possible actions in education. In addition, Gutting (2005) argues that Foucault's intentions were simply to analyse the modern dangers in our society. Thus, we should use his ideas to objectively instruct the desired social changes.

Nevertheless, Fairclough (1992) criticised Foucault's texts for offering the impulses that lessen practices to structures which fails to show significant instances or actions. This criticism of Foucault's ideas indeed seems to offer a viewpoint of re-examining and critiquing our educational practices. Freire (1998) shares the belief that education practices should provide the capacity to transform our thinking. This requires us as

researchers to overcome presumptions and self-motivation, to establish practices that change uncertainty in education research (Putnam and Borko, 2000). Thus the 'self' in research must focus on transforming the researcher into becoming the subject to others (Foucault, 1987), and thus capable of establishing changes and trespassing on the limits of "aesthetic practices of the self" (Foucault, 1988). Therefore, education practices in rural schools are structured as such with knowledge in order that learners do not become aware of 'self' which values community realities. Hence it is the intention of this study to revise Foucault's ideas of 'self' using transformative practices that resist unwarranted structures of ICT education in rural secondary schools. Foucault (ibid) expresses the importance of examining how individuals become structural subjects to power. In this thesis, therefore, grasping the knowledge that underpins the process of constructing subjects might hold significant clues to transforming education practices in order to produce autonomous subjects. This requires critical analysis of the meaning of what goes into the classroom and how it is reflected in societal structures (social realities).

Moreover, Fraser (1981) criticised Foucault for his failure to take on any pragmatic work within the institutions that could prove the uncovering of disputed power-knowledge relations. In response Foucault (1982) explained that "*it is important that social institutions such as schools, hospitals and prisons should be examined from an internal view point since they are concentrated, structured differently and ordered in a privileged point of observation*" (p222). Likewise, Foucault shows uncertainty in respect of yielding compelling evidence from these institutions and "*one must analyse institutions from the standpoint of power relations, rather than vice versa, and that the fundamental point of anchorage of the relationships even if they are embodied and crystallized in an institution, is to be found outside the institution*" (p222). Such remarks from Foucault depict his ideas as more theoretical with propositions, which can be applied rather than historical expressions. Paras (2006) argues that Foucault claims to write about practices that were not empirically analysed. Foucault (1982) insisted that his practices rely on account of what can or does actually happen in social structures (p75). Therefore, Foucault's ideas of analysing social discourses promises to provide a critical understanding of learners experience of ICT education practices in rural secondary schools. Thus, the kinds of experiences that learners face in rural schools

might become clear if we start to critically analyse dominant educational practices and enforce the needs of learners such as social and personal identities, and their social experiences.

3.7 Summary

This chapter presented the theoretical ideas developed by Foucault on power-knowledge in relation to the execution of this study. I detailed the ways in which the elements of power-knowledge theory have proliferated in the domains of education and ICT, in particular in the use of ICT education as a power and knowledge tool. I also indicated how the theory will be used as a lens to examine current ICT education practices and standards in rural secondary schools, and the relationship it has in supporting learners in developing transformative ICT knowledge. This is to a certain extent developed in this study to suggest the possible ways ICT education can transform learners into functioning as responsible citizens. The transformation in this study involves the 'self' that adheres to reflective knowledge and understanding of ICT, hence adherence to truth, claims of realities and needs of rural communities. Thus, the theoretical framework is drawn up in this study to develop ways of doing rather than just knowing, and occurs in a context where learners are empowered to become socially viable or recognisable to the community.

Chapter 4: Research Methodology: Design and Reflection

This chapter presents an overview of the methodological aspect of the study. Critical Action Learning intent is discussed along with a justification for this approach in studying ICT education experiences. The data collection and analysis processes are explained, as well as the limitations associated with this critical and philosophical investigation. There is particular focus on how the proposed methodology developed to support the analysis of the empirical experiences. Moreover, this chapter has introduced trustworthiness and creditability of the research. Importantly there is also an acknowledgement of the intention to produce a theoretical framework of what transformative ICT education is, in the consciousness of the participants who participated in this study.

4.1 Introduction

This chapter sets out to discuss the design and methodological assumptions which underlie the current study and proposes methods that [are] may be used to analyse data in critical information systems research. This chapter is presented in respect of the academic standard of using research design and methodology as a connection to various means of gathering and analysing the data. I have outlined the qualitative methods that I used within a Critical Action Learning setting to gather data.

Based on Ponterotto's (2005) philosophy of the character of experience as a valuable source of knowledge, this study is located in the interpretive and qualitative approach of critical research which seeks to understand experience from the perspective of an individual's experiences of life events, classroom events, and the meaning these events have for ICT education practices, and individuals themselves. In many critical IS research the interpretive and qualitative approach has been variously utilised and understood (McGrath, 2005; Cecez-Kecmanovic, 2001; Ngwenyama 1991). As research techniques in critical IS research and philosophy of knowing, the interpretive approach demands that the researcher sets aside his or her assumptions and predetermined references to closely examine a particular phenomenon from the perspective of the lived experience. In practice, many researchers in the critical IS field have struggled with the original intention of the interpretive approach. Subsequently, the application of the interpretive paradigm in critical IS research has undergone changes and its application has taken on a number of guises (Goldkuhl, 2012; Chen and Hirschheim, 2004; Carroll and Swatman, 2000). These include the use of interpretive phenomenological analysis and hermeneutic analysis, the latter being used predominantly in most critical IS research. As a result, the interpretive is adopted here as neither singular in approach nor unified in methods.

This chapter starts by highlighting the methodological shifts in the critical IS discipline. This is followed by a discussion on how the research was negotiated in the empirical to conduct the research activities and processes that include: capturing people's experience as it is lived, what is ingrained in understanding society, and the relevance to the objectives for the current research project. It conclude by discussing my presence, influence and impact as the principle researcher and author of this thesis. In this way

the reflexive process of locating the researcher and participants in the research are made evident and real.

4.2 The Methodological Shift in this Study

The historical trend of most research in the field of education has been favouring methodologies that yield quantitative (hard data) data to support policy makers (Bowe, Ball and Gold, 2017; Armstrong and Barton, 2016; Duchesne and McMaugh, 2013; Thomson and Gunter, 2007; Reddy and Sinha, 2010; McMillan, 1996) rather than changing the education practices (Dagnino, 2018; Borg, 2015; Dziabenko and García-Zubía, 2013). As such, some scholars recently begun to engage more pluralistic research approaches that utilize both qualitative and quantitative methods (McLeskey and Rosenberg, 2017; Castagno, 2014; Burns and Gibbons, 2013), to offer the community the interpretation of practices involved in the education field. In this respect, researchers are tasked with generalizing the results and the description of events while the participants determine the extent to which the research can be applied within their community or circumstances (Herr and Anderson, 2005). Such aspects fit well with critical research, to contest the conventional precepts of quantitative driven education research and the coherent body of knowledge (Carr and Kemmis, 2003). Indeed, understanding the implications of education practices as applied to social realities is a complex endeavour and quantifiable results alone cannot interpret its essence. Thus, various methodologies in qualitative research, such as narrative, case study, interpretative phenomenology, are commonly accepted as ways of understanding the context of school, society and people (Alvesson and Sköldbberg, 2017; Marshall and Rossman, 2014).

However, the shift in education research to more pluralistic methodologies is of paramount importance in this study to determine the extent to which the findings apply to the truth claim of empirical description. The truth in this aspect is on the claim that pluralistic methodologies are progressively being accepted as valid by some researchers in the field of ICT education (Thorne, 2016; Brown, 2014; Armstrong and Moore, 2004) and holds a promise for those who seek to critically analyse the nature of education practices (Dziabenko and García-Zubía, 2013). In other words, the methodology in this thesis shaped my understanding and belief of the research project conducted. This

forms part of the assumptions I am bringing to this research that the knowledge claims should be accepted as valid since they are representing “a worldview as defined by the holder, the nature of the world, the individual’s place in it, and the range of possible relationships to that world and its parts” (Guba and Lincoln, 1994, p 107). Likewise, the knowledge claims and beliefs in this study are the basic truth in the sense that they must be “accepted simply on faith (however well argued) and there is no way to establish their ultimate truthfulness” (ibid). Moreover, the beliefs remain very important in order to reflect the epistemology and ontology that bear the choice of methodology and inquiry methods in this thesis. In this regard, this section discusses the reflection of my beliefs on the nature of reality, acceptable knowledge of it and ways we can use to understand it.

Nevertheless, the interest of reality in the thesis relies on historical beliefs of social, cultural, economic, political and native values of establishing conditions which appear to be *real* in the empirical (Jussim, 1991) and naturally immutable to alternative perception. Such conditions do not only continuously constrain the capacity of individuals but rather they make up *what is known* of the capacities individuals have at any given time (Blau, 2017). As a researcher, I was trained according to particular conditions (schooled and trained through university) and value systems. Therefore, the knowledge about the reality of ICT education in this study was only arrived at through critical reflection and critical action learning conducted with the communities and schools. I believe therefore the truth claims in this study should not be universally accepted but rather they must be seen in context and given a time stamp, and processed through various systems of thought and morals in a local setting (Cooley, 2017; Baskerville and Myers, 2004). Thus, the research discussed in this thesis does not seek to reveal the nature of universal truth (world accepted social reality) but rather various ways in which truth, that is transient and local, has come to be accepted as a way of acting and thinking in society. My interest therefore lies in understanding how such truth is accomplished within “inscriptional acts and interactions to form a coherent knowledge” (Chia 1995, p.598).

In this spirit, the methodology and methods employed in this study redress historical concerns on how ICT education practices in rural schools have come to be accepted as

is, with particular assumptions that they could be otherwise. This does not suggest that there is an infinite ability for deconstructing them but rather in revealing the processes that construct a subjective state of ICT educational practices, and the intention here is to open spaces for alternative interpretations and methods of contestation. Such perspectives have stimulated this thesis to work towards a conscious and informed way of posits. It is my belief that such alternative images might create the possibilities to critique the taken for granted practices presented by ICT in our society. Therefore, this study engages methodology and methods of inquiry with informed and immersed in practices that “calculate the birth of those things that continue to exist and have value to us” (Foucault, 1986, p81).

4.2.1 Negotiating the Research process

As discussed in Chapter 1, the research project for this thesis was initiated through numerous concerns from the participants involved in ICT training in rural schools and the emergence of social developmental needs (refer to section 1.4). Such critical matters force most learners and their communities to seek knowledge of ICT presented in ICT education as a practice that supports them to use ICT social challenges. However, being critical about the strategies of power explained by Foucault (1978), I was aware that communities (teachers, school leavers, learners, other members of communities) have alternative thoughts, such as seeing the potential that ICT education has for empowering learners suspicious of the current ICT education practices, and envisaging the relationship education has to community needs.

In reality, the first task for me as a Principal researcher was to find methods which could allow the research to employ philosophical and critical reflections on ‘practices’ that involve the state apparatus (schools) and authorities. Although research on education practices can be conducted in different ways such as involving the leading researcher as an observer, or immersed researcher (Burns and Gibbons,2013), in this research I participated as an “*insider*” i.e the participants see me as member of their community because we share the same cultural and moral values, and life experiences as I grew up in a poor rural community. In other words, the research project created a mutual trust that saw me become a community member in the area. In context, this meant striving to show how similar situations have impacted on me and allowed other

participants to accept me as a member of the community. My experience as an insider in this study provided a unique view of data collected (refer to Figure 4.1). Likewise, it was evident that in a school setting, the impact of ICT or educational practices can simply be examined from the position of an “outsider”, someone participating in research with no direct concern for common issues raised by participants (Dwyer and Buckle, 2009). This perspective relates to research participation that involves a researcher as an experienced subject rather than an experiencing subject, but my participation was more of phenomenon experiencing subject in this study, hence an insider. Moreover, my role as a Principal researcher (although in other activities I was participating as co-researcher with other participants from the community) was to develop research agenda and methods used to interpret the results.

In order to assist the process of locating the research process in this study, I engaged Foucault’s ideas on power-knowledge relations as a theoretical and analytical framework (refer to Chapter 3) with the emphasis on how power relates to knowledge and the truth. When attempting to study power-knowledge relationship, argues Foucault, certain institutional arrangements should be created to expose the practices of government truth (refer to section 3.4.3). As such this research focused on assumptions, values and norms that regulate the conduct of people and schools (Blau, 2017). The elements of power and truth however were used to conceal different “ways in which people develop knowledge about themselves and how truth (social reality) is used by people to understand themselves” (Foucault, 1988, p17). This was the main reason for choosing to go beyond the predetermined interpretation of ICT education practices to find the meaning and relevance of ICT education that can be accepted outside the school parameters.

The meaning and relevance were either self-constructed or adopted from other peoples’ experiences by the participants as they were participating in the ICT training project. At the same time, this provided the study with a greater insight into the realities of ICT in rural communities and rural schools, rather than the much presented knowledge in most education and IS research. The common perception of ICT in education in rural schools has been focusing on technology rather than life experiences which are connected to ICTs in schools (Alfaki and Khamis, 2018; Hart and Laher, 2015; Chigona

et al., 2010). The setting in this research allowed one to reflect on the modern philosophy of critical research that considers people's experiences, experiencing of the empirical and the aspect of personal consciousness in interacting with the material world. Therefore, it became necessary to conduct this research in current local context, to approach the research problem from concerned people's perspectives rather than from the perspective of authorities that govern schools. As such, it was my goal to use various ways of knowing and exploring to avoid collecting data that is removed from the context of human experience.

Nevertheless, my prior knowledge and experience of teaching ICT in rural communities could be argued otherwise in academic research study (refer to appendix A). For instance, I moved from being a professional ICT teacher to critical IS researcher with the aim to experience the phenomenon myself. It was necessary for me to have such a prior understanding of a rural setting and it eased my interaction with others, and generated a sense of a shared identity with the research community. Although it became beneficial to have previous experience, I was an *outsider* prior to the start of the research project. This was experienced during the time I conducted the first ICT training as I had literary no knowledge of issues such as creating inclusive dialogue with participants, and the social structures referred to in experiences narrated by the participants. In return, I realised that it helped me to first take the position of an "outsider" as it made it easier to reflect on the so called *out of context perceptions*. Such an approach enabled me to reflect on taken for granted ways of understanding and interpretive approach in critical research, to shift the focus and reformulate research project activities in order to participate freely. Therefore, in the next section I discuss the methodological approach that supported this study to capture the important aspects in the empirical.

4.3 Methodological Approach

This research adopted Critical Action Learning (CAL) methodology. Critical Action Learning fits in with the objective of this research as it focuses..." *on how the comparatively abstract ideas of critical theory can be mobilized and applied in the process of understanding and changing interpersonal and institutional practices* (Rigg and Trehan, 2004, p149). CAL is widely known to borrow its underlying concept from Action Learning proposed by Reginald Revans in 1982. However, CAL differs mainly

from Action Learning because it focuses on the critical reflection of real-world problems, self-reflection and collective action. Therefore, it is the 'critical appreciation' in CAL that supports actions to reflect on "*exploring the underlying power, controlling issues and actively engaging in an examination of political and cultural processes*" (Rigg and Trehan, 2009, p405). This research therefore is conducted with the assumption that ICT education practices in rural schools have hidden ideologies that can only be revealed if we can critically engage reflective actions in learning. This is done in a "systematic, careful examination in order to discover new relationships and to expand existing knowledge with some specified purpose" (Ticehurst and Veal, 1999, p12).

The Critical Action Learning approach in this research was employed to relate reflective actions to critique. Reflective actions and 'critique' form the central tenet of action learning in this study to develop "the application of all the traditional scholarly criteria of rigour, and challenge taken for granted assumptions, debate, logical consistency and the setting of claims to validate generalisations and theories against the best evidence that can be mustered about what occurs in the world" (Watson, 1999, p4). Thus, the emphasis of CAL in this research is on critical reflection and research activities that aim to critique and transform education practices that are political and exploit learners. At the same time, CAL as a learning methodology supports this research in addressing the shortcomings of conventional ICT education practices by mobilizing ideas of critical theory to unearth power-knowledge relations, and working with emotions and facilitating critical thinking in challenging the taken-for-granted assumptions (Rigg and Trehan, 2004). Moreover, with its perspective of inquiring empirical practices, CAL supports this study in the use of a critical theory that has the "central task of emancipating people from the positivist domination of thoughts" (Carr and Kemmis, 1986 p130)

Furthermore, through a review of literature I have summarized the multiple interconnections on Critical Action Learning, Critical Theory and Critical Information System Research in this thesis (**See Table 4.1**). This is important for me to progressively describe, reflect and use the three different layers of knowledge involved within the research activities. The application of such layers of knowledge is a key component of Critical Action Learning (Vince, 2008) and most appropriate in this study.

These layers are developed in this study to direct the inclusion of CAL elements, namely identifying real world problems, group participation (set), group facilitation, critical reflection, critique, and commitment to learning and action.

Table 4.1: Theoretical Framework: Critical Action Learning, Critical Theory, Critical IS Research

	Critical Action Learning	Critical Theory	Critical IS Research
Theory practices	<ul style="list-style-type: none"> ▪ Develop problem solving skills ▪ Deep knowledge of existing power relationships existing within a group and individuals ▪ Mobilize Ideas of Critical Theory (Willmot,1999) ▪ Emancipate people from controlled thoughts (Carr and Kemmis,1986) ▪ The ability to transform institutional practices (Willmot,1999; Rigg and Trehan, 2004) ▪ Articulate view of theory (Carr and Kemmis,1986) 	<ul style="list-style-type: none"> ▪ Develop problem solving skills ▪ Ideological Critique ▪ Redistribution of power ▪ Dialect reasoning ▪ Individual and societal transformation ▪ Emancipate people from controlled thoughts ▪ Critical ethics ▪ Struggles and political practice <p>(Popkewitz and Brennan, 1997; Van den Brink and Owen,2007; Giroux,1997,2008)</p>	<ul style="list-style-type: none"> ▪ Improve human conditions through technologies ▪ Examine social relationships to improve society ▪ Develop emancipatory knowledge (practices) ▪ Explore social use of technologies ▪ Investigation of cultural, political domination and restructure societies. (Feenberq,1991; Ngwenyama and Lee,1997; Doolin,2004)
Researchers Role	<ul style="list-style-type: none"> ▪ Facilitate and participate in developing community practices (Vince,2008) ▪ Examining participants assumptions, meanings, beliefs, revise instructions and providing inclusive environments (Trehan and Pedler,2009) 	<ul style="list-style-type: none"> ▪ Advocate for change ▪ Create reciprocal relationships with the research community, to critically examine the practices, ambiguities and problematize (Giroux,1997) 	<ul style="list-style-type: none"> ▪ Advocate for change ▪ Self-reflective practitioner (Doolin,2004)
Outcomes for research participants or community	Participate in learning activities(practices) that reflect society in its various representations (Vince,2008)	Self-emancipation through reflexive practice; empowerment through critique of school education practices, societal realities; and transform prevailing inequities (Freire,1993; Giroux;1998)	Emancipation through reflexive practice; and forming an alternative framework for transforming societal hegemonies (Ngwenyama,1991; Lyytinen,1992)

As presented in **Table 4.1** Critical Action Learning forms part of layers of knowledge as it directs people to create meaning and construct future action. Therefore, the research is not just a collaborative understanding, but “it is a practice that situates socially reflective learning” (Yeo and Nation 2010, p187). The commitment to Critical Action Learning involves the groups in critical reflection on real world problems, encourages participation, and develops a sense of community (Ingram et al, 2000). As such, CAL employs different qualitative methods to shape the research practice. Since CAL in this study intends to inform and shape actions, it includes typical qualitative data collection instruments such as interviews, classroom discussions, narratives, reflective journals, and observations (Baldwin, 2016; Pedler, 2011). Respectively, Critical Action Learning activities support this research through the following:

- *Development and recognising use of practical knowledge.* CAL provides different ways of diverting research from positivist and functionalist approaches that pre-define ICT learning practices. This enables this study to challenge the conception of objectivity, neutrality and value free practice. The criticality in CAL aims to support the practices of this research to deconstruct predetermined notions, which are often taken for granted by researchers in order to establish knowledge that has power-dynamics understanding (related to RQ 1 and 2 in Chapter 1).
- *Critical reflection on real world problems and change.* Critical reflection, critique and reflexive practices form the core purpose of action learning. These practices are informed by various critical theories and experiences that aim to shape action learning practices (Vince, 2008). Thus, it helps individuals in the research to understand themselves through processes of self-reflection and introspection. The practices of CAL in this research go beyond the experience of resolving problems, as it engages communities that are facing the challenges. As such this research has the potential to create a new meaning of ICT education by “making people conscious of the political, social, cultural and ethical assumptions compelling or supporting people’s actions in a specific context” (Trehan and Pedler, p412)- (related to RQ 3 and 4 in Chapter 1)
- *Collaborative and engaged participation.* The practices of Critical Action Learning in this research are more than forming a group to understand particular problems but rather to collectively develop insight into research community

practices. This process therefore strives to nurture the participants to identify social structures upon which common social identity may be developed. Thus, supporting research participants to develop a sense of ownership, self-development and make collaborative decisions to achieve a community of practice. It is through this notion that participants will be collectively empowered to challenge the practices that fail to address community needs (Fox, 2009) (related to theoretical framework in chapters 7 and 8).

- *Learning from a research organisation (setting)*. The critique and reflective practices of Critical Action Learning are employed here to urge participants to become aware of the hidden political and power dynamics in social settings such as rural schools. Additionally, the emergence of Critical Action Learning as an approach requires these dynamics to be treated centrally in learning organisations or institutional practices (Rigg and Terahn, 2004). As such the learning process in this study is set to motivate the participants to learn from experiences that emerge as a result of critique or reflective insight into contextual problems (related to emerging outcomes in Chapter 6).

The Critical Action Learning in this research is designed on the premise of action in learning and the interacting intentional states of the participants. This is conducted within an interpretative research community that allows participants to share cultural values, assumptions and ideologies to create meaning. The CAL setting in this study is also socially situated to allow participants to use shared interpretive frames (See Figure 4.1) as the norm against which they can interpret, experience and give meaning to social situations and diverge from, or conform to, what they regard as the truth claim of social realities. The assumption is that while the process of claiming the truth is individual, meanings are mediated through the interpretive frames which form the framework for communities from which learners come. When learners claim the truth, they draw on their life experience which they use to frame the kinds of meanings they make, meanings which in turn are influenced by those that are acceptable within their communities (See Figure 4.1).

This setting depends on the capacity of people to internalise the actions and power dynamics used in making meaning of situations. My role as an 'insider researcher' (imposed by participants) therefore is to focus on introducing various ways (conversations, journaling, narratives) that people can use to construct relevant meanings and make sense of situations. Thus, to allow Critical Action Learning to develop knowledge that does not only convey information but rather articulates abstract concepts and constructs which are determined within the research community (Dixon, 2017; Bradbury, 2015).

The use of CAL practices in this study gives me a practical method on which to base the research project and incorporate the Critical Theory that has a transformative impact on ICT training. My interest therefore is to place the emphasis on using the principles for Critical Theory (see section 3.1) which can give an insight into the meanings and understand the actions of participants during the ICT training. At the same time, the Critical Theory acts as a lens for participants, helping them to understand their actions more clearly, particularly with inequalities that may exist in this research (Britzman 2012; Kemmis, 2009). With respect to the complexity of relating education practices to social realities, it is necessary that participants be given freedom during the training in order to thoroughly critique and reflect on each action and the experiences encountered. Foucaults' ideas on power-knowledge relations are therefore applied as a tool that should help participants to gain impetus in developing actions that can transform current ICT education practices in rural secondary schools.

Respectively, before conducting the CAL sessions and selecting data collection instruments, I developed a framework which represents the interpretive frames of reference (assumptions, ideas, values and knowledge) for phenomena that I am investigating in this study (**see Figure 4.1**).

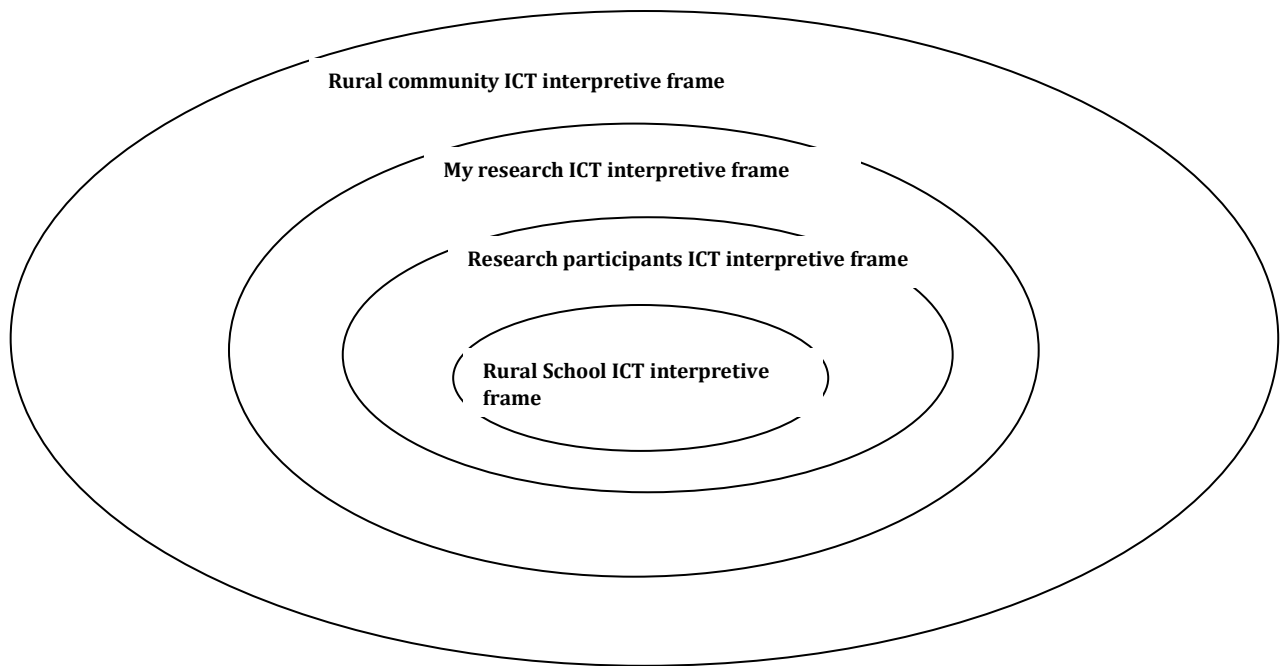


Figure 4.1 Framework for Analysing the Research Process

The framework above was developed as a guide to *how the principles of Critical Theory were defined, and in order to guide my research processes and my role as an insider-outsider researcher and how Critical Theory influenced the research participants' (co-researchers') meaning and beliefs about ICT education practices.* The visual circles on Figure 4.1 represent how I recognised the frame of reference within the process of analysing the empirical data collected. The concept of framing in this research was introduced to understand different truths or realities that co-researchers have in respect of ICT education practices and their experience of ICT. Thus, the research process in this study can be described as interpreting frames (meaning) within other frames, drawing meaning from other meanings that currently exist in a rural community. The framing has multiple layers which must be acknowledged as modes of perception and reflexive processes of accommodating and assimilating knowledge. The frames were discovered during the CAL seminars (ICT training sessions) and it is therefore necessary that I explain the use of these frames in this chapter in order to raise awareness of the subjectivity of the research process and my role as a co-researcher and leading researcher in analysing the data of this study.

Similarly, the framework also corresponds with the literature presented in Chapter 2, in which I drew some of the elements of the frames guiding the activities in CAL sessions. I

now turn to Figure 4.1 to explain how these frames are conceptualised as a methodological approach:

- ***Rural community ICT interpretive frame:*** this is the outer frame which covers the rest of frames. It represents the interpretative strategies used by rural communities to define acceptable social realities at the particular time of conducting this study. The meanings in this frame are mainly produced through different systems of knowledge and ethics pertaining to local context. This does not mean that the meaning defines the frame for the global society or that there is a universal way to describe or refer to what a society ~~means~~ denotes. The meanings are used here to indicate the critical social concerns that affect people, and shape both the interpretive frame of the society and the interpretive frame of ICT education practices in rural secondary schools. This equally has an effect on my interpretation of co-researchers' assumptions, beliefs, values and perceptions of rural communities, likewise my personal interpretive research frame.
- ***My research ICT interpretive frame:*** This is the frame that shaped my interpretation of data drawn from actions that took place in CAL sessions (ICT training) including the reflective journals, classroom events and narratives. At the same time, this frame reflects my research experience in this study. As explained in earlier sections, I am prioritising my role of an insider researcher within this research, despite the advantage of having certain knowledge and experience of teaching ICT in rural schools, communities and the fact that I grew up in a rural community. I have reviewed the relevant literature presented in Chapter 2 which discusses the different roles which ICT knowledge and education have played and currently play in the social development in rural societies. I have discussed in Chapters 1, 6, 7 and 8 the causal relationship that exists between ICT education practices and the reflective use of ICT knowledge by learners in rural communities. It is in my interest to examine to what extent current ICT education practices (meanings inherited in ICT education) are influenced by political and power ideologies in rural schools. Similarly, the literature discussed in Chapter 2 has had an underlying influence on my understanding on what other researchers have established, and has enabled me to redress my bias and perceptions. Thus, by being conscious of the use of my

frame it reflects the competence and reflective practices I have engaged in this research.

- **Research participants ICT interpretive frame.** The main source of data for this study came from both informal and formal conversations that occurred during the CAL sessions, from participants' reflective journals, and personal experiences and from the in-depth interviews with participants (co-researchers). The focus in this process is not so much on sharing details of why certain experiences emerged but rather to understand thoroughly the contexts in which the experience emerged. Therefore, I intend to be conscious of what the participants expressed and their intentions and any significance that I attributed to each of their comments. It is also important to know that the significance of expressions in this study is placed in the context of what I know about the participants, what I experience in respect of the empirical setting and my understanding of what the participants expressed within their interpretive frame as well as my own interpretive frame of reference.
- **Rural School ICT interpretative frame** This comprises practices that both teachers and the Department of Basic Education use to interpret the meaning of practices in ICT education, ICT knowledge and ICT skills. This is the frame through which learners interpret the meaning of current ICT education practices and it represents their experiences of ICT as universally accepted. I intend therefore to provide methods that will help them re-interpret their perceptions and reflect as they participate in CAL sessions.

This qualitative study setting sought to shape my practices (Blokker, 2011) as I prepared participants for CAL sessions to use the philosophies of Critical Theory. Critical Action Learning therefore fitted as a methodology for this study as it both explains and documents the actions that transform unwarranted practices. For instance, CAL strives to create a learning environment that allows participants to participate freely in conversations rather than being undermined. Lawless (2008) explains that Critical Action Learning “offers effective spaces for mobilizing learning that has a social phenomenon situated within hierarchies of empowering individuals” (p127). It is within such spaces that co-researchers are encouraged to participate in each process of exploring the context and nature of the real-world problems that concern them.

Moreover, co-researchers in this study “have the opportunity to develop an immediate and a deeply relevant understanding of their situation and be involved actively in the process of dealing with relevant social problems” (Stringer, 1996 p32). The task for Critical Action Learning in this study therefore is to provide a climate that might give co-researchers the sense that they are in control of their own lives and that supports them as they take systematic action to improve their circumstances.

Following the perspective for CAL, the activities in this study are designed to enable participants to develop attitudes and actions which are naturally reflective to resolve real world problems (Pedler, 1996; McGill and Beaty, 1995). The co-researcher is expected to involve the values of CAL in the knowledge produced, in reflective actions, and in the relationship between participants’ emerging knowledge and their new meaning of ICT education practices. In this regard the CAL methodological process is seen here as a means to transform and free the research participants, rather than to simply improve education practices.

The use of Critical Action Learning encourages participants in this research to critically reflect on their individual experience of actions. This is undertaken in relation to politics, culture, values and power that potentially create obstruction to and conflict in learning (Ram and Trehan, 2010). Critical Action Learning engages participants in a cycle or process of dialogue, action, observation and reflection (Revans, 1982; Ram and Trehan, 2009). The cycle in this study aims at supporting participants in learning from their own experiences and acting with new knowledge to avoid inefficiency in their work. As such, with my role as insider researcher, I participated in this cycle whilst mentoring other participants. Even though my responsibility from the start of the research project was to develop learning activities, I regularly made changes throughout the CAL sessions to make the project relevant to participants needs, experiences and questions. Thus, the learning activities were drawn from the critical perspective, “to connect learning and participants’ daily realities, to identify the assumptions governing their actions, to locate the political, historical and cultural origins of their assumptions, question their meanings and recognise taken for granted norms held about ICT education and social realities in their communities” (Trehan and Rigg, 2015 p3).

4.3.1 Integrating Research Activities in Critical Action Learning

In Critical Action Learning, practice and theory are integrated fully (Wilmott, 1997; Fenwick, 2003; Ram and Trehan, 2010) and the researcher is required to simplify the process of experiencing and understanding theoretical concepts by non-academic participants (Ram, 2012). Vince (2008) contends that Critical Action Learning research engenders such practices as it values the contributions of participants, and it considers collective reflection and experience to be a practical means of heightening the research process. Trehan and Rigg (2015) asserted that in Critical Action Learning, the theoretical interest is developed as participants collectively reflect on actions and construct new knowledge that responds to their needs and prior knowledge. Moreover, Coughlan and Coughlan (2010), Trehan, Rigg and Stewart (2006) urge the importance of understanding participants' perceptions and the individual experience of realities and actions, if we are to construct knowledge in Critical Action Learning research. Each of these ideas greatly informed the Critical Action Learning processes adopted in this study.

Nevertheless, the practice of Critical Action Learning in this study is largely collated and documented as narrative. Narrative, as an approach, is central to Critical Action Learning to critically examine participants' experience of their actions, and learning within the collective group, and provides stories and data that form research notes (Brook, Pedler and Burgoyne, 2013). The narrative approach was engaged in this study to allow participants to express their experience of transformation and to establish its relevance in the context of ICT education. The narratives further supported my practice of establishing meaning and the experience of truth claims from each participant rather than historical data and empirical abstractions (Tanggaard, 2009; Polkinghorne, 2007). Furthermore, the narratives offered the co-researchers a means of explaining their "insights, searches for meaning, and the connectedness they find in the world... [...]. Looking at their autobiographies, reliving their own experiences with inequality, power, and authority in schools, which offers them the opportunity to inform themselves further and move forward, to change situations in which today's students experience injustice" (Hobson, 2001 p 8). This approach is more aligned with the basis of free research practice explained by Oliver (1997). To Oliver, research should include

the process of generating solutions to relevant questions. The solutions do not only affect individuals only, but the society as a whole. Therefore, the transformative experiences in action research such as Critical Action Learning can be used as an example of action for others in the society. In this aspect, the realities and life histories shared by the participants in this study open up the possibilities of empowerment and changes to dilemmas of ICT education practices and themselves.

4.3.2 Adopting Critique as a Methodology

The central precept of this study and its inquiry is based on critical examination and the revelation of hidden powers that ICT education practices are made up of in rural secondary schools (refer to section 1.4). Such understanding calls for empirical analysis in order to acknowledge that ICT education practices are affected by socio-economic and political claims of truth (Kemmis, Taggart and Nixon, 2013; Alvesson and Deetz, 2000). Consequently, as I argue in Chapter 3 and earlier sections of this chapter, truth in society is not inseparable from all dominations of power which are subject to interpretations. Hence critique as a methodology is an essential element in this study, since it creates value, significance and the virtue of resulting outcomes. It supports this research to “point out on what kinds of assumptions, what kinds of familiar, unchallenged, unconsidered modes of thought, the practices that we accept, rest” (Foucault, 1988 p155). Critique as a methodology is found in the ideas of Kant, a renowned philosopher in modern philosophy. His idea of critique was to dispute the notion of epistemological understanding and neglect the subjectivity in interpretation and reflection of the truth (Davis, 2004; Usher, 1996).

However, Jørgensen and Phillips (2000) commend that “knowledge which is regarded as truth, seemingly without questioning, certainly internalizes dominant power in a society” (p39). Indeed, if the ideas behind the practical adoption of ICT education practices in rural secondary schools are derived from the truth, then this research reflects Foucault’s thoughts that we must critique such ideas as well as the grounds upon which they are based. My intention to employ critique as a methodology in Critical Action Learning rests on using multiple ways of questioning predominant truth claims about ICT education. This requires both I myself and participants in this study to become critical of activities engaged, especially in respect of practices that people

regard as reasonable. Therefore, it is necessary to recognise that the term 'critique' in this study does not mean objecting to current ICT education practices, neither is it "not a matter of saying that things are not right as they are" (Foucault, 1988 p155) but to understand "that everything is dangerous...[] and if everything is dangerous, then we always have something to do" (Foucault, 1984 p343).

Pertinent in this study, is that critique holds forms of analysis to the empirical (Zimmerman, Stolterman and Forlizzi, 2010), although the current practices of producing knowledge in rural schools are interwoven with dominant powers. This makes critique, as an analytical method, more vital to examine the truth that ICT education rests upon. On the other hand, critique as a process poses a challenge for me as researcher since I am using the same process that I am required to investigate. Thus, my role in this study involves both participating as a participant in CAL sessions (data collection and analysis) and the interpretive process (as a principle researcher as well as insider). My intention therefore is to be sensitive to every activity and substance of the word from my fellow participants (co-researchers). This will help my interpretive process even though I cannot fully experience what others have experienced. Nevertheless, the findings that I have discussed in Chapter 5 and 7 were gradually developed throughout the research process. The urgency to engage critique as a methodology came out of comments from the reflective journals and discussions that occurred during the CAL sessions that spoke out against predominant practices of ICT education in rural schools, and the truth they rest upon. This does not mean that the participants' accounts were in contention of current ICT education practices but rather their reference to such things seemed more realistic and made me suspicious and very curious. Thus, the participants were apparently seeing no reason to question something that needs to be questioned (Ehn and Klein, 1994 p67). Equally, I found their truth claims so irksome that it became necessary to critique myself in order to create alternative ways of thinking that could provide a varied understanding of the phenomena. Although such processes are determined to provoke the participants' image of educational practices, my aim is to instigate emancipatory practices that allow society to seek transformation of the hegemonic status of ICT education in rural secondary schools.

4.3.3 Positioning Myself as a Researcher

In chapter 1, sections 4.3 and 4.3.1, I have discussed in passing some of the roles I am playing as both principle researcher and co-researcher (participant) in this study. The discussions introduced the nature of Critical Action Learning research as a type of research that engages all members in the research as participants in action learning (Hauser and Trehan, 2014). This poses a challenge for the leading researcher to interpret the research from both participant and researcher perspective. As such Herr and Anderson (2005) criticised that “researchers are often regarded as true believers in their particular practices and the dual inquiry process tempts them to put a positive spin on their personal data” (p35). It is within this context that Herr and Anderson (2005) warned that “research fails to acknowledge the insider status of other participants... and allows the researcher to avoid the kind of intense reflection that is the hallmark of good practitioner research” (p47). However, in this study I intensively developed self-reflexivity to avoid any bias and allow other participants to recognize their position in the research activities. My identity within the research was both as an insider as I was researching my practice, and as an outsider as I was researching other participants’ activities (refer to section 4.2 and 4.3.1).

According to Raelin and Coghlan (2006) Critical Action Learning research positions the researcher as an insider who is not only concerned with studying the empirical but transforming it (p677). Since my background of teaching ICT at Rhodes University and as an ICT educator in rural schools allows me to become more familiar with the culture in rural communities of the Eastern Cape, my position consequently is insider (refer to section 1.4). This position will help me to become sensitive to the meanings and intentions of participants. My insider knowledge may help me to understand other participants since they have more experience and are more familiar with the context and setting of the empirical engaged in this study. Moreover, being an insider in this research allows me to understand fully the experiences that have shaped my participants’ perception and their identity. Indeed, Raelin and Coghlan (2006) advise that my position of an insider in Critical Action Learning is to work collaboratively with other insiders.

From the beginning of this study, I served as a full insider co-researcher. I was participating regularly in dialogues, informal and formal discussions during the Critical Action Learning sessions (ICT training). I made it explicit to other participants that my role was to improve their ICT knowledge, ICT skills and make the training relevant within their personal and community social development contexts. The cycle of dialogue, action, observation and reflection in Critical Action Learning conveyed my research methodology and nurtured our roles as both collaborative researchers and insiders in research endeavours. I used the CAL cycle to move other participants from anxiety, through hesitancy, to taking risks, critiquing, reaching understanding and getting a sense of empowerment (Oehlberg, 2006). Consequently, in learning sessions where participants faced more uncertainty, “the individuals were allowed to resist, responding with denial, avoidance, defensiveness, and ultimately maintain willing ignorance “(Vince, 1996 p122).

Therefore, I am aware that most of the participants are residents of rural communities surrounding the schools, and those of old age groups in particular, that are likely to have some important knowledge that may help my research analyse the historical background of the communities. It is necessary I take into account that even if it might seem to be clear that some of the participants have access to ICTs in their communities, it is less clear that some participants are able to use ICT the same way as young people who reside in the community. I am also aware that participants in this study have different backgrounds and levels of knowledge, and hence I must maintain an open mind and be conscious of my interpretive frame. Such conscious scrutiny of my practice is vital for ensuring integrity and usefulness in interpreting data (Davies and Gannon, 2003). Furthermore, reflexivity is employed in every process here to place my active role of a researcher, who is ethically and politically informed, to deal with issues as they occur in the research process.

Nevertheless, the nature of critical research methods and analytical process is contextual to the researchers’ values and meanings extracted from empirical data. Although this is true in most academic research, this study is publicly immersed in reflexivity in order to locate the role of researcher in the research processes (Berger, 2015; Munkejord, 2009). The participants are broadly positioned as co-researchers to

explore the objectives of this research whilst the direction of the research process stems from me as a leading researcher. Therefore, such processes require both me and co-researchers to reflectively unpack our understandings and present them as part of the research process. Hence, I employed a reflective journaling process to assist myself and participants in becoming conscious of the activities and interpretations of our experiences in the research. This process further helps me to recognize my own social, cultural and academic knowledge that shapes my research, although this process is not something new since I often use it to learn about myself.

The reflexive approach in this thesis aims to visibly allow the reader understanding of the nature of results that are related to decisions and choices that I took during the research process. Moreover, Davies and Gannon (2003) contend that researchers who are involved in critical research must value “the assumptions they make about the nature of, and relations between subjects, the texts they produce and the conceptual tools and strategies that are used to capture data” (p7). As a critical researcher I cannot claim that whatever I am discussing in this thesis is valid because of particular approaches engaged within research processes. Rather my intention of employing visible strategies in this study is to make the research process transparent (Bulpitt and Martin, 2010). As such transparency in this research is considered more essential and “presented in ways that make it clear on how the researcher and participants’ experiences, values, and positions of privilege in various hierarchies have influenced our research interests, the way we chose to do the research, and the ways we chose to represent the research findings” (Hartsock, 1990 p. 325). However, the inherent tension within this process is the problem of exposing the ‘self’ through reflective writing. This process is engaged here to enact ideas of making the research process as transparent as possible.

The use of reflective journaling in this study has added the benefit of realising the multi-faceted (Dana and Yendol-Hoppey, 2014) nature of being a critical researcher in rural empirical research, and the narratives helped me to develop a sense of self. As a critical researcher, my narratives and reflections in the journals helped me to become conscious of my assumptions towards this research. Similarly, this process opened my mind to understanding some of the participants’ preconceptions as I became immersed

in the social realities of rural communities. Nevertheless, it still remains natural and abstract on how I managed to become immersed within the community practices. It is important therefore that my experiences are reflected separately from other participants in this thesis.

4.3.4 Reflexivity in this Critical Research

With regard to prior experiences and knowledge of the phenomena I am investigating, I brought into this study a situated knowledge, and as such I and the participants were intentionally located within reflexive and comparative interdependency. Such situated knowledge has great impact on critical research and it directed me to conceptualise this abstract notion to avoid “the complex relationships between how knowledge is created, in particular the part that context plays in its creation, and what the individual brings to the process” (Etherington, 2004 p30). This sometimes creates a challenge to researchers to ensure that the research is completely reflexive. Moreover, the term reflexivity is often used vaguely amongst many researchers however Alvesson and Skoldberg (2009) describe reflexivity as responsiveness to the researcher position and influence in data collection, analysis and the interpretive process. Such descriptions of reflexivity stem directly from the research approach that perceives the world as structured and not subject to interpretation. However, in this study reflexivity is applied differently to what Alvesson and Skoldberg (2009) proposed. The study is using the concept of reflexivity to centre the effect of the researcher at both theoretical and methodological levels (Bulpitt and Martin, 2010). At the theoretical level, reflexivity is being applied to engage self-reflection on the use of theory and processes involved in the interpretation of data. Whilst at the methodological level reflexivity is focusing on developing self-reflection on the field of study, on empirical data and on the processes of collecting data.

As an insider researcher I cannot ignore every assumption involved in my practice. It is within this context that the interpretation of empirical data is tentatively bound and tallies with my personal experiences and legitimised knowledge. Therefore, I have adopted a set of questions suggested by Etherington (2004) as guidelines for becoming a reflexive researcher:

How has my personal history and experience led to my interest in this topic?

What are my presuppositions about knowledge in the field of study?

How am I positioned in relationship to knowledge in this research?

How does gender/social class/ethnicity and culture in relationship to this topic influence participants and my own particular views? (p28)

These questions extended an ethical responsibility for me to accept every voice from each participant with respect (Olessen, 2005). This shows the nature of reflexivity with which I am engaging in this study, in being so critical about methods, settings, processes, positions and values which the researcher and participants hold in research (Alvesson and Skoldberg, 2009). As such, being a reflexive researcher, I am able to explicitly identify certain operations of power that exist in the research process and people (Guillemin and Gillam, 2004; Pillow, 2003). This helps me to be conscious of various methods and epistemological claims that influence comments made by participants (Darawsheh, 2014). Likewise, my influence in this study is conceptualised as functioning through different levels through dominant cultural perceptions contained in my language, through various roles that position me as the leading researcher, through particular relationships created between myself and participants and the field of study. Although participants' language is dominant in this study, I am conscious by incorporating possible, as well as relevant political and analytical terms during the dialogues.

As a technologist and a teacher of ICT studies (see Appendix A), I have a vast knowledge in the field, and the empirical experiences are subject to my self-reflections. At the same time, my experience as a co-researcher in this study cannot separate me from being the author of this thesis, and therefore the voices I brought into this study are subjective to co-participation in empirical analysis. Moreover, it is my role to be conscious of the comments all the participants presented, since they do not have the same background and all are not conversant with educational practices. This means, most of the participants in this study are informed through their own experiences (see figure 4.1) that might be different from my own experiences of the empirical. I intentionally became reflexive and involved regular self-reflection on the research and in the interpretive process. Furthermore, reflexivity is used in this study not only as a means

to preserve methodological and theoretical rigour but rather to install some valued perspectives of the research process. Thus, reflexivity is involved to understand the values that co-researchers hold within this research.

4.4 Research Context

As I have explained in sections 1.4 and 4.2, the research project emerged from a community engagement initiative conducted by myself and Professor Krauss. Our interest in obtaining PhD research from the initiative came after contemplating the nature of ICT education presently available in rural secondary schools. This moved our initiative to incorporate this research project in order to focus on rural people and critical questioning on how practices involved in ICT education have an effect on learners in realising the potentials that ICT knowledge can have on the social development in their community. Therefore, the design of this research emerged in order to understand the lived experience of current ICT education practices in rural schools.

The research is located in five secondary schools in two communities of Alexandria and Joza in the Eastern Cape Province. The secondary schools have been chosen for this study in part due to the established relationship between our community engagement project and the Principals of the schools. Furthermore, the dwindling social development in these two communities motivated the schools to engage in the research project as part of improving education practices in rural schools. As a requirement to conduct academic research, I was given ethical clearance by Rhodes University in 2016, and began the field work in March, 2016. It took longer to receive the ethical clearance since my research involved government institutions.

The five secondary schools are all similar since they are in marginalized poor communities. In terms of population, the communities have a high-density population and are distinct in the demographic make-up of the population. The Joza community has more black people, who speak iSixhosa, while the Alexandria community has more coloured people who speak Afrikaans. The schools in these communities became of key relevance to the different outcomes and processes involved in this study.

The schools involved in this research have computer laboratories that were constructed to offer learners and teachers the opportunity of using ICTs. These computer laboratories were mainly designed to be used as classrooms in the first place, but later refurbished due to the increase demand for the integration of ICTs in secondary schools. At the time of conducting this research, each school had one computer lab with an average of 12 computers. Out of these five schools, three schools have computer laboratories with high-end computers, installed with common Microsoft applications such as Microsoft Word, Power Point, Access and Excel, and connected to broadband internet. The three schools progressed further in using the computers to teach learners an ICT subject called 'Computer Application Technology' (CAT). While in the other two schools, the computers are only used by teachers to access internet and printing services. Although three of the schools managed to introduce CAT, this subject is not a designated subject, that is to say that it is not credited as one of subjects that learners can use to apply for university entry.

The research activities in these schools were mainly ICT training seminars (Critical Action Learning seminars) conducted over a 10-month period. The research project began in March, 2016 at Ukhanyo Secondary School (pseudonym) and after two months the project was replicated in the other four schools. The CAL sessions were basically ICT training programmes involving ordinary people from the community (people with no formal schooling), school leavers, school drop outs, unemployed youths and teachers. The training sessions were strategically developed to resemble normal CAT class sessions (For more refer to 4.6).

The training sessions were intentionally designed to use a curriculum (Refer to Appendix J) that aimed at involving socially informed practices in ICT education in rural secondary schools. Therefore, to allow the research to achieve this objective, I delivered most of the classroom training sessions (CAL sessions) in conjunction with other participants who were willing to train their colleagues. This approach allowed the subjective and in-depth account of the transformative informed practices in ICT education to emerge. The training sessions (CAL sessions) were based on experiencing the use of ICT, knowledge of ICT, and informed by the participants' experience of events that occur both in and outside the classroom. The opportunity to allow participants'

experience to direct the training practices involved in and outside training sessions proved to be worthwhile and informative.

The training content (see Appendix J) included the current Computer Application Technology content, revised content that is based on participants' emerging experiences, and classroom practices. The experiences included the objective of each training session, and the transformation of participants knowledge of ICTs, the use of ICT in rural communities, the view of realities in communities, relevant realities presented in the practices, potential opportunities created through ICT knowledge and experiencing ICT, and the role of ICT education from the perspective of participants (learners) as members of the community. Through the research training programme, over fifty-five participants were trained using rural secondary school ICT resources. The following section provides more specific information about the design of the research.

4.5 Data Collection Tools

The methodological base for this research is Critical Action Learning. As such the intentions for gathering data were to search for descriptions of reality rather than to develop assumptions of the co-researcher's reality (refer to sections 4.3.2 and 4.3.3). Therefore, the research needed to use methods of collecting data that can critically examine the extent to which ICT education practices are legitimised and affect the social practices in rural communities. Moreover, as a critical researcher that seeks to emancipate people, to consciously act, to change the dominant practices and social conditions (Kincheloe and McLaren, 1998), I must understand that such conditions are constrained by political control. This research therefore attempts to form political action that redresses the social realities of education practices. Thus, the study employs data collection techniques that are informed by critical frameworks to examine the phenomena.

As a critical researcher, I am consciously aware of the unpredictability of empirical research (practical or in real life) and I needed the data collection instruments that Creswell and Poth (2017) claim to incorporate in the inter-subjectivity and situated research setting. In retrospect, this means my empirical data capturing methods are positioned to examine both how social reality is constructed through practices in ICT

education and how it is experienced (Silverman, 2015; Charmaz, 2011). Thus, I am interested in helping the participants to become more aware of their social experiences and to develop different notions of experience (Padgett, 2016). Thus, the outcomes from the data collection process form the descriptions of practical experience of ICT education practices.

Due to the nature of Critical Information Systems and the challenge of not having its own appropriate empirical research methods (Myers and Klein 2011; Lyytinen, 1992; Klein, 1999) this field still does not have predetermined and absolute methods of empirical data inquiry (see section 1.5). Rather most critical researchers in IS “infuse critical theoretic concerns and intents into hermeneutic acts of interpretation thereby adapting and transforming interpretational methods to serve critical ends” (Cecez-Kecmanovic, 2001 p1447). Subsequently, interpretational methods are identified with qualitative methods of inquiry such as interviews, focused group discussions, open ended questions and self-reflection. Such research techniques are also associated with “mutually exclusive ontological and epistemological assumptions and philosophical foundations” (ibid) in critical research.

Although critical IS research continues to lack its own methodologies and methods, Ngwenyama (1991) notes that available interpretive techniques can be adapted to achieve the critical needs. He defined five criteria that critical IS research can use in adapting other methods such as:

- Methods must be practice oriented focusing on change
- Methods must support inquiry into the organization process and its social context
- Methods must be sensitive to individual as well as organizational needs
- Methods must be collaborative, supporting free and open participation
- Methods must be critically self-reflective(p5)

In practice this research adopted interpretative data collection methods such as reflective journaling, in-depth interviews, participant information and CAL session curriculum (see **Table 4.2**).

Table 4.2: Data collection methods (sources)

Methods or tools	Period Administered	Purposes	Number of participants involved
Research participant information form (See Appendix G)	7 March 2016 to 12 February 2017	To collect personal information about the participants and to get a sense of their prior ICT experiences and training needs.	All 53 participants
Researcher Self-Reflective Journal	12 March 2016 to 20 April 2017	To help me reflect on my research actions, experiences, plans and actions as I train and interact with co-researchers.	1
Co-Researcher Reflective Journal	17 March 2016 to 20 April 2017	To help co-researchers reflect on and narrate their own feelings about the research and transformative informed ICT experiences, and how it is related to ICT educational practices.	49 participants
CAL Seminar on informal and formal activities (records)	Transcribed February 2016 to April 2017	To look closely at emerging ideas, issues and activities that happened during the CAL seminars (ICT training).	53 participants
CAL presentations (Curriculum, see Appendix J)	Created in January 2016: revised during the whole period of research	To address the important elements of socially informed ICT practices in CAL seminars (ICT training).	

First In-Depth Interviews	13 March 2016 to 17 February 2017	To help co-researchers identify their new experiences, skills and knowledge of socially informed ICT education. To identify emerging issues that needed to be addressed during their time participating in the training.	37 participants
Follow up on In-Depth Interviews	6 June 2016 to 17 May 2017	To discuss, clarify and articulate experiences the participants encountered that could be related to the use of ICT knowledge and skills which the co-researchers acquired from the research project.	24 participants

The engagement of these methods was cyclical (see section 4.3), as they correspond to research ideas which only came to light during the research process (Pedler, 2005). Equally these research techniques and other ideas used within the process of collection opened up the path to data analysis. Indeed, the data collection methods were inductively approached and required the emerging ideas (experiences) to be tried and readjusted during the research process. Although such processes can be argued otherwise in academic research, the methods remained true to the data and were located to current needs in this research. Moreover, as a critical research, the ability to alienate predetermined research processes and methods is a step towards emancipatory acts of research (Kemmis, 2016; Krauss, 2013). In other words, things such as methods, tact and judgement can lead to the reflective understanding of the phenomenon (Cecez-Kecmanovic, 2001).

The process for data collection started with developing frameworks that guided the investigation of each phenomenon (see figure 4.1 and Table 4.1) during the research

process. The two frameworks detail the nature of critical theories and their impact on my practice as a critical researcher as well as on the nature of the Critical Action Learning conducted. The Critical Action Learning sessions were conducted in cycles of dialogue, action, observation and reflection while seeking to use these phases in transforming the research processes and ICT education practices. Throughout the CAL sessions I was involved in all activities and collection of data for the study. I collected the data during the ten months of ICT trainings and teaching ICT in rural schools except for the few follow up in-depth interviews and reflective journals, which were conducted between three and four months after the participants completed their participation in the ICT training programmes.

According to Simpson and Bournier (2007) the data from Critical Action Learning projects is practically connected with the purposes of the activities involved. Thus, the activities for my research varied from classroom sessions, informal conversations, email communications, discussions with my supervisor and space in which participants chose to conduct the in-depth interviews. I now turn to discussing the data collection tools used in this study.

4.5.1 Co-Researchers Information Form

I created the research participants' information form (see Appendix G) and administered the filling in of information by the participants. This form was given to each participant on the first day of attending the ICT training programme (CAL session). The purpose of this form was to have basic information about the participants such as contact information, occupation, their responsibilities (roles) within the community and their reasons for attending the training programme. The last part of the form was designed to allow the participants to offer any important information they needed me to know before they participated in the ICT training session (CAL sessions).

4.5.2 Self-Reflective Journals

In this study the self-reflective journaling identified and defined research questions (Johnson, Raye, Mitchel, Greene and Nolen,2006) as well as reflecting on our (myself and participants) understanding and experience of the research process. This research used two types of reflective journals, thus those of the participants (co-researchers) and

my own self-reflective (leading researcher) journal as one source of data. The journals provided the means to detail my approaches in providing ICT training sessions, support for participants and resources needed to accomplish CAL programmes. As such reading through the journals helped me to redefine my practice and guide the critical approach in the process of research. Throughout the fourteen-month project period I created 46 journal entries with an average of one journal entry every four days. The participants were requested to make one journal entry every week and it amounted to 283 journal entries. I was writing my journals before and after the training sessions, to reflect on actions and events which happened both in and outside classroom. While the participants' journals reflected on what they had learnt, and understood, any knowledge changes, questions and how they practically applied the knowledge and skills obtained in their community (see chapter 5).

Most action learning researchers utilise the reflective journal to source valuable data (Taylor, 2008; Chirema, 2007; Thorpe, 2004; Wideen, Mayer and Moon, 1998). Gray (2007) contended its importance in critical action learning research:

“.....can stimulate participants to build up an holistic picture of the interplay of their past experiences and background with their current and emerging 'state', and in this way help them to understand the manifestation of, in complexity terms, 'sensitivity to initial conditions'—the notion that the long term trajectory of a system is highly sensitive to its starting point and that the long term behaviour of a system is determined as much by small chance changes as by deterministic laws” (p40).

Therefore, in my journals I was compelled to write every significant action or activity that occurred during both informal and formal conversations in and outside the classroom, and during my interaction with participants. For instance, reading my first journals, I recognised the narratives were more questioning the process I was engaged in, and understanding what I experienced through events which occurred in ICT training. From such reflection it helped to guide my own involvement in, and experience of socially informed ICT education practices. As the research progressed the focus of my journaling content kept on changing. In this manner the method provided a direction for me to engage the CAL cycle of dialogue, act, observation and reflection. Thus, the

reflective-journals allowed me to review research practice, act on changes, observe the practice and reflect on experience (Slotnick and Janesick, 2011).

Furthermore, the narratives presented in journals also reflected my personal interaction with other participants, the emotions, reactions, physical appearance, and responses made in their comments. I immersed myself within a compilation of writings throughout the research processes that included my personal knowledge of experiencing transformed ICT education practices, and my thoughts on participants' reflections, actions, journals and responses. For instance, in my reflective journal of June 7, 2016 I wrote:

Today I came to conduct the training, and later had an in-depth interview with one participant who is a school leaver. I planned the interview to be conducted in the community rather than at the school. The participant named Ayanda(pseudonym) looked so surprised that we were going to conduct this interview while walking around the community. I intentionally planned such setting to allow Ayanda to connect our conversation with his life experience in the community. As we reached some deprived place in the community Ayanda struggled to respond to some questions and he called another community member to comment on one of the questions. I recognised that people in a rural community share knowledge and depend on each other in taking up common social challenges. As per the practice of Critical Action Learning, I took all the responses and accounts of our experience today (me, Ayanda and random community member) and made plans to address this in the next CAL sessions with other members.

However, my other journal entries that followed the interview with Ayanda provided the pathway to note issues that participants struggled to find solutions to, and how they became afflicted as they were re-immersed in reality and conscious perspective. In retrospect, the process of journaling provided practical ways of informing this research. I personally became immersed in the experience of social reproduction (Cecez-Kecmanovic,2001) and it became a method of re-adjusting research questions and revealing the importance of this research, and it provided additional meanings to participants' narratives (Langellier,1998). Although the inception of academic research lies with the researcher's concerns and practice, this research was broadened by

exploring the aspects, experiences and meanings presented by others. As such the critical essence of this study focuses on *our* experiences not on *my* experiences, which allowed socially informed ICT educational experiences to become the participants' description of experiences rather than just researcher experiences. As Mehra(2002) contended qualitative research data based on individual participants and analysed by same participant is prone to subjective bias.

4.5.3 Follow-Up Reflective Journals

After participating in the research project study, the participants were encouraged to write post reflective journals that allowed them to narrate further thoughts and socially informed ICT experiences in their communities. During the time of participating in research activities, the participants were notified of further post-interviews and writing post-reflective journals required to help the researcher gather more data. Initially all participants agreed to participate in both the post research process, and 49 co-researchers managed to write their post reflective journals which were incorporated in the data analysis. The reasons for others failing to write their reflective journals were attributed to the relocation of some participants to other areas far from the project, involvement in various opportunities that opened up during and after participating in the project and some opted for post interviews rather than journals. Some felt the task to detail their post encounters on a piece of paper or email was quite challenging. To some extent the reason for not collecting all the reflective journals from the participants was due to my personal desire not to force the participants to respond to my requests. The participation in this study was predefined as free commitment by every participant, and they responded to issues of their own free will. Although reminders were sent to all participants in advance, I did not make much effort to follow up on responses in order to avoid being seen as more opportunistic than supportive of my participants.

Nevertheless, the purpose of writing post reflective journals was to encourage the participants to describe the emerging use and practical experiences of socially informed ICT knowledge in communities. The journals were collected within three to four months after participating in the research project (ICT training). The time frame was mainly selected to allow more time for participants to experience the practical usage of knowledge and skills acquired from the research. As evident from the reflective journal

guide in **Appendices E and F**, the participants were briefly requested to reflect on the outcomes of their participation in the research study, while the other part was to reflect on additional aspects of socially informed ICT educational experiences (new meanings and lived experiences of using socially informed ICT skills and knowledge). The reflection included redefining the meaning of socially informed ICT education practices and personal experience of socially informed ICT knowledge, exploring their experience or practical based relationship between ICT education practice and realities in their communities, interpreting their ICT knowledge and skills development, scrutinizing the importance and meaning of ICT education, considering the social effect and meaning of using ICT in social development, and describing the experience of using ICT that differed from the one discussed during the time of training and that during the post interview.

4.5.4 ICT Training Curriculum Activities

The training curriculum (CAL sessions) involved various ICT learning activities such as teaching, presentations, video presentations, learning tasks and discussions that I created to guide the sessions. The term “learning” in this study refers to the acquisition of skills, new meanings, new knowledge and the search for new or existing interests. The design of each session was aimed at addressing the topics relating to socially informed ICT knowledge and skills as well as participants’ concerns and experiences. The curriculum content was informed by the literature available in the field of ICT4D, ICT for Education Development, Rural Education, Social Development, Information Systems, Critical Action Learning, Critical Theory and Foucault’s writings (See chapter 2 and 3). Before designing the curriculum and conducting training sessions, I reviewed the relevant components from these fields to guide my practice and transform participants’ attitudes towards ICT education.

The components that guided the training sessions design were: 1) establishing emancipatory ICT knowledge and skills, 2) developing reflective ICT skills and providing transformative ICT learning, 3) establishing and realising human potential, 4) understanding/developing the contributions of ICTs to socio development in rural communities, 5) enabling action to change social conditions through knowledge of ICT, 6) identifying the opportunities in application of ICT and enabling critique, 7)

establishing the future of ICT education in social development, 8) reflective journaling and developing a power-knowledge balance between researcher and co-researcher. These components were involved in a positive learning environment for all participants and employed as activities of a critical research that aimed to transform ICT education practices (values, assumptions and norms). Nevertheless, it was my intention to simultaneously engage critical research practice, and the participants' experience as transformative ways of learning ICT. Moreover, the principles of Critical theory helped me to develop different goals to be achieved during each training session (**See Table 4.1 and section 3.1**). It is also necessary to note that some of the components were introduced by the participants themselves during the training sessions.

4.5.5 In-Depth Interviews

The in-depth interviews were the principle method of collecting data from the co-researchers (participants) in this study. The interviews conducted in critical IS research are often similar to any other unstructured traditions of soliciting qualitative data. As such, as the leading researcher I established the rapport, trust and provided a safe environment for the interviewees to allow them to discuss their experiences freely and examine their empirical experience (Greenwood, 2006; Baskerville and Wood-Harper, 1996; Orlikowski and Baroudi, 1991). This reflects the social cohesion that reassured the free discussion (Dworkin, 2012), and it is essential for the critical research interview process (Scott and Garner, 2013). Thus, the in-depth interviews in this study provided the interpersonal dialogue in which participants were not only sharing their personal opinions but exploring and expressing their own experiences. Similarly, ample time was allocated for participants to freely explain and interpret their experience (Taket, 2001; Myers, 1997). Hence the focus for the in-depth interviews was to critically explore why participant experiences emerged as they did and to explore descriptions of specific actions and contexts in which the experiences emerged.

All the in-depth interviews that I conducted with participants (co-researchers) amounted to a total of thirty-two, and some participants were interviewed twice or three times. The interview process was more of dialogue/conversation in a formal or informal setting. Most of the interviews were conducted in different informal and open spaces in the communities rather than at schools, and lasted from one to two hours. At

the same time, some informal conversations were also taking place with the participants before and after the interviews. This became an important process as it allowed the research to create a sense of rapport and an environment that supported participants not only in sharing the emerging issues but also their interests and experiences (Bryman, 2016; Marshall and Rossman, 2014). In other words, this process was valuable for most participants as they felt most welcome to discuss their personal new meanings and the nature of ICT experiences.

In all the cases, the participants were allowed to choose the place to hold the interviews. In some cases, the participants would choose open spaces, and I allowed the issue of secrecy to be motivated by they themselves. The issue of secrecy was mostly motivated by the participants as they understood that their role within this study is politicised (some participants were teachers in rural schools). Even though this study was not openly political, the culture of prevalent interventions in public rural schools meant that most teachers (those participating in this study) could, to a lesser or greater extent, perceive the intentions of this study as political. On the other hand, the challenge of instilling secrecy in this study is that only the pilot interviews were tape recorded while the rest involved taking extensive notes. This decision was made after I observed that most participants were not comfortable with the tape recorder, as they perceived the latter to be an observer. Thus, after abandoning the use of the tape recorder, it allowed most participants to re-ignite their zeal and make contentious comments.

Therefore, I personally made every effort to approach each interview process with an open mind. This was a valuable process in revealing different perceptions, backgrounds and the personal connection of participants with emerging needs of the study. They thus came with a range of different careers paths, attitudes and aspirations that shaped their participation in this study. As such the dialogue and interaction with the participants was individualised whilst maintaining the intentional focus of the research. On the other hand, the interview questions were unstructured and formulated with open ended queries that accommodated all respondents. Although this provided a steady focus, the direction and flow of subsequent questions and the dialogues reflected the participants' response (Charmaz and Belgrave, 2012). It was important in Foucauldian analysis to nurture freedom and variability, and avoid leading the participants towards any

particular type of response, but simply to obtain narration of their own experiences and relate this through CAL experiences. The conversations therefore were directed by the essence of the responses given and the urgency to inspire the participants to freely discuss and elaborate on the emerging experience (Shenton, 2004; McCosker, Barnard, and Gerber, 2001) of understandings, meanings and perceptions. This process was iterated to allow the researcher to grasp detailed examples and for describing the depth of meanings. Most of the interview conversations lasted for an hour or two with the intention of allowing the participants to express all the examples and meanings that they could manage to explain.

The interview process was also driven by the presence of democratic spaces for participants to articulate their own responses and allow the researcher (myself) to be attentive and conscious at all times (Goodman and West-Olatunji, 2009; Hiller and DiLuzio, 2004; Rodriguez, Lahman and Geist, 2011). Fewer encouragers were used in the process in order to allow the interview to flow with the unfolding of emergent findings (Reybold, Lammert and Stribling, 2013) and participants took up the role of directing the progression of dialogue. Moreover, the researcher had created an open environment for the participants to experience the reality and narrate their own understanding of phenomena investigated in this study. The questions also motivated the participants to generate storylines, which were noted down for later consensus with other participants' views. As different participants agreed with other storylines, it helped me to complete the remaining parts of data. Thus, by giving more attention to individual narratives and responsive conversation, the lived experiences of the participants were stimulated to emerge.

The interview schedule presented in **Appendix B2** was used to solicit data as part of pilot interviews. As such the first two interviews conducted were more structured and relatively detailed as evident from the example. The questions focused mainly on ICT education, ICT usage and social experiences as the central emphasis of the phenomenon. Subsequently the following interview processes were guided by a different set of questions (**See Appendix B1**). Later the schedule for questions was refined further, to fully relate the research to the inductive process of understanding the empirical and different aspects of knowledge from the respondents. Thus, the interview schedule

became more unstructured and broader in order to investigate all possible experiences related to this study. As such, the format for interviews led the participants to express different aspects of their experiences of the phenomenon in comfortable ways (Seidman, 2013). For instance, some participants needed to explicitly describe their own meaning of ICT educational practice, and socially informed ICT knowledge. They requested time to explain these ideas first before responding to further questions. In other interviews the participants articulated their own misunderstanding of experiences which they thought were socially informed by knowledge and use of ICT, while others expressed the significant ICT knowledge that changed their perception of the world.

Anfara, Brown and Mangione (2002) contended that an effective qualitative interview question evokes memories of experiences rather than thoughts about the phenomenon. Although in some cases the first question would seem not to stimulate such memories, it helped the participants to respond with stories. The interviews were scheduled with one leading question which was supported by prompts from the researcher and encouraged participants to express their experiences freely. Such prompts included questions such as: *What happened when you first experienced the use of any ICT? How did you respond to such experience? Are there any other recounts of what happened with such experience?* Using the prompts, I observed that the participants were opening up and becoming more focused in their responses. Moreover, this process helped the interviewee not to be guided so much by exact questions, but rather by our interaction and understanding mode which stimulated participants to describe aspects of their experiences.

What I found most useful in my approach of conducting in-depth interviews was how it supported me to conclude the interview session with a self-debriefing, and David Shaw (2013) recommended this as necessary to promote researcher capability in the interview process. As such, after each interview I was also critically reflecting on the data collected, and the interview process. David Shaw (2013) asserts that sometimes as researchers we forget to reflect on things as one leaves the interview premises, drives home or are chatting to others after the interview. Therefore, I found the reflection and writing my immediate experience from each interview a valuable way to rectify what

did not work during the interview process. This allowed me to understand whether participants' (co-researchers) experiences were matching up with mine in some way, a critical aspect that Boet et al (2011) recommend as crucial when gathering data in a critical research.

4.6 Research Participant Selection

4.6.1 Locating Co-Researchers (Research participants)

Within Critical Action Learning Research there are various arguments in respect of the appropriate number of or sample sizes for participants to establish a thorough research (Zuber-Skerritt, 2001; Creswell and Poth, 2017). Equally in this Critical IS research there is no set response to this question as the research aims not to establish generalised laws of understanding multiple contexts. Hence the experience of individuals affected by situated social problems is important to understand the empirical data. However, Zuber-Skerritt (2001) explains that participation in interpretive research "is more personal and interpersonal than methodological research and should be based on interactive dialectic logic rather than a specific number of subjects or participants" (p7). The variables in this study therefore are not predetermined and controlled by the number of participants but rather they are incorporated as they were accrued from empirical data. In addition, reviewed studies in Critical Action Learning show that most research involved varied numbers of participants. For instance, the research conducted by Allison (2008) titled "*using Critical Theory to preserve inclusion of pre-service teachers in Art education*", involved seven participants. While another research conducted by Mughal (2016) recruited thirty-one participants that explored "*A Bourdieusian analysis of organizing learning sets*" experience.

Nevertheless, some authors in qualitative research acknowledge that any number of participants is appropriate to interpret the experience of a phenomenon (Marshall et al., 2013; Onwuegbuzie and Leech, 2007; Patton, 2005; Sandelowski, 2001). Thus, research knowledge should be constructed through data collected rather than by the number of participants or respondents. As such this study had 53 participants, including teachers from rural secondary schools, secondary school leavers, secondary school drop outs and community members with no formal school education. The initial participants in the

first ICT training (CAL sessions) were teachers from one secondary school who later recommended other teachers and community members to be included in the training project. The participants were recruited based on their interest in attending a weekly ICT training session for a period of four months. The training project started with nine teachers from one rural school who were interested in acquiring ICT knowledge and skills for teaching and personal development. Through the first training however teachers from other schools who were known to first group of teachers were called to participate in the second training programme. The first group of teachers contacted other teachers whom they felt were friends and shared common knowledge and experiences in their teaching profession. In this study such connections were essential to willingly allow the participants to identify co-researchers that had experienced a phenomenon (Somerville and Howard, 2010) and could inform the research investigation. Since the first group of teachers had knowledge and experience of socially informed ICT education, they were interested in sharing such experiences with new co-researchers (new participants) and this established a community of learning.

As the training was progressing, the study adopted a snowball research technique whereby teachers recommended other members from the communities to participate in the training sessions (Noy, 2008). The group comprised unemployed youths, school dropouts, school leavers, community elders and people with no formal education who were incorporated in different sessions of ICT training programmes (CAL sessions). Such a diverse group of participants was recommended by co-researchers, since they felt that these people had the appropriate information and contributions needed for this study. Indeed, each participant's experiences offered empirical data which was relevant to this study. They all participated willingly in the Critical Action Learning groups to acquire critical and reflective ICT knowledge that helped them to socially understand their community realities. Nevertheless, the participants were divided into sets (groups) of training schedules since the trainings were facilitated by one researcher only. The distribution of participants was randomly done and based on the number of computers available in school labs and on a first-come-first-served basis. At the same time, participants from previous training groups (participants who had completed the training) and had diverse ICT knowledge were identified, and approached to help the researcher to facilitate other sessions for training. This process was meant to use

individuals who had experience of using new knowledge of ICT and the skill acquired from previous trainings and they could describe it as related socially informed ICT education presented by this study. Such ICT knowledge-experiences included knowledge developed during the training, knowledge gained in using ICTs in community and personal testimony. Since the objective of this Critical Action Learning research is to detail experience rather than diversity of participants (Coughlan and Coughlan, 2010), the goal was to involve co-researchers who could generate different empirical experiences and sets of knowledge to analyse the phenomenon of socially informed ICT education practices (Edmonds, 2016).

Nevertheless, the snowball effect and purposive sampling techniques were both utilised in recruiting the co-researchers. The two techniques were not randomly used in this study, and were considered to be appropriate in interpretive and Critical Action Learning research (Denscombe, 2014; Brook et al., 2013; Suri, 2011; Loppie, 2007). The resulting participants for each critical action learning set were identified by co-researchers and they offered in-depth contributions to examine the social experiences, and to share their ICT experiences and knowledge. Moreover, the sample was adequately set to offer various opportunities for rich and particular empirical experiences to emerge (Camagni, 2017; Alvesson and Kärreman, 2007). The participation of participants in Critical Action Learning sets (ICT training group) was also guided by the following criteria:

- The participants had self-defining experience of living in rural communities surrounding the schools.
- The participants showed interest and were willing to attend critical and reflective ICT education sessions.
- The participants were willing to share their experiences with other co-researchers during and after participating in the study.
- Given the researcher skills, culture and background the participants were willing to attend multilingual classroom-based ICT education.
- The group contained people with diverse experiences of ICT, social backgrounds and were willing to critically examine their own experiences.

In practice the schools offered space in their computer labs and time to conduct socially informed ICT training which was seen to benefit both the communities and teachers respectively. The effectiveness of the study project created a reciprocal relationship with schools, whereby the researcher was entrusted with the task of teaching the Computer Application and Technology (CAT) subject for grade 9 and 10 classes, although this was not the objective of the research project. Moreover, the schools were eager to learn from this study and consider implementing ICT education practices that could redress passive ICT knowledge and skills in rural schools. Furthermore, I chose to include the community members and teachers as participants in each set of training sessions because the teachers would experience different interpretations of socially informed ICT use and ICT education practices. Collectively the teachers had the opportunity to critically discuss different interpretations of ICT education practices during the classroom sessions and were able to identify tendencies regarding how ICTs and ICT education practices are interpreted in rural communities and in rural schools. Thus, the design of the ICT training directed the participants to continuously become critical and reflective in addressing the need to transform ICT education practices and experiences.

The training programmes for each group were scheduled for a four-month period, with two class sessions per week. Although the group setting consisted of acquaintances and friends, the participants were reasonably different in social experiences, ICT experiences, demographics, and in their interest in using socially informed ICT knowledge and skills. Moreover, the researcher ensured that particular shared context of background information, and process for data gathering was established, and the process of responding to study activities followed the protocol for conducting research. This meant all potential participants were initially approached by the co-researchers themselves (study participants). Taking into consideration that potential participants were friends and some of them were acquaintances before participating in this study, it created a simple process of providing research information since they were able to share information regarding the background, scope and the intentions of my study. At the same time, each participant received a research information letter and consent form (**see Appendix I**) on their initial day of participating in this study. The aim was to formally inform the potential participants about the nature and intentions of the study,

to outline the requirements of the study, to indicate their formal willingness to participate, and thank them for their interest in participating in my research.

It can be argued that the informed consent document used in this study indicated that the participants were personally willing and active co-researchers through their engaged and active efforts to be involved. Through the use of the snowball effect of sampling selection, it emerged that some of the potential participants contacted the participating participants and the researcher, not the reverse. That is once such potential participants contacted the researcher, they were referred to current participants to receive more information about the research. Subsequently, many of the participants were involved based on their own initiative to contact those participating in the research rather than as a result of being directly approached.

4.6.2 Participants Demographic Background

Although the 53 participants involved in this research study shared a common desire to experience socially informed ICT training, to explore ways of improving their knowledge of ICT, to use ICT knowledge as a pathway to create various opportunities, and to examine their own use of ICTs and ICT knowledge in rural communities they were a diverse group in terms of education levels, ages, race and their roles in communities. An intentionally diverse group was sought in an effort to capture the real experiences of people in rural communities which are then referred to as ICT experiences and therefore to avoid limiting the research investigation to a stereotype perspective of ICT experience found in rural schools or learning practices. Thus, the participants consisted of 21 men and 32 women who ranged in age from 19 to 68 years. Out of 53 participants, 29 participants were aged in between 19-25, twelve were aged 26-39 and the rest were over 40.

The diversity amongst the participants was demonstrated in a number of different categories. The educational backgrounds of the co-researchers included people who were matriculants, school dropouts, tertiary educated persons (teachers, other members), and those who were identified as responsible community members with no formal school education. Many participants noted their education background as being diverse with a number indicating that they were not willing to attend further formal

education but rather showed a preference for attending skills training which could create business or employment opportunities. The employment background of the participants included teachers, people who are self-employed, youths who are searching for employment opportunities, people who were occupied with home duties, a writer, a painter, musicians and artists.

When interviewed all the participants were living in the communities of Joza and Alexandria. However distinct cultural similarities and race could be found with twelve participants identified as Coloureds, five as Afrikaans and the rest as black people. For the number of participants there was a desire to acknowledge the cultural pool which formed their background, thus many identified as Xhosas but acknowledged the other cultural influences in their lives such as speaking Afrikaans and English. Five of the participants were Zulus and three were the Sotho. At the time of research twenty-seven participants were not married, five of the participants were illegally married and ten of the participants were legally married. Of the eleven who did not commit to answer if they were married or not, four noted a personal choice not to marry.

A range of experiences in the use of ICT were also identified by the participants. Some viewed access to computing services from computer cafés as their experience while others acknowledged the use of computers at the community library. Across the board participants 'ICT experience' was described as using desktop computers and laptops. As will be seen in Chapters 5 and 6, the experiencing of ICTs identified by the participants changed as they were participating in CAL seminars to include the use of mobile phones, tablets, modern televisions and other digital devices. While this is not a complete list it is representative of the diversity of experiences which were perceived as ICT experiences by the participants.

4. 7 Translating the Interviews and Participants' Journals.

I conducted the interviews with the participants in English although in some cases participants were freely allowed to mix in their original language. It was important to acknowledge that the participant's communities have people of different races who speak English as the common language of communication. At the time of conducting my research all the participants were able to communicate in English although not fluently

due to the influence of the local language and culture. The cultural diversity of participants in this study can be characterized as highly contextual and during the interviews and ICT training seminars I was mostly conscious of the co-researchers being English language learners, as language makes a great difference between outsiders and insiders in research (Spradley, 2016).

However, part of my research enquiry and analysis of data was related to Huberman and Miles (1998) work that involved both I myself and the participants compiling multiple reviews of the data collected and the emerged themes. Miles and Huberman (1998) provided structured ways of writing field notes and transcribing the data collected in research. I have attempted to convey and translate what I understood as the meanings of the words expressed by the participants in this study. Interestingly at the time I was conducting multiple re-reading of research notes, one of the participants asked “if I was translating what they say using ears or by eyes?” My response was that I chose to listen carefully with the ear and as such I have expressed everything in this thesis to make the reader understand and read my research data with ease.

4.8 Conclusion: Exiting from the Research Field and Data Gathering activities.

The research field work was completed in April 2017 and during the time I was completing the last training, some participants (Xolisa, Siphelo and one community member who did not participate in any of the training sessions) requested me to train more community members. The ICT skills and critical discussions that occurred during the CAL seminars had started to be appreciated by the community and allowed people to recognise me as an influential member of the community. My PhD final academic year and time to write up my thesis naturally created boundaries for me to complete the project. Through the research project I managed to build a strong rapport with the participants and other community members. For example, I was invited to attend a cultural ceremony (Journal Entry 12 December 2016) and the Director for Joza Youth Hub in Joza community approached me to start up a similar programme at their centre.

Chapter 5: Research Methodology Contribution

This chapter presents proposed methodology developed to support the analysis of the empirical experiences. The chapter further introduce trustworthiness and creditability of the research. Importantly there is also an acknowledgement of the intention to produce a theoretical framework of what transformative ICT education is, in the consciousness of the participants who participated in this study.

5.1 Introduction: Research Contribution to Empirical Data Analysis

Researchers in academics are often clear about how they are required to use different techniques to collect their data, but they remain silent on how they analyse it (Bell, 2014). Charmaz and Belgrave (2012) are among the researchers who recommend that researchers should be transparent in terms of how they use methods for interpreting the research data. Foucault (1980) contends that the interpretation of research is “‘not to formulate the global systematic theory which holds everything in place, but to analyse the specificity of mechanisms of power, to build little by little a strategic knowledge’ (p145). I think what Foucault is referring to is the position this research holds, thus interpretation of the empirical experience in this study is a strategic act rather than a compliant event.

As a critical IS researcher involved in exploring the phenomena of political, people and theory interest, it was important that co-researchers and myself should be open and true to our actions. In essence this means shifting the power balance and allowing multiple voices to shape the interpretation of research data. Throughout the process of data interpretation, I placed myself not in a position of knowledgeable researcher but rather as a co-researcher who was participating in this study to learn from group experiences. In practice, I tried as much as possible to set aside what I knew or thought I knew and listen to what other co-researchers know (Van Sluys, 2010). Equally the data analysis process in this study needed to lay aside a perspective of dominant research expectations and presumed meanings, so as to actively recognise the views of participants and meaning of their experiences (Gillies and Alldred, 2012).

In this chapter therefore, I intend to explain the method of empirical data analysis which allowed co-researchers in this study to interpret the meanings of emerging experiences and descriptive findings to be reached. As I discussed in Chapter 1 and section 4.5. the criticism of critical IS research is that it lacks appropriate empirical

methods at community level (Klein, 1999; Lyytinen, 1992; Ngwenyama, 1991; Lyytinen and Klein, 1985) and most critical IS researchers adopt dominant interpretive methods (Krauss, 2013; Stahl, 2008). Therefore, the data analysis method developed in this study adopted the critical ideas of Myers and Klein (2011). They proposed the six principles of conducting interpretive research as explained in section 3.1. These are the *principle of taking a value position, the principle of revealing and challenging the prevailing beliefs and social practices, the principle of individual emancipation, the principle of improvements in society, and the principle of improvements in social theories*. These principles were used as guidelines for developing the methodology for analysing empirical data (experiences) in this study. While the procedures involved in the proposed research method do not represent a step by step guide to academic research, and to dominant qualitative research, nor follow a dominant set of rules for data analysis, it explains in practical terms the procedures implemented in this study to give attention to social intricacies that are deeper than any description of ICT education and access to ICTs in rural communities. Moreover, the method is developed to allow the reader of the thesis to gauge whether the research results make sense based on the methods or activities undertaken (Hayes, 2017; Sarantakos, 2012; Minkler and Wallerstein, 2011).

In this regard the critical theoretical framework presented in Chapter 3 is linked to a proposed methodology that has been developed to guide the process of analysing empirical data. To clarify the methodological design processes in this study, this chapter offers a design of methodological approach that can be used as a solution to methodological challenges faced by critical IS research. The design of the methodology is introduced in this chapter to analyse the empirical data and argue further on the proposition that ICT education practices are being challenged by an epistemological shift in the understanding of social realities.

This chapter start by introducing the procedures used to discover the methods used to develop the methodology proposed. The next section introduces further methods involved in the methodology to analyse data, the role played by both the participants (co-researchers) and myself as principal researcher. The last part of this chapter reflects on how the proposed methodology was developed in line with the principle for

conducting critical IS as proposed by Myers and Klein (1999). The chapter concludes by presenting issues of ethics, validity, limitations and lesson learnt.

5.2 Discovering the Procedures and Methods

The process of analysing empirical data in critical IS research involves the elements of value insight, critique and transformation (Myers and Klein, 2011; Ngwenyama, 1999). Indeed, the literature reviewed in critical IS research locates critical research as an approach that seeks to reveal social inequalities (Cecez-Kecmanovic, 2011; Richardson and Robinson, 2007), the need to demonstrate the complexity of social phenomenon (Howcroft and Trauth, 2005), and to theorize the mechanisms that technology uses to reproduce existing social inequalities (Walsham, 2005). While all these statements remain true to critical IS research, they are not immediately descriptive in terms of the act and the art of interpreting empirical experience (empirical data analysis) or the implications of the actions as suggested. To guide the data analysis activities in this study, the philosophy of critical exploration, intuitive knowing, open dialogue with the text of co-researchers' descriptions, reflections that lie beyond the methods, were adopted using the work of a range of critical IS researchers, philosophers and critical social researchers.

In all the research processes involved in this study, I considered the following: suspending prior assumptions within the research so we (I myself and participants) could all become more critical and reflective of what was presented to us. All experiences were considered in search of patterns and the explanation of identified themes and sought how experience emerged or is possible. Thus, the aim was to look for conditions and a basis that makes the experience what it is. The accomplishment of these contemplations and inductions entails a critical guided approach in this study. Although the methods of achieving these could differ, the intention was to capture the essence of the experiences for the participants (co-researchers) involved in this study. The application of these methods is discussed in the next section to unpack the data analysis methods developed and used in this study. While all the elements of these methods were used, it will also be revealed that they acted as core methods in developing a more philosophical position of inspiring critical IS research.

5.2.1 Staging the Processes

The analysis process was carried out in sequence and in a number of stages. From the start it was important to recognise each participant (co-researcher) as an individual, to interpret each participant's stories and description of the meaning of socially informed ICT education practices, and how they were related to experiences of using ICTs in rural communities by each participant, before starting any cross-participants' analysis. To that end an analysis to *do* list was written, which indicated the foundation for each participant's texts as follows:

I. Examining the field text and engaging with the respective co-researcher

This phase involved reading the transcripts collected from the field in order to understand the lived experiences of each participant. The engagement was achieved by multiple readings of the individual's interview notes and journals to engage with the separate participant in articulating what they said and how they expressed their stories. To accomplish this effectively and to maintain the integrity of the co-researcher in the analysis process, I needed to preserve the reflective state of suspending all the presumptions held and be open to the facts (experiences) as presented by each co-researcher.

In practice this meant that for each co-researcher, a responsive and active process of reviewing my personal biases and opinions was applied (pre-reflection) so that I was able to freely and openly list and review the participants' text with a reflective mind. As Gray and Malins (2016) indicated that the process of reflection can help a researcher to be more receptive to the research process. Thus, the act of identifying I myself and my assumptions provided the freedom and democratic space to recognise the co-researchers as they saw themselves with minimal preconceptions.

II. Review of the field texts to focus on the content relevant to socially informed experiences using ICT and ICT education practices: Direct experience or intentional induction

At this stage I needed to re-read the field texts using a more informed interpretation from the previous phase (phase I). This required reflective

reading and identifying experiences or content related to the description of experiences of using ICTs and socially informed ICT education practices. Since some of the interviews and reflective journals were more inclusive to a number of interrelated and diversified topics than those that we initially captured in the socially informed ICT education practices and experiences, and a number of texts needed to be condensed into points of relevance. Throughout the process the language of the co-researcher in the text was not changed, rather it was condensed to remove unrelated thoughts. This process was carried out with consciousness as the researcher felt it was vital to maintain the integrity of the text and not to presume relevance. Thus, text and discussions which were distinctly not related to the experiences of using ICTs, and ICT education practices were separated.

III. Write co-researcher's textural descriptions of socially informed ICT education experiences: Direct experience or intentional induction

This stage involved an exhaustive inductive search for the meaningful and vital components of each co-researcher's experiences of using ICTs connected to ICT education practices, and those experienced during the training sessions. The intention was to search for patterns of experiences which could give an accurate picture of socially informed ICT education as it was experienced, by continually and critically reflecting on it, revising, reconsidering, and reviewing the emerging and sought-after constituents of the experience. As such I was interested to see the experience the way other co-researchers saw it and continued to examine and observe until I was able to understand from the perspective of each co-researcher.

It was during this stage of analysis that the induction process of data became more important as I strove to describe the clear connection between the phenomena investigated in this study and how the co-researchers' experiences related to it. During this phase different qualities of the ICT experiences were considered and more consideration was given to critically examining each co-researcher's experience, for its multiplicity of qualities such as empowerment or disempowerment, natural or constructed links to social (community)

development or personal development, the impact on personal identity or community identity, shaping ICT education practices or maintaining the status quo of ICT education practices, and discovering the potentials of using ICTs or being highly reflective in using ICT knowledge. While these qualities are not comprehensive, they indicate the layers of descriptions needed in an effort to critically examine the objective of this study from a whole perspective and not just to explore obvious parts, and the aspect which helped me become more critical. Thus, the intention was to search for the aspects of empirical experiences that have evidence rather than those which are merely assumed to be the case (Van Manen, 2016). At this stage of analysis, I was not just adopting tools used in data analysis but rather I became an integral part of the analytical questioning. My aim was not just to search for parts of co-researcher experience, I needed to critically reflect on my own views, explore possible patterns through acknowledging my intuitive understanding and see data with new perceptions that allows deeper layers of meaning to emerge with each examination of the field data.

IV. Write each co-researcher's interpreted descriptions of ICT experiences

During this phase of analysis, the description of texts that focused on unpacking *what* it is about ICT experience, in relation to ICT education practices, was structured to interpret *how* ICT experience is related to ICT education practices experienced. Thus describing "how did the co-researcher's ICT experiences come to be what it is?" (Seidman, 2013). At this stage of analysis, the process was committed to search the meaning of experiencing use of ICT both in the classroom and community. To search for the meaning and structure of experiences, I became involved in a process of critiquing and reflecting on the experience in all its possibilities. The aim was to critically analyse the research objectives in relation to meanings captured from the texts until something is proven with empirical evidence (Krippendorff, 2012).

Thus, the co-researchers' experiences were recognised at this stage of analysis not only for what allowed the experience to exist but for the conditions (education practices) that were more figured to the existence of experience. For

instance, a practice in ICT education was considered in multiple ways to see if it was important to the experience. All the themes that were derived from the text were exceptionally saturated in this way until all the possibilities were critically examined and deemed integral to reaching the objective of this study.

V. Write the contextual/composite description of socially informed ICT education experiences for each co-researcher

This phase involved connecting textural description and meaning of ICT education experiences for each participant. The outcome from this process was a summarized description of the '*what*' of co-researchers' ICT experience and '*how*' the experiences emerged, based on the contextual situation at the time I was collecting the data. The descriptions were used as a base for relating cross-participant experiences.

VI. Write shared descriptions of socially informed ICT education experiences: sought possibilities and intentional induction

Using the description of meaning from individual ICT experiences drawn in the previous phase, the shared meaning of ICT experiences was then acknowledged. It was at this point that the individual experiences became more ambiguous or unclear since the aim was to explore the causal elements which formed the ICT experiences. Although the individual ICT experiences were more informative, the research took a step further to search for more common experiences shared by the co-researchers. The research draws common meaning from these shared aspects of ICT experiences.

As Foucault (1984) illustrated, the social reality is a form of truth as accepted by its citizens. Van de Ven (2012) recognised that the social reality shows how the society works and comes into existence. Although the intention of my research is not to generalise research outcomes, it aims to search for the critical understanding of ICT experiences that are related to socially informed ICT education practices rather than a single experience. Thus, the analysis process at this stage allowed the core elements of experiences shared across participants to become evident.

Through such critical processes of analysing data in this study, it became possible to involve each co-researcher's experience and meaning, before examining them as group data. In this way the aim of critical IS research of emancipating and realizing individual needs and search for society improvement was maintained (Krauss, 2013). However, in the process of maintaining integrity and rigour of data, some traditional qualitative methods, such as the open coding exercise of data, were used in the initial stages in relation to individual data descriptions. In practice this meant that research data was visible through distinct parts that were conceptually related in order to form the properties of data (Creswell and Poth, 2017; Cho and Lee 2014; Rapley, 2011). Moreover, the process of open coding on research data allowed me to clean the field data, resolve any data challenges attributed to the field before reconstructing the co-researchers' experiences as a whole. Thus, drawing on the data analysis process with the traditions of hermeneutic and influences of modern critical research practices of Mugerauer (2014), Bauman(2010), Kemmis et al (2013), Kaneva (2011) and Myers and Klein (2011).

VII. **Identifying and clustering research themes: textural descriptions**

In practice to draw the research themes, critical reflection was needed to examine emerging ideas, observations and essential elements of socially informed ICT education practice, and co-researchers' ICT experience as it was presented during the time of research. This led the research to reveal individual themes such as *empowerment* and *community identity*. The process was not only done through multiple reviews of field texts but also through critique and reflection in conjunction with co-researchers in respect of the components of experiences connected to socially informed ICT education practices, which were found to be on the same level (Beebeejaun et al,2013; Tracy,2012) or composed of the elements of the experience. It is at this stage the revelation of research themes focused on the precise words of co-researchers as they were describing and discussing their experiences both in the classroom and community. The process was then furthered to search for common reference points within each co-researcher's texts, and a search for similarities across the texts. For instance,

furthering search of commonalities in co-researchers' texts resulted in identifying some experiences which were different but manifested the same idea. Thus, units of meaning for the theme such as 'self-identity', 'individual identity' can all be unified as *personal identity* that constitutes experience and not separate units. Equally, it was revealed that some imprecise expressions were summarised to create precise meaning (Yin, 2013). Reaching this phase, I felt that I had critically reflected on attributes and searched for the meanings, hence the horizontal themes were firmly identified while the incomplete ones were removed.

VIII. Examining and integrating research themes, sought possibilities and intentional induction

At this stage of analysis, the induction process was engaged to search for any discrepancies in the themes, by critical review of the themes and relating them to co-researchers' texts. In practice this meant that the similarities that survived critical review in the previous phases were considered as core attributes of socially informed ICT education practices for all co-researchers.

While the open coding exercise of data does not essentially lead to insight (Kelle,2010; Charmaz and Belgrave,2012), the data analysis process at this stage was directed by immersing myself in the empirical as a co-researcher and dedicating all efforts on research processes to remaining true to other co-researchers' experiences. Moreover, the data coding exercise helped this study to see the data as a whole and all possibilities of commonality. This process helped the research as well to reinforce quality attributes on the emerging themes since dedicated efforts were intentionally set to critically examine the data through multiple reflective lenses. Furthermore, the open data coding exercise allowed the development of emerging themes to evolve through the interaction of co-researchers in the research. In practice this process helped to strengthen the structural picture of data analysis as I saw aspects of experience which could not have been revealed in some of the co-researcher texts.

This stage concluded with integrating co-researchers' experiences to develop a common character of the empirical examined in this study. At this point the shared co-researchers' experiences and essence from the process of identifying the research themes led to descriptive explanations that shifted each co-researcher's experience to the whole. Thus, affirming those aspects of co-researchers' ICT experiences that aided representation which made the ICT education practices socially informed, and made the experiences of co-researchers what they were, rather than the perception of what participants thought they had experienced.

Although the processes represented in this proposed critical IS methodology for analysing empirical data are in sequential order, there was repetition of some phases (cyclical). That is, there was constant involvement of re-establishing the themes, critiquing, searching for relevant meanings and emerging ideas that could structure the whole understanding of the empirical. Furthermore, the issues of trustworthiness and validity of processes in this proposed methodology are discussed in the next sections to show how efforts were dedicated to revealing what the co-researchers really experienced in the research and communities.

5.3 The Ethics and Validity of Critical IS Research

The critical approach adopted in this research though is concerned with the subjective experience of the social reality needed to produce some form of valid and ethical representation of the participants' experiences (Marshall and Rossman, 2014) and offer credible research output. Fairclough (2013) contends that the critical concern of social research is in employing processes for analysing data. In every analysis stage in this study, the researcher managed to show the picture of the phenomena being studied, to allow the co-researchers to see how the results applied to their particular situation. According to Cecez-Kecmanovic's (2011) recommendation, it was my responsibility to provide this description such that the reader of this thesis can also understand the context clearly. Consequently, in critical IS research there are arguments on what constitutes research validity, credibility and reliability (Mertens, 2014; Cecez-Kecmanovic, 2011). At the same time there are also different methods that guide

academic researchers in searching for integrity and credibility in their research (Anney, 2014; Sinkovics and Alfoldi, 2012; Finlay, 2006). Thus, my intention in the next section is to demonstrate the processes that were used to ensure that the research findings can be trusted as valid, ethical and credible.

5.4 Research Validity

Validity in academic research refers to the extent of credibility that a piece of research has (Herr and Anderson, 2014). The key issue for validity in most academic research is on whether the data analysis was accurate or if the research can be trusted as a steady source. As a Critical IS researcher, it is necessary that I address any bias in order to allow maximum validity of research findings. Equally, in Critical Action Learning research, most researchers face challenges to maintain valid processes since they tend to study themselves and the results of their own work (Pedler, 2011). There is such a close link between the researcher and research findings, that all efforts must be put in place to avoid bias. The first step to reduce bias in research is for the researcher to declare his intentions, values, beliefs and experience before participating in each research process (Coghlan and Brannick, 2014). This confirms the critical reflexivity that I have involved in this study as part of the research process, whereby the co-researchers were freely and constantly critiquing, and problematizing the learning practices in searching for their own experiences.

However, irrespective of the position taken by the co-researchers and myself in this study, the question still remains 'how can the reader find the research findings credible even if some participants could not agree with them?' This means the researcher needed to lay down foundations that allow a reader of this thesis to be grounded in the perspectives taken in my research. As such the interpretive objectives of the research were made clear so that textural evidence supporting this research could be put into the context of meaning. This does not mean the reader must believe the interpretation given but rather it provides a viewpoint that a first-person understanding was achieved (Kelle, 2010). Nevertheless, to address such perspectives in practice, I dedicated much effort throughout the research to clearly presenting research questions, locating the self in the study and in the processes for collecting and analysing data, and in identifying the research findings. With such research practices, it is hoped from the researcher's point

of view that readers will be able to identify not only with how the empirical data was managed, but also how the contributions of each co-researcher to the research were made possible (Beebeejaun, Durose, Rees, Richardson, 2013).

Furthermore, to instil validity in this study, the data collection processes were made to represent the experiences and texts in the words of the co-researchers such that their expressions and meanings were allowed to richly shine through in descriptions rather than abstracting to researcher interpretations. In critical IS research, the empirical descriptions which are full of meanings from participants can assist in unpacking and demonstrating the reflective nature of the empirical under investigation (Cecez-Kecmanovic, 2011). According to Krauss et al (2015) such precision and rigour in ICT4D research can be found when there is completeness of detail, linking the participant's experiences with conscious interpretation to demonstrate proper understanding of the empirical.

Relatively the foundational aspect of validity is associated with the credibility of practices that are engaged in this study to establish relevant research findings. As partly discussed in the data collection and analysis sections of this chapter, I intend to further this in order to help the reader understand how choices were made to use particular procedures. To maintain suspension of prejudgement, a number of procedures were initiated to set aside researcher presumptions, values and not to impose irrelevant meanings on co-researchers. Moreover, throughout this thesis there is consistency and explanation in terms of presenting my own understanding of research, my academic knowledge, intentions and my prior understanding of socially informed ICT education practices. While this can be argued otherwise in most academic research, the research practices show the critical processes behind this study and procedures that locate I myself as a co-researcher. Thus, the practices acted as conscious monitors to ongoing research processes and subjective values and beliefs which could have had a negative impact on the research.

As discussed in the section 4.5.5, the in-depth interviews were presented as my learning process for Critical Action Learning and Critical IS research. From the first phase of the interview process I found myself influencing the interview process by asking questions

which in some cases could have detracted co-researchers from expressing their situated experiences. After critically reflecting on the first interview process, the questions were refined such that the content of co-researchers' response should become more reflective of their own experiences rather than being guided by philosophical theorising of *why* questions (Mugerauer, 2014; Kaneva, 2011; Thompson, 2013). Thus, to achieve the intended research objective it was appropriate to shift the process of questioning to *how* and *what* rather than *why*.

Nevertheless, to remain true to participants' empirical experiences, the findings presented in this thesis were predominantly offered in the co-researchers own explanations not in my own understanding of what they said. Thus, the themes and meanings presented in this study emerged from the terms that co-researchers' utilized and not through academic abstracts or philosophies. As such it is certain that the reader of this thesis will be able to relate the original data to the credibility of findings (Tracy, 2012). On the other hand, furthering the process of allowing the themes to emerge, and to develop a critical view of the phenomena investigated in this study, the researcher engaged his PhD supervisors as critical friends (Bazeley, 2013). The supervisors were involved to offer interpretations of meaning underlying the proposed co-researchers' experiences. In this way I was able to check the missing interpretations and differences as presented through various critical perspectives and identify themes which were too abstract or irrelevant (Sinkovics and Alfoldi, 2012).

5.5 Research Ethics

In addition to the responsibility of addressing equality and social injustices attributed through ICT education, there was a need to critically reflect on my research practices and to conform to the Rhodes University code of ethics. The ethics in critical research continue to be argued as a difficult scholarship (Wynn and Williams, 2012; Mingers and Walsham, 2010) and often tensions exist especially in respect of adopting formal ethical codes and providing ethical judgment (Walsham, 2012). It is therefore impractical to cover a wider range of ethical matters in research with one statement (Li, 2012). Moreover, given the context presented in this study whereby interviews and Critical Action Learning were conducted in democratic spaces, it was necessary for me to pre-arrange research environments that would not interfere with co-researchers needs.

This meant that from the start of the research project the co-researchers were free to make their commitment to the research process based on informed aspects and assured of their participation and information confidentiality. In practice each participating co-researcher, was given a research information document with an informed consent form to sign (**See appendix I**). In addition, the participants were allowed to ask for more research details from the researcher.

However, prior to the beginning of each interview process and Critical Action Learning seminar (ICT training), the co-researchers were reminded of their freedom and right to answer or participate in any formal or informal conversations. In research like this where individuals were eager to participate in the research for the sake of acquiring knowledge and skills in ICT, the concerning issue was on false consciousness. I made every effort to allow participants to genuinely give informed consent rather than to socially condition the research as a way of attracting participants. At the same time, the co-researchers were tasked with offering detailed reflective journals that required an intense process of consideration, which became a challenge to some participants who preferred their own patterns of communication. As I was reflecting on data collected from the journals it showed that some co-researchers wanted to describe their experiences in their own way rather than that suggested. This led me to question if I was perhaps directing the co-researchers to focus on a particular experience or if I must coach the co-researchers to fit the prescribed aspect of narrating their own experiences or if it was necessary to change the reflective journaling method of collecting data?

The discussions with other co-researchers, and the in-depth review of literature and the reflection of my principles related to research, led to the adoption of diversity. Moreover, as a critical IS researcher concerned with the impact of technology in society, I was conscious in executing my role so as not to control and direct how the co-researchers should approach the social reality (experience) in this study. Although gentle help was given, the reflective journals and interviews followed the directions suggested by the co-researchers. Thus, the narratives in journals allowed the co-researchers to unpack their awareness and understanding of the empirical. The aim was to give the co-researchers a forum that allowed them to use their own approach in exploring and investigating the phenomena being investigated in this study (Sinkovics

and Alfoldi, 2012). Moreover, the researcher made the effort to interact with the co-researchers' writings in an ethical manner by respecting their experiences, their truth and their ways of expressing their experiences (Krauss, 2013; Mingers and Walsham, 2010).

Nevertheless, the research process in this study required me as a principle researcher to display some respective behaviour. As Jacob and Furgerson (2012) assert participants stories are the heart of research. The individual nature of describing the experiences of ICT needed to be valued and the process of reviewing the journals and interview notes was grounded in a necessity for me to engage the co-researchers, and to confirm their meanings (Schmidt,2016; Fairclough,2013). The aim was to create open research spaces where co-researchers meanings could not be suppressed and no-one had a dominant opinion (Hesse-Biber and Johnson, 2015; Alderson and Morrow, 2011). Similarly, the research created open conversations within a supportive environment for co-researchers rather than power dominated interactions. Although such issues were more embedded in aspects of journaling, interviews and analysis processes, they also became part of the whole research approach. This means that efforts were dedicated to employing social understanding and rapport with the co-researchers (Finlay, 2006) because they participated freely and of their own free will and respect was maintained by the researcher to allow co-researchers to have space and time to articulate their own meanings and experiences.

In order to install trust in this study, the researcher shared his own experiences, thereby building a sense of contributing his personal insight just as every co-researcher was tasked to do. At the same time, it was my way of showing commitment and willingness to spend time as a co-researcher in this study. As such the reciprocity and trust was established and I was seen as part of the research and the social community (Seidman, 2013). However, such aspects of research can be regarded as common issues in academic research, and they were not intentionally employed in this study to create mutual trust. The behaviour and respect displayed are natural characteristics of who I am, thus the ethical interactions built were a reflection of my personality as well as research requirements. The success of such an approach was evident in comments from the co-researchers' journals and interview process such as:

“I was quite so happy on Tuesday, you helped me open up and discuss the misunderstandings I had about Internet and emails. You always make us feel proud of our knowledge of ICT.”

“I personally enjoyed the interviews we had last week on Thursday at Mpumulelo hall. It encouraged me to reflect on some of my life experiences which are connected to ICT training you conducted at Makana primary school”

The notion of ethical and trust strategies in this study were important not only for the researcher but it helped to build shared identity and expert knowledge of ICT.

5.6 Limitations and Lessons Learned

This research is based on critical action learning on what is wrong in ICT education practices in rural secondary schools (see Chapters 1 and 3), and therefore when I started the research design all processes were set up to support the commitment to investigating the research objectives. This was not an easy task since the methods that were used to collect and analyse data were discovered as the research progressed. While this was intentionally done, in practice the research process led to the discovery of a method that helped the co-researchers and the researcher to approach the empirical in reflective ways. Such aspects in academic research can be argued as impractical since most researchers use predictive research approaches.

However, in this study it was not practically possible to engage predetermined ways of examining the empirical, since such methods do not represent a participant's real experiences (Charmaz and Belgrave, 2012). As such the study developed its own method of data analysis that aided the representation of the multiple layers of co-researchers' experience and the meaning of socially informed ICT education practices, including the notions of what was happening, how experiences occurred, what it meant to the co-researchers' community, and how it was part of their life and social development. On the same note, such diversity revealed that learners' ICT education practices and ICT knowledge in rural secondary schools may be viewed differently by people, and it was only by deeply reflecting on these understandings and critiquing them from within themselves, that greater insight could be derived.

Nevertheless, despite that fact that some of the findings are common in academic research, no absolute conclusions were desired to be established in this study. As is common in most ICT4D and IS research methods, research data represents a perspective which accounts on some level for participants involved (Krauss,2013; Cecez-Kecmanovic,2005), and it is the basis for this research that behaviour, choice and motives are acted upon by someone who is influenced by current intentions and motivations. Thus, the proposed data analysis method in this study aims to critically examine the current moment, and to do this with no bias and provide insight that represents the empirical as it appears. This intends to help the participants to realise that every situation is different and filled with varied meanings and conflict interpretations (LeCompte and Schensul, 2010).

In addition, the methods used in analysing the collected data can be argued as a limitation of a Critical IS research which endeavours to examine a very specific area in detail rather than the big picture. However, if the reader can view this research within its intentions and methods, the desire for objective or rational findings is less relevant. This is attributed to the fact that critical research in Information Systems is ideologically, philosophically and politically motivated (Myers and Kein 2011; Walsham 2008; Ngwenyama, 1999). This means that there is an assumption that each use or access to ICT has its own unique intention, and it is necessary to hear the voice of the individuals involved (Hevner and Chatterjee, 2010). Moreover, critical IS research studies the social and cultural impact of technologies by using the participants' practical experiences to capture meaning (Cecez-Kecmanovic, 2005; Howcroft and Trauth, 2004). Thus, the methods involved in this study are used to critically examine the particular presence of ICT in rural areas rather than to generalise the findings (May, 2011).

Critical research in the Information Systems field is limited in outcomes, just as any other social research is limited but in various ways. There are boundaries which shape particular research approaches as well as boundaries that have resulted from the approaches used by the researcher to access knowledge, and to interact with co-researchers and the time to complete the research activities. Thus, the findings and discussions presented in this thesis offer one way of knowing and one way of understanding rather than a generalised knowledge. Moreover, the findings are

delivered in a framework that is open and helps the reader to make his or her own meaning on the credibility of the results and methods used. As such, the researcher anticipates that while the data represents the construction of co-researchers' meaning of what they know (Tuffrey-Wijne and Butler, 2010), it can be assumed that such understanding is possibly meaningful and reflects the practical experience of ICT in rural communities.

5.7 Summary: Relating the Principles of Critical IS Research in this Study

To conclude this chapter, it is necessary that I summarise not only *what* was done but also *how* the process of critical examination of ICT education practices and experiences in rural schools was conducted. This summary aims at informing the reader on what a critical research in Information Systems can be and how my research managed to address the potential principles of critical IS research. According to Myers and Klein (2011) there are a number of proposed principles that can guide critical research in Information Systems (see section 3.1). Throughout the previous sections of this chapter, I have highlighted not only what critical approach in multidisciplinary research and in Information Systems field entails, but why it is appropriate to address my research question. In conclusion, I intend to relate five of the six principles identified by Myers and Klein (2011) as relevant to this critical IS research. The principles are related to how my research met the practices for critical research in IS, and how the challenges were encountered and resolved to maintain the critical philosophy.

1. The principle of taking a value position. Advocating for equal opportunity, democratic participation and ethical values

In this research the guiding research questions, the data collection and analysis processes focus on how socially informed ICT education practices can determine the experiencing of ICT by learners. However, to avoid pre-empting co-researchers' meanings, I took up a value position of allowing their interpretations to guide the process of constructing the themes. The meanings provided in the findings are based on the co-researchers' construction of their own empirical experiences and these were situated in their communities. At the same time, all efforts were dedicated to bracket my bias and truths, to allow the research experience the natural world of living.

Similarly, my connection with the communities and ICT experiences was explicit throughout this thesis. From the initial stages of the research, I expressed my position on how ICT education practices in rural schools are important to me, why I see them as essential to our understanding of social development in rural communities and how I am a professionally trained in ICT. As such, I expect the reader to recognise my experiences in this field and subsequently see the relevance of findings and my impact on practices involved in this study.

The findings in this study reflect the empirical experiences of both co-researchers and myself. It is my belief that the reader will recognise the transparency involved in constructing the knowledge as well as the processes implemented to support the reflective and critical aspects of examining the empirical. Throughout the research I tried not to separate myself from research processes and put much effort into allowing other co-researchers to understand my position. This research has been part of my life and I am part of it, and it is more important to me beyond the point of being an academic research.

2. The principle of revealing and challenging the prevailing beliefs and social practices. Identifying important beliefs, social practices and critique with empirical evidence

From the initial phase of gathering the data, the research focused on allowing the data to be collected from co-researchers using multiple methods and in different contexts. It included creating democratic spaces during the interviews for co-researchers to freely express their own experiences of ICT, allowing co-researchers to articulate their own experience of ICT education practices from different perspectives, supporting co-researchers to be reflective about themselves, and critiquing (questioning) other co-researchers. These processes were used to represent the findings that reflect on the whole knowledge about the empirical as it is related to each co-researcher. Moreover, this research was conducted to enhance critical understanding of ICT education practices by utilising the willingness to consider new ideas as well as reflective processes. At researcher level, I was more conscious not to develop research processes that could encourage conceptualization of pre-existing ideas of what the empirical is, but rather to utilise open-mind ideas and understanding. At the same time, there was focus on reviewing the emerging ideas, and accepting the events that triggered critique

and meanings. Thus, the researcher devoted his efforts during the research to allow each co-researcher to recognise the new ideas and experiences described by others.

3. The principle of individual emancipation. Realizing co-researcher potentials, needs and experiences.

The experiences presented in this study are contextualised to show the impact of ICT education on human subjects. With such objectives underlying the processes in this research, the interwoven experiences from co-researchers were embedded. In practice this was encouraged by engaging in reflective dialogues during the interviews as well as allowing co-researchers to approach the empirical with diverse perspectives including: questioning, having an open mind and being interpretative. Moreover, the leading researcher and co-researchers related the empirical to who they are, their understanding of what it means living in rural a community and their choices. These research aspects were vital as it helped the researcher to present findings that maintain the integrated nature of human experiences.

4. The principle of improvements in society and

5. 5. The principle of improvement in social theories

The two principles are fully presented in the following three chapters which represent the findings from the textural details and incorporate co-researchers experience of socially informed ICT education practices. In Chapter 6 the common structural themes are presented and discussed with related examples from co-researchers showing how socially informed ICT education is [can be] experienced. Chapter 7 combines the results from chapter 6 to develop a theoretical framework for constructing Transformative Acts of ICT Education practices in rural secondary schools. Furthermore, the testing of the theoretical framework is discussed in Chapter 8 to show the contribution made by this study to critical social theories.

Chapter 6: Portrayal of Findings

In this chapter, the textural descriptions of the ICT education experiences are presented and the results to allow the reader come to know the participants experiences, the activities and contexts they described as related to ICT education, their understanding of ICT education practices and knowledge of ICT. To gain an insight into the nature of ICT education experiences, a selection of shared (common) descriptions are also presented.

6.1 Introduction

As discussed in Chapter 4 and 5, the methodology used in the research process for this study involves an iterative and empathetic search for the meaningful and essential components of each participant's experiences. The aim is not to discount what has previously been proposed, but to critically examine the experiences of multiple persons regarding ICT education practices and formulate a new perspective based on these experiences. As with any critical research, this is not an easy task. Within the field of information systems and education, most researchers endeavour to define ICT for development, to explore the presence of ICT in education, to demonstrate the importance of ICT education and the integration of ICT in rural schools (refer to sections 1.5 and 2.4.1). While this task is restricted by the researcher's ability to put things into a written or spoken language, there are still insights to be gained through participants' expressions and experiences of the ICT education and its practices.

The participants in this study included I myself, as leading researcher, teachers, school leavers, school dropouts and community members with no formal education experience. The Critical Action Learning methodology was used to explore the phenomena investigated in this study. Data sources included in-depth interviews, reflective journals, and events that occurred during the Critical Action Learning seminars. In the research design, the curriculum (**See Appendix J**) was developed to guide the practices of CAL seminars. The CAL seminars were also guided by the critical theoretical frameworks as described in **Table 4.1** and **Figure 4.1**. The two frameworks were essential in guiding the data collection process, developing empirical data analysis methods and presenting the findings.

While the CAL sessions were valuable for capturing participant's experiences (Dixon, 2017; Daudelin, 2000) individual participants were allowed to construct meaning from these experiences, based on their perception, understanding and memory. The results from the methodology that was implemented in the current research revealed that socially informed ICT education could be explained through experience obtained from the CAL sessions, and especially through an individual's own identification of socially informed practices in ICT education. Significantly, Mezirow (2000) points out that learners examine the existence and diversity of their experience through education

practices. Thus, in searching what was experienced, the chapter start by discussing how critical frameworks (Table 4.1 and Figure 4.1) informed the activities involved in this study. Then it demonstrates various ways through which the participants expressed or presented their experiences in respect of ICT education practices. The chapter conclude by presenting the results of these experiences in the form of narratives. The meaning of the text in the narratives moves beyond highlighting the experience of the co-researcher and delves more into understanding and gaining insight into what each experience meant for the individual and shows how the experience was lived by the co-researchers (refer to section 5.2.1). Thus, the results are summarised in the last section of this chapter to bring the reader closer to individual voices, and suggest the meanings and perspectives expressed by the co-researchers in the chapter.

6.2 Critical Theoretical Framework: A guide to Research Practices.

The participants received ICT training (CAL seminar sessions) based on the curriculum goals highlighted in **Appendix J**. Goals of critical theory '**Table 4.1**' were used to define and inform the classroom, research practices and data collection processes. In this first section of the chapter, I will demonstrate how I engaged the CAL while seeking to achieve the goals of critical theory:

- 5.2.1: Repositioning power among the co-researchers and researcher,
- 5.2.2: Creating a community of learning,
- 5.2.3: Fostering critical reflective dialogue,
- 5.2.4: Honouring co-researcher's comments and narratives,
- 5.2.5: Enabling Dialectal Reasoning on dominant ideas,
- 5.2.6: Making CAL content relevant

6.2.1 Repositioning Power among the Co-Researchers and Researcher

In the field of education, critical theory has been used to emphasise the use of the democratic connection between learner and teacher (McLaren, 2015; Carrington and Selva, 2010). Both Giroux (2012) and Leonardo (2004) contend that in practice, the frameworks of critical theory focus on establishing a mutual understanding between the learner and the teacher. To Giroux (2012), this mutual understanding includes re-establishing power relations, whereby both the teacher and the learners make

significant contributions. The teacher does not become the master or expert to hold the whole truth but rather facilitates the process of discovering the truth (Mezirow, 2010). It was essential therefore that in the first CAL seminar, to allow the experiences and voice of my co-researchers to inform the learning approach (Responding to Research Q2).

Although this research is designed to honour co-researchers' experiences, I had to ensure equal distribution of the power relations between co-researchers and myself. The two critical theoretical frameworks (**Table 4.1 and Figure 4.1**) were appropriately developed to assist in the process of redistributing power since the tradition of critical IS research is to explore and transform the dominant oppressive use of power in IS research (Doolin and Lowe,2002). As such, the power dynamic was the primary issue addressed throughout the whole research process. I found it to be the core part of this research, as I was continually reflecting on whether power was equally dispersed between the co-researchers and myself.

The first seminar started with a discussion on classroom conduct. My responsibility was to explain to participants (co-researchers) that we have the ability to define what we want to achieve, create democratic learning spaces and involve all necessary input to accomplish our training goals. The underlying intention was to provide an environment in which co-researchers should be able to critique and transform common assumptions through communal dialogue. Since the participants were presenting themselves as high school learners during the training, I allowed them to express what they needed in order to succeed in the training programme. It was significant that all participants wanted to gain practical knowledge that could help them establish a reflective account of using ICT, so that they could integrate knowledge of ICT and ICTs in their community activities as well as initiate transformation of ICT education. My initial understanding of using critical theoretical frameworks was that it enables learners to learn independently. I was concerned that the critical approach would worsen rather than equip them to successfully construct knowledge that demonstrates ways in which ICT education can contribute to social development in their communities. This was my concern since teachers (I as a facilitator/teacher) in rural schools are treated with respect that subject learners to acceptance of every instruction given. Moreover, as

Lecturer in ICT at Rhodes, I felt that participants would assume that I am an expert able to give them their desired knowledge and skills of ICT.

As learners in this study, all participants were expected to engage in the process and openly speak about their views and ideas. Such expectation had some positive intention - to support the participants in understanding their role in transforming ICT education practices - but most participants had difficulties in opening up since most of their peers valued 'respect' as way of behaving in classroom. There was pressure from their peers to observe the common rules for learning in rural schools. The power of the rural schools over the interest of learning seemed to underpin the loss of engagement in the classroom. Popkewitz and Brennan (1998) argue that learners rather than teachers hold power in a classroom. Although I never experienced any threat of power by participants, I was conscious that some participants felt my position was to control the learning processes.

In the classroom, I observed that the participant's response was biased and I doubted if some responses were indeed their own experiences or what they wanted me to hear. For instance, the extract from my reflective journal on 28th August 2016 reads as follows:

When I heard the participants were mentioning some of the computing terms such as installing software, network servers and saving files in the cloud sources (google drive), this made me feel so proud could this really be true that the participants are understanding the concepts presented to them? After the training, Cindalene (names have been changed) informed me how she managed to help her young brother to connect to a website that has a matric exam resource, I was excited. Could this indicate success? Or maybe I am so excited that the participants are enjoying using the computing terms without really establishing how they feel?

The comments from my reflection above show that although the ICT training environment was designed to embody empowerment and relevant ICT knowledge, the participants demonstrated they were limited in making practical applications of their own knowledge and establishing meaning from their experiences.

Furthermore, the notion of power sharing was examined in all training sessions especially in the Critical Action Learning cycle of dialogue-act-observe and reflection. This is reflected in my journal excerpt of 3rd June, 2016:

Today, I read the research study conducted by Mughal, Stead and Gatrell (2016) on 'reflective practice of Action Learning that enhances criticality in students studying Master of Business Administration'. The authors discuss how they struggled to address power relation in Critical Action Learning seminars. In their role as facilitators, they wondered how the practice of supporting students to critically reflect became an influence fulfilling their agenda in the research. The students were more receptive to the practices and the author's aim was to support students initiate reflective actions that could contribute to the success of the research. Mughal, Stead and Gatrell (2016) conclude that their research opened critical perspective in students whenever they directed the practices of critical reflection. Thus, as CAL facilitators they were doing things together with students rather than for students. I am certain that such an approach is in line with the critical theory engaged in this study, since it focuses on motivating all co-researchers and myself to participate in the research processes rather than directing them to things they must do or not do.

Power sharing is not something new in Critical IS and education research. Krauss (2013) demonstrated that power redistribution is vital, although it has second-order-strategies hidden in social situations (p238). As a leading researcher, I became aware of this power dynamic so as to avoid being accused of holding any hidden strategies highlighted by Krauss (2013), such as forcing certain learning practices, seeing myself as more knowledgeable and assuming the role of the expert. On the other hand, Giroux (2003) in his review of the critical research approach acknowledges the challenges of applying this approach in action research. He notes that, while the critical approach aims to empower the participant, it can result in enforcement of a different type of control. He draws on the insight of understanding the relationship between critical theory and transformation of the society. In his view the critical theory provides a framework by which we can command forces that shape the larger society totally. The core issue is one of repositioning power such that it provides critical inquiry that constitutes vital resources for empowerment.

Similarly, I performed a self-evaluation on my style of delivering instructions to co-researchers. This matter emerged in one of my journal entries after a training session as follows:

I critically examine myself if I am being too directive with participants in the classroom... giving them ideas on how to utilise different ICT resources they have in their homes and in the community. I promised to show them various ways of using ICT to share skills with other members in the community. Am I evading the goals of participants in this training by directing them to what I am thinking? and does the critical theoretical framework and Critical Action Learning approach presuppose that I declare my bias? What are the participants' (co-researchers) view about this? (16th August 2016).

In this context, I wondered if my concern in respect of sharing power in this research was practical, considering that participants were seeking to find immediate answers to issues arising within and outside the training. Furthermore, my journal entry above suggests that research activities revolve around hierarchies of power and influence related to the position of a leading researcher. The distribution of power in qualitative research is given so much attention by many researchers. For instance, Kincheloe and McLaren (2002) explain that the distribution of power in research is desirable, but problematic since the leading researcher is the one who directs the research activities. I was aware, as much as power distribution is necessary in this research, that I do hold more power as am still the one coordinating the research. At the end of first training programme, the power distribution issue was noted as an important factor that needed to be acknowledged. Therefore, in an attempt to understand power distribution in this research, I constructed the in-training interview questions (**See Appendix B1**) that were administered during the fourth week of the training programme. The two questions in particular were structured to deal with the co-researchers' perception of sharing power during the training and during the research activities.

Table 5.1: In-training interview response (question opinions about power in ICT training)

Co-researcher	Was there any moment that you felt, I was directing you towards the things I prefer to be right rather than what you think is right?
1001	<i>No. We enjoyed learning everything freely and choose things that related to our own situations. I remember on the first day we agreed as a class that everyone was free to contribute and share what they have discovered or know – so whatever you said I took at it as part of ideas emerging from the training. You were flexible in helping individually and class as a whole</i>
1013	<i>No. You allowed everyone reflect on what is important, and the dialogue provided spaces for some of us to share our experiences freely.</i>
1022	<i>No. You were not directing at answers, in fact I was happy that in our last four sessions some of my colleagues were facilitating the training and you also acknowledged that you have learnt a lot from those sessions.</i>
1027	<i>No. I found out that you were avoiding providing direct solutions to some of the questions or issues. This helped me and my friends to challenge ourselves to find our own ways of solving the challenges.</i>
1033	<i>No. You provided democratic spaces in and outside the classroom. At some point, some of my colleagues felt you are a participant than a facilitator.</i>
1034	<i>No. We are given more opportunities to explain everything and even ask more questions. Am so grateful for allowing us to experience such training environment.</i>
	Do you think as a participant you are given power to make your own ideas or decision in this training and research?
1006	<i>We are allowed to suggest things we want to learn. We are also allowed to question our own ideas and ask others to help us understand better.</i>
1011	<i>You gave us some ideas but it was my choice to select things am interested to use and do.</i>

1023	<i>We had the chance to revise and work on things we felt make sense in our lives and community. You let us try new things, this was great. I created my email address and test sending emails to my colleagues.</i>
1027	<i>You taught us some ideas that I managed to try on my own using my in-law's laptop.</i>
1041	<i>Everyone contributed during the training sessions I attended although in some cases I missed some lessons – I was still given chance to ask questions and comment.</i>

After reviewing these interview responses, I revisited my reflective journal and found that indeed there were instances where power was distributed equally. Here is my journal entry of 25 August 2016, which exemplifies equal power distribution:

I planned today to facilitate the training on “use of ICT in business”. The lesson started on a high note as most participants seemed to like the idea of starting up small businesses in their community. However, I observed that Asanda(name has been changed) was really struggling to understand my point. And as I looked closely at her, she responded by asking everyone in the class if we could use her bakery business as an example in this lesson. Then I changed the examples in this lesson to focus on her bakery business and allow her to explain more on what she thinks would be an ideal practice of involving ICT in her bakery business and her experience of running this business in her community. I wrote all her experiences down on paper and requested other members to comment. I like the fact that all the participants were in agreement to try out what Asanda suggested and see if it can make the lesson relevant. At this point it seems power was equally distributed since I was not the one dictating what to involve in this lesson.....I allow the participants to relate the lessons activities with what they personally experience in the real world.

This evidence correlates with responses from co-researchers during the in-depth interview question of their experience of power distribution in the research. However, another journal entry shows that even if I was the one ‘with hidden strategies’ (Krauss,2013 p238) many of the participants really understood that I was there to facilitate the training and assist them rather than to judge their experiences, as the following journal entry of 19th June 2016 demonstrates:

Akhona (name has been changed), was shocked on her fourth day of participating in the training that Anathi (co-researcher) came to facilitate the training. I allowed Anathi to facilitate the training session with the aim of learning from others who are experiencing relevance of ICT knowledge from the research. Anathi kept referring to me as “our colleague Clement” during the session and introduced me to the class as someone who has come to help and share ideas that could help all make effective use of ICT in their communities.

To my knowledge, power was indeed equally distributed among the participants, since the participants knew I was also there to learn from them and gain new knowledge about ICTs. I found that in some instances, power was naturally shared without using the theoretical frameworks. Nevertheless, it has been well discussed in Critical IS and Education research literature (Krauss, 2013, Guo, Dobson and Petrina, 2008; Doolin and Lowe, 2002; Cox and Preston 2000; Ngwenyama, 1999) how difficult it is to establish balance of power and trust with participants. The first time I walked into the training classroom and introduced the research, I was nervous because I thought participants would find the project dubious. I think tensions came from teachers (who were also participants) who felt like my intentions were to evaluate their ICT competence and how they are failing to teach ICT in their schools. Therefore, I made a conscious effort to share the power between the participants and myself, by telling everyone to freely participate in and outside classroom research activities.

The other tension was related to teachers (who were also participants) who thought the content covered in this training was not related to rural secondary schools' curriculum. Some teachers who participated in the first training felt that I was out of place to relate the sessions to “rural community realities”, Madam Vuyo (pseudonym of a teacher) made this plain to me in one of our informal discussion outside the training room. I invited her to initiate the discussion in the next training session that could offer other teachers a forum to express their anxieties about the training. After the discussion, some participants (teachers) came to me and disclosed their purpose of participating in the research. In this regard, this is what I recorded in my reflective journal:

It was interesting to participate in critical discussion on the 'relevance of engaging practical content in the training'. I felt uneasy from the start of the conversations, because I was not confident that some participants would appreciate the knowledge and skills presented in the previous sessions. Throughout the discussion, I positioned myself as a participant not as a facilitator. I explained to the other participants that the ideas emerging from the training are things we must articulate and try out in our lives to find what is relevant or not within their context. I felt that they appreciated the approach taken by the research. As I was exiting the training, Madam Njigane (teacher participant-pseudonym) appreciated the approach used in the training and confessed that she often spent time in the computer lab trying out the things that they are learning.

(12 September, 2016)

Sharing power in general imposes that one must think on one's feet (refer to Table 4.1). I found that it was necessary that the research activities must be flexible and revised some decisions or actions to preserve power distribution between co-researchers and myself. I also found that I was continually putting much effort into building the trust and to balance the power between the co-researchers.

6.2.2 CAL seminars: A Community of Learning

The intention of setting up the Critical Action Learning seminars (ICT training) was to establish a learning community that supported co-researchers (participants) to share experiences of ICT, construct ideas and knowledge together, and to support one another (Responding to research Q3). I felt like I was not successful in this endeavour since most participants were not open to share their concerns with others. -To me the participants' interactions in the classroom did not look like they were open to each other. Therefore, I revised the sessions to include time and spaces where the participants could formally and informally discuss their emerging ideas and concerns. Often times, the participants would pause the session to allow us discuss issues arising during the learning process. This approach provided the latitude to enjoy the conversations and connect with other participants despite some participants dominating the discussions. More often, I did not get involved but rather allowed the participants to talk and direct themselves to their own conclusions. The aim was to avoid participants adopting my contribution as the only valid truth because of my professional knowledge of ICT. The participants

expressed how the classroom activities helped them experience the relevance of this study, as I was conducting the in-depth interviews, see responses in the **Table 5.2**.

Table 5.2: Experiencing the classroom activities

Co-researcher	From your observation, what were the challenges you faced when participating in the classroom activities?
1015	<i>During the discussion you let us talk too much and discuss some personal issues instead of concentrating on important things related to the training. Everyone was allowed to raise any issues.</i>
1019	<i>The activities kept most of us active although some of my friends were more active during the discussions than practical work.</i>
	In your observation what were my strongest or weakest points as a facilitator of training?
1028	<i>During the training, a few students dominated the conversations and you let them lead the discussions. You allowed some students introduce things that could not make sense to some of us. I observed in the last training sessions you encouraged everyone to talk and balance the participation of all participants in classroom activities. You were always concerned about individuals' issues. You helped us to reflect more on emerging ideas and issues from the training.</i>

In an effort to explore further if the CAL setting established a learning community, I asked the co-researchers some questions about the training sessions during the in-depth interviews, as detailed in the **Table 5.3** below:

Table 5.3: Experiencing learning community

Co-researcher	Do you feel the training sessions resemble a community? (why/why not?)
1031	<i>Yes, the events that happened during the training connected most of us. I met new people and became friends. We were encouraging and helping each other.</i>
1017	<i>Yes, most people have the same experiences and desire to learn</i>

	<i>more about ICT. This is the same in our community where we are people that share the same experiences and challenges. The training sessions created some ideal forums to resolve common challenges and offer support to one another.</i>
1036	<i>Yes, the training provided an environment where everyone was part of the team. Some of us joined the training at a later stage but we were supported to catch up by other participants. The environment was supportive despite people having different beliefs and goals.</i>
1025	<i>Yes, the training created a network of people from different villages or communities. In most occasions we were sharing ideas and worked together to complete the tasks.</i>

I needed to understand the validity of the Critical Action Learning seminars (ICT training) from the participants themselves. Most of them acknowledged that the training environment allowed them to share their experiences and receive support from fellow participants. As such, they felt connected to one another since they shared similar empirical experiences. The responses differ with my prior definition of what constitutes a community. I thought that being in a community meant that people communicated verbally, come up with ideas and collaborate in solving problems. I realised that I did not share my definition of community with the participants. Therefore, the data from the participants shows that people in the participating communities conceive shared experience as the main characteristic of a community. McMillan and Chavis (1986) confirm this through their explanation of community as “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared experience that members' needs will be met through their commitment to be together” (p 9). This could also be attributed to their lack of interest in the participation of some research components I thought were more important to them. Moreover, I realized that I was putting too much effort into developing and encouraging participants to establish a community.

A classroom in rural schools has many learners and each one in this environment has the responsibility to promote community. Although the primary responsibility rests

with the teacher, who has the power, the learners must be encouraged to participate in the whole process of establishing a community. Solomon et al (1996) confirm that “it is essential for schools to be created as communities in which students could blend their individual skills and interests, and could experience the democratic process through collaborative deliberation and decision making, thereby developing and becoming committed to common goals” (p236). After reviewing this explanation, I reflected on the activities and events that occurred in the training sessions and wondered if I directed the establishment of this community rather than informed the co-researchers that this was an area in which they were supposed to play their role. Indeed, I was privileged to have the same powers as every participant and to be part of establishing a community.

6.2.3 Fostering Critical Reflective Dialogue

Reflective dialogue is an essential part of Critical Action Learning. It enables the participants in the conversation to express their views and develop the capacity to listen to the views of others. According to Dewing (2010), dialogue “is a process for sharing and learning about how one’s own meaning making is received by others and how another individual’s values and beliefs, feelings, interests, and/or the needs of others are received” (p24). In the dialogue the power must be shared equally for conversation to occur. The way dialogue was initiated in this research was to allow the participants to start formal or informal discussion that included emerging ideas and experiences. The aim was to create a culture that was supportive to question, receiving feedback and trying out what was relevant to individual context. My responsibility during the dialogue was to encourage participants/students to reflect critically on each activity or event, and to find out the root causes of the dilemma. In all the dialogue, time was equally given to participants although I also participated as a member. Many of the co-researchers acknowledged this as my strongest point during the in-depth interviews.

In terms of creating effective group dialogue, I don’t feel that I was nearly as successful. Some participants talked more extensively than others and I also was using lecture teaching with a student-centred approach rather than a teacher focused approach. Although some co-researchers talked extensively when discussing social concerns, everyone managed to understand what each topic meant to lives and personal experiences of those who dominated the conversation. My reflective data from the

training sessions confirms this. For each transcription, I wrote down the number of times each co-researcher commented. I found that every participant had a chance to talk more on issues that concerned their context or experiences. Moreover, my strength in managing the training was attributed to the fact that I managed to cover all the topics set as part of the training curriculum. As I transcribed the data from the training sessions, I found that I had a tendency to present the training in the same way I lecture at Rhodes University, of giving more opportunity to the students to comment. Consider the analysis of text from the 17th July 2016 training session:

- *The training today was more active with little time to deliver the instructions. It was hard for me to listen to and write down the issues that emerged from the discussions. I could imagine experiencing hopeless, jobless situations after completing my PhD. So, it was necessary to allow young participants to express their experiences and aspirations.*
- *The two participants from Ukhanyo Secondary school were talking a lot even when everyone was quiet.*
- *Why was I stressing so much about telling the participants that I also teach ICT at Rhodes University? Is it because I am confident of what I am doing or am not certain about what I am teaching? Why is it necessary for them to know my competence in this field?*

6.2.4 Honouring Co-Researchers' Comments and Narratives

The central tenet of Critical IS research is allowing participants to express their experiences. I sought to do this in this research by sharing my personal experiences with other co-researchers. I found that the co-researchers looked into their own background of living in rural communities and being schooled in rural schools as something that affected their understanding of opportunities that ICT can offer to them. During the training, I continually encouraged the participants to reflect on their actions and try to relate to and understand them in terms of the background of their communities (Responding to research Q1). On some occasions, these reflections supported them in articulating a broader picture of ICT education and increased their positive beliefs about practices involved in ICT education in rural schools. I considered these responses from in-depth interviews, when I asked co-researchers to explain their

thoughts in respect of the importance of using ICT in social development and background history.

Table 5.4: Using ICT in social development and background history

Co-researcher	Do you think the failure to understand the importance of using ICT in social development is because of your background? (i.e ICT education in rural schools)
1032	<i>Yes. I see ICT as tools which can offer opportunities, but the challenge is that it requires someone with proper knowledge and skills to teach me to connect to such opportunities. Before the training I never thought at some point in my life I will know the practice of participating in online training with colleges or universities. The training encourage me and my other colleagues to start incorporate use of ICT in our personal activities, so far, I have helped two of my brothers to search for school related materials online and we also email one of our uncles in Limpopo often.</i>
1022	<i>Yes. Recently I met a friend of mine who has wondering on how we could share youth club initiatives and information to people within and outside our village. I knew the friend had no any knowledge about blog, creating Facebook page and sharing of information online. We have a community library that has computer connected to the internet, yet we never utilised the internet to inform others about activities in our community.</i>
1031	<i>Yes. I am now connected to many people using different social forums available online. I couldn't manage to market my business in our area before, now I learn a lot from others who are also doing same business of baking as mine in our community and outside. Our school has created a Facebook page where we share information with the community and students as well. We are well informed nowadays and easily communicate with other schools.</i>
1033	<i>Yes. Many people in my community are not aware about the importance of using ICTs in our daily live activities. I understand one of the teachers</i>

	<p><i>in this class confessed she was given a laptop by her cousin, but she doesn't know how to operate it. My children also who are in schools here they struggle so much with school work, yet I have a smart phone that we could use to access information from the internet.</i></p>
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This type of reflection where co-researchers are able to connect their beliefs and experiences with their backgrounds, enables ICT education to be more than a secondary issue in rural communities. Observing these reflective comments also helped me to understand some of the themes which emerged from this study. The data collected in this aspect of the study lent the most credibility to the fact that learners' background could determine their acceptance of current ICT education practices in rural schools and therefore produced no significant change in their attitudes towards use of ICT in social development.

6.2.5 Enabling Dialectal Reasoning on Dominant Ideas

Dialectical reasoning is commonly associated with the element of Critical Theoretical Framework as well as Critical IS research. The use of dialect reasoning in this study was to enable participants to problematize the current ICT education practices and see both sides of the issue being investigated. I found that during the processes of collecting and analysing the data in this study, the dialectal reasoning is necessarily the same as using any critical theories as a lens to empirical analysis. When the co-researchers were critically reflective on issues of power distribution, social development and social realities in ICT education they were basically practising dialect reasoning. I discuss more on Critical Theoretical Frameworks and Theory in Chapters 3, 6 and 8.

However, Critical Theory used in this study has the potential to support co-researchers to critically reflect on the ways in which ICT education manipulates learners, and prevents them from obtaining a sense of meaning and wholeness in their lives. The assumption is that reflective use of ICTs within everyday life contributes to the emergence of new social realities to which learners may be able to establish a sense of belonging. My observation is that students and ICT education are both issues in rural schools that seem to be affected by a number of things such as power, identity, culture and beliefs, and school practices. Teachers and learners who are able to dialect reason

in the context of ICT education and community realities, generally hold positive beliefs about ICT as a developmental tool (Prestridge,2012). Additionally, because ICT education in rural schools is controlled by dominant education policies and practices, it is an oppressive means of shaping and manipulating the beliefs of people in a rural community. In terms of being more cautious, ICT education in rural schools can be transformed into positive change. I informed the co-researchers in our first training session that one of the goals of my research project was to help them become more conscious of every notion of ICT education rationality in rural schools. This was something that seemed important to many participants, like Ziziphoo. Consider this first reflective journal of Ziziphoo on 18th April, 2016, after attending the first week of training:

I am so glad that I was accepted to join the training programme. On the first day I enjoyed online typing tutor and it was fun because I knew how to type using a computer keyboard but not the same as the online typing tutor- that was interesting. When I shared my story to other members that I learnt about computers the time I was a student at Ukhanyo Secondary School, they were surprised. They seemed to wonder how could I fail to type on the computer and seek help from other participants on basic things about computer. I realise how my past experiences and knowledge of ICT failed me to support people who felt I could help them. In the first place I blamed myself for sharing my background in this training but later on Thursday it was interesting everyone understood that we are all learners and expected to learn new things from this training. The two training sessions were so amazing with minimal challenges. The facilitator allowed us to question everything and discuss as a classroom to find solutions. Am not nervous anymore to trying out things using ICTs, although our teachers in secondary school never allowed us to do such things.

This confirms that when learners are allowed to dialect reason to what they learn, they are able to put ICT education in perspective. By distinguishing things freshly, they can examine their taken for granted assumptions and are able to describe the norms of school culture that influence educational practices. Such understanding can become transformational if learners and teachers are given the opportunity to critically reflect and act (Giroux, 2008; Mezirow, 2000). In the field of education some critical theorists

argue that dialect thinking transforms learners into becoming active citizens in their communities (Mezirow, 1981; Bell, 1987; Freire, 1970). Other critical theorists focus on the role of engaging learners in dialectal thinking to develop self-actualisation and alter self-concept (Runco, 2003; Fletcher, 1998; Harden, 1996). In common, critical theorists recognise the use of dialect reasoning in education as a self-directed nature of learning and it develops transformational experiences (Nias, 1984). I found that the responses to questions during the interviews provided extensive evidence that the premises of socially informed ICT education which I was providing was helping the co-researchers to critically reflect on all aspects of current ICT education practices with a reflective lens of the Critical Theoretical Framework underpinning this study. I noted a significant effect in the following responses:

Table 5.5: Dialect thinking on ICT education

<p>The current ICT education practices in rural schools fail your community because ...</p>
<p><i>Recognising that the world is changing and every sector of the society depends on technologies or ICT, it means our learners cannot be successful to understand the importance and opportunities that ICT can offer to them and people in our communities (Co-researcher:1018)</i></p> <p><i>It shows from what we covered from the training that certain understanding of ICT can help learners to succeed in using different technologies both in their studies and daily living (Co-researcher:1027)</i></p>
<p>Any change in attitudes towards ICT education considering what we discussed about current ICT education in rural secondary schools and the ICT training in which you participated...</p>
<p><i>Yes, am able to recognise the importance of everything we covered from the training although I doubt if the teachers (participants) that participated will change what they teach in their schools. The teachers complained that the Deputy Principal at Malalo Secondary school (Pseudonym) is not willing to attend the training (Co-researcher; 1033)</i></p>
<p>Teachers and students should examine their beliefs about ICT education because...</p>
<p><i>The teachers should not impose ICT knowledge and skills on these learners, instead they must help them to maximise the potentials of ICT education (Co-researcher;1014)</i></p>

The responses above show how co-researchers (participants) began to critically reflect on how teachers' actions, education practices and the curriculum could be oppressive to learners in rural schools. When I analysed more responses from the interviews, there was a compelling shift in their comments. The co-researchers acknowledged that it was not only the education practices that hindered learners in the successful use of ICT but also it was their aspirations and experiences that needed to be incorporated in ICT education. In examining ICT education contextually, most co-researchers also experienced a shift in their perception of current ICT education in rural schools. Their response was that learners in rural secondary schools cannot be compared with their counterparts in urban schools without critically reflecting on the type of ICT education they are receiving. Though "*the training programme modified its curriculum..... teachers in rural schools still cannot implement such relevant ICT education practices if they are not given the right kind of support and motivation (i.e proper guidance, training and tools)*" (Co-researcher 1026). However, most learners in rural schools do not need special support to attend or participate in ICT education.

Furthermore, I noted a shift as well in the responses from the in-training interview questions related to the needs for schools to provide socially informed ICT education in the rural environment. Most participants indicated that teachers in rural schools need support to re-design the current curriculum. After discussing how they reflected closely on taken for granted ICT curriculum in rural schools, they also recognised that school culture, education policies and teacher beliefs also need to be transformed to enable learners to acquire effective ICT knowledge and skills. One important thing that accounts for this shift in attitudes is the fact that I encouraged the participants to try out anything they wanted in and outside the training as a way of reflecting more on ICT education and social development. In essence, I was looking for ways to make the content of the training programme more relevant to them by connecting the emerging ideas with their real-world experiences.

6.2.6 Making the CAL Content Relevant

The practice of connecting the research content (instructions) relevant to co-researcher's real-world experiences was an essential component of engaging Critical

Action Learning and Critical Theoretical Frameworks in the research. The relevance emerged as I analysed the reflective journals from the participants, classroom events and research activities. As a critical educator, I was aware that socially informed knowledge is essentially connected to learners' real-life experiences. Mezirow (2003) posits that learner's ideas or thoughts should be honoured in learning that aims at transformation. Teachers transform learning by constructing a curriculum that supports learners in solving real life experience (Illeris, 2014; Taylor and Cranton, 2012). In this study the relevance of training was made real by the participants themselves and the curriculum developed during the training sessions. I found this aspect of Critical Action Learning encouraged the participants and I myself to progressively reflect on unearthing the emerging themes and produce content informed by participants' experiences.

On some other occasions I had informal and formal conversations with participants who felt comfortable enough to provide some advice regarding the curriculum. Madam Bulelwa (pseudonym) commented during one of our informal conversations that, *" it was very important for her to receive the ICT training, since she was not being forced to participate in every activity but rather given freedom to choose the training activities that match her goals and life experiences "*.

In addition to demonstrating this element of providing relevant content through my informal dialogue with co-researchers, I also developed the reflective form (**See Appendix E**) that guided the participants on things to consider as they write their reflective journals.

6.3 Locating the Emerging Experiences

It is evident in the transcriptions outlined in this section that the participants (co-researchers) in this study were experiencing socially informed ICT education in different ways. It was necessary therefore to allow them to focus on writing their experiences, construct meaning based on their perception and understandings. When considering the nature of these notions, it was revealed that socially informed ICT education practices could be better explained by trying out the ideas that emerged, through evidence of new experiences, and through each participant's self -definition of

ICT based experience. Such notions provided insights into the extensive existence and diversity of ICT education. In the search to understand *what* and *how* the experience was, the next section will focus on the individual and the collective perception of experiencing ICT during and after receiving socially informed ICT education in rural secondary schools.

Although the proposed methodology of data analysis employed in this study can be used for understanding the degree of quality in experiencing ICT in developing communities, the critical process was recognizing how the quality of education was manifested in the participants. The research processes were grounded in a desire to examine *what* they experienced, *how* they experienced it and I sought to understand the prime influences that accounted for their experience (Sey *et al.*, 2013). As such the focus is on explaining beyond *what* occurred and to reveal *how* the experience was lived by the participants in their community. In demonstrating the importance of the inductive process in this Critical IS research, the explanations serve to bring the reader of this thesis closer to the voices of individual co-researchers. Thus, to suggest the meanings and context expressed collectively by the co-researchers throughout the research processes.

6.3.1 Critical Understanding of the Phenomena

In Chapter 4, I introduced the research setting and how the co-researchers (participants) had responded to activities and became part of experiencing the phenomena investigated. The reflective journals, interviews and comments transcribed from the training are the units by which meaning is inferred. The participants' exploration of the relevance of ICT education practices is the focus of this study. The Critical Action Learning seminars (ICT training) were useful in intensifying the engagement for co-researchers in order to derive meaning from their ICT experiences. The significance of ICT education in rural schools formed the collective identity of most co-researchers. This finding was further supported by authors in ICT and Education research such as Kleine (2013), Sang *et al.*, 2011, Zhang (2008), Srinivasan (2006), Heeks (2002) Veiga *et al.* (2001) who have shown that a strong connection exists between the belief system and the identity of individuals.

I argue that ICT education in rural schools has the potential to be community associated. My interest in establishing the classroom as a community can be captured in the form of a unique kind of reproductive space according to Foucault (1988). In Foucauldian terms the classroom formations are discursive. They constitute various subject positions that include learners and teachers with particular identities, such as good student or bad teacher and vice versa. Thus, it was of interest to investigate the type of classroom atmosphere that can contribute to a community atmosphere (as in responding to RQ1 and RQ2).

Nevertheless, the research analysis method presented in Chapter 4 supported this study in critically examining the data for evidence, on the shift the co-researchers experienced through the research, what they discovered about themselves, how they participated in ICT training. This included their attitude towards the values they attributed to ICTs, using the interpretive frame from their communities, the conflict of ideas or meanings which emerged, the practical conditions of co-researcher experience as beliefs unfolded, and own use of emerging ideas in changing previous perceptions about ICT education and its practices in rural secondary schools.

South African rural secondary schools are explicit about their value in transforming learners. The co-researchers were aware that the conventional purpose of secondary schools has departed from the current ICT education practices. By clearly articulating the relevant meanings of rural secondary school learning, I should be able to analyse if the co-researchers are accepting prevailing values in ICT education, based on their responses. Moreover, the intention of the data analysis methodology used in this study is to develop themes that will enable me to understand the realities of ICT education within a social development framework (as in responding to RQ4).

6.4 Developing the Research Themes

The study used all the 283 journal entries and 32 in-depth interviews notes taken to compile an overview of what the co-researchers expressed in respect of their participation in this research. All the comments and narratives were read thoroughly with the co-researchers to investigate not only *what* is known about their experiences but also to highlight the conditions that led to their experiences. Through the process of

critical analysis and induction, the co-researcher's comments were considered in order to understand their experience with ICT education. Thus, not only the context and activities of using ICT in and outside training were acknowledged, but also the elements that were essential to its existence. This led me to remove my own biased assumptions and to rely on what the co-researcher expressed in their journals and interview notes. This process created individual accounts, whereby each of the co-researcher's portraits were critically analysed to reveal what was essential to the experience.

The key elements of experience were further checked by analysing whether the experience of ICT still existed (refer to section 4.7 and 4.8.2). In order to accomplish this, the various themes that emerged from the outcomes were examined to reflect on the significant use of knowledge of ICT and ICTs in social development in rural communities (Dodson, Sterling and Bennet, 2012; Bailey and Ngwenyama, 2010). Through a continuous process of critical analyses and reflection, it was also significant to condense the transcripts to reflect more correct individual accounts, where components that did not contribute to ICT experiences were withdrawn.

To illustrate the process, I will present individual comments to allow the reader to immerse themselves in the intense, personal descriptions shared by the co-researchers in this study. As such I expect the reader to identify essential and shared component evidence in the use of ICT education for social development. To support this process, selected phrases within individual accounts which are representative of the shared meanings of ICT experiences are drawn out. Although the phrases are grounded in different situations and languages amongst co-researchers, they reflect the understanding of ICT education and realities in rural communities. Consequently, the phrases shifted this study from *what* to *how*, from an understanding of what it is about experiencing socially informed ICT education practices to one of understanding how the reflective meaning of experiencing socially informed ICT education is in rural communities. Consider the narratives from reflective journals below:

As I was going through what we covered in the training I was amazed that we managed to learn a lot from the training and acquire relevant knowledge and skills. This is important for me, since failing to pass exams in grade 12 I felt hopeless to re-write the exams and

now I am thinking of registering for grade 12 at GADRA foundation and re-write matric exams. I now know how to access the internet and all the required resources for my studies and exams. The training allowed me to meet new friends who were also reluctant to re-write matric exams. We encouraged each other during the training to go back to school. It was amazing when one of the school teachers offered to give us online materials to use in our studies. I like the setting of the training – we were able to interact with elders from my community. Please do not stop responding to our emails and calls sometimes when we want to ask some guidance and help in using various techniques of ICT in our community. The day we called you, we were searching for jobs online that are available in Port Alfred area. You helped us a lot to refine the search for relevant jobs on Google. I wish there was a chance to have another refresher training course-maybe next year. Try to come and teach us again.’ (Co-researcher; 1033)

From narratives such as above, different themes were singled out and recorded under various captions such as: *influence of ICT education, new knowledge of using ICTs (transformed), experiencing ICT in communities* along with other related narratives. These points were also related to research questions 1, 2 and 3. I have developed other themes from responses that related to positive and negative impacts, emotions, values and those which are connected to a specific belief. Equally, a few remarks were recorded also in other themes, since the segments of the comments are used where applicable. Although it seems that the themes naturally emerged from the data, I have argued (in Chapter 4 on Figure 4.1, Table 4.1, in the proposed method of analysing data on section 5.2, and in the preceding sections of this chapter 6), that the interpretive framework in Figure 4.1 was used to influence the decisions in developing the themes. While admitting that all these themes are constructed ideologically within the critical theory and social framework, I am nevertheless aware of my assumptions in order to present the co-researchers’ comments as fairly as possible.

I turn now to present the excerpts from these themes, with evidence and possible connections to relevant meanings made by co-researchers. The focus in sections 6.4.1, 6.4.2, 6.4.3, 6.4.4 and 6.4.5 is on articulating the role ICT education plays in participant’s community life context, and as a learner in rural schools. With this in mind the excerpts in these sections are embedded in the descriptions of the co-researchers as they

attempted to understand the meanings of their ICT education experiences. Working through a process of identification of themes and constituent meanings, a textual description of emerging themes was constructed for each individual.

The excerpts selected for inclusion in the next sections were chosen on the basis of being representative of different contexts and responding to research objectives. No two respondents speak of the same experience or activity, but it is evident there are commonalities as each unpacks their interpretation of ICT education and experiences. Throughout their stories, patterns are evident showing that the experiences described had a profound and memorable impact with distinct social development components. Furthermore, the excerpts formed another phase of induction that I as a researcher engaged in with each of the participants (refer to section 5.1 and 5.2). Endeavouring to set aside my own ego and understanding, I have reflected on each transcript, looking not only at what was said, but the meanings underlying the words. Lingered, questioning, trying new ways of viewing the phenomena investigated in this study, I have allowed each co-researcher's words to present themselves and to question what occurred as part of the research activities, what was intended and what was experienced.

6.4.1 Reflecting on the Influence of ICT Education

In the account below the co-researchers reflect on the influence that ICT education has in their education journey. The participants narrate their educational experience which occurred when they participated in ICT education. They also reflected back on what could have been done better. Not fully aware of what they were engaging in prior to receive ICT education, the participants found the impact of ICT education to be more significant in their life experiences. See excerpts below:

I want to make sure that Makhana High School (Pseudonym) understands how important this ICT training is to us school dropouts. It is helping me to have a new lease of opportunities and life experiences. Since I left school in grade 9, I have not had any chance to attend any sort of ICT training in my community. However, it would have been better maybe to also teach us how to develop a business plan or to start businesses in the community like mine. Also, some of us feel shy to talk in a classroom, because some of the

people participating in the training are elders in our community and we respect them. I doubt if some of the comments made by the teachers (participants) during the training were representing learners' views (Co-researcher 1041).

The training was really fantastic. I really enjoyed the discussions and like ideas that were presented. It is sad that the training was planned to be conducted two days a week. What about giving us ICT books or resources to use after participating in your training? (Co-researcher 1039).

In the training it would be better if you taught us what you planned. It is confusing when you teach us things that members want to learn. Teach us whatever you plan first, if time allows you will cover other areas later. You are more educated than us – we believe you know better things that will help us in the future (The training is mostly concerned with what we want to learn rather than what you want. I think it was good).

6.4.1.1 New understandings of using ICTs (transformation)

Part of demonstrating the emerging experiences from co-researchers were contributions made in the classroom. As such most of the emerging ideas were incorporated in the training. This encouraged them to feel a sense of connection and affirmation. Removed from assumptions, able to have opportunity to experience their aspiration, the participants renewed a sense of hope and appreciation that had been missing in their mundane community life. See the excerpts below:

The training is mostly concerned with what we want to learn rather than what you want. I think it was a good a strategy to incorporate issues that concern our daily lives since some of us are searching for various job and business opportunities. It is helping me to think properly and to understand things I took for granted in my community. I am interested to start a tailoring business (Co-researcher 1011).

I liked the view of using ICT as a social capital that can help link ourselves to people in other communities or in our community (Co-researcher 1012).

6.4.2 Experiencing ICT in Communities

For each of the participants in this study there was a clear evidence of the emotional engagement and sense of awareness they achieved through the ICT education presented by this study. Though the activities varied, the locations were diverse, the ICT education experiences provided each co-researcher a reflective understanding inspired a sense of connection and led to an increased realization of using ICT knowledge for self and others in community as indicated in comments below:

I am a native in this community and only attended formal education up to grade 11. During all these years I never had any thought that I can contribute something to my community. Now I am able to help others to use different ICTs available in our community. I enjoy spending time at the community library – and also helping young members when they want access to resources on computers there. It would have been so nice to consider giving us computers or tablets after completing the training. We are really in need of using the ICTs in our community. It was wrong for you to give us access to computer lab at Ukhanyo school, something we really enjoyed, then refused us to access the lab after completing the training (Co-researcher 1004).

I believe many people in my communities don't understand the importance of accessing and using ICT in our daily lives. Most people fail to connect with others and share valuable information - it is really hard. The computer skills are so important. However, the government has little concern in helping schools here to have necessary ICT resources. People are disappointed that you can't continue your programme and this has been a concern for most people here since they started to participate in your trainings. Is there something we can do as a community to initiate such a programme? What are the things we need to do? The other group you are teaching will also be upset to know that the programme will end soon (Co-researcher 1005).

After attending the training, I informed the school Principal to request for laptops that we can use to record information at our school, Nabulelo Secondary School (pseudonym). The department of education donated three laptops and we used them to record all our student information (Co-researcher 1009).

Reflecting on the quotes presented in the above sections (6.4.1, 6.4.1.1 and 6.5.2), the co-researchers were more reflective in revealing parts of themselves (co-researcher 1009), within the interpretive framework used to make meanings (co-researcher 1005), of the ethics and values that they held (co-researcher 1011) and the sentiments and thoughts that were stirred as they participated in the research activities (co-researcher 1004). In some narratives the co-researchers expressed their comments in simple statements (co-researcher 1012). For others it was more of a multifaceted argument and an affirmation of their experience (co-researcher 1041). In some instances, the co-researchers agreed that the situation was marred by rural secondary schools (co-researcher 1005), while others disagreed with teachers who were also participants (co-researcher 1041) and yet others rejected the current practices involved in ICT education, asserting that the realities in communities should be dominant in the education practices (Co-researcher 1012).

The comments expressed above provide evidence that ICT classrooms in rural schools form communities that have particular ways of interpreting their own realities and that of others. These particular ways are not often internally persistent since there is a difference within, as well as between learners, teachers, communities and policies from the Department of Education. The comments suggest that members in the *classroom community* understand the needs of others through their comments and actions. Moreover, Foucault (2000) suggested that in such a community, people may have equal opportunities to recognise the conditions of social reproduction rather than understanding what *controls* them. The parameters of these communities are commonly constituted to construct certain behaviours and thus limit the meanings that members (learners) make. This was noticeable in the comments from reflective journals of co-researchers 1016, 1018, 1032 and in follow-up interviews with co-researcher 1004. The co-researchers responded on the point of 'imposing time limits on the usage of ICT resources in the school computer laboratories. These responses show how co-researchers who participated in the same training programme responded differently and construed different meanings from their experiences. The time restriction on computer usage in the ICT lab was further espoused in the excerpts from co-researchers below:

It is a good idea to open the computer lab to the community. Could it be possible to give us access to these ICT resources in the afternoon? It is really unfair idea that teachers should only be given access to computers, yet the First National Bank (FNB) donated this computer lab to the community. Maybe the teachers want to benefit more because they have power to control the school resources (Co-researcher 1021).

One would assume that our participation in the training and the training was not appreciated by everyone at Ukhanyo Secondary school (pseudonym). I felt this from some events that occurred, for example the Deputy Principal removed the internet cable from that big box (meaning the server), training was reduced to two hours per week and also some teachers believed that the resources are for learners and teachers (Co-researcher 1014).

It is important to close the computer lab to the community, if they insist to open the computer lab to the community, we can choose members to control and assist people when they are accessing resources in the computer room (Co-researcher 1021).

They should leave the computer room open during the school time and in the afternoon. It is pity that even the learners and teachers are not allowed to access the room, it is always locked (Co-researcher 1019).

The comments from CC-researcher 1014 show that her experience from participating in the training was a positive one, although there was evidence of relating power to subjects (people) who were interested in accessing the ICT resources in rural schools. The other comments are different. Co-researcher 1021 interprets the meaning of ICT resources in schools and for communities. This is contrary to Co-researcher 1019 who disagrees with this notion, while co-researcher 1021 sees the need to *empower* people in the community and recognises the community as part of the school. This suggests that the meaning of ICT education practices in rural schools is rejected by the three co-researchers. The perceived values of ICT education and ICT resources in rural secondary schools are in conflict with the ideals and values presented by the co-researchers. Their *expectations* of ICT education practices were not met. They did not see their community and themselves being reflected in the education practices with

pertinent status, and there is an implicit sense of discontent as revealed by the co-researcher's comments.

The comments embody the vigour presently available in the co-researchers understanding of the importance of ICT. In this sense, Foucault (1988) notes that norms, culture, rules, power and knowledge restrict our view of the society or the world. Foucault's intention in this aspect is to reveal that people hold the reality of what they perceive is the truth and they must approach such truth with critical thought (Foucault, 1984). As such, the truth constructs the features of the society culture that connects individuals with things they experience. Foucault further argues that the truth in our society is so complex that "it put[s] an individual as master and puppet at same time in a game with constantly changing rules, and only by being aware of the forces of society can the individual have options to act" (van de Ven,2012, p14). The comments by the participants demonstrate the strength of their interpretive frame.

Therefore, possible patterns continued to evolve and they were organised around the following main points 1) comments related to ICT, 2) co-researchers' belief structures, and 3) overall comments linking to education practices in rural secondary schools. These patterns were grouped around the three sub-themes of attitudes, values and sentiments which co-researchers expressed, that were attributed to the critical understanding of ICT education practices (See Table 5.1). The attributes included the comments that sought transformation of our practices and that identified practices they thought should be transformed in current ICT education.

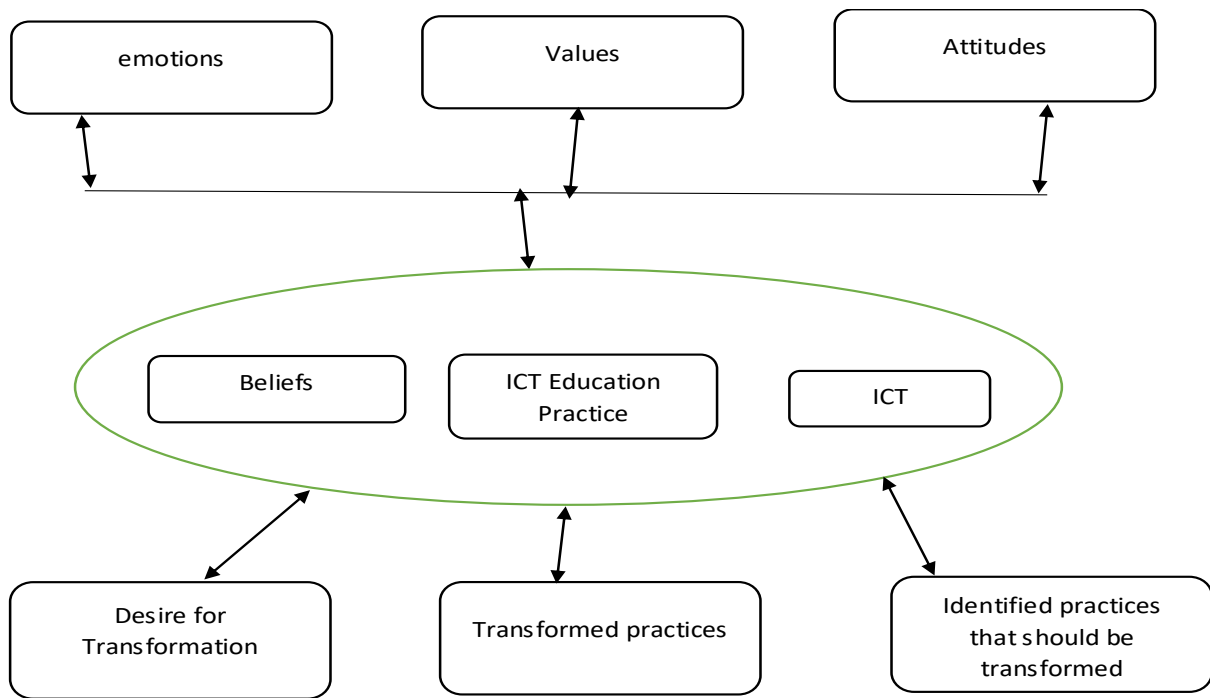


Figure 5.1 The patterns showing the relationships identified in preliminary themes

The model above shows that while each participant experienced different moments, they shared experiences of underlying similarity as they were inspired to critically reflect and critique on aspects of ICT education that extended beyond the school premises, both the seen and the understood. Within this model the pattern of the preliminary themes allowed the participants to begin to experience a new dimension of meaning. As the excerpts of individual co-researchers were completed, common patterns, themes and components began to emerge which depicted not only individual experience but also the shared experiences of the other participants as a whole. To further develop the pattern of these themes and gauge the essential nature, each was matched to composite experiences of all co-researchers.

The analyses of the comments from the co-researchers' narratives show strongly that they were active in understanding the importance of ICT education practices. They reflectively narrated their experiences from the research activities (participating in and out of the ICT training). The data analysis methodology revealed the model relationships that linked co-researchers' values, knowledge, beliefs and concern to the meaning they deduced from the ICT education and ICTs in rural communities (See **Figure 5.1**). This model echoes the ontological and epistemological view of Mezirow (2006), who believed that people construct knowledge themselves. The knowledge

allows people to build meanings based on their experiences and within the frameworks of their interpretive communities (Lopez and Willis, 2004). As such, the ICT education practices in rural schools influence the learner to adhere to traditional rationality of ICT knowledge, and their meanings of ICT are confined to a school culture rather than community realities. This confirmed Foucault's (1980) concerns about the ways in which social actors, such as government, schools and hospitals use their practices to construct knowledge that regulates or creates subjectivities. The learners in such cases did not advance their meaning of ICT since the knowledge produced regulated them as subjects.

The two theoretical frameworks (**See Table 4.1 and Figure 4.1**) enabled me and co-researchers to critically analyse the patterns between the identified preliminary themes and ratify Foucault's theoretical base. The following section presents data interpretation that aims at unpacking the common themes using individual expressions and contexts, while at the same time indicating the context of the interrelated and shared nature of the experience (responding to research Q3).

6.4.3 Aligning Social Experiences in ICT Education

In responding to Research Question 3 and in reviewing the meaning that ICT education acquires in the process of changing the ways learners and people in rural communities organise themselves, particular focus is placed in this section on transformation that enables learners to create new reflective knowledge of ICT for themselves and communities. I turn to critically reflect on the comments made by co-researchers 1033 and 1041.

As I was going through what we covered in the training, I was amazed that we managed to learn a lot and attain relevant knowledge and skills. Please do not stop responding to our emails and calls sometimes when we want seek some guidance and help in using various ICT techniques in our community. I wish there was a chance to have another refresher ICT training course maybe next year if you can manage. We enjoyed the training (Co-researcher 1033).

The comments in this narrative could be read as a personal reflective experience, experiencing of ICT education and ICT. The co-researcher used the first person singular

(refers to himself), and in this process of reflection he identifies and relates to how he perceives and feels towards the previous assumptions, knowledge and emotions. Furthermore, another co-researcher narrates in his journal in the following manner:

I want to make sure that Makhana Secondary school (Pseudonym) understands how important this ICT training is to us school dropouts. It is helping me to have a new lease of opportunities and on life. Since I left school in grade 9, I have never had any chance to attend any sort of ICT training in my community. (Co-researcher 1041).

The two co-researchers express their disappointments with prior social experiences which affected their understanding of ICT and they re-enact with transformed ICT knowledge. This is an instance of experience where the transformed ICT knowledge and the social experiences overlap and is being associated with participating in ICT education. During the time of ICT training, individuals were allowed to bring in their own ideas and suggest things to cover in the sessions. The training sessions provided democratic spaces for co-researchers to try out things which they felt were relevant to their personal context (refer to first sections of this chapter). In this respect, the socially informed ICT education practices did not create the same experiences as those which co-researchers had experienced before attending the training.

As well as commenting on the importance of not losing the social connection that ICT education provided, Co-researcher 1033 expresses his anticipation of more ICT experiences which he expects from the school, and why it is necessary, and the possible ways in which this can be realised. The comment by Co-Researcher 1041 further suggests components of community realities where the co-researcher's values, ideals and ICT education practices become conflicted. The co-researcher sees the realities in his community that upset his sense of *what is right* in a rural community context for the ICT education and he uses the reflective journal to indicate his emotional stability. He is taking advantage of his role as a member of the community to express how practices could be transformed in rural schools or better utilized by him in order to face the realities in the community.

Co-researchers (1033 and 1041) use some positive language such as *enjoyed* and *new lease* which indicate certain realities, which they experienced with ICT education (ICT training) and how it met their expectations and ideals. On the other hand, their language is more negative such as *I wish there was a chance* and *I have never had any chance* where their ideals are not met. The experience of ICT is about themselves and they are able to actively develop relevant knowledge and gain skills through the ICT education practices (ICT training), with the emerging ideas providing the motivation for their experiences.

The training is mostly concerned with what we want to learn rather than what you want. I think it was a good a strategy to incorporate issues that concern our daily lives since some of us are searching for various job and business opportunities. It is helping me to think properly and to understand things I took for granted in my community. I am interested to start a tailoring business (Co-researcher 1011).

I liked the view of using ICT as a social capital that can help connect us to people in other community or in our community (Co-researcher 1012).

The training was really fantastic. I really liked the discussions and ideas that were presented. It is sad the training was planned for two days a week. What about giving us ICT books or resources to use after participating in your training? (Co-researcher 1039).

The comments above show how Co-researchers 1011, 1012 and 1039 responded to the ICT education practices. They give all their attention to the idea behind the practices they encountered in and outside the classroom, hence recognising that ICT knowledge and skills can provide absolute social experiences. They also expressed discomfort and disappointment with the arrangement of training for two days a week but overall, they were appreciative and were eager to attend more training sessions. The co-researchers' experience and knowledge was overwhelmingly satisfactory. Co-researchers 1011 and 112 responded positively to the ICT education practices. They managed to use experiences and knowledge from the training (ICT education) in an active way to construct their own relevant use of ICT in their context, stimulated by the practices but not restricted by specified understandings. This contradicts conventional practices of

current ICT education conducted in spaces that force learners to learn only what they will be examined on, and how they should use and access the ICT resources mandated through following the policies set by the education authorities. The ICT resources are given to schools without appropriate teacher training. These practices politically represent the hidden oppressive power strategies which hinder learners from building potential ICT knowledge and skills.

Such types of practice create knowledge boundaries that affect all learners in rural schools and relate not just to particular standards of ICT education but to attitudes, beliefs, values and views of ICT that form part of learner identity, sourced from rural societies. The knowledge boundaries are also practically related to the motivation that directs individuals not to use ICTs to transform human experience in new and significant ways. According to Cohen (2004), the “knowledge boundaries are themselves largely manifested in control that subjects learners to adopt passive knowledge and skills”(p13). This promotes the creation of social layers in our society (Parkin, 2013). The knowledge boundaries can be revealed by transforming the practices in rural schools such as the current ICT education practices.

Rural schools aim to represent the meanings of ICT education as that of the rural communities that learners inhabit, by acquiring various ICT resources, constructing ICT laboratories and forcing learners to have limited time on the usage of ICT resources. Teachers are given ICT devices such as laptops, tablets, and schools display this in their slogan as education transformation aspired to by rural schools and communities **(see Figure 5.2 and 5.3 below)**.



Figure 5.2: The slogan for one of the rural secondary schools



Figure 5.3: ICT laboratory at one of participating rural secondary schools

The co-researchers in this study took a different view in respect of the degree to which rural schools succeed in undertaking this. The overall meaning of current ICT education practices in these rural schools is not necessarily of the same meaning as of co-researchers' communities. The schools instead enforce the hidden power dignity in ICT education practices that support the philosophy of respect for dominant ideologies.

The fact that rural schools adopt a stance which gives respect to dominant ideologies rather than giving precedence to the use of ICT education as a catalyst for expanding the human and social capabilities of learners is an exercise of that dominant power. This

stance has political attitudes and values attached, that may prevent learners from relating their knowledge of ICT to their social experiences. This failure resonates with Mezirow's (1990) idea that education practices should aim at providing transformative learning. According to this perspective, the practices involved in education must serve to alter our frame of reference by challenging learners' beliefs and assumptions. Mezirow (ibid) suggested that education practices should transform learners to become more open to new ideas and develop their ability to integrate new knowledge into their worldview. Hence, it is in participating in ICT education in rural schools, and comparing the attitudes and values presented in the curriculum to those of learners' communities that we can achieve the transformation of ideological practices embedded in ICT education.

In summary, the analysis of data (comments) from the co-researchers presented in this section concludes that ICT education can develop '*social experience*' among the learners. Therefore, '*social experience*' has emerged as a theme to consider in this study. This theme is related to learners' meanings of ICT education and reflective use of ICT which depended on their community experiences, and it includes the identities they hold within their communities, how communities interpret ICT, how they use and access ICT, and the roles they construct in the process of using ICT. The '*social experience*' in ICT education as a theme emerged and is also related co-researchers' ability to construct their own meanings that involves in fundamental ways, their own community experiences and the relation of power within the classroom environment. Similarly, the extent to which the practices involved in socially informed ICT education aligned with the co-researcher's community experiences, shaped or transformed their knowledge of ICT, strongly influencing whether or not it was a positive or negative experience which they would want to experience again or share with others in and outside the classroom.

6.4.4 ICT Education as a New Social Development Phenomenon

The reflective encounters or use of ICTs by the co-researchers in and outside the school environment, which I have presented in the sections above, are an instance of more or less successful social realities within ICT education. The social realities occur when the co-researchers experience relevance of ICT education practices either emotionally or intellectually. The integration of rural community aspects and social experiences of

individuals means that the co-researcher’s use of ICT or the ICT education practices creates experience that is relevant. Whether such experience is described as personal development or community social development or a combination of both, may depend more on the co-researchers’ interpretive framework, (see **Figure 4.1**) than on the technical epistemological perception of their experiences. The co-researchers prioritise the meaning presented by their interpretive frame as most valuable since it also represents the collective or shared understanding. Many of the excerpts from the reflective journals and interviews in **Table 5.6** describe some of the contextual experiences of co-researchers related to ICT and ICT education practices (ICT training). For instance, during the training the co-researchers imagine a productive community (co-researcher 1001), have a bit of ICT knowledge and realize skills significance (co-researcher 1006), make productive connections with other community members (co-researcher 1017) and are transformed to aspire to more (Co-researcher 1044; 1043).

Table 5.6: Excerpt showing contextual experiences.

Personal-reflection	<i>The training was really more important for some of us to connect with people from Rhodes University (me) and to also share common challenges we face in using ICT as teachers as well as community members (Co-researcher1001)</i>
Transforming experience	<i>When I look at what am able to do with ICTs at home and in my business of Art paintings, I cannot deny that the training has changed my perception of what ICT can offer to us in this community. There are many ideas that really require some sort of ICT knowledge. I can market my paintings even online and sell to people who stay far from Joza, making more profits and reaching other markets (Co-researcher 1006).</i>
ICT education	<i>The training was well presented and organised (Co-researcher 1020)</i>
ICT knowledge practices	<i>If we were given chance to continue using ICT resources at Nombulelo Secondary school, I could spend most of my time there trying different ideas with other friends. Currently, I am not working or studying, the resources in their computer lab are certainly enough that I can use to develop more ICT skills and knowledge – or even</i>

	<i>study online with colleges. Thank you for accepting me to participate in your training (Co-researcher1017)</i>
Reflective reflection	<i>I really appreciate the ICT skills and knowledge acquired from the training. But I suggest that you organise another ICT training for youths only such that we can also be free to share our ideas without being intimidated by presence of elder? Teachers have more opportunities of using the resources, they should not be included in such training (Co-researcher 1044)</i>
Passion	<i>Maybe you can also ask Rhodes University to donate more ICT resources to my school Ntsika secondary school. We can refurbish one of the rooms to be an ICT lab for communities (Co-researcher 1043).</i>

In verbalizing these reflective experiences, the co-researchers show that they responded positively to the ICT training and are using the knowledge and skills acquired to construct their own experiences. In all these comments, the co-researchers have responded to social aspects presented by the ICT training (ICT education). The ICT training has given these co-researchers a practical environment that features within their communities, that allows them to use their assumptions in reflective ways and that supports them to enact the ICT education practices in personal contexts. The knowledge gained by co-researchers was inspired by the practices and emerging themes, but was not essentially the same as the meaning of current ICT education in rural schools. The current ICT education practices became more irrelevant only when the co-researchers found the content more than merely something they did not agree with or were not interested in i.e when they critically reflected on the practices involved in current ICT education and found that they are unacceptable. Thus, they critically found the meanings of ICT education were impractical and to be at odds with their aspirations.

ICT education is often associated with ICT4D discourse and Krauss (2013) notes that “the central concern in most ICT4D discourse is the need to critique the assumptions about ICT and what ICT can do in developing situations” (p11). This compels “the researchers to take a position of inquiry where they can question the underlying assumptions, expectations, motives, beliefs and values that drive the ICT4D artefacts,

including those that developing communities have among themselves” (p11). In response to the nature of ICT4D explained by Krauss (2013), the co-researchers confirmed values and attitudes which were presented during the ICT training and other contexts that conflicted with their deep beliefs and loyalties. To Eickelmann and Vennemann (2017), ICT education continues to remain somewhat peripheral to the majority of learners. For, in particular in developing countries, it is considered as nurturing knowledge experiences in which attitudes and values are presented in conflict with deeply rooted beliefs and the loyalties of learners. There is evidence in the following comments made by the co-researchers associated with their participation in ICT education or presence of ICT in rural schools. See comments below:

Also, you noticed some of us were failing to contribute more in the classroom, it is because some of the people participating in the training are elders in our community and we respect them. I doubt if some of the comments made by the teachers (participants) during the training were representing learners' views (Co-researcher 1041).

It is worrisome that the company that donated the computers we are using did not consider to train teachers here. The Principal decided to lock the computer lab and keep the keys and no one was allowed to use the lab. After attending your training, we forced him to let us to use the resources, it cannot be left locked despite him not being interested to attend the training. We chose Madam Asiviwe (pseudonym) as our coordinator for ICT activities (Co-researcher 1016).

I am absolutely disappointed that during the time I was in secondary school, there was no ICT educator, instead the Deputy Principal decided to outsource the computer training from one ICT trainer in Grahamstown, at R80 each learner to attend a two days training. I could not afford to pay such amount of money and I was not allowed to attend the training. I lost interest in computers and participating in ICT club at our school. I wish you could help my former school with your free training or I can partner with you to train learners (Co-researcher 1035).

The comments expressed by the co-researchers indicate emotional responses as shown in the words used to describe the meaning they were making such as *absolutely*

disappointed, lost interest, him not interested, I doubt if some of the comments. The co-researchers were reacting to the presence of ICT in their communities. Such expression is one way of showing the *conflicts* and *emotions* stirred up in experiencing the contextual use of ICT knowledge. My observation from the co-researchers comments and experiences is that they are critiquing the practices of ICT in their communities and schools. To this extent, it can be said that the socially informed ICT education (ICT training) has prepared the practices for social as well as developmental realities.

Although the research attempted to give power equally to co-researchers' comments, language was noted as a subtheme that hindered co-researchers in discovering self and various forms of being from the values and standards of ICT education. Consider excerpts from Co-researchers 1019 and 1011:

You informed us last week that there are different examples of writing curriculum vitae on internet. I tried to search with my colleagues but we failed to find the information (Co-researcher 1019).

It is unfortunate for us that there is no translation for isiXhosa for information on these computers. I found there are other languages such as French, Spanish and Germany on computers. Why is there no isiXhosa language? (Co-researcher1019).

The co-researchers recognised the *power* of the ICTs and ICT education practices as failing to represent the communities through the isiXhosa language that forms their identity. Although English is the language of business among the formal and some informal corporate sectors in South Africa, for a vast majority of the population, primarily from rural areas, English remains a foreign language. While most ICTs today have multi-lingual interfaces, the default language available in South Africa is English. Very few, even among the educated elite, are aware of the existence of the multi-lingual abilities of the ICT.

Gudmundsdottir (2010) argues in his paper titled "*When does ICT support education in South Africa?*" that English is the dominant language of instruction across all formal schools, hampering the learning process of students who have other South African languages as their first-language. Computer programmes are also presented in English,

making it difficult for the instructor to explain the subject to the students properly. Since the learners speak and understand more non-English (Afrikaans or isiXhosa in this study) languages, the teacher needs to put in the extra effort to translate into either one of the local languages or simplify the English, necessitating greater knowledge and training on the part of the teacher himself.

Similarly, Escobar (1995) and Krauss (2013) highlighted the issue of subjectivity of rural people - where entire populations believe in and aspire to the values of the West. Their particular concern was on how language is used to suppress dissent. They concluded that ICTs used in social development are strongly driven by knowledge of English. For many rural communities, English is the language of their coloniser that became the language of the powerful in the post-colonial era. The “English language retains its power and dominates over all local and native languages in most developing countries” (Reddy *et al*, 2017 p13). The co-researchers therefore prioritised the native aspect of their identity and adopted their roles or aspirations to interact with ICTs, despite the absence of ethnic language.

6.4.4 The Community expectations in ICT education

The most striking aspect of the comments from the co-researchers was the use of the personal pronouns such as *I* and *me*. Likewise, they persistently addressed ICT education as if it was a person (human being) through the use of the words *your* and *you* as evidenced in the following examples:

Thank you for allowing me participate in your training (Co-researcher 1017)

It is helping me to think properly and to critique things I took for granted in my community. I am interested to start a tailoring business (Co-researcher 1011).

It was wrong for you to give us access to computer lab, something we really enjoyed then refuse us to access the lab after complete the training (Co-researcher 1004).

The co-researchers show that they have personified the ICT education and their explanations represent a conversation between ICT education practices and co-

researchers, as they disclose their expectations of the ICT education (**See more in Table 5.7**).

Table 5.7: Excerpt Showing Co-researcher Expectations of ICT Education.

Certainty	<i>It is unfortunate for us that there is no translation for isiXhosa for information on these computers (Co-researcher 1019)</i>
Organisation attitudes	<i>I really appreciate the ICT skills and knowledge gained from the training (Co-researcher 1044). The training is mostly concerned with what we suggest to learn rather than what you want. I think that was good idea since most us we are searching for various job and business opportunities. (Co-researcher 1011).</i>
Willingness to critique issues	<i>I found there are other languages such as French, Spanish and Germany on computers. Why is there no isiXhosa language? (Co-researcher 1019). It is good idea to open the computer lab. Could it be possible to give us access to these ICT resources in the afternoon? (Co-researcher 1021). It was wrong for you to give us access to computer lab at Ukhanyo school, something we really enjoyed then refuse us to access the lab after complete the training (Co-researcher 1004).</i>
Eager to take on new ideas	<i>Is there something we can do as a community to initiate such a programme? What are the things we need to do? The other group you are teaching will also be upset to know that the programme will end soon (Co-researcher 1005).</i>
Dimension and possibilities	<i>I wish you could help my former school with your free training or I can work with you to train learners (co-researcher 1035). I was chosen to be the in charge of these laptops. Our school has also managed to register with SA-SAMS (South Africa- School Administration and Management System). I am so happy that my ICT skills and knowledge are appreciated at my school (Co-researcher 1009). The training was really fantastic. I really enjoyed the discussions and ideas that were presented (it's sad the training was planned for two days a week). What about giving us ICT books or resources to use after participating in your training? (Co-researcher 1039).</i>

	<p><i>It would have been so nice if you could have considered to give us computer or tablets after complete the training; we are really in need of using ICT in our community. It was wrong for you to give us access to computer lab at Ukhanyo school, something we really enjoyed then refuse us to access the lab after complete the training (Co-researcher 1004).</i></p>
<p>Social emphasis on the role of ICT education and ICT experience</p>	<p><i>Please do not stop responding to our emails and calls, sometimes we want call to seek some guidance and help in using various ICT in our community. I wish there was a chance to have another refresher ICT training may be next year if you can manage (Co-researcher 1033).</i></p> <p><i>I believe many people in communities here don't understand the importance of accessing and using ICT in our daily lives. Most people fail to connect with others and share valuable information – it is really hard. The computer skills are so important. However, the government has little concern into helping schools here to have necessary ICT resources. People are disappointed that you cannot continue your programme and this has been a concern for most people here since they started attending your trainings (Co-researcher 1005).</i></p> <p><i>During all these years I never had any thought that I can contribute something to my community. Now am able to help others on how to use various ICT available in our community. I enjoy spending time at the community library – and also helping young members when they want access resources on computers there. It would have been so nice if you could have considered to give us computer or tablets after complete the training. We are really in need of using ICT in our community. (Co-researcher 1004).</i></p> <p><i>There are many ideas that really require some sort of ICT knowledge. I market my paintings even online and sale to people who stay far from Joza to make more profits and reach other markets (Co-researcher 1006).</i></p>

In describing their expectations, co-researchers were also attributing roles to ICT education. For instance, they projected that the ICT education would fulfil or not be able

to fulfil or surpass their expectations, provide access to contextualized information (co-researcher 1019; 1011), reflect on their concerns (Co-researcher 1004), easily access and use ICTs (Co-researcher 1005, 1009) and support their perceptions or assumptions (Co-researcher 1006). Equally the comments show that when ICT education provided knowledge, ideas and skills relevant to their expectations, co-researchers felt a sense of belonging (Co-researchers 1044; 1009), became engaged with the ICT education (Co-researchers 1006; 1033) and had relevant experiences (Co-researchers 1035;1039;1004). Consequently, some co-researchers felt disappointed when practices of ICT education did not meet their expectations (Co-researcher 1019) and failed to provide a sense of belonging (Co-researcher 1041).

You informed us last week that there are different examples of writing curriculum vitae on internet. I tried to search with my colleagues but we failed to find the information (Co-researcher 1019).

Also, you noticed some of us were failing to contribute more in the classroom, it is because some of the people participating in the training are elders in our community and we respect them.I doubt if some of the comments made by the teachers (participants) during the training were representing learners' views (Co-researcher 1041).

In the training it would be better if you taught us what you planned. It is confusing when you teach us things that members want to learn. Teach us whatever you plan first, if time allows you will cover other areas later. You are educated than us – we believe you know better things that will help us in the future (Co-researcher 1019).

All these co-researchers' comments, undesirable or desirable, are the result of knowledge and skills they acquired through ICT education (ICT training). The co-researchers reflected on their current experiences of ICT education and on their prior knowledge of ICT. This supported them in developing knowledge that is related to the *personal* and *social experiences* encountered in their communities.

The comments in section 6.4.4 and 6.4.5 conclude that personal (represent the personal identity) and social experiences were foundational impacts that helped make ICT

relevance in the eyes of the co-researchers. As such, we can draw these two notions as themes that emerged from the comments.

6.5 Conception of ICT Education as Social Reality

This section addresses the significant and more common components of ICT education experiences identified by the co-researchers. Throughout the analysis process of induction, reflection and refinement (see section 8.2.7), a range of social aspects emerged based on co-researchers' descriptions of ICT education experiences that helped to unpack how the experience of using ICTs in their personal context came to be what it is.

Although there is ample evidence that the socially informed ICT education provided a realistic aspect, co-researchers do not accept some ideas prescribed in this study. In fact, they participated actively within the research activities by choosing what they felt was appropriate or rejected ICT education practices that positioned dominant ideologies. The personal roles in their communities gave them a connection between their behaviours, perspective and social circumstances in which they found themselves. The roles they construct take into account prior ICT experiences, for instance, attending formal ICT training as a subject during secondary schooling or informal access and use of ICTs in their communities, and provided a scope through which subsequent experiences are assessed. I have listed some of the possibilities and social roles played by some co-researchers as evidenced in the following examples:

Table 5.8: Contextual Roles Connected ICT Education

A person involved in baking business	<i>Yes. I am connected to many people using different forums available online. I couldn't manage to market my business in our area before, now I learn a lot from others who are also running the same business of baking as mine in our community and outside (Co-researcher 1031)</i>
Artist	<i>There are many ideas that really require some sort of ICT knowledge. I market my paintings even online and sale to people who stay far from Joza and reach other markets (Co-researcher 1006).</i>

Clothes Designer	<i>It is helping me to think properly and to understand things I took for granted in my community. I am interested to start a tailoring business (Co-researcher 1011).</i>
Secondary school teacher	<i>I was chosen to be the in charge of these laptops. Our school has also managed to register with SA-SAMS (South African School Administration and Management System). I am so happy that my ICT skills and knowledge are appreciated at my school (Co-researcher 1009).</i>
Unemployed community member/ Volunteer	<i>Now am able to help others on how to use various ICT available in our community. I enjoy spending time at the community library – and helping young members when they want access resources on computers there (Co-researcher 1004).</i>
Secondary school leaver	<i>Currently I am not working or studying; the resources in their computer lab are certainly enough that I can use to develop more ICT skills and knowledge – or even study online with colleges. Thank you for allowing me to attend your training (Co-researcher 1017)</i>

The comments above show how co-researchers are able to construct roles for themselves which preserve or improve their abilities and reaffirm *their identity* in terms of their skills, perceptions, knowledge and expectations. Moreover, writing the comments in reflective journals and responses to interview questions, co-researchers are enacting their role of transforming ICT education practices in rural secondary schools. They are attaching relevant meanings to ICT and ICT education through their own connection with or through practical experiences, their attitudes, their culture, their values, their ideals and frame of interpretation used in communities. The reflective experience becomes part of the ability to realise developmental needs and realities in their communities.

The roles served as a framework within which the co-researchers could prioritise *their identity*, connect what they know, believe, perceive, their *social situations* and make it relevant at the same time. When they found a clear connection between their identity

and emerging ideas, their comments were constructive. The co-researchers' comments have indicated that a key influence on how they could make relevance of ICT education was their self-identity. This confirms the claim made by Rise et al (2010), that "self-identity is the perspective one takes of oneself, implying that one incorporates the meanings and expectations associated with a relevant categorization into the self, thus forming a set of identity standards that guide identity-relevant behaviours" (p1087). Co-researchers seek out the practices presented by ICT education to affirm their *self-identity*, and they expect the access and use of ICTs to support their abilities.

The co-researchers who responded with reflective comments are self-consciously creating relevance in relation to themselves. Their ICT knowledge is experiential and self-referential such that it is constructed through their values and beliefs which form their individual social identities (Luhmann, 2017). Their expectations and interpretations could be perceived as rooted in meaning, and perceptions of rural schools, but they have a reflective view of what is relevant and appropriate in ICT education. Their comments are evidence of the emancipation aspect of ICT education, particularly what Foucault (1988) refers to as *technologies of self*. In the ICT education provided through this study, the essential aspect is on replacing the dominant ideologies with learner attention and actions (Dean, 2010). In this notion, the learners are being shaped by socially informed ICT knowledge that produces responsibilities and actions preferred to empower their communities.

The learners are given freedom to respond to the empowerment that works in their best interest. Foucault (1988) argues that the concept of institutions such as rural secondary schools implies the dominance of *disciplinary power* over the learners and their communities. He believes that while schools are seen to fulfil their social purposes of empowering students with relevant knowledge, they also carry out broad, sometimes less obvious, ideological and political functions. He argues that learners are correctively rehabilitated to adopt particular knowledge and behaviours. He says that this *disciplinary power* is a consequence of rendering learners to become subjects of dominant ideas in a discontinuous way. The learners in this aspect are exposed to wider social issues that have ideologies and practices that do not allow learners to contest. However, in this study the co-researchers are active in making ICT education relevant to

their community and have made a variety of reflective responses that reveal the complexity of reality not acknowledged by Foucault.

6.6 The Prevailing view as it stands

In this chapter, I have attempted to demonstrate how the themes for understanding the phenomena investigated in this study emerged. In summary table 5.9 I list other preliminary themes that emerged from the participants' comments and meanings.

Table 5.9: Emerging Themes

Theme	Association
Power	<i>Transformation, control, influence, language, expectation, critique, critical reflect</i>
Social experience	<i>Values, attitude, emotions, transformational experience, reflective reflection, passion, personified, contextual experience</i>
Identity	<i>Personal expectations, beliefs, language, values, transformed knowledge of ICT, transformed human experiences</i>

This is revealed through research activities, processes and responses noted by the co-researchers. The textual excerpts presented provide a critical view of the different forms ICT education experiences may take in both learners and rural communities. Individual, varying in context, activity and location, provide the results that describe what happened for the participants, the situation, the conditions and the activities and thoughts engendered by the experience of ICT education. The comments show that current ICT education in rural secondary schools is dominated by ideological educational policies and practices. The education practices embody all these policies and ideologies, though the co-researchers (learners) took up their roles to make sense of ICT education in rural schools.

The reflective comments and actions from co-researchers contest the notion of passive ICT knowledge and show the ideological power associated with the ICT educational influences, but does not control co-researchers in building their own appropriate knowledge and skills from ICT education. Although there was diversity in the co-researchers experiencing relevance of ICT education practices, there were also elements common to the co-researchers that make the experience what it is. The co-researchers

were more active in constructing reflective retorts in which the emerged themes revealed how co-researchers *identify* themselves, how practices of ICT education adopted depended on their personal or social *identity*, and how they perceive the relevance of ICT education in their community *social experience* (practices).

The relevance of ICT education is revealed by participation in its practices, in which group and individual identities are prioritised. It is also revealed that where there is imbalance between the ideals and values of the learners and those of rural secondary schools, there is a fight against the dominant power of education practices whereby learners *accept, reject* or *negotiate* with a rural school's meaning of ICT education. Likewise, where there is connection between the learner's values of ICT education and rural school meaning of ICT education, there is an opportunity for the learner to have reflective social and developmental experiences both within and outside the community established by ICT education practices.

The results have provided a new way of examining the empirical that supports the connection between the social, individual and potential facets of ICT education which have also been identified by other researchers. In addition, the results offer the important element of the hidden *power* of ICT education, which has been less well presented by other models (refer to the discussion in chapter 7). While the ICT education experiences supported the intent of this research, there is also a need to consider the implication of the results presented. To do this, in the following Chapter 6, I intend to discuss and expand on the themes identified, and begin to construct a descriptive theoretical framework in relation to objectives for this study.

6.7 Summary

In summary this chapter has provided responses that represent an individual experience and in some cases group experience. The data provides an understanding of the experiences of the phenomenon of the ICT education as they occur in and outside the classroom, of learners and in different conditions. By using the proposed methodology (refer to section 5.2), meaning of the experience for each individual is located in the experience and is presented not just as a conscious understanding. As Foucault (1972) has noted, discovering knowledge only ever means a certain mode of

approach, and an exhaustive coverage of all domains of inquiry (p66). Thus, the process of critical investigation in this study requires examining what happened from a practical and sensory perspective and to explore the thoughts, memories and events that are evoked.

To extend the results presented in this chapter, the next chapter involves discussing how the experiences evolved to develop a theoretical framework. In effect, the next chapter demonstrates how the themes identified are crucial in the transformation of ICT education. While the participants responses reported in this chapter revealed that the practices in ICT education develop experiences for learners in multiple environments (in schools and communities) and evoke aspects of, for instance identity, social experiences, the following Chapter 7, extends this exploration to reflect on how these themes were [can be] lived in ICT education experiences. Thus, Chapter 7 shifts from the explicit and objective of the experience to examine the reflective and reflexive elements of ICT education in rural schools.

Chapter 7: The Development of a Theoretical Framework of Transformative ICT Education

This chapter continues the examination of the experiences of ICT education, reporting on the core essences that draw the diversity of the individual to a shared understanding of the elements which were common to all. In this chapter the parts of results previously discussed in Chapter 6 are brought together into a whole and the essence of ICT education is presented. Here preliminary elements of transformative ICT education experiences are identified and a theoretical framework is developed.

7.1 Introduction

This chapter intends to present the development of mid-range descriptive theory derived from the research results presented in Chapter 6. The descriptive theory is associated with the process of describing the common threads that are found in disconnected events of the phenomenon, according to Smith and Liehr (2013). Through this theory, assumptions about the emerged results are revealed. In essence, the theory is developed here to further explain why this particular critical research took this shape because the themes form the intellectual foundation of the study, intellectual knowledge discovered. As a result, these concepts say as much about the co-researchers as they do about phenomena being studied.

The research data used in this study consisted of comments from narratives presented in reflective journals, in-depth interviews and events that took place in and outside CAL seminars. The co-researchers took the opportunity to reflect on what they experienced from ICT education (ICT training) and their personal context of using ICTs. The co-researchers personified their experiences to show the importance of ICT knowledge and skills in their daily living and communities. Many of the narratives in reflective journals and responses during the interviews, though evidently about ICT education, reflected the interpretive communities, the values and ideals of the individuals and the knowledge constructed. These aspects supported this research to describe a series of experiences in which the ideals, values and knowledge that socially informed ICT education presented were critically contested against the co-researchers held experiences. The knowledge, values and ideals are what frame the identities of co-researchers, in responding to ICT education practices. The co-researchers draw on these resources, embrace capabilities and engross those conditions of their identities which are evoked by ICT education. The co-researcher's *identities* and *social experiences* are the two core factors in creating the reflective relevance for ICT education and its practices.

The access to and use of ICT has been described as a modern means of empowering developing communities in research conducted by Leong et al (2015), Dasuki et al (2014), Heeks (2010), Gigler (2004,), Chapman and Slaymaker (2002). The co-

researchers realised the *power* of ICTs, when they established their expectations of ICT education and construed the knowledge boundaries which they determined it should cover to inform rural community practices, social needs, and social development. On the contrary, the power enhanced by rural secondary schools and the curriculum content gives irrelevant meaning to ICT education and to the practices, such that the developmental view of ICT education becomes common and is taken for granted. Co-researchers created relevant meanings of ICT in a series of personal and social encounters. Moreover, the relevant meanings were experienced through the power that they earn when interacting with different forms of ICT, as they were using their knowledge of ICT, and their own power and identities. *Power* is also an additional core factor in recognizing the relevance of ICT education and its practices.

Power, social experiences and co-researcher identity are the noticeable features to emerge from the results presented in Chapter 6. The co-researchers who participated in this study considered ICT as an important aspect to most individuals in the rural community. The co-researchers acknowledged the power of ICT, as well as the imposed ICT education in rural secondary schools, and created their own opportunities and roles as they participated in the ICT education (ICT training). The co-researchers actively engaged with the ICT, knowledge and skills, tried out and used their roles to make the relevance of ICT education by not accepting passive practices devised by the agenda of current ICT education practices in rural secondary schools.

As outlined in Chapter 6, the research process in this study allows the participants to not only describe what was experienced but also explore the underlying essence that created the experience. Embedded in the individual experience, the focus in this chapter is on understanding the transformative experiencing of ICT education, the participants' objective meanings of ICT education, and the hidden knowledge of the practices and meaning of ICT education in the lives of people living in rural communities. Therefore, based on the results presented in Chapter 6, both intuitive and academic reflections will be engaged in this chapter to allow the descriptive theory to be derived and more remains to be learned. The sections in this chapter therefore strive to critically understand how the human experience of ICT education is lived. The first section represents not only what was said, but what was implied, what was felt and lived by the

participants. The chapter ends with demonstrating the relationship between the themes identified in Chapter 6 and how they inform the theoretical framework as experiences shared by the participants.

7.2 Theory Building and the Concept of Theorizing

The interpretation of *theory building* and *theorizing* is necessary in this thesis since the two terms are difficult to define and researchers tend to use them differently. In this study, I adopted the definition of theorizing by Bacharach (1989) as “a statement of relations among concepts within a set of boundary assumptions and constraints” (p496). In theorizing “a set of well-developed categories (e.g. themes, concepts) are systematically inter-related through statements of relationships to form a theoretical framework that explains some phenomenon” according to Strauss and Corbin (1998, p22). Theory building in turn is defined as “the process through which researchers seek to make sense of the observable world by conceptualizing, categorizing and ordering relationships among observed elements” (Andersen and Kragh, 2010 p50).

Using the critical theory of power and knowledge (Foucault, 1972) as a sense making base, a series of multi relational propositions were developed to understand the hidden power of ICT education that conditions human experience. The induction of the theory in this study began with establishing prominent themes from the results and expanding on these with competing interpretations. The last step is to construct the relationship between these components into a descriptive theory. The propositions will be logically set and tested with sample empirical data to demonstrate its validity (refer to Chapter 8). Moreover, this theory aims to provide the “shared and socially constructed knowledge foundation that endures, even when the elements that are momentarily used are replaced with new ones” (Lee, 2004, p9).

The two theoretical frameworks presented in Chapter 4, **Table 4.1** and **Figure 4.1** guided the process of collecting data and developing the proposed method of analysing the empirical data presented (refer to section 5.2). The intention was to explore these theoretical frameworks in a community based critical IS research. During the process of data analysis this study was searching for confirmations and inconsistencies between the theoretical frameworks and the empirical data, and these were resolved with co-

researcher's interpretation of frequent patterns that emerged from the data. Consequently, literature in information systems shows that such research data interpretations are referred to as *theoretical abstraction* (Klein and Myers, 1999) and *analytical generalisation* (Yin, 1994). The induction of this study with theory provided an alternative understanding of the empirical in which variables correlate to each other (Creswell, 2008). In this study, rather than describing the variances that exist between variables in empirical data, the theoretical abstraction is adopted to interpret consistencies that co-researchers experienced in their communities. This is a fundamental approach in information systems research that seeks to "generalize its objectives within the setting observed and to provide propositions that explain what the researcher would acknowledge to be distinctive events in unique circumstances." (Kvasny, 2003 p211).

The theoretical induction in this study does not involve any variables or explanations that are external to the empirical examined. As such, Sutton and Staw (2005) recommended that this study should focus on developing theoretical arguments that critically examine and extend knowledge about the empirical rather than to justify if building the theory is an important goal of my research. The discussions presented in this chapter cannot be divorced from analysing the empirical, though there are more opportunities to further understand the phenomenon investigated in this study. Thus, by critically cross examining the individual experiences and in accordance with principles of conducting critical research, I will be able to draw the universal character of the empirical as well as synthesise its meaning and essence.

I turn now to show the relevance of the identified key factors in exploring the realities of experiencing ICT education and at the same time, initiate the development of a hypothesis for theorising the social conception of ICT education practices.

7.2 .1 Reflecting on Power and Identity

The meaning of concepts such as self, community and *identity* are loose and figurative. As figurative as they are, these concepts in general are not precisely static but continuously change and grow through context and time (Mercer and Williams, 2014). According to Sarber (2015) "as people immerse themselves within a society, a culture,

or a social group, they begin to construct ideologies and meanings that help them to define their own self-identity. Because people often belong to multiple groups, this identity is complex, and embedded in the many beliefs, preferences, and practices a person undertakes” (p5). In understanding the identity of people, Geertz (2000) asserts that identity “has doubtless of late been much abused, pressed into the service of one cause or another, one theory or another, one excuse or another. But that in itself attests to the fact that something rather general is happening to the ways in which people think about who they are, who others are, how they wish to be portrayed, named, understood and placed by the world” (p49).

The demonstration of self-identity in IS and education research has become less of the researcher element, and more for participants, and even a political one. In his research entitled: *Ethical ICT research practice for community engagement in rural South Africa*, Krauss (2013) emphasises the importance of understanding the values that form identity of people in critical IS research. He asserts that identity of people in rural communities entails knowledge of social, cultural and values that motivate them to participate in change and create opportunities in their society. He further suggests that “if a person’s identity lies where he belongs, belonging is what he is going to value and protect as well” (p124). This means that creating a sense of belonging should therefore also be an intricate part of engaging research that involves ICT in rural communities. While identity is an important element in this study, Krauss (2013) acknowledges that individuals within a social grouping have the power to manipulate their own or their social identity. Thus, those outside the social grouping should not consider their official definitions as adequate.

I have quoted the definitions and findings from other researchers on identity to emphasise the multiplicity of human identities including that of the co-researchers who are equally diverse in their interpretations of ICT education and interpretive frames. It is not all of their commitments that are equally vigorous and in certain situations identity will take precedence to influence people to make sense of participating in or taking an action. On the other hand, the results in Chapter 6 show that the interpretive frame used by individuals plays a crucial role in the process of creating meaning. The interpretive frame affects the structure of social identities while individuals influence

the behaviour of social identities. In other words, individuals utilise their social influences to construct the 'self' and project that sense of self back into the society (Sarber, 2015). Individuals create self-identities within their communities using the accepted practices and values within these communities. Such a process acts in a reciprocal way, whereby the individual creates a sense of self-identity using legitimized community practices and the individual plays a self-identity role within the structure of the community that she or he identifies with.

Although the co-researchers varied in their ability to construct their own knowledge through participating in practices involved in the classroom, they perceived themselves aligned within the intentions of socially informed ICT education, comprehended their role within, and understood that their knowledge contributed to individual identity. The relevance of ICT education will affect how an individual perceives ICT or the use of ICT in social development, while attitudes that the individual experienced will support him to build both collective and individual identity. The participation in ICT education can be realized as a shared practice whereby both collective and individual identities are continuously negotiated, with respect to their status (role) within the community.

The process of understanding the relevant and appropriate meaning of ICT presented by some of the co-researchers indicates notions of power involved in the affirming of identity that influence the practices in ICT education. As I have also discussed, and argued in Chapters 3 and 4, rural secondary schools are institutes of dominant *power* which reproduce that power within ICT education practices. The education practices engaged within rural secondary schools have been revealed to be of a political influence. This proposes that the relationship between the two themes '*power and identity*' has a profound effect on learner's ways of understanding the relevance of ICT knowledge and skills, and their attitudes towards ICT education practices reflect their relationships with the predominant power groups within the society.

7.2.2 Reflecting on Social Realities Embedded in ICT

The notion of relating ICT education with the social experiences which I introduced in Chapter 5 and other sections of this chapter, has been researched by Kendricks (1999), as well as social ICT researchers like Croon (2006) and Deuze (2006). This aspect

suggests a move away from the usability, functionality and other notions that fail to grasp the way in which people relate ICTs to their life experiences. At the utmost, it explains how ways of being should be reflected or related to ICT that focuses on social development.

Kendricks (1996), employed a critical approach in his study of *Virtual Realities and Their Discontents* to analyse the end products that are associated with social experiences and the application of ICT in a developing society. He treated the products of applying ICT in a society as elements that cause people to become disturbed and anxious, often because our understanding of others and ourselves is a continuous target for improvement and change. In as much as ICT is always vital for people to understand their social environment, Kendricks (1996) points out the importance of being sensitive to the “*technological real*”. He explains that:

“to understand the ‘technological real’ is to recognize that subjectivity is always in the process of being reconstructed [...] any sense of a pre-technological reality or a reality distinct from or prior to technological intervention can be only imaginary. The technological real, therefore, describes the inextricability of identity and technology” (p144).

Kendricks (1996) attributed the dominant discourses that shape the social experiential aspect of ICT in developing communities as responsible for establishing political power. This political power exists behind the process of applying ICTs and at the same time exploits and denies the important reciprocal relationship between ICT and subjectivity. Such absurdity is problematic since it forces people not to appreciate the social effect of ICT as well as making them believe that they are restricted in terms of experiencing whatever they need. Thus, the effect of ICT in communities has moved from the empowerment of individuals to the creation of uniform subjects.

Croon (2006) argues in her research entitled “Being with Information Technology: Critical explorations beyond use and design” that:

“subjectivity at the same time is oppressed, it is exploited to breed the desire of forming a part of reality by being distinct from the technology that conditions our experiences, suggesting humans to be superior and allowing them to consider themselves as selves

opposed to or distinct from the digital materials of life worlds” (p201). At the same time as information technology contributes to dissolve the uniform subject it offers, other non-existent uniform subject emerges in various experiential applications. This “places information technology at present, in a very awkward situation and in constant denial of the consistent subject that paradoxically is claimed to be both assumed and re-created” (p201). In this perspective, the notion of ICT conveys a critical reason for the need of a new responsiveness, both on how ICT and human experiences should be addressed in order to envision the reflexive character of ICT within a developing context.

Similarly, Foucault (2000), Flyvbjerg (1998) and Deuze (2006) further developed the concept of truth (reality) in society and argue that at particular times in our societies, there are acceptable ways of being, ways of doing and acceptable practices. The ways of doing and being form some beliefs, ideals and values of the society and are formed as practices for identifying the individuals within that society. These practices set the limits and allow only certain discourses to be accessible to individuals, as they conform to the values of that particular society (Flyvbjerg, 1998). Sharing of social experiences depends in particular on social relations that render them acceptable, believable and intelligible, according to Deuze (2006).

I have described in Chapter 6, how co-researchers reorganized their role in response to the dominant ideologies of ICT education by using their identities as resources. The notion of the social experience in ICT education indicates that co-researchers construct roles from aspects of their identity as well as establishing their identity in and through these roles in the process of making ICT education relevant. This confirms Deuze’s (2006) theoretical concept of *emerging digital culture* that demonstrates manifold ways in which people and ICT interact in society. He argues that emerging digital culture does not signify that everyone in the society will be online sooner or later rather that the important aspect which is on the manner in which people attach meaning to their lives through access to different forms of ICT. The interaction between people and ICT has effects on shared social levels both offline and online, according to Deuze (2006, p66). He went further to define the three principle elements of digital culture. The first is *Participation*, which concedes the active involvement of people and ICT in the process of

meaning making, secondly *Remediation* that directs people to efficient ways of adoption, manipulation, modification and to resolve ethical ways of relating human experiences with ICT. The third is *Bricolage* which refers to the assembly of our own reflexive version of social reality/experience that has opportunities, possibilities, resources and caring about events.

As such Deuze (2006) and Foucault (2000) note that things that constitute the modern society such as ICT, norms and culture, rules, power and knowledge relations construct our view of a particular version of social reality. According to Foucault (1984), people hold the reality, what they perceive is the truth, and they must approach such truth with critical thoughts. Foucault argues further that the social reality is so complex such that “it puts an individual as a master and puppet at same time in a game with constantly changing rules, and only by being aware of the forces of society can the individual have options to act” (van de Ven, 2012, p14). Therefore, social realities reflected in current ICT education in rural secondary schools, are constituted by practices that deprive learners of a sense of meaning, a sense of fulfilment and a sense of belonging. The curriculum contents are structured, interpreted and controlled by the education authorities that force rural secondary schools to use and make particular dominant meaning of ICT. ICT education can therefore be portrayed as the reproductive means of power, through its practices that shape learners with passive knowledge and skills. Learners, as subjects in this aspect, behave as if they are constantly being watched and conform to particular standards of knowledge and skills of ICT. These acts are done to enforce self-regulation, self-control and discipline upon the learners, according to Foucault (1977, p22).

7.2.3 Reflecting on ICT Education within a Social Community

In Chapter 6, I discussed in detail many responses made by the co-researchers, the way they defined the arrangement of socially informed ICT education and current ICT education practices. The notion of ICT is associated with social living in which people in the various societies are dominated by presence and use of different forms of ICTs on a daily basis. In the same way in rural secondary schools, teachers create opportunities for learners to have access and use ICTs available in the computer lab. Many of these ICT devices and ICT laboratories are donated to schools by donors as part of supporting

social development in rural communities and there is always a power struggle for ownership and control.

The challenge for rural secondary schools is to respect the meaning of ICT education in learners' social sense and experiences, while using the ICTs available in schools as tools for social development. The educational institution of a rural secondary school has legitimacy, power and authority conferred upon it, which co-researchers acknowledge. Teachers, principally the ICT teachers, wield that power by presenting the ICT curriculum content that represents ICT knowledge and skills as not being equal to important spheres that affect learners' life aspirations. The schools have tried to introduce ICT education to all learners, such that all learners can have the chance of experiencing ICT. The introduction of ICT education is a means of showing education developments taking place in rural schools as well as representing a part of social development in rural communities (**See Figure 5.2**).

In the ICT lab, the ICT resources are placed in rows and connected to the internet which is paid monthly, and is regularly available. Each set of computers available is secured to avoid theft or damage by students or users from the community. The computers are set in rows to allow a number of learners to use one set per time, while observing the stipulated rules of conduct within an ICT classroom (**See Figure 7.1, 7.2 and Appendix L**). The learners access the ICT lab only during the time they are attending CAT subject and are required to participate in all classroom activities. The seats in the ICT lab are placed in a position that enables the teacher to watch over all the students. As such, the ICT lab is designed to give the teacher full control over the students.

In a social community there should be equal opportunity for all members to freely, emotionally and physically participate in activities or events. In the socially informed ICT education (ICT training) conducted in this study, the co-researchers tried to encourage each other to participate in the classroom activities. The co-researchers were more willing to comment, discuss, and share meanings and ideas as they emerged. Though co-researchers did not show their values, ideals and beliefs in the first few days of training, they had self-desire of ICT knowledge and skills which led them to create contextual meanings of ICT and ICT education related to practices in rural communities.

As learners, these co-researchers were motivated to search for parts within themselves that reflected the curriculum goals set out, at the same time recognising the power that ICT education had within their community and in so doing used this influence to endorse their identity.

As co-researchers were participating in the ICT training, they revealed expectations that are similar to the ones they would expect if they were participating in formal ICT education in rural secondary schools. For instance, they expected that their beliefs and their assumptions would be endorsed and attested so they could feel enriched. This confirms Foucault's (1982) idea that people "know what they do frequently, they know why they do what they do" (p187). The co-researchers participated in the ICT training envisioning that their individual self is part of the knowledge and skills presented.

Most of the activities in the socially informed ICT education are representations of the hidden opportunities or social attributes like digital citizenship or individual aspirations i.e setting up businesses. Co-researchers seek to make these intangible values have some sort of permanence in their lives or society through the use of the internet to share skills or ideas. Co-researchers may internally hold certain aspirations or assumptions associated with a particular concept of ICT, with expectations that they will be allowed to apply these in the classroom. The assumptions and meaning they made of the ICT knowledge, by participating in the classroom activities, also became part of themselves to be used in other experiences or situations.

Proposition: The discussion in this section concludes that co-researchers *experienced* ICT education setting in this study as a learning community in which they participated to make contextual meanings of ICT. The productive *power* of the socially informed ICT education creates *social realities* and assumptions which form part of their anticipated community life.

7.2.4 Reflecting on Self-Empowerment in ICT Education

In Chapter 6 and preceding sections of this Chapter, I described self-identity as a key influence on the co-researchers' process of getting contextual relevance from ICT education. According to Falk et al (2000), "in every realm of activity we seek and make

opportunities to create, express and affirm who we believe ourselves to be - our sense of self" (p61). The results presented in Chapter 6 show that the experiences of individuals in their communities and the knowledge acquired from participating in ICT education is the one that the co-researchers used to transform and reinforce their sense of self-esteem. Moreover, the comments from co-researchers reveal that one of the strongest points that influenced them in making reflective (contextual) meanings was the extent to which they recognised the *legitimacy, power* and *authority* of ICT education practices. The meanings that co-researchers discovered varied according to their interpretive community (refer to Figure 4.1), and the extent to which they are consciously and actively engaged in the use of ICTs and the knowledge of ICT.

The data presented in Chapter 6 also showed that it is through personal *identities*, and social interactions that co-researchers managed to make meaning, ordered and arranged the opportunities they created, inducing them to prioritise some and lessen the importance of others. Through these opportunities, they were able to express their self-identities, their interpretive communities (frames) and the aspect of their identities. The co-researchers felt the need to prioritise these notions in their response to research activities such as in writing reflective journals, in-depth interviews and classroom discussions. Moreover, the identities are organised in different levels of salience. The concept of salience in identities refers to the 'likelihood that individual identities will be activated in other situations' (Stryke and Burke, 2000 p292). Thus, the prominence of an identity influenced the co-researcher to seek out more opportunities that act in terms of that identity. These identities were constituted as part of the *power* that co-researchers used to reveal their aspirations in and out of classroom contexts.

The notion of power is associated with the notion of governmentality that positively governs people's conduct rather than formulating oppressive laws. Foucault (1974) developed the notion of 'governmentality'. Conduct in this study takes on conscious meaning beyond the form of directing and leading. It refers to the conduct *of oneself* whereby co-researchers are governed to develop a sense of self-governance. Foucault (2000) suggested that the rationale of governmentality should attempt to make clear how people or things ought to be governed. Olssen (2016) suggests that governmentality should present to people what is consciously approved by the citizens

(p23). Governmentality does not necessarily intend to change the authority of state where power is presented vertically with bureaucratic structures. According to Peters (2001), the notion of governmentality provides a horizontal approach of understanding the underlying relationships in our society, which constitute the institutions and people. Bevir (2007) stress that the “ultimate concern is how we govern others and ourselves, how a government becomes one for each and all or expressing a concern not only for the population as a whole, but for every individual within the population as well” (p390).

The individual in a society is active often in making his or her own meanings, but within limits as set by social structures or institutions. The governmentality therefore ensures that “people interact and negotiate with themselves within a social situation to produce a response which can be acceptable to others who in turn can negotiate a response” (Fraser, 2004 p140). While critical social researchers and information systems researchers like Sanyal (2014), Dean (1999) and Feinberg (2011) see governmentality as the domination of power that aims to distort the self in individuals, this study sees it as a willing participation of the self in reflective social conditions that renders certain knowledge of the society as real. The individual in this aspect constructs *self-identity* that reflects on the *reality of the society* to which he or she belongs. Governmentality provides the motivation for individuals (learners) to see themselves as being watched by society that expects them to perform as responsible citizens.

The notion of governmentality enables me to articulate the process by which the co-researchers gain contextual ICT knowledge and construct their identity, intentionally or unintentionally in response to participation in ICT training. As co-researchers participate in socially informed ICT education, they make connections to themselves and reflect on the responses to these connections. The knowledge is reworked or worked into their own life experiences, and becomes their identity and formulates ideas that they can share with others in the community. This process of constructing contextual ICT knowledge is socially active as they make sense of what they learn and the events that happen in and outside the classroom through the rejection or affirmation of their identity. The experiences that result from using such knowledge are the *power of the self*. Thus, they develop the ability to reflectively understand their past

experiences, current experiences, perceive future experiences and share their experiences with others in the community.

The paradigm of governmentality resonates with the discussions on the notion of self-reflection or of reflexivity in critical information systems research by critical IS researchers such as Krauss (2013), Schultze and Avital (2011), Cecez-Kecmanovic (2011), Myers and Klein (2011) and Ngwenyama (1999). The reflexive intention of the self involves building capacity for change, transformation and establishing a new basis for praxis in social situations (Čečez-Kecmanović, 2005). A learner can make use of this diversity to create a distinctive self-identity which positively turns experiences from different social settings into an integrated reflective experience. In this process, learners construct their identity by the reflexive ordering of self-experiences.

The learners who are also members of a rural community understand themselves and construct their identity by working on the interpretation of their social experience in a self-constructed ICT knowledge and skills-based environment. This process relates to what Foucault refers to as the “technologies of self”. These are specific practices or technologies that an individual develops after being liberated from imposed authority. Foucault suggests that these technologies permit individuals to see themselves as active subjects responsible for enhancing their own wellbeing (Foucault, 2000). The essential aspect of ‘technologies of self’ is the government that replaces the state interest with human attention and action (Dean, 2010). These technologies of self are still operating within the field of knowledge and power and other distinct numbers of discourses such as the theoretical framework for the Transformative Act of ICT Education proposed in this thesis (see Figure 6.1). Although this framework has authority and potency, co-researchers as learners are actively self-transformative and self-reflexive.

In spite of the fact that the practices and curriculum content of ICT education are formulated in institutions that embody power and knowledge, the responses show that learners can participate, can make socially informed ICT knowledge, can outwit current meanings of ICT education and can reject or accept the meanings either partly or wholly. I have argued in the preceding sections that some of the co-researchers do feel comfortable with practices presented by this research because of their own and

community background. Some of the co-researchers argue that education practices do not represent them and they cannot see themselves identified with the ICTs and ICT education practices in rural schools (**See Appendix M**). In recent years, marginalised communities in rural areas participated in this study have tried to coax the education authorities to provide equal access and relevant education in rural secondary schools (See: <https://mg.co.za/article/2013-03-05-16-eastern-cape-schools-on-lock-down-12-000-pupils-miss-school>). This shows the emotions that the communities express against education practices through identity politics. The phrase identity politics “often emerges from the deeply felt injuries of misrecognition and it is imperative therefore to engage with this experiential substrate in order to understand, and possibly change, individuals’ perceptions of themselves and their oppression” (McNay, 2010 p514).

Although the ‘identity politics’ phrase has various meanings, I have attempted to represent the actions and views of communities who feel they are not represented in education practices, with the result that their social developmental needs and realities have no locus within ICT education. Rural secondary schools have for so long traditionally supported the political voice of education authorities; hence they need to understand that education practices, which offer knowledge and power, are only a small factor in a range of discourses which represent political interest and viewpoints, according to Foucault (1980).

I have argued previously that the process of making contextual ICT knowledge within the ICT education classroom departs from Gagliardone’s (2014) view of ICTs as tools that oppress the self to function in everyday life and reinforces the ‘governmentality’ paradigm in developing communities. In making contextual or socially informed ICT knowledge, the co-researcher is not just revealing her or his own identity but uses identity as a self-foundation to instigate socially embedded actions. The co-researcher participated in ICT education not to represent himself or herself but to act for others present in the classroom and in the community. In cases where the education practices presented an identity that confirms learners or community identity they acknowledge, or else they may reject or feel rejected by the ICT education. The process of making reflective and (contextual) ICT meaning is transformative.

Proposition: the discussion presented in section 7.2.2, 7.2.3 and 7.2.4 show that while participants experienced different moments, they shared related experiences of the *power, identity and social realities*, hence these emerged as themes in this study (See table Figure 6.1).

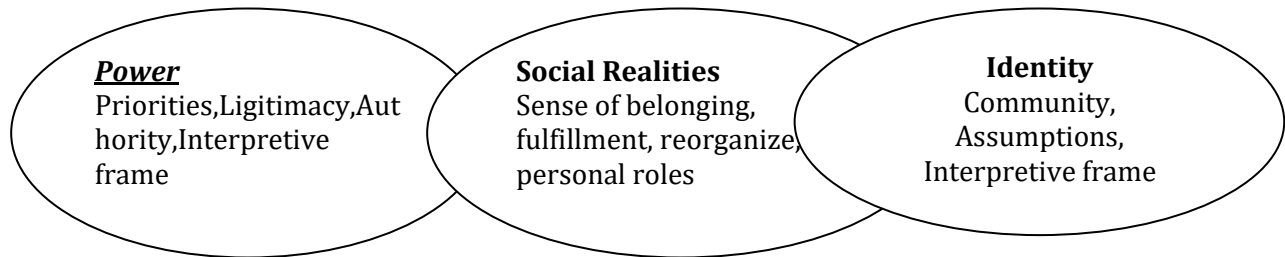


Figure 6.1: Emerged Pattern in Themes

Within this model the pattern of the preliminary themes allowed the participants to construct and experience a new dimension of meaning.

7.3 Summary: Process of Liberating the Practices

The arguments presented in previous sections of this chapter draw on critical theories, social theories and present ICT education within a developing community as a combination of different social aspects. The co-researchers who participated in this study as secondary school learners are initially seeking to use ICT knowledge and ICT education to improve the community livelihoods. The study engaged classroom activities and emerging ideas that supported the co-researchers in making contextual sense of ICT. Within the conduct of socially informed ICT education, I have argued that learners actively participate in classroom activities and make ICT knowledge relevant in a process where they recognise the power and the role ICT plays in rural communities. Thus, co-researchers were allowed to make connections to notions that are important to them, pursued their identity and self-ability realization, and took ownership of the relevant experiences and meanings they made through the process of reinforcement and identification of group and self-identities.

I have proposed that socially informed ICT education in rural schools is a social transformative practice that can enable learners to construct their identity by prioritising those aspects relevant to social realities and/or development in their communities. Learners participate in ICT education with expectations and they assess the meanings of different aspects of practices involved, and with the knowledge and

skills of others in the classroom. They feel empowered through ICT education when they are able to use various forms of ICT and concepts on their own, when they are with other learners in their communities or when they share their experience of ICT through conversations, or through their reflective journals (narratives), as is the case in this study.

The use of ICT knowledge and skills in the community by the learners is the expressive transformative act of making ICT education as an ICT4D discourse, of reinforcing or constructing their own identity within the community. Power, identity and social experience have become the key elements in the construction of the theoretical framework presented on **Figure 6.1**.

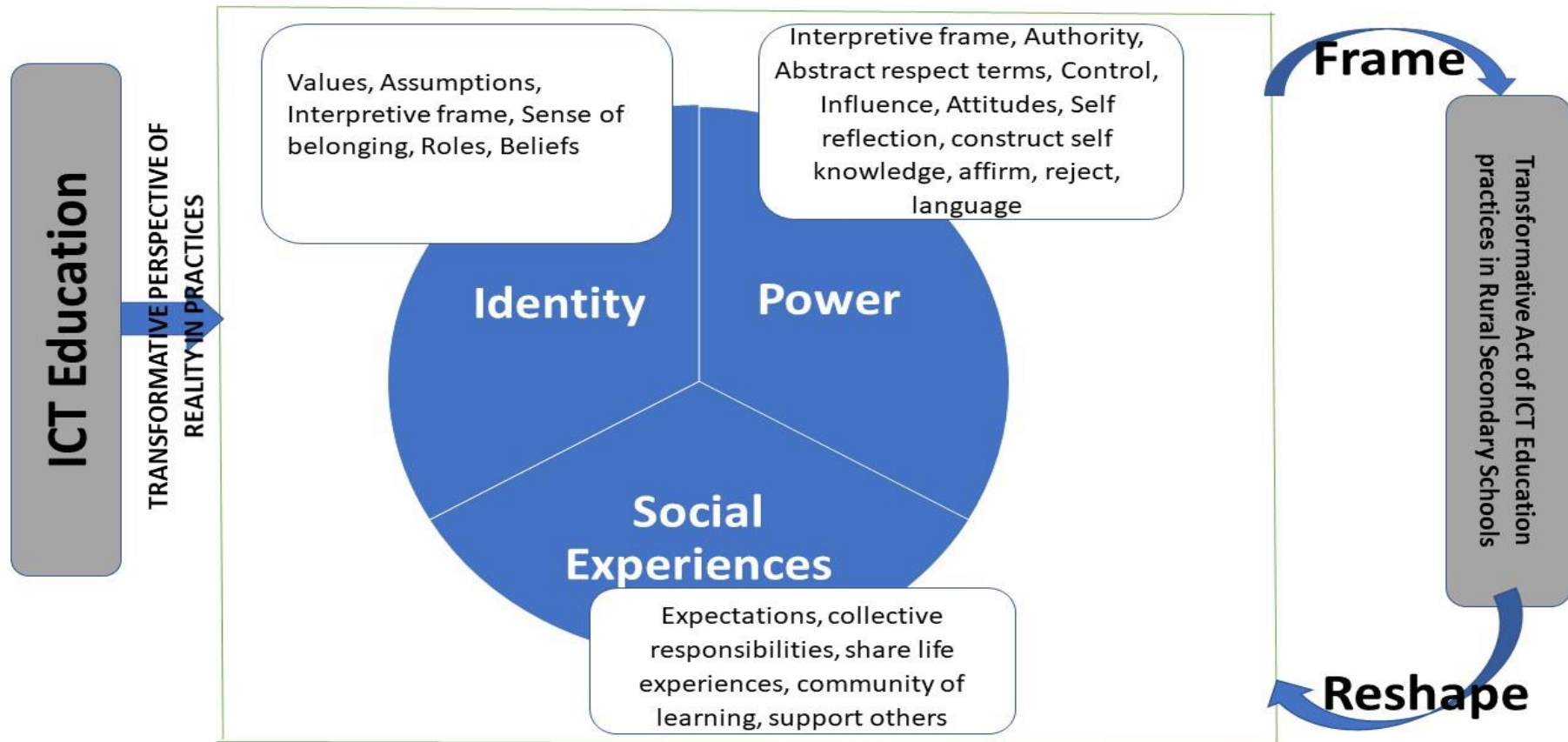


Figure 6.1: A theoretical Framework for the Transformative Act of ICT Education practices in rural secondary schools.

In the theoretical framework presented in Figure 6.1, the transformative act is central to the processes. The social experiences of learners which constitute the realities and needs in the community are one element in this process. Construction of learner identity is another. And the conflict of power between learners and rural secondary school education practices is another element.

The framework above theorizes the process by which the practices involved in ICT education can be transformative to the social developmental needs of rural communities. The components in the theoretical framework are correlated in the sense that they represent the values, beliefs and realities of the community. For Foucault, such elements signal the fundamental interests and activities of a particular community that legitimizes equal power relations among its members (Foucault, 1982, 2000). As such this framework rejects the claims to universal knowledge, values, and beliefs that would stand beyond any social influence (Foucault, 1972). Thus, the elements are clearly arbitrary in that they reflect on the social realities and framework of the communities involved in this study. The fundamental logic in the use of this framework is on transforming ICT education to involve practices that are in line with power (empowerment), learners' social experiences, and personal and community identities. These elements function to legitimize and contextualize knowledge of ICT among learners and the community as a social group.

Transformative action is the term that has been adopted in this framework to describe the political and social developmental use of ICT education and ICTs in a rural setting. Rural secondary schools are granted authority to instil the current practices and knowledge of ICT as universal to learners who are aspiring to use ICTs in the social development of their communities. Such ideological practices have the effect of reproducing social and cultural disparities in our society. Thus, by accepting not to acquire knowledge of ICT that is transformative to community realities, learners unknowingly reproduce social development inequalities.

The hypothesis of this theoretical framework is developed from the responses presented by co-researchers in the reflective journals, the in-depth interviews and classroom events. The meanings from the responses were articulated and expanded

upon by theoretical frameworks developed in Chapter 4 (See Table 4.1 and Figure 4.1). This framework is tested against another sample comment of data in Chapter 8. The data was collected as part of the in-training and follow up interviews, and reflective journals from the co-researchers and I myself. The testing of the framework is conducted to demonstrate its validity in using another set of data and at different times. To support the hypothesis of this framework, in Chapter 8 I will focus on probing evidence of co-researcher's constructing own identity, the power play and social experiences in ICT education, and the power conflict between the co-researchers (learners).

Chapter 8: Testing the Transformative Theoretical Framework

This chapter examines the validity and consistency of the theoretical framework against data collected in research activities and events, such as interviews and reflective journals from co-researchers. The focus in this chapter is on identifying any further considerations of the implication of the research for our understanding of the transformative ICT education, the importance and potential of ICT education, and the relevance of critical and philosophical view that can expand our understanding of ICT education experience. The chapter presents a theoretical framework that includes four elements of transformative ICT education-power, identity, social experience and ownership. The chapter ends with a discussion on how this framework adds a new dimension to existing frameworks of ICT in education and advocates a critical perspective on the transformative role of ICT education in society.

8.1 Introduction

In Chapters 6 and 7, I have developed the leading arguments that have supported me in building a theoretical framework for the Transformative Act of ICT Education. The framework suggests that power, social experiences and identity are the core elements for the education practices which can be adopted as transformative to community social needs and realities. The realistic nature of education practices in rural secondary schools is derived from the political interest of authorities whose power affects ICT knowledge as well as skills acquired by learners.

The ICT devices and current curriculum adopt aspects of authoritative power imposed by education authorities as well as the universal power imposed by the authors. Within the ICT classroom, devices are placed in a particular order to force learners to adopt the meaning of ICT education set by rural schools. Learners in turn affirm their self-identities as they construct contextual knowledge, drawing on the values, ideals and experiences from their communities, in a process whereby aspects of their identities are challenged, negotiated or reinforced. Learners are representing themselves as well as their community in constructing knowledge that has the potential to be transformative. The learner can adopt the experiences in ICT education as part of the reconstruction of self-identity.

In this chapter I therefore intend to test the validity and consistency of this framework against data collected in research activities and events, such as interviews and reflective journals from co-researchers. My task now is to evaluate and test the coherence and validity of this framework against a new sample of the comments. I will also focus on comments and data presented by co-researchers who were part of the last three groups which received the ICT training (education). I have divided the process of testing the framework into two phases. In the first phase (refer to sections 8.2, 8.3, 8.4 and 8.5), I examine ICT education in rural secondary schools as a phenomenon with both political power and empowerment. My intention in this phase is to further explore the source of power that exists within ICT education practices and the interplay of power between knowledge of ICT in rural schools and learners. In the second phase (refer to section

8.6.1,8.6.2,8.6.3,8.6.4,8.6.5 and 8.7.6) I will explore further and test if the element of power, social experiences and identity still apply to the new data sets or else revise the framework.

The interpretation of the data and testing of the framework was conducted in collaboration with the co-researchers. Therefore, the responses relating to different aspects of my study are not separated, although I was able to locate specific responses for each co-researcher. For the purpose of evaluating the framework, I used more data sets from the follow up interviews, reflective-journals and my personal reflective journals, with the purpose of attaining more reflective responses from co-researchers who were exposed to socially informed ICT education and experienced its relevance or not. The framework was tested on 49 scripts and the focus was on specifically examining the co-researcher's attitudes and experiences within the critical action learning space (refer to section 4.3.1). Therefore, in the first section 8.2, 8.3, 7.4 and 8.5, I will search for more empirical evidence of the power play that exists in schools in exercising its authoritative meanings in the context of ICT and ICT education. The focus in particular is on the meanings that the co-researchers use to enforce ownership of the relevant meaning of ICT education. The power play will be related to classroom practices which emerged through social experiences and self-identities.

In the last sections 8.6.1, 8.6.2, 8.6.3, 8.6.4, 8.5 I intend to reflect on the words that represent the concept of power and on how co-researchers respond to these abstract concepts. Teachers in rural schools do use these words often since they are considered to be part of classroom practice, but they support activities which encourage the enforcement of the abstract presentation of power. Learners (co-researchers) in turn, used their own abstract concepts (terms) to associate themselves with the kind of power they did or did not have. The chapter concludes by revising the framework using the findings attributed in the first and second phases of testing the theoretical framework.

8.2 Reflections on Embedded Power within an ICT Education Setting

In chapter 7, I highlighted the issue of power as an element that both schools and learners use to enforce the meaning of ICT education and its practices. I argued that if

the practices in ICT education have to have a transformative agenda, then negotiation of the relevant meaning between learners and rural schools is essential. This section therefore explores ways in which power is presented or promoted in the course of negotiating the transformative meaning of ICT education.

The overall setting of ICT classrooms in rural schools is one that enhances a common order of understanding and respect, and ICT devices therein are placed to support this dominant meaning. For both schools that participated in this study, the ICT devices are thematically kept in one single classroom i.e. the “computer lab” rather than in each individual classroom. In the computer lab, each computer is connected to the internet and installed with a Microsoft Office application. The computer labs have a range of eight to fifteen computers which all learners use in each class session. The time allocated to each class session is 30 minutes and on average three to four learners use a single computer station, as they participate in the CAT subject class. This creates minimal time and space in which learners can potentially experience or try out their ideas. The teachers (who participated in this study as co-researchers) are aware that their aim of making learners respect such setting is not one every learner would agree with. As such, the design of these computer labs was made to challenge the deeply held values of learners and attitudes of ICT. This enforces the value of ICT held by schools as essential rather than other values held by learners.

The teachers who participated in this study are also aware that schools enforce their values and might be seen to enact authoritative power on learners and education practices. In relation to power, the co-researchers responded to the interview question ‘how do the school values engaged in ICT education inhibit learners to actively participate in the classroom?’ See the comments below:

...I am also aware that some of the things we do in the classroom are unfair and we only follow the practices that help us teachers to control learners. The learners sometimes find their own ways to play on these computers even when we are in the process of teaching and we do try to control them. This is the most challenging part of teaching the computer subject (Co-researcher 1011).

Co-researcher 1011, like others in this study, seems to regard resistance or control as something good and there is appreciation that the ICT classroom is a place for exchanging values and ideas which may lead learners to construct certain types of knowledge as shown below:

Our school encourages all learners to take CAT subjects, even if they have not any prior experience in using computers or internet.... we want them to have an equal opportunity of using the computers in the lab....we want to get them to understand a bit more on how computers work (Co-researcher 1040).

Reading the responses above (from Co-researchers; 1011, 1040), the success of encouraging and presenting socially informed ICT education will depend on the extent to which the assumptions and experiences of the learner relates to the concept[s] presented by the teachers who teach the ICT subject.

The co-researchers as learners in this study used their prior assumptions or experiences of ICT to assess knowledge of others including the facilitator (teachers), in a process of constructing their own relevant ICT knowledge, as revealed in the narrative below:

I really don't think I know much about computers. In Grade 11, we learnt more about MS Word and again in grade 12 it was the same. (Co-researcher 1032)

Why is the school not interested in fixing computers that are not working in the computer lab? It is very bad for a group of learners to share one computer in a classroom (Co-researcher 1031)

The interaction between co-researchers and ICT in the classroom exists in the reciprocity between those ascribed meanings of ICT education recognised by co-researchers and the effect of meaning given by rural schools. The co-researchers' response shows that they construct ICT knowledge as part of their experience, affirming or creating identities and negotiating the relevant meaning of ICT education. The individual identities reflect their own ideals, and the values of their interpretive

communities. The response shows the power of the co-researchers' own interpretive community (frame), which in some instances seemed to influence their ways of constructing reflective meaning of ICT education.

In a follow-up and in-depth interview, Co-researcher 1016 (a teacher), describes how the school managed to refurbish one of the classrooms to become a computer lab, and the Deputy Principal controls access to the room and all learners are given equal access and use of computers in the lab.

The school decided to use one of the classrooms as a computer lab. You can see yourself how we really needed to have computers here at Ukhanyo school (pseudonym). The keys for the computer lab are kept by the Deputy Principal – this is done to allow him have control of the computer lab. All learners are allowed to use the computers and even the ones with no computer knowledge and skills. In the classroom sometimes we have students with prior knowledge of computers and they are normally dominating in most learning tasks or activities but we do try to control them such that every student must have equal access and use of these computers. (Co-researcher 1016)

The response from Co-researcher 1016 shows that all learners are given equal access to, and use of the ICT lab. This is an important part of the value of the ICT education practices in rural schools. Although Co-researcher 1016 indicated that learners with prior knowledge of ICT oppose the rules stipulated in the computer lab, due to their superior knowledge of computers (Figure 7.1 and 7.2), all learners are given equal participation in classroom activities. It is an exercise of power by rural schools that is recognised by most co-researchers (1011), rejected (1031) and accepted (1032) and depends on their interpretive communities (see figure 4.1). The meaning portrayed in this aspect does not only indicate equality, but has some political intent acknowledged by some co-researchers, as is revealed in the responses below:

I must thank the schools for accepting us to participate in this training. It really helped many of us school leavers who are just wandering in the community. The things we learnt in CAT subject are not much related to some of the concepts you are teaching us. Is the

school trying to introduce ICT training for everyone in our community? (Co-researcher 1036)

The computers at Makhana School (pseudonym) are really fast compared to the ones they have at the community library in extension 4. I really enjoy the internet and the air-conditioning makes the room cool and nice (Co-researcher 1038)

The training has really opened my mind about how ICT can support me both in my teaching job and my life. It is my first time to attend ICT training that really focuses on our needs, and it was easily presented, and we were allowed try out everything we wanted. (Co-researcher 1002)

It is true that we teach our learners some things that do not really matter to them; they outshine us with their ICT knowledge and skills sometimes. I believe people who developed the CAT curriculum must consider revising it to include new knowledge about computers and ICT such as things you are teaching us and what the other participants are raising. It is really disappointing to see our students ... they don't even know how to search school materials on line – they fail miserably in matric exams, yet we have the resources freely available. I believe our Principal will allow us to write a report of what we have learnt from this training so that we can start teaching the students some of the things we are learning here. (Co-researcher 1000)

The power of education practices supports the ideological stance of ICT education. For many co-researchers who share the envisioned connotation (1002) their response is positive and affirming while the responses from some co-researchers (1000) seems to be disappointing, seeking to affirm and enquire more about ICT education. Those co-researchers who used the pluralism approach in their responses perceived that the values of ICT education were more aligned with their own beliefs, their identities were affirmed and they were more engaged with the activities or concepts. Their meaning of ICT education was the same as that of rural schools (experience from ICT education provided by the research).

Personal development, knowledge and sharing of information were the three common issues that co-researchers expressed in the above comments. Co-researchers had experienced occasions which illustrated the power of these concepts. The concept of sharing information and personal development has a long history in a social setting such as rural communities whereby individuals strive every day to access or share information to create opportunities, and hence it creates a sense of personal development (Chambers, 2014; Thompson and Doherty, 2006). People in rural areas tend to share information as a way of establishing personal relationships and cementing their community identity. The varied aspects of power in respect of the meaning of these concepts are most evident in most responses relating to them. See more responses below showing the native power associated with ICT education (Co-researcher 1022) and the attributed power that people associate with ICT education (Co-researchers 1015, 1007, 1023,1035).

Table 7.1: Power Associated with ICT Education in Rural Communities

Intellectual power	<p><i>I was personally impressed with the way you facilitated the training programme. I also learnt new approaches of teaching – which I believe will help me teach well. I am a bit worried on issue of allowing learners to be in the computer lab alone without the teacher to supervise them and even allow them to try whatever they want on these computers – they will end up breaking them or stealing some of the equipment from lab. It is hard to convince them that the lab belongs to them and they must take care of the equipment.</i></p> <p>(Co-researcher 1015)</p>
Demonstrative power	<p><i>My colleagues were so amazed how I organise my classes and my teaching practices electronically. I bought a new laptop to support my teaching practices. The training has motivated me to improve my professional and personal life—it was really a good experience (Co-researcher 1007)</i></p>
Political power	<p><i>Concerning the training, I would like to know if we are going to be given the certificates. We were told that the training is conducted by a lecturer from Rhodes University. (Co-researcher</i></p>

	1022)
Power to recall past experiences	<i>I still remember the first day of training when you presented to us information about what we should expect to learn and able to achieve. I was inspired on how you saw potential in us than we used to see ourselves. (Co-researcher 1023)</i>
Power to arouse sense of imagination	<i>The ICT knowledge and skills from the training will help me a lot in my business (Co-researcher1038)</i>

The responses above show how co-researchers take ownership of the task of relating ICT education to their own experiences. This taking *of authority or ownership* is an indication of the co-researchers' power and means of reinforcing their identity. The co-researchers are more comfortable to try out their knowledge within and outside the classroom, and are courageous enough to present their interpretive communities and foster negotiations within these communities. While not all co-researchers seem to agree with the practices of ICT education presented by this study, they did not withdraw from participation, but instead they were able to negotiate with the practices to construct their own knowledge of ICT.

As I analysed the responses, some co-researchers (for instance Co-researcher 1023) seemed to regard their own experiences as unfavourable when they discovered the potentials or opportunities they could create from knowledge presented in the ICT education. They used plural phrases like *"we used to see ourselves"*. The current ICT education practices in rural secondary schools have not allowed them to realize their prior experiences or abilities. The co-researcher felt unsuccessful and less confident, and their identity was affected. The experience of ICT education presented in this study was associated with the desire to continue participating in the classroom activities so as to realise their potential. Power, identity and participation in ICT education worked together to create a potential experience of ICT or construct relevant ICT knowledge which this co-researcher longed to use. Nevertheless, Co-researcher 1007 wrote about the experience she encountered with her fellow work colleagues, and she seemed to be satisfied with her new ICT knowledge and skills and she had *"a good experience"*.

The co-researchers participated in the ICT training with a feeling of experiencing the similar concepts they hear or see in their communities. This created a sense of contextual learning, which arises from experiencing abstract concepts of ICT in communities and which triggers a strong interest in learning more about ICTs. The recall of the prior knowledge or experiences of ICT or other concepts becomes part of the co-researcher's identity. For some co-researchers there was a strong desire to try out their prior experiences, and their delight in managing the re-experiencing is evident in their responses. The lack of having any prior experience of ICT affected some of the co-researcher's process of making contextual meaning of ICT and subsequently the way they perceived the effects of ICT on social development. Allowing the co-researchers to re-experience their prior experiences was pivotal in sharpening interest and awareness.

In the ICT education provided by this study, the curriculum and goals have been designed to incorporate the co-researchers experiences, ideas and assumptions so that the co-researcher's world is reflected and transcended (Illeris, 2014). The resulting learning experiences have been described by Mezirow (2014) as transformative practices and by Gadotti (2010) as reorienting education practices. The response below show the co-researchers' shift in experience.

It is so exciting that the training has opened opportunities for me to connect with people online. I am so glad that I managed to teach my friends back home the same thing we learn here (Co-researcher 1033)

The ICT education has managed to succeed in providing relevant experiences to co-researchers. It has supported them to self-reflect and extend their imagination, recall their past experiences and extend their experiences to others. The co-researchers indicate respect in their responses and gave similar meaning to ICT education and ICT devices. The responses made by co-researchers so far have been in principle the response to the power of ICT education, their own power and the ideological setting of ICT classroom and practices. The dominant practices of education have been part of their social experiences with ICT education providing a more abstract meaning of power.

In the computer labs, the computers are placed to *show off political and oppressive power*. While some co-researchers accepted that rural schools give equal access and use of ICTs in the computer labs, other co-researchers focus on understanding the social experiences and opportunities that are associated with ICT for themselves or for others in their community. They relate emerging ideas to what they experience in their life, rather than adopt new meanings, and they prefer to reinforce their identities to make the training relevant, rather than accept everything presented.

Proposition: the comments in this section propose that there is tension between rural schools meaning of ICT education and the meaning that co-researchers bring with them, which they prioritise to use in constructing reflective ICT knowledge in the classroom. This seems to be the preferred resulting experience that co-researchers recognise. The participants' comments confirm that the identified themes in Chapters 5 and 6, namely *social experience* act together with *power* and *individual identity* in the process of making reflective ICT knowledge that helps them experience transformative practices in ICT education.

8.3 Reflecting on Social Experiences Imbedded in ICT Education

In this section I intend to demonstrate how the ICT training (ICT education) involved in this study created the meaning and importance of ICTs and ICT education in rural people's daily lives. The co-researchers participated in the ICT education which was intentionally designed to allow them to construct their own meaning of ICT education as well as knowledge of ICT. The co-researchers responded in different ways as follows:

I appreciate the way you planned this training. When my friend invited me to attend, I was not sure if there will be a free computer to use on my own. I enjoyed the way you welcomed me and the support you gave me throughout the training. (Co-researcher 1026)

The computer lab has more than five computers which are not connected to internet. It seems even the teachers who are participating in the training are aware about this issue. I understand this training requires computers to be connected to the internet

(Co-researcher 1025)

In this training, the emphasis was on allowing equal participation. The critical action learning approach was implemented to allow people of different background to contribute ideas or knowledge on different topics. The topics or practices from current ICT subject (CAT subject) personal experiences and the needs of the communities were chosen as examples to demonstrate the transformative conception of ICT education. I personally indicated on the first of day training:

We want everyone participating in this training to contribute any issues or any concepts you assume relate to ICT. We are all here to learn from each other and there is no one with more knowledge of ICT or skills, therefore anyone is free to contribute any issue

The co-researchers were more engaging in discussing different topics, contributing different topics as well critiquing other emerging ideas. See responses below:

I am also not sure if the learners really understand the importance of ICT in their studies or lives. Is it the duty of the parents to force their children to take ICT subject in secondary schools? Would it not be good for the Department of Education to donate cheap computers or tablets to students to use in schools? Why do most schools in town have more computers and well-trained ICT teachers? (Co-researcher 1029)

The issue of building civic capacity for learners through the use of ICTs was well presented though we needed more time to discuss this topic [...] it is very important to help our young boys and girls in secondary school to know their role in the society. I hope you will make time before we complete the training to discuss more on this topic (Co-researcher 1039)

The training is very helpful. I discovered that some of the things people talk about ICT in my community are just vague. I am now very confident and by end of this training my knowledge of computers will change [...] though am still struggling to understand the difference between the use of email and internet [...]am really confused about these two concepts. (Co-researcher 1038)

The responses above show that the meaning of ICT education in rural schools did not correspond with co-researchers' experiences. It caused co-researchers to question the inequalities presented by ICTs in schools (Co-researcher 1029), to examine their own values (Co-researcher 1038) and to express their optimism (Co-researcher 1039). Co-researchers critically reflected on the meaning of ICT education presented by schools and created a role they could use to negotiate the meaning with the schools. They were projecting and revealing their identity so that others could accept them and share their values. This indicates that "human beings are social actors in their cultural worlds, they do not take for granted that they are acting in relation to others who share a history and set of common experiences and understanding of experience" (Van Manen, 2016 p 73).

In response to 'the importance of using ICTs as part of living in rural community', Co-researcher 1029 responded by questioning himself, but he uses his social experience and knowledge to critique the current setting of ICT education practices in rural schools, which does not reflect the needs and realities in rural communities. Regarding digital citizenship, Co-researcher 1039 responded on a personal level while representing the context of a wider social group. There is sense of 'a conversation with self'. With Co-researcher 1038, the response is more self-referential, an exploration and reflection on self in the social experience of ICT and concepts. The critical exploration of the meaning of ICT associated with multifaceted social issues has been encouraged by the critical action learning and the goals of ICT education involved in this study. The responses show some form of power in the practices engaged in, and also the power of the co-researcher to relate his or her own meaning of ICT knowledge and of taking ownership of it in the process of using ICTs.

During the follow-up interviews some co-researchers questioned the lack of providing formal ICT training for teachers in the area, as follows:

In most schools around this area there are no proper trained ICT teachers. It is not practical that any teacher who has attended a simple ICT training is given CAT subject to teach, this is really unfair for our students. I believe we should not be forced to have CAT or ICT class just because the school has computers; we need formal training such that we can

teach these students who are mostly exposed to technologies. The schools seem to accept such practices as normal.

(Co-researcher 1007)

A company donated twenty new computers at our school last year. The Principal decided to lock all these computers in his office. In the staff meeting most teachers were so angry to see computers getting dust and not used. The Principal explained how terrible this issue has caused conflict between school and school governing board members, who wanted to see the computers being used in the computer centre. He explained that the community love computers and if he had any ICT knowledge and skills it would make him look like a good Principal. The challenge is that we don't have any teacher with proper ICT knowledge and skills to take care of these computers.

(Co-researcher 1013)

The co-researchers were very concerned about the realities of current ICT education and practices in schools. Co-researchers were deeply and self-consciously disturbed by the attitude of not addressing the importance and relevance of ICT education in rural schools. This shows different interpretations of the situation faced by ICT education and so the co-researchers reconciled what they experienced in rural schools with their interpretive communities (frames) and their knowledge of ICT. They used words like *"This is really unfair"* and *"angry"* to show the impact of what is happening. They rejected the rural schools meaning of ICT education practices outright to affirm their role in social issues that affect their communities. The responses by Co-researchers (1007 and 1013) do express the values placed on ICT and ICT education by people in rural communities and this is adopted from their interpretive frame (Figure 4.1) and they draw on these values in their process of constructing ICT knowledge.

The responses reflect the ideals and values of the co-researchers' communities and the interpretive frame they used to construct the meaning of reflective ICT practices in those communities. The study tried to present rural schools' values and ideals in ICT education meant for communities, but the co-researchers reflected on their own identities and social experiences to negotiate the meaning. The co-researchers' power is reflected in their responses and in adopting values from their community. Moreover,

the social experiencing of ICTs seems to be the whole intention of participating in ICT education, and reinforcement of their identity in the power struggle is to own or defend their own meaning for ICT education. The contextual use of ICT in human activities is part of the co-researcher's social and culture experiences, which also forms part of their identity. Associated with their identity are the ideals and values of the community of which the co-researcher is a member. The ICT education in rural secondary schools is a respected means of learning about appropriate concepts and use of ICT which affect or have the potential to affect learners' ways of living. This assists learners to continuously construct their social and individual identities, it potentially informs learners of the realities (development) and needs in their communities, and it contributes to relevant social experiences for them.

The responses presented express the effect on or impact of ICT on co-researchers. When they communicate their thoughts and suggestions, that act is negotiation, and an identity, which is part of their role in the community. The negotiation is positively used to promote relevant outcomes and ownership. The co-researchers seek to make relevant connections to situations they experience in the classroom so that they can make sense of ICT knowledge in their communities. They bring their community experiences, expectations and prior experiences of ICT to the experience of ICT education, so that it has an informed conception of developmental needs and realities. Sometimes their particular expectations are the only ones they want to experience or achieve. They are exposed to ICT and social realities, and hope the ICT education will fulfil their expectations.

The activities involved in the ICT education in this study have intentionally encouraged the co-researcher to see their expectations and experiences as part of transforming ICT education practices. Co-researchers have not only constructed *identities* and *roles* for themselves but have also *taken ownership* of the meaning of ICT education and ICT knowledge which they constructed in relation to *individuals and others*. The meanings and knowledge reflect the values, realities and needs of their communities. The ICT education provided in this study exercised its power, and intensified social realities. Moreover, the practices engaged in the ICT education were transformative and most co-

researchers responded reflectively. The ICT education created experiences for co-researchers which they were able to relate to or use in other situations.

8.4 Discussion on the First Phase of Validating the Theoretical Framework

In section 7.3, I introduced the theoretical framework which unpacks the component parts of transformative practices in ICT education. The components include 'social experience', 'power' and 'identity'. These components revealed the underlying conditions which enabled learners (in this study as co-researchers) to experience ICT education as a transformative practice of shared experiences in the classroom and rural communities. Clustered into co-related elements, the significant aspect of this framework entailed triggers that precipitated the construction of transformative knowledge of ICT, use of knowledge of ICT within personal experiences and shared knowledge of ICTs that impacted on the lives of learners and others in the community.

The experiences and activities gained from the ICT education provided by this study created different responses from the co-researchers. In the classroom, co-researchers had the freedom to try out their ideas, assumptions, discuss any emerging ideas and construct their own relevant ICT knowledge. They seemed to expect transformation and wanted to be reflective. This association of reflective experience with ICT education is part of ICT4D agenda that Ngwenyama and Lee (199) explained that "potentially people are constrained by various forms of social, cultural, and political domination, which implies that one should not only strive for mutual understanding in development discourses but also the emancipation from false and unwarranted beliefs, assumptions and constraints" (p14). The responses in section 8.2 and 8.3 show that co-researchers strived to free themselves from the unwarranted ideologies of ICT education. It is part of their expectations that schools should provide contextual or reflective meaning of ICT and ICT knowledge, which is the means by which they constructed their own knowledge of using ICTs in rural communities.

The ICT education provided in this study was potentially designed to enable transformative ICT practices to take place. The co-researchers were allowed to critique both current ICT education practices and the one provided by this study. As a leading researcher, I prepared the critical action learning space in such a way that co-

researchers could make their own meaning of ICT education associated with the realities and needs of communities in the area. Where the practices did not meet their expectations, the co-researchers were able to critique and modify their expectations. They, as learners in the ICT classroom, expected to construct particular ICT knowledge and experience. As co-researchers, they expressed their thoughts and suggested ways of transforming ICT education, by drawing on personal and community experiences. The co-researchers' response included self-identity, in particular on what they expected of ICT education. The co-researchers' power (empowerment) is reflected in their questions or demands to redress ICT practices since rural secondary schools form part of the framework of their community. Likewise, the social experiences are the things they expect from ICT education and ICT knowledge, as a modern form of social development, must cater for the individual and for the community. Ownership of knowledge is portrayed by responding to the process of constructing knowledge of ICT in ICT education.

In the classroom, the curriculum is designed with practices that enact both a social response and ICT knowledge construction. There are different goals stipulated in the curriculum (**see Appendix J**). The aim was to introduce the fundamental concepts of ICT, the use of ICTs and the social issues associated with ICT. The social aspects in ICT education emerge through critical action learning. The practices provided different meanings which were intentionally constructed to correlate with co-researchers' interpretive frame of understanding. Where the co-researchers' frame relates to practices involved in ICT education, the co-researcher experienced relevance of acquired knowledge of ICT. If not, their knowledge, values and attitudes on ICTs and ICT education were disrupted. In many cases, the meanings presented by schools fail to dominate the co-researcher's experiences and aspirations. The co-researchers responses during the interviews, in the classroom and in the reflective journals, show some evidence of disruptions and the potential effect of the transformative practice of ICT education. The process of making their own relevant or contextual knowledge of ICT is influenced by the co-researcher's life experiences, background and expectations. The co-researcher's responses further show an account of the experiences of other co-researchers and the connection to his or her own experiences.

The aspect of an ICT classroom (computer lab) setting led the study to introduce the discussion of power represented by the placement of ICT devices and the resultant seating plan. In the ICT classroom, the co-researchers had preconceived notions of access and use of ICT, and in the process, they interacted within the *control (power)* set by rural schools. This control affects their perception of ICT education, and whether or not their identities, values and ideals are presented. In the ICT classroom, co-researchers came with their own perception of abstract concepts like mutual understanding, respect and tolerance to establish whether or not the ICT education practices are aligned with their views. The connection between education practices and co-researchers perception is a political motive to demonstrate their power.

Proposition: the analysis of comments from the co-researchers in this phase of testing the validity of the framework propose that that while each of the elements, namely *power, social experience* and *identity*, was not universally shared by the participants, they were commonly drawn in to enhance our understanding of the practices involved in the transformative act of ICT Education. Building on the foundation of thematic components it is evident that the components for the framework are more co-related than isolated. The experience of the transformative act of ICT Education is best understood as a composite tapestry of *social experiences, identity* and *power realisation*.

8.5 Summarizing the First Phase of Testing the Theoretical Framework

In the sections 8.2 and 8.3 I have presented the comments and responses from the participants to verify the consistency of the theoretical framework, and I used this data to see if it could explain the elements presented in the framework (refer to section 7.3). The focus in this phase has been particularly on exploring the following two elements: ICT education as an aspect of *social experience*, and the *power* in which the practices were designed to allow participants to experience these notions. The activities in this study treated the participants as both co-researchers and learners so that they could share these experiences and the meaning of ICT education.

The first part of validating the framework shows that learners do not always accept the meaning of ICT education as defined by rural schools, but they focus on concepts that are of interest to them using their life or social experiences, or those concepts which

have meaning in their interpretive communities. Learner experience of transformation only occurred if the ICT education enabled them to reaffirm their identities and their needs reflected in the practices. The co-researcher's meaning of ICT education and ICT are collective and personal. The ICT knowledge constructed by the co-researcher dwells on their social and individual identities as they relate to the values of their communities and themselves. The collective power of social practices, of the values and of the expectations (concepts of ICT) associated with their communities can sometimes be stronger than the political or authoritative power of rural schools as an institution or as a social entity.

The experience in ICT education can be transformative or positive where the practices relate to the learner's social experiences, and he or she has certain expectations. The experience can be irrelevant if a learner feels his needs and his identity are not reflected in the practices. Sometimes the learner will participate in the ICT education to falsely make the teacher feel his presence, while negotiating to reinforce his or community identity. The responses from co-researchers indicate social experiences drawn from ICT practices and ICT knowledge which reinforced the values of their community, and which has had opposite meaning to that of ICT education provided by this study. As the learners prioritise use of their values, they transform practices in rural schools and they strengthen and reinforce their identities. This is the 'product of the relationship' which Foucault (2000) said exists between truth (social reality), knowledge and power. The knowledge supports learners to initiate power that restricts any unwarranted social practices in their communities and this power effectively shapes their knowledge. This interplay is more important as it creates the productive relationship of knowledge and power (Foucault, 1977). As such, this study recognised the potential *power* that exists in the knowledge constructed by the co-researchers.

This analysis of the comments in this phase, proposes that a framework can be used to understand and explain the experiences and responses that learners make of ICT education or people in ICT4D projects. The whole co-researcher experience drawn from the use of contextual knowledge of ICT and in ICT education is the result of practices involved within the ICT education provided by this study and can be described as the power play between ICT education and learners. The contextual ICT knowledge

constructed both in and outside an ICT classroom is an important illustration of the *ownership* of meaning placed on ICT education and would be an important addition to the proposed framework. See Figure 7.1.

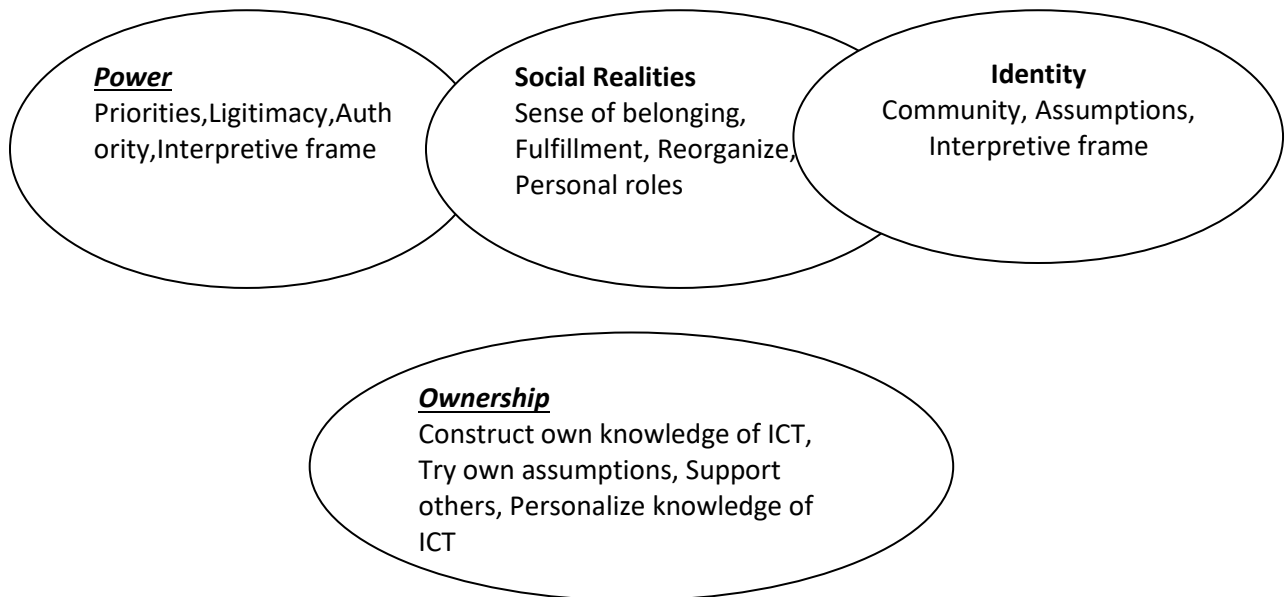


Figure 7.1 Proposition Additional to Theoretical Framework

Following this, the next section ties together the entire theoretical framework, drawing on the understanding of the experiences of participants from the various perspectives of *power, identity, ownership* and the *social experiences* triggered by transformative acts of ICT Education. Utilising both the co-researchers' combined voices and my intuitive and reflexive understandings, a revised descriptive theoretical framework is provided. The structural synthesis of this framework is derived from the core meanings and essential essence of the ICT education as experienced by the participants (co-researchers).

8.6 Reflecting Correlation between Power and Identity in ICT Education

The ICT education involved in this study was devised to nurture the practices which enable learners (co-researchers) to draw on their own prior knowledge of ICT, and to negotiate meaning and interpretive frames. In testing the proposed framework using the elements of power and social experiences in the previous sections, I identified the

additional element of *ownership* which learners use to make sense of what they learn in ICT education. This element supports them in personalising their knowledge of ICT in response to personal or community needs. *Ownership* together with *identity*, *power* and *social experiences* constitutes the learners transformative experience of ICT education. As Foucault (1988) warned, the truth of the techniques of government institutions is very complex. This study understands that education can “put an individual as a master and a puppet at the same time in a game with constantly changing rules, and only by being aware of the forces of society can the individual realize options to act” (van de Ven, 2012, p14). The knowledge of ICT produced through ICT education practices constitutes the possibilities of ‘governmentality’ and ‘truth’. In the next section 8.6.1 I will use the responses from co-researchers to identify what they revealed about themselves from their experience and knowledge of ICT. The narratives in self-reflective journals will be used to show the connection between the process of making contextual meaning of ICT education and the formation of identity.

8.6.1 Positioning Identity in ICT Education Practices

In chapters 5, 6, 7 and previous sections of this chapter, I presented the idea of *identity* which I described as a significant element in constructing transformative practices in ICT education. The individuals in this study associated the relevance of ICT education with their identities through the practices involved. Stryker and Burke (2000) refer to identity as “parts of a self-composition of the meanings that persons attach to the multiple roles they typically play in highly differentiated contemporary societies” (p284). When individuals “immerse themselves within a society, a culture, or a social group, they begin to construct ideologies and meanings that help them to define their own self-identity. Because people often belong to multiple groups, this *identity* is complex and embedded in the many beliefs, preferences, and practices a person undertakes” (Sarber, 2015 p5).

Co-researchers participate in ICT education (ICT training) with different expectations, interests and motivations. Since rural secondary schools are part of the framework for the community to which learners (co-researchers) belong, there is always a perception that education practices and learners will share similar values, ideals and knowledge which are acceptable in rural communities. However, a learner brings with him his

whole life and community experience and the construction of knowledge and response to education practices in schools will depend on aspects of his social and personal identity. The social identity in this aspect supports the co-researchers in having a sense of self, which they create over a period of time as they participate in social life and it identifies others with whom they share common experiences within a community setting. This community can be a place, a religious group or interest group or an activity for instance, that fosters an individual's self-worth or belonging. Thus, social identity is nurtured in a sense of resemblance and belonging, while self-identity stresses a sense of distinction that makes an individual unique and creates a sense of personal sovereignty.

Social and self-identities are part of biographical identity and they can influence the different experiences the person manifests. It is the experience related to either self-identity or social identity or both that allow the person to construct knowledge. The ICT education presented demonstrated practices embedded within self and social identities as revealed in the following narratives:

I believe that as a teacher, teaching in a school in rural community, I am not different from teachers in urban schools. We are all secondary school teachers promoting the same government ideas of basic education. It seems most teachers who are in urban schools receive frequent trainings and they participate in many ICT training programmes. Am really concerned about this... (Co-researcher 1008)

It is really unfortunate that not all learners are interested in taking CAT subject or even just to attend ICT classes. Sometimes I feel like what we teach them maybe irrelevant or they do not see the value of ICT or ICT knowledge. We cannot force them to be in the ICT classroom or take CAT subjects. We follow the policy of not forcing students to attend class as stipulated by the school. (Co-researcher 1003)

The situated experience presented in the comments above reveals a connection between self-identity and social identity. For instance, Co-researcher 1008, who is a teacher in a rural school, adopts a social identity of rural community as part of his situated experiences as well as part of the ways he sees himself. In their responses they prioritised this aspect of identity, when they wrote words such as '*all secondary school*

teachers' and *'teaching in a school in rural community'*. The co-researchers are identifying with other co-researchers, with rural schools and with themselves. This perpetuates the purpose of *'technologies of self'* described by Foucault (1988) of transforming individuals "to reflect on their own means or with the help of others about a certain number of operations on their bodies and souls, thoughts, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immobility" (p18). The co-researchers are reinforcing their own identity whilst informing others and negotiating for reinforcement of that identity in a social setting.

In some cases, conflicts may arise within the process of constructing situated ICT knowledge, as co-researchers integrate identities beyond the one involved in their experiences. This conflict contributes to the realities associated with ICTs and ICT education, and the effort to realise ownership of the meaning of ICT education. The responses below illustrate this tension:

I was a bit confused when you spoke about social entrepreneurship. I liked the idea of using ICT to connect people as social groups which can come together to share ideas that support their empowerment, [...] Please, you must teach us more on this topic as well . (Co-researcher 1024)

To leave the computer lab open the whole day is a bad idea and the students might end up stealing accessories or damage computers (Co-researcher 1025)

I just moved in to Joza Township a few months ago. I came from Nqwaqwa village which is a place close to Nqunu in Umthata. When I first saw the computers at Makhana Secondary school (pseudonym), I could not believe the schools here have such good facilities. I am really enjoying this training. (Co-researcher 1029)

The training reminds me of the time I was in primary school – failing to pronounce some English words, it was interesting. (Co-researcher 1033)

The responses express the co-researchers' negotiation of their self-identities, their community identities and their interest in other (learners) in secondary schools. Co-researchers feel they are part of the practices in ICT education if they affirm their identities – these are ideas they contributed in the classroom and they reflect their needs or expectations. In cases where they fail to affirm their identities and their expectations, they negotiate with themselves to make necessary changes or negotiate with practices involved in ICT education. Such negotiations contributed to the different responses they made, such as rejecting the community's perception of ICT education practices (Co-researcher1025), providing new insight (Co-researcher 1029), creating the opportunity for self-reflection (Co-researcher 1033), and resolving discrepancies between ICT knowledge and themselves (Co-researcher 1024).

This mediation of their identity is a fundamental basis of the process that co-researchers use to make their own meaning of ICT education. As I have also described in Chapters 6 and 7, it is part of the co-researchers' transformational practices. The negotiation indicates the contest between the ICT knowledge constructed by co-researchers and the one expected by the school, as they participate in ICT education. For the learner who feels confident of his identity may challenge the practices and meaning raised by the school.

The challenge can be in the form of requesting more information or clarification on ICT concepts (Co-researcher 1024), or demanding fairness in providing relevant ICT knowledge (Co-researcher 1008) or change of policies, practices and abstract concepts in ICT education (Co-researcher 1003). The Co-researchers (1003, 1008, 1024) expect their self-identities to be reinforced in the knowledge presented in ICT education and by the education authority. The knowledge that learners (co-researchers) bring into the classroom involves what they experience in real life, what they know and what others in their community know. This is what constitutes their self-identity and interpretive frame (community) and it is used when they are critiquing what they perceive as irrelevant practices in and outside the classroom. For learners who perceive ICT knowledge as an important element of their self-esteem, they will prioritize that aspect of their identity within ICT education practices.

I argue in this section, that the learner by virtue of being a member of a community that values ICTs and ICT knowledge, reinforces and confirms the values of his community, as part of his identity. I found from the responses made by most co-researchers that they participated in the practices engaged in ICT education to demonstrate the strength of their personal and social identities. This was evident when they prioritised their identities within the classroom, within the process of constructing their ICT knowledge and the use of ICTs in rural communities. They prioritised their *self-identity* as they constructed ICT knowledge that supports them and others within or outside the classroom. Conflict arises when there is tension between transformative ICT knowledge presented by this study (representing rural schools) and the values of self-identity that co-researchers responded to in various ways. Co-researchers used their community or social experiences to respond to the meaning of ICT and ICT education presented in this study and this will become the point of discussion in the next section 8.6.2.

8.6.2 Positioning Social Experiences in ICT Education Practices

In chapters 5 and 6, I introduced the element of social (community) experience as part of explaining how co-researchers situate ICT knowledge as they interact with others or with ICT artefacts. Many of the responses made by co-researchers used words such as “*me and I*” to refer to their sense of self. Co-researchers’ responses show that they are self-conscious about themselves and motivate others to pay attention to their conscious ways. Where there is conflict of meaning, the co-researcher negotiates to create a sense of belonging within ICT education practices, whilst reinforcing the ideals and values of their communities, which constitute their social and self-identities. See the responses below:

Am really so grateful for the training, it has created opportunities for me to revise my computer skills and improve my knowledge of using ICTs in my teaching job. The topics you covered demonstrated how easy we can use these computers in our daily lives. I appreciate your effort to conduct this training (Co-researcher 1028)

As an elder in this community, I feel so bad that most students nowadays don’t have passion to learn more or use these technologies to support activities in our communities. We thought the new education system will improve the students’ ICT knowledge and assist them to pass well during the matric exam (Co-researcher 1040)

I believe as a parent with a child in rural secondary school- it is very important for people to know that urban schools are the same as rural schools, therefore all students must learn the same things – It seems the ICT education provided at this school is presented only in rural schools. You have managed to show us how ICT connects with our daily lives.

(Co-researcher 1042)

Co-researchers (community members) as learners themselves show in their responses the meaning of ICT education by referring to their identity and the interpretive frame of their community - the self and social perceptions they have of themselves. The responses all refer to ICT education and draw on co-researcher's experience of practices involved in ICT education. They express their understanding of ICT education in relation to the practices of ICT education provided by this study as well as situated experiences of using ICTs in their lives. Here the abstract concept is social experience, which is an important component of the self-identity of these co-researchers and which they commonly use to construct knowledge of ICT.

The response made by Co-researcher 1028 shows that ICT knowledge has been transformative and affirms the co-researcher's identity as a teacher. The co-researcher seems to also experience transformation as she reveals the extent of using the knowledge – in plural word “*we can use*”. She constructed the knowledge for herself and the use of this knowledge has revealed part of others and herself. The practices involved in ICT education provided by this study have enabled her to use her social experiences and self-reflections to construct transformative knowledge of ICT associated with ICT education. The transformative ICT knowledge reinforces her identity of being a teacher and creates power associated with ICT education, which is an important aspect of ICT for development. The transformative ICT knowledge has contributed to situated experiences or use of ICTs.

The responses made by Co-researchers 1040 and 1042 above show how they try to make sense of their own meaning of ICT education in rural secondary schools. There is a feeling of disappointment in Co-researcher 1040 and worry by Co-researcher 1042. The feelings arise from being associated with practices in rural school, from participating in

ICT education provided by this study, from their knowledge of ICT and from part of their social experiences.

The analysis of comments in this section suggests that relevance of ICT knowledge is a measure of the engagement of a learner (co-researcher) with ICT education and the practices, the confidence they feel in their own ICT knowledge, the connections they make, values seized on concepts presented, and self-reflection of their own self-identity. It concludes that in the classroom, students create new identity or affirm their identity and connect ICT knowledge with *social situations* (community experiences). This confirms the strong co-relation between *identity* and *social experiences* identified in the framework.

8.6.3 Positioning Engaged ICT Education Practices

As a researcher, I was interested in searching for the evidence of the existence and nature of transformative ICT education experiences. Subsequently, the study was guided by a search for practices which could engage classroom activities that are related to participant's lives, and would help understand how their experiences could be unfolded. As such in this section I demonstrate how the practices involved were engaged to achieve the synthesis.

In the responses below the co-researchers show how they refer to their involvement in practices in ICT education as if they were engaging with a person:

I was motivated to participate in the training when I found out that we are being trained by a teacher from Rhodes University. At first, I thought it is something that has been organised for us to play around with computers. I found it so helpful to me, since it has improved my knowledge of computers (Co-researcher 1034).

I think it is very helpful to take ICT subject, since it can help students to have knowledge of engaging ICT in other subjects they have in secondary school. I also learned a lot from this training.... which I am planning to use in my teaching diploma course....-am studying with UNISA (Co-researcher 1030)

Would it be possible to have the handout for the topic you were teaching last week Tuesday about “creating email address”? Is it available? Most people liked that topic and we want to teach others on creating email addresses and emails (Co-researcher 1025).

It seems most of the teachers who are in urban schools receive frequent trainings and participate in many ICT training programmes. Am really concerned about this ... (Co-researcher 1008)

In each of these responses, ICT education is being referred to as a person: the co-researcher uses words like ‘*it is something*’, ‘*it can*’. They critique (Co-researcher 1008) or commend the practices engaged in the ICT education in particular the content (Co-researcher 1025), purpose of ICT education and ICT knowledge (Co-researcher 1030), and the overall appreciation of ICT education (Co-researcher 1034), while using their knowledge and experience of ICT which they constructed from participating in ICT training provided by this study or in their community. This gave them confidence and the capability to critique and evaluate the current ICT education practices in rural schools. Sometimes this capability can also deepen their view of connecting ICT education or ICTs with their community social setting. This is particularly true of co-researchers who suggested that the training be conducted in community libraries:

The community library at extension 6 has more computers compared to what we have here at Makhana School (pseudonym) - I think it could be good if the training was conducted at the library since it is close to homes for most people who are participating in this training (Co-researcher 1013)

The co-researchers had the perception of ICT education being associated with the community and not only rural secondary schools. The association seemed to be so strong that it encouraged them to see the importance of ICT knowledge in a new way. Their experience of practices involved in rural schools seemed to become an obstacle to construct their own ICT knowledge. The setting of ICT classrooms (computer labs) in these schools constrained co-researchers rather than allowing them to exert the power to make new meaning of using ICTs. The co-researchers had prior knowledge of ICT classrooms (computer labs) in another institution within the community and they

expected the same in rural secondary schools. Since the co-researchers are part of the community, this knowledge had a great influence on their lives. The suggestion to move the training was not supported by other co-researchers since they wanted the research project to achieve its goals. Although those who suggested moving the training felt their idea not supported, the project took their views into account and motivated them to participate.

Proposition: the participants' comments in this section shows that as the co-researchers were engaged in practices provided by this study, they were able to exert personal power to construct ICT knowledge and take ownership of that knowledge. As such, the analysis of these comments concludes that reinforcement or affirmation of identity developed a process of ownership. The ownership considers not just owning knowledge of ICT or owning meaning of ICT education, but rejecting or negotiating the practices that present schools as institutions with political power. The co-researchers were continuously engaged in the training to reinforce their identity as they constructed their own ICT knowledge.

8.6.4 Positioning Social Perceptive in ICT Education Practices

The co-researchers expressed many of their aspirations, expectations, ideals and values as they were participating in this study. Although rural schools are protected by government interests, the ICT education in this study created an environment for them to engage with the aspects of their personal identities. Where the practices do not meet their expectations, this can hinder their process of constructing knowledge of ICT. See response below:

...it is very important for people to know that urban schools are the same as rural schools, therefore all students must learn the same things – It seems the ICT education provided at this school is presented as only for rural schools. You have managed to show us how ICT is connected with our personal lives... (Co-researcher 1042)

Co-researcher 1042 is affected by the connection and interpretation of ICT education made by the education authorities and cannot use his perceptive in meaningful ways, he cannot relate his meaning of ICT education to the education authority's meaning. In

using their perception co-researchers recognize and challenge their presence in the classroom and challenge the school's ideals. They critique whether their values concur with those practices involved in the classroom or schools. They use their identities to continuously negotiate how their ICT knowledge will be valued or seen by other co-researchers or people in their community and by the school. They participate in ICT education to construct knowledge for themselves and others in their community, extending the power of transformative knowledge of ICT to wider aspects of society.

The responses presented above can also be acknowledged as exertion of power by the co-researchers to transform some of the practices involved in ICT education. As they exercise that power, they endorse the interpretive frame used by their community and their identities. The power of rural schools as a political institution is recognised in the rules set in computer labs (See Figure 7.1, 7.2 and **Appendix L**) which most learners oppose.

Figure 7.1 Rural School Computer Lab Rules



Figure 7.2; Rural School ICT classroom rules (copy given to learners)

**RULES AND REGULATIONS INSIDE THE
COMPUTER CENTRE**

- 1. DO NOT ENTER THE CENTRE UNTIL INSTRUCTED TO DO SO**
- 2. NO RUNNING INSIDE THE CENTRE.**
- 3. DO NOT MAKE UNNECESSARY NOISES**
- 4. NO EATING OR DRINKING ALLOWED INSIDE THE CENTRE**
- 5. ONLY PERFORM THOSE TASKS INSTRUCTED BY THE TEACHER**
- 6. DO NOT PRINT UNTILL TOLD TO DO SO BY A TEACHER**
- 7. DO NOT PULL AT ANY WIRES**
- 8. DO NOT LIFT OR MOVE ANY EQUIPMENT FROM ONE WORKSTATION TO ANOTHER WORKSTATION**

- 9. DO NOT FIX OR REPAIR ANYTHING IN THE CENTRE**
- 10. DO NOT TEMOVE ANY EQUIPMENT FROM THE CENTRE**
- 11. LEAVE YOUR WORK STATION CLEAN AND TIDY**
- 12. WORK QUIETLY AND DO NOT DISTURB OTHERS**
- 13. FAILURE TO COMPLY WITH ANY OF THE ABOVE RULES OR OTHER GIVEN BY A TEACHER IN CHARGE WILL RESULT IN YOU BEING SUSPENDED OR EXPELLED FROM THE CENTRE.**

BY SCHOOL ORDER

*www-ama.ac.uk
Learners@mayfield.com*

*ntlato
to
mrs.ajf*

In exerting their perceptions or expectations, the learners (co-researchers) may falsely and consciously observe the rules whilst evaluating the *abstract power* and reinforce *ownership of meaning* in ICT education. In using their perceptive, the learners are able to connect with their own *social experiences* and create a vision of the ICT education they want.

8.7 Discussion on the process of Validating the Theoretical Framework

In this second phase of testing the proposed framework, my focus was on co-researcher identity and its relation to other elements. I have recognized that socially informed ICT education managed to create situated ICT knowledge in which the ideals and values of the co-researcher's community raised an important expectation of this knowledge. The situated knowledge has to be reconciled with other aspects of *learner identities* such as *self* and *social identities*. Moreover, as I argued earlier, the process of constructing ICT knowledge is affected completely by learners' social experiences. As the learners interact with others or as they interact with ICTs, they form social and self-identities which embody beliefs, ideals and the values of their community.

As the learners use their interpretive communities to negotiate with knowledge presented in ICT education, use their perceptions, engage with the practices, and participate in ICT education, they are exerting *individual power* to take *ownership* of the meanings (knowledge) they construct in ICT education. Although these learners may construct the same meaning of ICT education as the one intended by rural schools, other learners will create their own meanings in relation to how they see themselves, their needs, and their identity reflected in practices of ICT education. When the learners affirm their *identities* in the practices, they have a sense of being represented here and as they experience abstract concepts, they negotiate or reject the meaning.

The responses presented by co-researchers in this study are not only descriptions of what they feel or think or perceive, they also construe meanings from their experiences. The co-researcher constructs the knowledge of ICT for himself which also becomes part of his identity for others in his community.

In testing the theoretical framework, I have illustrated the importance of the connection between the learner, the ICT, ICT education and their perceptions (expectations). This resulted in an enactment of transformative knowledge of ICT. As I define the transformative practices of ICT education in rural schools, I am describing a socially informed ICT education which encourages learners to engage in practices to construct their own knowledge of ICT, to become partners in learning, and make relevant experiences as they use ICTs to interact with the school and others in their community.

8.8 Summary: Revising the Theoretical Framework

In Chapter 6, I presented a framework of the *Transformative Act of ICT Education Practices* which has elements of *power, social experience* and *identity*. This framework was validated in this chapter with a new set of comments and data that has led me to identify an additional element to the framework which encompasses the learner experience - the process of enacting *ownership* of the meaning of ICT education. See Figure 7.3 in the next page 269:

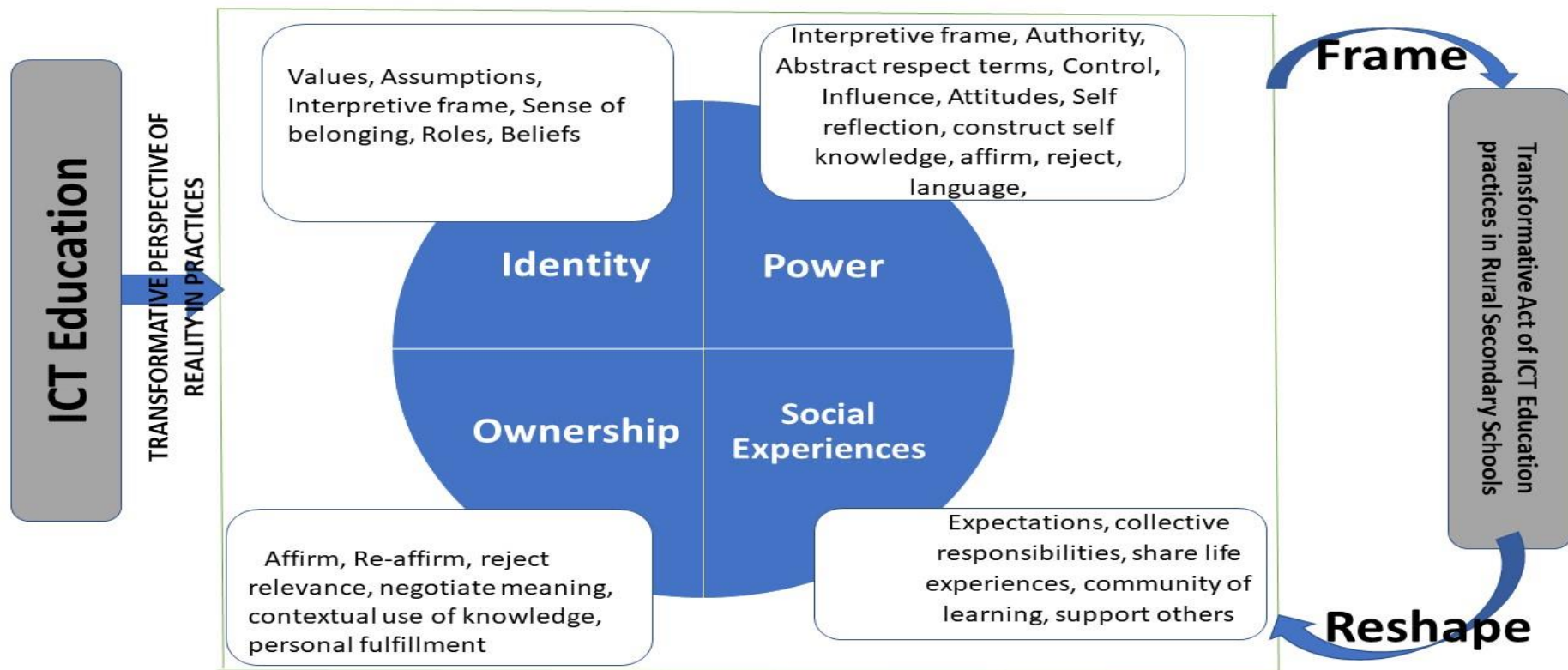


Figure 7.3: A Framework for the Transformative Act of ICT Education practices in rural Secondary school – the revised Theoretical Framework.

Although the diagram shows equal size components attached to each other, each element can dominate depending on the practices involved in ICT education and the extent to which learners value ICTs and the knowledge of ICT. Each of the elements can be resized to become less or more important depending on the learner's perception of the practice involved in ICT education.

I have used the responses made by co-researchers to support my evidence that in ICT classrooms the learner constructs ICT knowledge which forms social experiences. This includes creating, affirming or renewing *self* and *social identity* through ICT education practices. It is invoked by the concepts (ideas) presented by goals of the curriculum, and how ICT devices are set in ICT classrooms. The process of constructing ICT knowledge with a transformative agenda is a *power struggle* for reinforcing *ownership* of the relevant meaning of ICT education, and abstract qualities such as ideals, values, norms, developmental needs and realities which can be established in practices presented by ICT education in rural secondary schools.

CHAPTER 9: Contribution and Conclusion

This chapter provides a conclusion to the research. Reflective of the '*so what*', this chapter includes consideration of the implications of the research for our understanding of ICT education, the importance and potential transformative ICT education, and the relevance of critical thoughts of Foucault on power-knowledge relations for expanding our understanding of the experience. The chapter concludes with highlighting the contributions made, and points out areas for future research.

9.1 Introduction

The practice of providing social development through ICT is a complex concept with many abstract qualities that still need to be resolved. It covers different sectors of society which are in general related to each other (Gray, 2013). As such, to search for the knowledge of using of ICTs in a developmental context, the researcher is not constrained to create new realities. Rather, the attempt is to open a window of new perspectives and understanding of how the presence of ICTs can be or is 'developmental to us' (Gray, 2013; Kempster and Parry, 2011). To achieve this, my research draws on the knowledge from the personal perspectives, meanings and the past and present real-world experiences of participants. Although a goal in this research was to allow co-researcher biases and preconceptions to be voiced, it was also important to understand the phenomenon from the lives and perspectives of each participant as they are engaged in the multi-layered and rich world around them. Thus, the description of responses, comments and thinking, as well as contexts of action and events, were equally important in searching for meaning and understanding.

The co-researchers who participated in this research were prepared to share their experiences of ICT education and of using ICTs in rural communities. The co-researchers were more conscious and reflective as they described their experiences from their own perspectives, in sharing their thoughts and actions and values they had in respect of the conception of developmental needs and realities in ICT education. Though their descriptions of responses were varied in context, diverse in activity and multiple in social situations, they were also marked by aspects of distinct meaning and similarity.

The ICT education (ICT training) engaged in this study was intentionally designed to allow the co-researchers to experience a sense of the authentic self and to engage in the process of becoming, being and belonging. The practices further considered the power and political role of rural secondary schools as an institution. It was evident that not only did the individual participants share some common experiences and the power of ICT education, but also there were other abstract concepts that defined the power effects of ICT education practices on rural community's realities and needs. The

recognition of these effects, along with common themes that marked the expectations and experiences, has been the focus of the research to nurture socially informed ICT education.

The meaning of the lived experience, and of ICT education practices, contributed to our understanding of locating ICT education within ICT4D discourse, and subsequently, and perhaps most valuably, to what ICT knowledge and ICTs can mean to practices or the process of developing rural communities in the South African context. Therefore, the research engaged the participants to share their own experiences, understandings and meanings. This allowed the research to gain insight into how people live in rural communities, what they believe in and expect from ICT education and the sort of things they value and question. In addition, as the leading researcher in the project, I was able to find my own sense of belonging as I reasoned with the sense of knowing, as I felt a sense of shared understanding with each co-researcher.

While the research practices were reviewed using the critical theoretical frameworks (Table 4.1 and Figure 4.1) and principally that of Foucault's ideas of power-knowledge, I argued in the preceding chapters that they do not fully take into account the political and powerful role of education practices, especially of ICT education. I used the theoretical framework (refer to Figure 7.3) in this study to contest the political power that influences ICT education practices to produce passive knowledge of ICT. The framework concedes the authority and position of practices engaged in ICT education in rural secondary schools. It focuses on the power of learners within ICT education practices to draw upon ideals, values, and knowledge of their own social experience and use ICT knowledge to create reflective ICT practices in their communities. The learners' knowledge of ICT embraces all the practices they experience in ICT education and establishes a pattern for subsequent use of ICT in meeting needs and realities in their community.

From this foundation, the discussion in this chapter concludes the research. The chapter commences by presenting the research questions addressed in this study, the potentials that the framework and findings offer specifically on what ICT education can be. The chapter concludes by outlining the contribution and suggested theoretical insights and

implications, and further research recommendations. To begin this chapter, however, there is a short personal research reflection to remind the reader of the foundation of the study and my location in this critical information systems research.

9.2 A personal reflection: ICT Education Practices

The genesis of this research emanated from an awakening of my own experience of teaching ICT in rural secondary schools and training rural communities on ICTs. Not only tied to my own background of growing up in rural areas, but also aware and reflective in what I was teaching, I recognised the passive knowledge in the current CAT subject, and that learners had an enigmatic potential of connecting ICT knowledge to practices and realities in their communities. When this realisation was combined with my intrigue and with the philosophical, and with the understanding of ICT as a tool that can enact social development, the desire to explore the possibilities and meaning of ICT education practices to assist with the developmental needs and realities in rural communities emerged as a more direct reality. Although how to go about this was a problem. Not only did I need to move beyond the structured ICT education, I had to grapple with how to frame the concept of developmental needs and realities in ICT education practices.

In practice, I desired not only to know what transformative ICT knowledge can do for learners, but also for their community. Desiring to bridge the gap between the actual and the philosophic, between expectation and experience, critical philosophy became the methodology and approach of choice. Within this framework, it then became possible to understand what learners are inspired to recognise in ICT education and to accept that ICTs are intertwined with the political power agenda. As the research progressed, however there was also an appreciation of the similarity embedded in diversity. I discovered what I *knew* and others *know*. That is, while learners may use ICT knowledge to act differently, describe diverse experiences of ICT education, there was also a shared awareness and connection to their communities.

To progress through the study, I also needed to find a path, to remain true to my epistemological beliefs, but also to open up to that which was presented. Thus, rather than presume knowledge, I set out to explore the subjective and lived meaning of ICT

education for a group of willing participants. Searching to understand how these participants perceived and understood their knowledge of ICT and ICT education, the research emphasised the individual lived experience. This approach was based on the perspective that learners in rural schools are capable of constructing their own knowledge of ICT, their own meaning of ICT education, and are active and intentional participants in ICT education, who are aware of the reflective use of ICT in their lives (Giroux, 2008; Mezirow, 2000). As a result, critical research was viewed as the most relevant approach as it allowed for the ICT-social world relationship to be prioritised and for individual participant's conscious awareness of ICT to be heard.

Conceptually this study has developed insight into the nature of ICT education experiences in rural secondary schools. It has also developed a theoretical framework that recognises the integrity and validity of the responses made by co-researchers who participated in the ICT education. The framework also presents those responses as factors that must be considered in order to develop transformative ICT education practices that are varied, rich and contribute to the developmental needs, and realities in rural communities.

9.3 Responding to Research Questions

This study was conducted to respond to the following research questions:

RQ1: How do existing secondary school ICT education practices contribute to the social stratification of marginalized rural communities in the Eastern Cape Province?

This question is addressed in Chapters 2, 6 and 7. It is revealed that in rural communities in Eastern Cape in South Africa, the introduction of ICT education in secondary schools remains fraught with difficulties, because contrary to the perceived improvement of learners' knowledge of ICT and skills, it also has hidden agendas and political motives. ICT education is introduced into rural schools without consideration of the contexts and existing practices. This influences people in rural communities to unwittingly have common assumptions on how ICT education in schools reproduces and deepens social structures. This necessitated the transformation of ICT education practices to encourage and enable rural secondary schools to acknowledge the ways in which learners can use ICT education to further social developmental interests of the

community. In transforming ICT education practices, rural schools may present knowledge that reinforces the values, culture, identity and assumptions of rural communities.

RQ2. How do education practices affect the potential of disempowering or empowering communities with ICT knowledge linked to social realities?

This research question is in particular addressed in Chapters 6, 7 and 8. The three chapters provide the detailed discussions on how ICT education practices in rural schools may present knowledge that fails or reinforces the values, culture, identity and assumptions of rural communities. More than educating learners, it is thought important to understand that a rural secondary school is a powerful institution which has the authority to shape knowledge and the behaviour of learners in rural communities and it uses this framework to create meaning for education practices. Understanding the existence of schools in this way helps to account for the 'connection' with and 'effect' they have on rural communities. It is determined that the connection forms part of the identity of rural secondary schools. The practices in ICT education which enact authority and meaning reinforce that identity as do learners when they participate in ICT classroom sessions and interact with ICTs. Viewed as responses to the power presented in schools, the transformative practices in ICT education may be conceptualised to become the principle for making learners become more aware of the role ICT education practices have in the process of constructing ICT knowledge and understanding the reflective use of ICT in the context of community needs and realities. Moreover, the practices may empower learners to willingly challenge or reject unwarranted practices in ICT education.

RQ3. How should the meaning of reflective ICT practices shape the transformation and expectations of communities?

This research question is addressed in Chapters 7 and 8. The chapters identify the practices that exert learners to have the power to construct contextual knowledge from ICT and take ownership of that knowledge. It is emphasised that the moment learners are reinforcing or affirming their identity, they are always in a process of engaging ownership. The ownership considers not just the knowledge of ICT or meaning of ICT education, but actively rejects or negotiates with meanings exerted by schools. Learners

are often engaged in the ICT education to reinforce their identity as they construct their own ICT knowledge. Furthermore, in this process of taking ownership of meaning, the ICT education is also transformed through the integration of learners' interests. It also implies a relationship of *power* between schools and learners. This does not only propose empowering learners to take *ownership* of meaning, but the process may support rural secondary schools in taking ownership of the meanings presented by learners. The recognition of the meanings presented by learners reveals the social experiences in ICT education that reinforces the potential of ICT knowledge to have a transformative effect on learners and others in their communities.

RQ4. How should a critical research methodology be used as a strategy to conceptualise ICT education as a transformative practice, particularised for local community contexts?

This question is addressed in Chapters 4, 5, 6,7 and 8. The research proposed the development of a critical research methodology that explains the method of analysing empirical data. This methodology demonstrated the strategies that may support community critical research to develop meanings of emerging experiences and descriptive findings to be reached. The methodology employs deep considerations that include suspending prior assumptions within the research so that the researcher and participants all become more critical and reflective of what is presented to them, all experiences which are considered in the search for patterns and explanations of identified themes and how experience emerged or is possible. Thus, the methodology supports the research to theorise conditions and the basis that makes the experience what it is. Moreover, the application of this methodology aids in theory construction. The theory of the Transformative Act of ICT Education examines reflective ICT practices in the context of rural community realities. The theory uses the practices of ICT education to describe the elements which constitute reflective ICT practices, *power*, *identity*, *social experience* and *ownership*. The outcome of transformative ICT education is the transformation of knowledge of ICTs, not just for learners or teachers but also for people in rural communities. This knowledge is constructed either reflectively or unreflectively and becomes part of a person. The key to the successful application of this theory is on raising conscious understanding of the nature and potential of ICT knowledge that rural schools can provide to learners.

9.4 Deepening the Meaning of Research Results

The research has developed the framework for the Transformative Act of ICT Education using critical theoretical frameworks (refer to Table 4.1 and Figure 4.1) and CAL practices (section 4.3.1) to capture the co-researcher experiences. In this framework, the ICT education prepares practices that enable learners to respond using their own interpretive frames both emotionally and intellectually. The learners use these notions to reinforce or create self-identity and enact social experiences, depending on how comfortable they are, or how confident they are with the knowledge of ICT. In this framework the practices do not wholly determine but rather influence the process that the individual learner uses to construct his or her own ICT knowledge and meaning of ICT education.

The learner's responses to ICT practices in their communities may be affected by their expectations and the perception of the ICT education and schools. Learners may be subconscious or reflective when they are participating in ICT education and this can have a negative or positive effective on how they perceive ICT knowledge and ICT artefacts. Sometimes the design of classroom practices may enable learners to experience a powerful (an empowered) meaning of ICT education if their imaginations and expectations are acknowledged. This might support learners to create or affirm their identities, to construct their own new knowledge of ICT and new experiences. In other cases, learners may experience an adverse meaning of ICT education which alienates them from the realities of ICT and leads them to create experiences and knowledge of ICT that may negatively affect their future participation in ICT education (ICT class).

In this research, I examined the empirical practices using different settings of critical action learning seminars (ICT education). I interviewed and quoted narratives made by participants, from which I was able to establish goals and aims of ICT education in rural secondary schools. The research allowed me and other participants to understand the political and social role of secondary schools within the communities in rural areas, and also the education strategies and practices that were developed to communicate *respect*, *order* and *slogan* (See Figure 5.2, 7.1 and 7.2).

The responses from participants (co-researchers) and events that occurred during the research were used as data to develop the research outcomes presented in Chapter 6. From the outcome, I built a preliminary theoretical framework (refer to Chapter 7), which was later contested against another set of data from the same empirical (refer to Chapter 8). The responses in all these instances show that participants were addressing ICT education as a person, an aspect expressed by Singh (2004) and Mansell (1999). The participants did not only give the ICT education a role, but also created or adopted various roles which were exemplified in their responses such as baker, teacher, paint artist, volunteer, learner and school leaver. Within these roles the participants commented on how they realised the potential of incorporating ICT knowledge, formed their expectations, accepted or rejected the practices in ICT education and expressed different situated experiences of ICT. This insight supported the research to critically analyse if a critical theoretical framework would lead to a new perspective of ICT education and the process of constructing transformative ICT knowledge.

Applying the critical theory of Foucault and the theoretical frameworks in Figure 4.1 and Table 4.1, permitted me to critically use different viewpoints that could describe the participants' experiences. The events within and outside the classroom are the potential experiences. The participants consisted of people from different backgrounds who were participating as secondary school learners as well as community members. Thus, their contextual knowledge of ICT can be related to the ICT education practices they encountered in and outside the classroom.

Learners (co-researchers) seemed to respond to practices engaged in the ICT education as if they were a social practice. They acknowledged the transformative nature of ICT knowledge by using expressions such as *amazed*, *helping me*, *we really enjoyed* and actively reflected and used their social experiences in constructing their own ICT knowledge in the classroom. The transformative design of ICT education and practices were intentionally set to examine and reveal the power of ICT education within rural communities. The abstract concepts in the ICT classroom were structured as part of a social experience, as part of a learning community in which individuals construct meaning of ICT education for themselves and/or for others within the classroom. This confirms that the "acquisition of knowledge involves knowing the restrictions or

guidelines that are in place according to the knowledge culture” (Cornelius and Herrenkohl, 2004 p470).

I identified instances of social experience within different practices of ICT education that depended on how the learner responded to these practices. The responses show that ICT education practices are not exclusive to realities or social experiences, but they are developed as notions of realities. The practices in the ICT education provided by this study were designed to situate social experiences. As such the learners experienced the power of ICTs, the political power of rural secondary schools, and the hidden authority in ICT education practices. The experiences encouraged most learners to be reflective about themselves, about constructing knowledge of ICT and for use in their life or social experiences.

The research developed a curriculum that has aims and goals associated with the practices and assumptions of individuals. The curriculum content encouraged learners to be self-reflective, and to make the connection and association with their own identities and themselves. Moreover, in the ICT classroom the learners were active in interacting with ICTs and others, making personal connections and relating the practices to their own life experiences. The processes of constructing meanings in ICT education were framed by learners’ ideals, values and expectations related to life experiences. Learners were encouraged to construct meaning from ICT education using their own interpretive framework. Moreover, the process encouraged learners to construct knowledge of ICT for themselves as well as for others within the classroom and in their community. This act changed the way a learner participates in the ICT classroom because subconsciously or consciously she or he understands that they are part of a learning community. The act of allowing learners to contribute their own ideas or assumptions transformed the nature of ICT education. This practice was evident in the way learners were able to identify or negotiate and affirm identities of themselves in the ICT education practices.

The responses and narratives provide evidence (refer to section 8.6 and 8.6.1) of learners using the practices in ICT education to critique or reinforce the values of their communities. These values form part of their identity and the practices of ICT education

provided the opportunity to endorse their identity and the identity of their community. Learners who felt conflicted in the classroom either because of power presented through the arrangement of ICT devices or the concepts presented, responded differently in terms of the extent of emphasis, depending on the degree to which they perceived how their own identity was being undermined. The positive and negative responses were the evidence of the power they used to negotiate for ownership of the meaning of ICT education and its practices, and the extent to which learner identities are reinforced and constituted in their knowledge of ICT.

9.3.1 Reflecting on Ownership of Meaning as Transformative ICT Education Practice

Ownership of meaning is one of the threads in the framework presented in Chapter 8 (refer to Figure 7.3). Rainer and Matthews (2002), described ownership in education as “the linchpin, or a central and cohesive element, of knowledge construction” (pg2). Rainer and Matthews argue that human beings who become mentally active and reflective, are agents in their own learning. As human beings participate in learning practices, they own the knowledge and they relate it to their personal experience. Rainer and Matthews caution that in learning practices we cannot give ownership, rather we should provide structures, processes and conditions that encourage people to own meaning and knowledge.

In the interview and reflective journals, participants expressed various abstract concepts such as *respect* for instance between themselves and the arrangements of ICT artefacts in ICT classrooms. When the participants identified that they were affected by one aspect of ICT education practices, they questioned if the practice represented their interests. Where the participant discovered a connection with a practice engaged in the ICT education, then she or he shared sentiments and affirmed the relevance. These abstract qualities are reconstructed in transformative learning, are reinforced and reconstructed in the negotiation of meaning between people, in this case between schools and learners. The negotiation is part of taking ownership of the meaning of abstract ideas and values that exist in ICT education practices.

In this process of taking ownership of meaning, the ICT education is also transformed through integrating the interests of a learner. It also implies a relationship of power

between schools and learners. For instance, the perception of authoritative power of ICT education practices can be enhanced or weakened by the practices described above. The framework does not only propose empowering learners to take ownership of meaning, but the process may support rural secondary schools to take ownership of meanings presented by learners.

9.3.2 Reflecting on Social Experience as Transformative ICT Education Practice

The other perspective of the framework looks at ICT education practices as a social practice with situated experiences. ICT education in this study has intentionally been designed so that its practices create transformative ICT knowledge and different situated experiences of using knowledge of ICT. This marks the ICT classroom as a learning community. Learners seem to endorse this aspect as they create personal relationships between themselves, as they contribute ideas, as they share knowledge of ICT and as they create their own roles. The curriculum and practices involved have been contributed by learners themselves, since they were encouraged to suggest ideas and information to include in the topics, and to convey the mutual reflective meaning of ICT education. The classroom activities encouraged learners to facilitate their own ideas, experiences and express their concerns. The responses from interviews with participants revealed their situated experience of using the knowledge of ICT. The enactment of ICT knowledge in a situated use of ICT is a social experience.

The social experiences in ICT education are fragmented. In most cases, whether it is reflective or unreflective, and if a learner does not assess the importance of a concept or an idea presented in the classroom, she or he will not comment. Just as in their communities, learners presented their knowledge of ICT in a way that would fulfil their interests. Likewise, not all learners encountered positive social experiences. This phenomenon of negative social experience in ICT education resembles the disciplinary power of knowledge described by Foucault (1977), as “techniques of power that operate within an institution and which simultaneously create a whole domain of knowledge and a whole type of power” (p185). It may produce ingrained conditions for learners to act or think in certain ways. This may produce knowledge of ICT which restricts learners in experiencing or encountering richer possibilities of ICT in their life. The leading researcher (me) took the opportunity within the ICT classroom to

intentionally control learners in experiencing the social aspect of ICT education. Certain rules of conduct and behaviours were deliberately laid down so as to encourage response and reinforce the rural school's meaning of ICT education. The narratives and responses show that the tactic was successful. Learners managed to critique and pay attention to them. In restricting the conduct in the classroom and practices, such as the rules on Figure 7.2, I was able to draw attention to issues that informed the research and to use the same restrictions to support learners construct reflective knowledge of ICT - a strategy which does not always work and which is risky.

The recognition of the social practices and experiences in ICT education reinforces the potential of ICT knowledge of having a transformative effect on learners and others in their communities. ICT education can become a social practice as it contains practices that encourage learners to construct their own knowledge of ICT, to use their community experiences, to discover themselves, to examine their values and ideals, and to reflect on their role in the community. Learners may succeed in constructing their own reflective knowledge of ICT, if they affirm their interest in ICT education and can relate the practices involved to their life experience. The ICT education is not just a learning experience in the intellectual sense as it has the potential to be a social experience which can include informing learners about the knowledge of community development and opportunities that could change their livelihood.

The social experience element of the theoretical framework (see figure 7.3) challenges the ICT4D researchers, ICT4RED practitioners and educational specialists to use the practices in ICT education creatively and reflectively to enrich social development in developing rural communities.

9.3.3 Reflecting on Identity Formation as a Transformative ICT Education Practice

The findings from this research confirm that a rural secondary school is a powerful institution, which has the authority to shape the knowledge and behaviour of learners in rural communities and it uses this framework to create meaning for education practices. The responses from the participants show evidence of the *connection* that secondary schools have with rural communities. The connection forms part of the identity of rural secondary schools. The practices of ICT education which enact authority and meaning

reinforce that identity as do learners when they participate in ICT classroom sessions and interact with ICTs.

The identity of ICT education in rural secondary schools has been created to signify practices that separate the knowledge of ICT between learners in urban schools and rural schools. It is within this practice of differentiating between rural schooling and urban schooling that the undermining of identity becomes possible (Brown and Duku, 2008; North, 2006). If ICT education in rural schools is to change, and is to develop relevant ICT knowledge and incorporate the experiences (needs) of learners, then we must address the transformative role of ICT education practices. Recognition of the possibility of transformation could provide an underlying principle with which to understand the meaning of ICT practices and ICT education in rural communities, in rural secondary schools and the role of identity within these two notions.

The meaning of identity used in this research is also related to biographical experiences, as suggested by critical theorist Maybin (2006). Individuals can never talk about anything without making some kind of judgement or taking a perspective that reflects some kind of evaluative framework that reflects their stance (Maybin, 2006). This sense of identity is attributed to the practices of community in which the learners are members, it embodies past experiences, present experiences and those experiences they strive to have, which are acceptable in their community. The transformative knowledge of ICT that learners acquire, the use of that knowledge, and the interest they have in the knowledge, are part of the experience which they use to renegotiate or reaffirm their identity. As they participate in the ICT classroom sessions, the learners are actively negotiating their identity. Their participation in practices triggers them to construct their own knowledge of ICT in and outside the classroom, affirm their identity, and reconstruct the meaning of ICT education.

The formation of identity by rural secondary school learners is the one of the components in the framework presented in Chapter 7. Identity in ICT education is socially constructed within a set of signifying practices that learners participate in. Within the transformative ICT education practices presented by this study, only

affirmation of certain identities has been noticed and hence the research recognises the importance of ICT education in the formation or reaffirmation of identity.

9.3.4 Reflecting on Power Formation as a Transformative ICT Education Practice

The last element in the framework focuses on the extent to which the learner adopts the knowledge of ICT as power to make use of this knowledge in constructing his or her identity. Foucault stresses the power that predominantly circulates in institutions such as schools as places where learners are required to use certain types of knowledge. He argues that this power “constructs learners as subject[s] in two senses, firstly as subjects to schools through control and restraint, and secondly as subjects tied to their own identity by their conscience and self-constructed knowledge. Both meanings suggest a form of power which subjugates, and makes the subject accept a certain type of knowledge” (Foucault in Dreyfus and Rabinow, 1982, p212). The responses from co-researchers show that the transformative knowledge of ICT enabled them to become the principal of their own subjection. The co-researchers became more aware of the role ICT education practices have in their process of constructing ICT knowledge and understanding the reflective use of ICT in the context of community realities, hence they were willing to challenge or reject them.

The political power of ICT education is not only associated with a rural secondary school as an institution, but also with ICTs, the information presented through ICT, the expertise to use them, and the knowledge of using ICTs. The practices in socially informed ICT education have exercised power in allowing participants to contribute topics, ideas and the interpretation of the concepts, which they identify as most important, politically, economically, socially, historically and connected to their lives. These concepts have significance in wider societies and have a reflective meaning associated with their life experiences. The participation in ICT education creates an opportunity for learners to take ownership of meanings, to make connections with their life or community experiences and to have their identity affirmed or reaffirmed. The responses show the participants power experience when there is conflict or accord.

The participants prioritised certain important aspects of their interpretive framework and established boundaries within which they could construct their own ICT

knowledge. The power of the co-researcher (learner) in most cases was the determinant of interpreting the meaning of ICT education and reflective ICT practices connected to community realities. If the values of school meanings were seen to suppress learners' values, then learners were engaging in minimal negotiations but where they were related, transformation was perceived.

The framework therefore shows that the existence of power within ICT education and its practices has to be recognised by rural secondary schools as political and a strong part of constructing ICT knowledge, which can influence how learners see themselves and use ICT in their community.

9.4 Research Contribution

9.4.1 The Research Implications and Theoretical Insights

In Chapters 3, 6, 7 and 8 I have discussed how my research is informed by the philosophical thoughts of Foucault in understanding how ICT education practices are shaped by authoritative ideas. Rather than focusing on the perception of my own reality, the participants in this research were encouraged to examine the dominant structures that have influence on ICT education, its practices and knowledge in rural secondary schools. Foucault's ideas informed me and co-researchers about the particular importance of analysing the reproductive functions of ICT domains which have been subject to political and social actions in different arenas. Within this perspective, Foucault's ideas formed the response to existing programmed strategies of prevailing structures of conducting critical IS research in a developing community context. Thus, the theoretical stance of power and knowledge shows that the existence of ICT education practices in rural secondary schools has an underlying relationship to the social structures (framework) of rural communities.

Maynard and Ross (1984) explain that "social structures are commonly not visible and devoid of relationships which are hidden within patterns of human behaviours" (p425). There are real social structures such as schools that provide knowledge of which people sometimes don't have the power to question (Foucault, 1977) and this can only be exposed through critical methods of inquiry. I have attempted to engage philosophical and sociological understanding as a means of revealing certain elements of human

actions in society. The two approaches have identified the forces of power, identity, social practices and ownership. Indeed Foucault (1980) interprets the reproduction of such structures and conditions in this thesis through institutional arrangement as a possible site where reproductive power is made. I argue therefore that the interpretation of ICT education practices in rural schools relies on the meaning of social reality in society. In agreement with Foucault's thoughts, I believe that there are effects of power in ICT education that are concealed to hide the meaning of reality in developing rural communities. The research has evidently shown that the knowledge of ICT presented in ICT education practices reflect 'what' really is occurring within the community.

I drew on Foucault in this research to reveal certain social orders that have come to be accepted as reality in rural schools. Foucault (1984, p10) explains that research must endeavour to show people that a lot of things that are part of their landscape and that people see as universal, are the result of some very precise historical changes. This concurs with the methodology I developed in Chapter 4 and it opposes the idea of universal necessities in critical IS research. The methodology contains methods of analysing arbitrariness of inquiring empirical complexity and shows the degree of freedom we can still enjoy in understanding the phenomenon of interest and how changes can still be made. I have also attempted to show throughout this thesis that the proposed methodology is not being used to explain the researcher's experience with the empirical, but rather to advance philosophical thoughts to examine empirical experience, and to understand what it is that experience means in this critical IS research. Also, the proposed methodology functions to highlight paradoxes, contradictions and the conflict approach of understanding the empirical that has been prevailing in empirical IS research. Therefore, my attempt in developing this methodology and use in my research was to shape the meaning made of empirical experience such as on what can be said of empirical practices, on who can say it and the view from which the subject is argued.

Foucault (2000) rationalises his thoughts about power and knowledge to show that there are social and cultural means of privilege in creating the product of truth over another. I have argued in this thesis that 'truth' has different meanings in ICT education.

The truth causes communities to perceive current ICT education practices as universally real. Therefore, I concur with Foucault on the importance of critiquing the construction of truth about ICT education. Thus, empowering learners and communities to critique and transform ideological influences inherited in education practices. However, this research distances its view from Foucault thoughts by showing that such a critical stance requires that the researcher and participants see the school as an institution with political *power* in order to resist attempts of legitimatizing dominant truth in ICT education. From this perspective, I have attempted to reveal the meaning of truth by which rural secondary school's ICT education practices are produced. The truth in current ICT education practices is hidden and thus serves to position communities and teachers to legislate and interpret the knowledge of ICT in a particular historical way.

Furthermore, as I have explained in Chapter 3, the word 'truth' in this thesis is interpreted in Foucault's theory as a *social reality or social experience*. Hence, the social reality has enabled this research to understand the connection of ICT education to the life and purpose of people in rural communities. I have provided empirical evidence to show that the current ICT education practices produce passive ICT knowledge and skills that could have been otherwise, and there is no certainty that things will be any different in the near future. In this critical perspective, the interest of dominant authority succeeds in forming rural community structures and realities. Ultimately, this present, historical and continuous formation of societies has an effect on the meaning of ICT education as well as reflective ICT use by learners and communities.

Foucault (1984) writes that "each society has its regime of truth, its general politics of truth that is, the types of discourse which it accepts and makes function as true" (p73). I have revealed this truth in Chapters 6,7 and 8 that people in rural communities endorse their *identity* as the presentation of social reality. The empirical evidence shows that rural communities establish certain institutions such as schools with the purpose of promoting and safeguarding their identity. The identity of the community is revealed through concepts (knowledge believed to be true) taught in various subjects and influences learners to access certain ways of thinking and actions which are accepted by the community. In this regard, the ICT knowledge in rural secondary schools can shape

learners to connect themselves to realities in rural communities. I have also argued that institutions such as schools presently available in our societies use various tactics to influence certain understandings of truth about ICT education. As such, ICT education in rural schools continues to ignore certain versions of community realities through ideas and knowledge practices. Thus, the results in this thesis provide new understanding of rural secondary schools as sophisticated social structures with the possibility of introducing learners to new forms and patterns of thinking.

In this research the truth is also linked to rural school education practices which have the best interests of communities and learners in mind. The results presented in Chapter 5 concur with Popkewitz and Rose (1996), that schools are constructed and structured to create knowledge solutions for social problems affecting different settings in society. In line with Foucault's thinking, I have observed that rural schools in South Africa can also draw on different educational programmes, policies and practices that attempt to provide learners with knowledge and skills for confronting problems in their communities rather than to discipline, control and subdue learners to certain political or oppressive truths about their society. I have presented empirical evidence on how practices in ICT education in rural schools can be produced within the interest of developmental needs and the realities of society. Moreover, Foucault (1972) presented his thoughts on truth in that it guides people towards moral conduct. I have extended this view to explain that people in developing communities always seek to live within certain *ethical realities* (truth) of life. I concur that within such ethical conducts appropriate choices and practices of specified actions that have particular intended goals are required (Foucault, 1997). Therefore, I argue in line with Foucault that rural secondary schools can also take up the realities of rural communities that are ethical to create transformative ICT education practices. This thesis therefore constitutes various empirical works which ethically can support ICT4D researchers, education authorities and rural schools to construct education practices which can inform learners about the developmental needs and realities of developing communities. Thus, the exploration of alternative practices in this research is not to reach an ethical desired truth but rather to provide transition to certain modes of truth of *transforming* ICT education in rural secondary schools.

The application of Foucault's thoughts also stresses the understanding of strategies that connect power and knowledge within our social setting. For Foucault, power is local and unstable and it emanates from the local centres to produce knowledge. I have also observed from my research that knowledge is developed in various social settings such as faith groups and schools. Thus, the effect of knowledge and power is only being realised in this research through the field work and my engagement in empirical activities. As I also explained in Chapter 1, this research discusses the practical work in respect of my participation in teaching and training people in rural communities, teachers, and learners. Therefore, I came to know about different identities of society represented in current ICT education practices in rural secondary schools. The schools are presumed to be producers of knowledge that hold specific power to subject learners (Freire, 1993). Therefore, the social control that teachers have over a learner indicates the necessary power and knowledge practices for learning. Indeed, without such a setting the circulation of power that produces knowledge in schools would not take place. In this respect, I believe ICT education may potentially come with the knowledge which can empower learners to reflectively engage ICTs in their society or other subjects in schools.

The schools in rural areas are also presented in this research as knowledge centres where a teacher transmits certain knowledge to learners. As shown in this study, a power-knowledge relationship is favourably conditioned in various statements and activities that stipulate the true intentions of schools. Moreover, I argue that different ways of speaking and imparting knowledge in schools can compete with each other to create different intentions of the school. For instance, teacher's expressions and meanings given to ICT can set boundaries of ICT knowledge and skills imparted to learners. So, in Chapter 8, I describe how schools in rural communities lay down rules that set expectations and boundaries for learners thus, restricting options of understanding the importance of ICT in their life. This power-knowledge relationship (discipline, rules) is experienced when learners and schools interpret expectations differently in terms of the application of ICT to social realities. This power-knowledge operates to develop in the learner certain attitudes and beliefs about ICTs. I therefore argue that rural schools maintain the historical educational practices that create,

exclude and validate learners' experiences to exert *ownership* of meaning on ICT education.

The power and knowledge described by Foucault is theoretically centred on the notion of governmentality. In line with Foucault's idea of governance, I have demonstrated how abstract concepts and power in our society control the meaning of various important spheres that affect a learner's life such as ICT education. Moreover, in order to exert its power within the society governmentality requires certain technologies (Foucault,2004). Therefore, I have conceptualised governmentality slightly differently from Foucault in this research as it refers to the process of making and taking ownership of the meaning of ICT education.

In Chapters 7 and 8, I also argue that the notion of ownership of meaning represents both learners and rural schools. This ownership guides learners to construct ICT knowledge that supports them to be reflective in their acting and thinking. Concurring with Foucault, I have revealed in Chapters 6 and 7 that a sense of governmentality which prevails in rural schools where various practices operate to limit a certain understanding of the importance of ICT for learners. For instance, rural schools are sites of governing learners in rural communities, since education practices produce the truths that are unchallenged. Consequently, my research offers hope as I have argued that ICT education practices are also a possible means of transforming rural school practices as well as a conception of meeting developmental needs and realities in rural communities. I have proposed the importance of acknowledging *identity, ownership, power and social practices* as technologies of governmentality that can be used to transform ICT education and society.

At the research methodological level, Foucault's ideas have been used to represent my actions as a researcher and create boundaries for this thesis. For instance, the choices of being an outsider or insider within the undertaking of this research were crucial. The power-knowledge relationship therefore has great impact on various roles that I and participants are playing in presenting the findings, developing the methodology for analysing empirical data and the theoretical framework. The motive here has been to give democratic spaces for participants to air their voices in problematizing the

phenomenon. This research uses every voice of the participant as a critical agenda, since Foucault believed that resistance exists wherever there is power (Foucault, 1977). Moreover, I have argued that the power-knowledge relationship is instituted here to allow participants to reflect on the changes this research has brought about in their life. For example, the activities in this research helped participants to earn new ICT knowledge and skills that later exposed certain injustices and inequalities of ICT education in rural communities. My intention as a researcher was to create good rapport with participants that helped to expose hidden practices of social research in the ICT field. This is highlighted through data and participants' voices presented in Chapters 6 and 8 of this thesis.

9.4.2 Contribution to new Knowledge for Experiencing ICT Education in Rural Schools

The social development in rural developing communities today is under scrutiny to involve ICT as a modern form of development. In the South African context, the government and private sector call for the transformation of rural communities with best values and practical ideas that are more public focused. My premise is that rural communities should use their practices to engage in social development that treasures their values, ideals and identities. Chambers (2014) explained that "whoever the outsiders are, there is a systematic tendency for them to seek the kind of knowledge that fits their own mental framework, instead of listening humbly to what the rural poor have to say" (p246). As such, this study re-examined ICT education practices by incorporating the identities, values and ideals of rural communities as a step towards developing the conception of social development.

The research has developed a theory of Transformative Acts of ICT Education (refer to Figure 7.3) which examines reflective ICT practices in the context of rural community realities. The theory uses the practices of ICT education to describe the elements which constitute reflective ICT practices such as *power, identity, social experience* and *ownership*. The outcome of transformative ICT education is the transformation of the knowledge of ICTs, not just for learners or teachers but also for people in rural communities. This knowledge is constructed either reflectively or unreflectively and becomes part of a person.

I believe that this understanding of the transformative nature of ICT education as well as the factors which contribute to the transformative practices presented in the framework, encourage a fundamental shift in the way people see the function of ICT education. Only by adopting education practices which recognize the way power, identity, ownership and social experience offer people (learners) particular views of themselves and the world, can ICT education fulfill the potential of becoming a transformative ICT practice. Such a view is often implicated in the ICT4D or ICT4ED discourses and the relationship between power and ethics. To emphasize the importance of ICT education is to critically examine not just how rural secondary schools construct the political and ideological positions from which they make meaning of ICT education, but on how learners make meaning of ICT education. Mezirow, an American critical sociologist and educator, defines transformative as “how to negotiate and act upon our own purposes, values, feelings and meanings rather than those we have uncritically assimilated from others” (Mezirow and Associates, 2000 p8). This appears to me to be precisely the purpose of transformative ICT knowledge. If rural schools can understand the practices that can be engaged in ICT education to allow learners and teachers to create this knowledge, then they can develop transformative ICT education and fulfill purposes of ICT knowledge.

The definitions like that of Mezirow differ from the traditional meaning of ICT education in rural schools which does consider ICT knowledge as unequal to important spheres that affect a learner’s life aspirations, such as access to social services, access to relative education, and creating and accessing opportunities within their communities. As the society continues to recognize the importance of ICTs and their relationship to ICT education, the schools in urban areas have adopted new practices in their ICT education curriculum. This development is championed by the Department of Education and has become powerful in influencing and differentiating the knowledge of ICT between urban and rural schools.

The developments in technology and the infusion of different forms of ICT in developing communities has made the importance of ICT knowledge more urgent (Kleine, 2013; Carden, 2009; Moodley, 2005). In most rural communities, people are seen to embrace ICT as a modern form of meeting developmental needs. Although these people belong to

different interpretive communities or cultures, they use ICT as a platform to establish connections and share information. The knowledge of ICT supports them in learning new practices and ways of being that lead to the recreation of their identities. They aspire to use ICTs in meeting community and personal needs, although they are hindered by processes of acquiring relevant knowledge of ICT.

Krauss (2013) writes that the enabling critical factor, the one that brings reflective use of ICTs in the South African developing context, is the understanding of *meaning* from within the social context and lives of people. He argues that “issues of meaning may also include the need to understand differences and collisions between the African and Western worldviews, associated value systems and the ways in which developing communities innovate and function” (p26). The central attention in this aspect is people’s engagement with systems that are established to share meanings, values, beliefs as they participate in the practices of society. The critical frame to understand this point of view is ICT education - the practice that is affected by such engagement. ICT education is not only a practice of providing technical meaning of ICT devices, nor even a matter of allowing students access to and use of the ICT devices the schools have. It is a pursuit of fitting ICT knowledge to the life experiences of learners and their life experiences to the practices of ICT education.

The framework of the transformative act of ICT education practices has been built up within contextualized ICT education. The framework recognizes the social and ideological basis on which knowledge of ICT is constructed and creates a learning environment in which new meaning of ICT practices, new meaning of ICT education and new identities are formed or recreated. By focusing on learner’s community or social experiences, the ICT classroom can become a space where the boundaries of interpretive frames are clearly presented and these boundaries examined explicitly. Through the practices engaged in the ICT classrooms, learners can explore their identities, values, ideals and the knowledge that underpins their worldview. As learners construct their own ICT knowledge, they can contest, confront or collaborate with the meaning of ICT education presented by schools, making the boundaries of their interpretive frame clear. Mezirow (1991) writes that we must “provide learning that transforms problematic frames of reference-sets of fixed assumptions and expectations

(habits of mind, meaning perspectives, mindsets) to make them more inclusive, discriminating, open, reflective, and emotionally able to change” (p 2000). Such frames of reference are better than others because they are more likely to generate beliefs and opinions that will prove the truth or are justified to guide action. ICT education as a transformative practice can provide such a learning experience.

The role of the teacher is central to practices of transformative ICT education. Teachers should not retreat but rather assert the life experiences or assumptions presented by learners. The teacher has to be a collaborator who understands conflict and collision associated with reflective ICT practices and the meaning of ICT education. By this I mean that while the teacher might not have all the necessary ICT expertise and ICT knowledge the same as learners she or he can emphasize the narrative reasoning, which assists learners in sharing their experiences and revise these experiences with the new knowledge of ICT. Thus, the teacher should be able to separate perception from being. Perceptive experience of learners means understanding the learner’s experience. The teacher therefore interprets the experience through the learner’s frame rather than having the experience herself or himself.

The transformative practice of ICT education shifts the power-knowledge relationship away from the traditional practice of transferring ICT knowledge towards a strategic practice of engaging with ways in which learners can construct their own reflective knowledge of ICT. Learners must participate during learning activities that affirm and re-examine the complexity of their identities and permit them to utilize their interpretive strategies. Transformative practice in ICT education is more than simply encouraging narrative reasoning and sharing experiences, it means understanding how learners’ knowledge and experiences associated with ICT will not fit easily into existing goals of current ICT education. The value of ICT knowledge is its transformation character which can enable an individual to situate ICT to create desired experiences within the society. ICT classrooms should be seen as a space for a potential source of possibility, experimentation, social experience and identity formation. Mezirow’s notion of creating and appropriating revised and new interpretations of meaning of an experience must be combined with Foucault’s notion of rediscovering power and

helping learners to develop an awareness of agency to transform their own reality and society.

Teachers must acknowledge and use the relationship between power and knowledge, and create an environment that supports learners to have their social experiences accepted so that they can revise or construct new knowledge of ICT within a framework of explicit values and ideals. It is in the process of constructing reflective knowledge of ICT that learners make connections with their own social experiences and are transformed to appreciate the importance of ICTs and they invest their efforts in creating their own knowledge of ICT. This is akin to the appropriation of ICT knowledge, that has been described by Myers (2009) as a means that we can only come to understand the meaning of knowledge if “we make it our own” (p189). Appropriation of knowledge is crucial for making meaning. The task is to use practices in ICT education that encourage learners to critically examine the context of knowledge presented in the practices and construction of new meaning.

A transformative ICT education based on the perspective of engaging practices that support learners to enact their identities will open up the possibility of integrating social, cultural and community realities that are not referenced in dominant models of education in rural schools. Learners will be encouraged to cross political and ideological boundaries of knowledge as a means of broadening their knowledge of ICT in a setting that has been transformed to socially nurture rather than infuse authoritarian and political correctness. Mansell (2011) argues that “many see great potential in the knowledge of ICT as an impulsion towards progress of the individual or society” (p15-16). Thus, the transformative ICT education strives to “uncover the real structures in the material world to help learners change conditions and build a better world for themselves” (Neuman, 1997 p74).

The key to the successful application of the framework presented in this thesis is based on raising conscious understanding of the nature and potential of ICT knowledge that rural schools can provide to learners. The schools must articulate their own meaning of ICT education, transform the practices by using ICTs and classroom environments that may encourage learners to construct reflective ICT knowledge and negotiate meanings.

The focus must be on providing knowledge of ICT that enables learners to experience desired realities in society and to engage learning practices that empower learners to reflectively use the knowledge of ICT.

9.5 Consideration for Further Research

This study has been developed as a theoretical framework to provide a foundational understanding for empirical experience and could help other researchers to develop research practices which can make a real difference in the lives of people in developing communities. This framework offers the beginning of a crucial task for others to explore further the process of making relevant meaning of ICT education in social development, which is currently missing in rural schools. What I have offered in this framework are complex ideas from the empirical that suggest contributions to that crucial task. Moreover, further research is required to examine each or the combined elements of the framework. Other critical researchers in IS or education might wish to develop research methods that would explicitly test whether the theories that I have articulated lead to the outcomes as I have argued in this thesis.

9.6 My Reflection on this Research

Living this research process for many years (refer to section 4.1 and Appendix A), engaging with people who had a different experience and knowledge of ICT, watching them articulate the potentials of ICT and ICT education that they found for themselves and others in their community, I have reflected more on the possibilities that ICT knowledge and ICTs offer in people's lives. I have thought about how ICT education is not just an activity that is engaged to excite learners on use of ICTs. While it incorporates practices that reflect values, identity and the ideals of learners and society, it also stimulated me to feel a sense of belonging and helped me to learn more about myself.

The research process created a time of acceptance, epiphany, challenge and struggle, of joy and wonder. The experience and knowledge of ICT that the participants acquired from this research was lived and appreciated. They owned the knowledge and created meaningful experiences. To express their experiences, it required thought and reflexivity from their side. Their narratives offered evidence of action, clear location and

situated experiences. Each part of the narrative and responses suggested meaning. The implications of this research in both the fields of critical information systems and ICT for education are multiple and contain practical ideas for further research.

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APPENDIX A: MY PERSONAL RESEARCH STORY

This thesis represents my personal emancipation from common assumption that ICTs are neutral mechanisms for improving the lives for people in marginalized communities. Such a view was mainly driven by my historical background. I was born in a rural community with poor living conditions. As I grew, my concerns were on having equal access to educational resources that others in mainstream had access to. It later became clear to me that social conditions would not allow people like me to enjoy the same privileges as others in main stream since the social structures in our society are strongly guarded by inequalities. Furthermore, living in a rural community heightened my low status although I was not content with this. My attempts to seek for joy and freedom were always hindered by the walls set by open and hidden injustices. For so long my family and community legitimized such practices as the universal way of living and discarded as obsolete and/or irrelevant to the question.

After so long, the hope to come out of such darkest cells came through an approach that offered me to critique every event that matters to people's lives in our society. As such this thesis comes out of my interest to break the walls that lend deprived communities not to critically investigate the role and importance of information technology in their everyday life. It led me to question how I, as a re-researcher, should advance the question concerning the significance of the increased presence of information technology in everyday life in terms of the social developmental intentions of rural communities. Moreover, it became my duty as an emancipated citizen to enlighten others to question assumptions inherited in ICT education and use of ICTs for social development. The time I was conducting this study, I saw how communities violently accused schools for not responding to community needs and realities. I experienced communities protesting and close one of rural secondary schools, and forcing the Department of Education to transfer all teachers to other schools. I heard participants regret for failing to access various job opportunities that required basic knowledge of ICTs. Thus clearly, it came to my mind that ICT education and human experience are related issues that need critical attention.

I have come to realise that schools are institutions inflicted with political, economic and cultural domination. Such inequalities have left me not to remain neutral and silent. Through findings from my research, I hope that it will motivate other researchers to call for more participatory

and transformative ICT education. I am compelled as well by the notion that the participants are inspired to retain their position in the society. This is my plight of being an emerging critical philosopher who “thinks differently”. On the other hand, this leaves me worried about the “gap between knowing and living” although I have questioned how some of our knowing is constructed, and I am increasingly aware that there are other ways of knowing and living.

APPENDIX B1: INTERVIEW QUESTIONS FOR PARTICIPANTS

In Training Interview Questions for Participants

Leading questions

What do you know about ICT education?

Anything you know about ICT education in this or any school in this area?

How does ICT education help the life of learners?

What are the implications of not having ICT education in rural schools?

What would it take to help rural schools realise the importance of ICT education ?

What are your opinions regarding;

- How you are learning about ICT in this training?
- What you think people are interested to in participating in this ICT training?
- What does ICT knowledge and skills mean to your life?
- What is at stake if you do not learn about ICT in your life?
- What is at stake if you do not learn about ICT in your community?
- Any attitudes towards ICT education? (i.e current ICT education in rural schools and this ICT training in which you are participating)
- Thinking about your background, past experience, community life, community social problems, what are your expectations from participating in an ICT class?
- What do you believe are your chances for success after attending this ICT class?
- What social challenges do you face that require one to use ICT?
- If you do not consider your background, past experience, community life, community social problems what are your desires/aspirations?
- Do you think you have a real chance of improving your livelihood once you receive ICT training?
- Do you think you have a real chance of improving your social challenges in your community once you receive ICT training?
- What has life been like in your community been like without have ICT knowledge and ICT skills?
- How do current ICT education practices in rural schools keep the learners from not understanding community realities?
- How does ICT education fail learners and people in your community?
- Some of the participants (or learners) have access to ICT at home already. How did they get the ICT? And why do they still attend this training?

Your opinions about ICT training

- What is working during the training?

- What motivates you during the training?
- What are your ideas for reaching people in order to understand the effect of ICT your community?
- What differences exist between you and people who don't consider the use of ICT in their daily living in your community?
- Where do (will) you normally access ICT?
- What are the effects of accessing ICT in the place you mentioned earlier?
- Under what circumstances would you prefer to access or use ICT knowledge from this training?
- What are some unanticipated effects of ICT knowledge you are attaining from this training? Positive and negative.
- Do you feel the training resembles a developed community? (why/why not?)
In your understanding; Do you thinking ICT can (enhance) provide:
 - empowerment
 - employability
 - self-perception
 - quality of life
 - socially develop your community
 - access to various opportunities

Acquiring ICT

- What would it take for you to get any ICT device? i.e computer, laptop, TV etc
- What would you have to give up in order to get any ICT device? i.e computer, laptop, TV etc
- What would consider to be the main use of ICT device bought?
- Is there any significance if you can't own (access) any ICT devices, technology?

About the research

In your own understanding;

- What is the value of this research ?
- Has your belief or (and) attitude about ICT changed? (why/why not?)
- Will you manage put into practice things learned with others in your community?

APPENDIX B2: PILOT FOLLOW UP IN-DEPTH INTERVIEW QUESTIONS FOR
PARTICIPANTS

What does the term ICT mean to you?

— do you consider yourself knowledgeable about ICT? (why/why not?)

What does the term ICT education mean to you?

How does ICT education relate to you and your community life?

Have you had at any point resolved or understood community social problems through use of ICT and would you refer to this as experience of ICT?

Identify some ICT experiences you have had

— can you think of any others

— are any of the mentioned ICT experiences more important/more significant than others (why?)

Please describe one these ICT experiences to me?

What was it about the situation that contributed to/or facilitated the experience?

How have these types of experiences affected you? (i.e. use of ICT experiences in your community)

—your identity

— your culture

— things you value in community

— life

— life choices

— personal understanding of social problems in your community

— personal needs

How do ICT knowledge and social realities connect in your life?

How do ICT knowledge and social realities connect in your community?

How does ICT knowledge and skills contribute to personal development?

How does ICT knowledge and skills contribute to community social development?

In your own understanding what are the characteristics of a social developed rural community?

What does socially informed ICT knowledge and skills mean to you?

— do you have other terms that you would use instead of socially informed ICT?

— why would you use these terms?

How does socially informed ICT knowledge contribute to your community needs and realities after participating in ICT class and experiencing new ICT knowledge? In your own understanding;

- how does ICT education fail learners in order not to actively use their knowledge in community issues?

- how do current ICT education practices in rural schools fail your community?

APPENDIX C: REVISED FOLLOW UP IN-DEPTH INTERVIEW QUESTIONS

What does the term ICT mean to you?

— do you consider yourself knowledgeable about ICT? (why/why not?)

How does ICT relate to you and your community life?

Have you had at any point used the ICT knowledge and skills attained from the project in solving your needs and that you would refer to as experience of ICT?

Identify some ICT experiences you have had

— can you think of any others

— are any of the mentioned ICT experiences more important/more significant than others (why?)

Please describe one these ICT experiences to me?

— what happened

— where/with whom

— characteristics

— reaction or feelings

— how did it effect you?

What was it about the situation that contributed to/or facilitated the experience?

Why do you refer to this experience as being ICT experience?

Why did you suggest the experiences as being ICT education?

How have these types of experiences affected you? (i.e. use of ICT experiences in your community)

— identity

— your culture

— things you value in community

— life

— meanings of social realities

— enhance nature of relating yourself to community

— life choices

— personal understanding of social problems in your community

— personal needs

How do ICT knowledge and social realities connect in your life?

How do ICT knowledge and social realities connect in your community?

How do ICT knowledge and skills contribute to personal development?

How do ICT knowledge and skills contribute to community social development?

What does socially informed ICT education practice mean to you?

— do you have other terms that you would use instead of socially informed ICT education?

— why would you use these terms?

How does socially informed ICT knowledge contribute to access of opportunities/needs in your community?

Do you think ICT helps to structure or create ways of understanding the needs in your community?

After participating in ICT class and experiencing new ICT knowledge, in your understanding:

- how do current ICT education practices in rural schools keep the learners down?

-how does ICT education fail learners in order not to actively use their knowledge in community issues?

APPENDIX D: RESEARCHER REFLECTIVE JOURNAL GUIDELINES

Reflection on interview

- what was the interview like for me and the participant?
- what must I improve in the next interview process?

Reflection on research intentions

- After the interview what does socially informed ICT mean to me? (explain any ideas noted)
- Is there anything I can relate from the training and interviewee to new understandings or meanings?
- How is the nature of social challenges being addressed by the interviewee?
- How does my research connect myself to interviewee?

APPENDIX E: PARTICIPANT REFLECTIVE JOURNAL GUIDE

Thank you very much for your participation in the ICT training and interview process for my PhD research project. I enjoyed our discussions during the interviews and in the classroom and look forward to your reflections on the agenda of this research. As mentioned, when you started participating in this research project, you were kindly requested to write some reflective journals that extended our discussions started in the interview and classroom. The journaling phase is designed to allow you to have a time to reflect on actions taken after attending training sessions and after completing the training. This phase of the research asks you to respond to three different areas. Firstly, how you felt about the knowledge and skills attained through the ICT training. Secondly, further exploration of practical ICT experiences encountered in your community. Thirdly, how your socially informed ICT knowledge and skills has developed over the course of your life in the community. Please look through the attached guidelines for different things to reflect on and respond to. You are free to respond to the guidelines and any other issues that you think could complete the objective of this research and your personal experiences. You are welcome to respond in any order which you feel most comfortable. You are also welcome to respond through a piece of paper or email me the response.

Remember you are requested to write one journal every week as you participate in this study and the last journal within three months after participating in this study. You are free to take more time to reflect, write, and capture your experiences after participating in research training project. You can also contact me, for any further questions or concerns. I would like to thank you for participating and responding to research activities.

Enkosi kakhulu

Mr Clement Simuja

APPENDIX F: PARTICIPANT REFLECTIVE JOURNALING OUTLINE

Reflection and review of socially informed ICT experience

- Describe any of your new experiences of using ICT in your community?
- How do ICT experiences now form part of your life in the community?
- Explain or list any of the ICT experiences that connect you and others in solving community social developmental concerns?
- Any other thoughts about ICT education, ICT knowledge, ICT skills, ICT experiences and social realities we/never discussed in this research?

Story experience (narrative)

Any story you might want to share.

In part, I would like you to consider the development of socially informed ICT knowledge in you. In effect this means thinking about different aspects of your life that have impacted on , affected, influenced and led you to arrive at the experiencing of socially informed ICT you consider yourself now. You can also consider outline the story by focusing on the following:

How your understanding of socially informed ICT has developed and how that has changed over the course of living in the community? What were the stimulants for these changes? What role has the participation in ICT training involved in this study played in this process? I understand this story is too personal, but be assured the information is kept secret and confidential in this study.

APPENDIX G: PARTICIPANTS INFORMATION DETAILS

PERSONAL INFORMATION

Name: Gender: M / F Age.....

Physical address (location).....

Contact Number:

E-mail.....

Education (level).....

Marital Status

Please list any responsibilities you have in your community:

Are there any concerns you have before participating in this ICT training?

Are there any areas for which you feel you need special assistance or help with regard to attending and participating in classroom activities?

Is there anything additional that you would like me to know as your co-participant or facilitator in this training?

APPENDIX H: PARTICIPANTS CODE AND ROLES

Code for Co-Researchers	Roles/ Experience
1001,1002,1007,1008,1015,1025,1028,1029,1020,1022,1024,1029, 1033,1034,1035,1040,1045	Teacher in Rural Secondary school
1003,1004,1011,1014,1033,1043	Educated Elders within the community
1022,1026,1027,1028,1039	Secondary school dropouts
1047,1049,1053	Uneducated community members(members with no formal educational background)
1014,1019,1020,1042,1046,	Running different small- scale personal businesses
1023, 1025	Paint Artist
1024,1032, 1036,1038,1048,1050,1051,1052	Community Social Volunteers
1005,1006,1009,1010,1011,1012,1013,1016,1017,1018,1021, 1023,1030,1031,1037,1041,1044	Secondary school leavers (completed school and still searching for opportunities)

APPENDIX I: INFORMED CONSENT LETTER



RHODES UNIVERSITY

Where leaders learn

Research Information Letter

Study Title: Transformative ICT Education Practices in Rural High schools in the Eastern Cape: Providing knowledge relevant for developmental needs and realities

Researchers: Mr Clement Simuja and Professor Kirstin Krauss

This letter is an invitation to participate in a research project. Before agreeing to participate in this research, we strongly encourage you to read the following explanation of this study. This statement describes the purpose and procedures of the study. Also described is your right to withdraw from the study at any time. This study has been approved by the Research Ethics Board of Rhodes University

Explanation of Procedures

This study is designed to critically examine and explain ICT education knowledge relevant for addressing developmental challenges in rural communities in South Africa. We are conducting this study to learn more about this question since it has not been studied much in the past.

Confidentiality

The information gathered in this study will remain confidential in secure premises during this project. Only the researchers (Mr Clement Simuja and Professor Krauss) will have access to the study data and information. There will not be any identifying names on the reflections, discussions or interview transcripts. They will be coded and the keyed to the code and will be kept locked away. Your names and any other identifying details will never be revealed in any publication of the results of this study. The results of the research will be published in the form of a research paper and may be published in a professional journal or presented at professional meetings. It may also be published in book form. The knowledge obtained from this study will be of great value in guiding the education authority and community in use of transformative ICT knowledge for development.

Withdrawal without Prejudice

Participation in this study is voluntary. Refusal to participate will involve no penalty. You are free to withdraw consent and discontinue participation in this project at any time without prejudice or penalty. You are also free to refuse to answer any question we might ask you.

Further Questions and Follow-Up

You are welcome to ask the researchers any questions that occur to you during the discussions, classes or interview. If you have further questions once the interview is completed, you are encouraged to contact the researchers using the contact information given below. If, as a result of participating in this study you feel the need for further, longer term support, you are welcome to contact: csimuja@gmail.com/kirstin.krauss@gmail.com or on telephone numbers 0612062452 /0825306815.

If you have other questions or concerns about the study please contact the chair of the Research Ethics Board at Rhodes University at, 046-603 8055 or via e-mail at: ethics-committee@ru.ac.za.

I, _____, have read the above information. I freely agree to participate in this study. I understand that I am free to refuse to answer any question and to withdraw from the study at any time. I understand that my responses will be kept anonymous.

Participant Signature/name Date

APPENDIX J: CURRICULUM GOALS

Goals for the CAL (ICT training) seminar

- a. To develop a community of learning, where the facilitator delivers instructions, assistance, resources and input as you need them.
- b. To enable you to look closely at every aspect of the classroom instructions and practices.
- c. To provide you with problem solving skills, information and training for successful use of ICTs.
- d. To help you explore/articulate YOUR beliefs, preferences and needs as a learner and community member.
- e. To create a classroom community where problems are shared and solved collaboratively.
- f. Understand the generic contribution of ICTs to social development
- g. Identify key roles, challenges and questions in the application of ICTs to specific social development goals.
- h. Consider your perspective of participating in the training as of a secondary school learner with passive ICT knowledge and establish social implication of such knowledge.
- i. Mobilize ideas to critically understand the knowledge embedded in rural secondary school ICT education and its practices.
- j. Collectively establish socially informed ICT knowledge and skills and re-construct current ICT education practice with new understandings and meanings.
- k. Engage in collaborative use of socially informed ICT education practice to understand community realities.
- l. Explore the connection between ICT education and community needs and consider the school education practices and effect upon the community's social development.
- m. Explore our experiences, assumptions, attitudes, and cultural values about ICT. Be able to critique and transform their own situating problems using socially informed ICT knowledge and skills.

Establishing the intended goals as above the following topics will preliminary guide our practices. The training is flexible to add, remove and revise each topic to as needed or requested.

- a) Basic understanding on starting up a computer, set-up an email account and computer operation.
- b) Creating individual and community dialogue, individualize digital citizenship and social development participation using ICTs.
- c) Develop and create meanings for ethical use of ICT use in society
- d) Translate ICT knowledge and experience and required skills into the community domain
- e) Creating a socially informed class model. The topics emerge as participants engage or discuss contextual and practical use of ICTs in their community
- f) Use ICTs to tell their story of being a citizen in a community (facebook, blog, citizen journalism, other social medias)
- g) Daily and weekly classroom informal and formal conversations about the connection between ICT education and social realities in rural communities.
- h) Develop collective understanding on the use ICT for development means in the community.

- i) Develop collective understanding on the role ICTs play in the delivery of human development goals.

APPENDIX K: ETHICAL CLEARANCE



RHODES UNIVERSITY
Where leaders learn

Rhodes University Ethical Standards Committee, Rhodes University, P O Box 94, Grahamstown, 6140
Tel: +27 46 603 7366 • Fax: +27 46 603 8934 • Email: ethics-committee@ru.ac.za

29-Jan-2016

Dear Clement Simuja,

Ethics Clearance: Transformative ICT education practices in rural high schools in the Eastern Cape: Providing knowledge relevant for developmental needs and realities

Principal Investigator: Clement Simuja

This letter confirms that a research proposal with tracking number: RU-HSD-15-11-0003 and title: **Transformative ICT education practices in rural high schools in the Eastern Cape: Providing knowledge relevant for developmental needs and realities** was given ethics clearance by the Rhodes University Ethical Standards Committee pending attention to the following:

A confidentiality agreement should also be signed between translators and transcribers and the researchers. Please do so.

Please contact the Ethics Committee for clarification of the stipulations, if deemed helpful.

Please ensure that the ethical standards committee is notified should any substantive change(s) be made, for whatever reason, during the research process. This includes changes in investigators. Please also ensure that a brief report is submitted to the ethics committee on completion of the research. The purpose of this report is to indicate whether or not the research was conducted successfully, if any aspects could not be completed, or if any problems arose that the ethical standards committee should be aware of. If a thesis or dissertation arising from this research is submitted to the library's electronic theses and dissertations (ETD) repository, please notify the committee of the date of submission and/or any reference or cataloguing number allocated.

Yours Sincerely,

Professor M. Goebel: Chairperson RUESC.

Note:

1. This clearance is valid from the date on this letter to the time of completion of data collection.
2. The ethics committee cannot grant retrospective ethics clearance.
3. Progress reports should be submitted annually unless otherwise specified.

APPENDIX L: CLASSROOM RULES

UKHANYO SECONDARY SCHOOL
SCHOOL POLICY COVERING TERMS AND CONDITIONS FOR USE OF THE COMPUTER
FACILITIES AND ACCESS TO THE INTERNET.

Access to the computer center and Internet is primarily available to students and staff of Ukhanyo Secondary School.

Students and staff of other schools in the area may use the facilities with prior arrangement with Ukhanyo Secondary School.

Non-students and non-staff in the Alexandria community may use the facilities with prior arrangement with Ukhanyo Secondary School.

The original purpose of the computer facilities and Internet remains that of supporting educational purposes and research by providing access to resources and opportunities for collaborative work.

Our goal in availing this access is to promote educational excellence, encourage innovation, communication and launch students into the Information Technology era.

Students and staff have access to:

- Educational software
- Electronic mail communication with people all over the world
- Information and news from research institutions
- Discussion groups on a variety of topics that are content and age appropriate
- Access to libraries and other electronic data bases
- NetMeeting facilities

With access to computers and people all over the world also comes the availability of material that may not be considered to be of educational value in the context of the school setting. As such, the school has taken precautions to restrict access to controversial materials. However, on a global network it is impossible to control all material and an industrious user may still discover controversial material and information. Regardless, we firmly believe that the valuable information and interaction available on this worldwide network far outweighs the possibility that users may produce materials that are not consistent with the educational goals of our school.

1. Conditions

The smooth operation of the center relies upon the proper conduct of the users who must adhere to strict guidelines that require ethical and legal utilization of the resources. These guidelines are provided here so that users are aware of their responsibilities for the use of the network and Internet. Any user who violates any these guidelines will have his or her account terminated and future access may be denied. There may be legal as well as school consequences for violators.

2. Acceptable Use

The use of any account must be in support of educational and research, and consistent with the educational objectives of Ukhanyo Secondary School. This requires efficient, ethical and legal utilization of network resources. We shall therefore at all times strive to ensure the use of our network conforms to national and international policies and laws.

The following are prohibited uses on our network:

- a) Use of our network to access, store, distribute or promote illegal activities including but not limited to bomb-making, drugs, gambling or pornography.
- b) Use of our network to promote racism, sexism, or other any other forms of discrimination.
- c) Use of our network to install, use, store, duplicate or distribute copyrighted materials, including software, files, video clips, photography, graphics, text, music or speech.
- d) Use of our network to plagiarize work of others.
- e) Use of our network for non-school, non-educational related activities including but not limited to political, recreational or commercial purposes.

APPENDIX M: IMPLICATIONS FOR ICTS IN EASTERN CAPE PROVINCE SCHOOLS

Laptops are 'ornaments' – teachers

Computers gather dust in the homes of Eastern Cape educators who haven't been trained to use them

Bongekile Macupe

The Eastern Cape department of education has spent millions on information and communication technologies programme, which includes providing foundation phase teachers with laptops that they aren't using.

In March, MEC of education Mandla Makhupula announced the provision of laptops to 16 817 grade R to grade three teachers.

According to the *Daily Dispatch*, the department had set aside R250-million for the first phase of its digital initiative, which included laptops for foundation teachers and laptops and tablets for principals. The laptops come with two gigabytes of data.

But the *Mail & Guardian* spoke to several teachers from different districts in the province who all said they have never used the laptops since getting them in August and early September.

This is because the majority of these teachers – based mostly in rural schools – are not computer literate. The laptops were their first exposure to the gadgets.

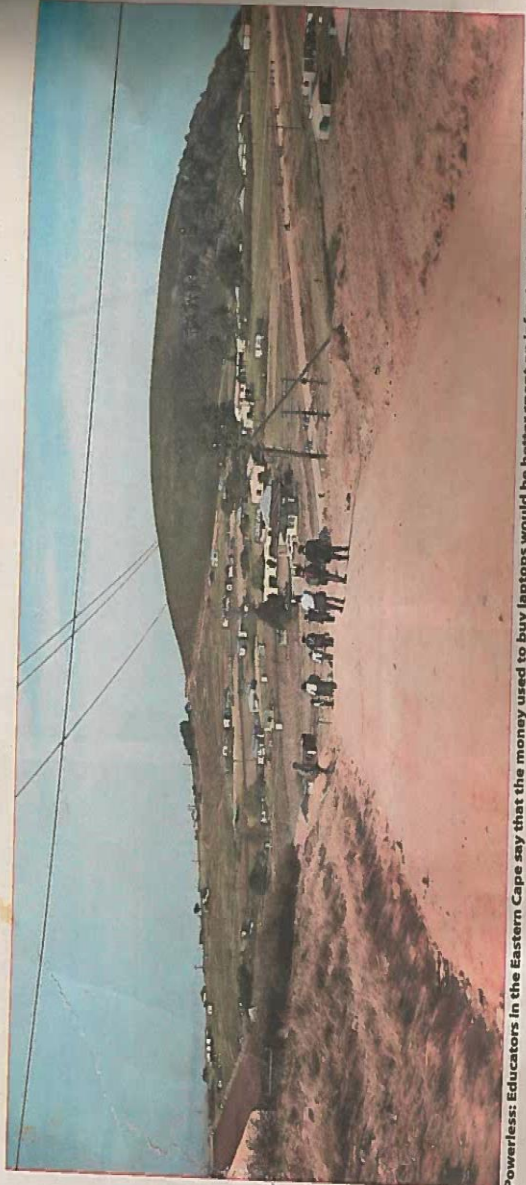
The teachers were unable to use the laptops. No one told them what they would use them for. On the day they received them, they were "vaguely" told that they would be used for lesson plans, to capture pupil's marks and to register attendance.

That was it. There was no training in how exactly they were supposed to do all this.

"It has been in my mind since I came back with it. What am I supposed to do with it?" said grade one teacher from Mount Fletcher. "I have never used a computer in my life and I am not now, as a grown woman, miraculously going to learn how to use it without any training from those who expect me to use it."

Other teachers echoed her sentiments.

A grade one teacher from Mbizana



Powerless: Educators in the Eastern Cape say that the money used to buy laptops would be better spent on infrastructure. Photo: Madelene Cronje

district said the clerk at her school had to show her how to switch on the laptop, shut it down and how to use the mouse. The clerk also showed her how to use the laptop without training and now leaves it at home.

"Those things have become ornaments in our homes," she said.

The teacher said she continues to do her lesson plans and prepare for assessments the old way. She always has a laptop with her, but she never has time to use it. For her, it's a waste of money that could have been used to cater for other resources that we desperately need."

Her school struggles with a lack of stationery, reading books and the basic teaching and learning tools.

"When I buy stationery for my children I also buy for myself, because we either don't get it or when we get it it's not enough. I mean, I use my own paper because we don't even have that at the school," the teacher said.

teacher from the Barkly East district said she would have been pleased if the provincial department had addressed the pressing needs of the rural schools rather than giving them the so far unused laptops.

This teacher also said she doesn't even take her laptop to school.

"Classrooms are falling apart, the potholes in the floor are so big that you sometimes fear that you will break your leg. There is no electricity, so where are we even supposed to charge these laptops?" said the grade three teacher.

"We don't even have blackboards, let alone a desk. This laptop business is the biggest overcrowding and believed that the money could have been used to build schools for 60 pupils each and yet the government goes and spends money on laptops. I think it would be right to fix the more pressing issues, before we look at laptops that we have not even received

training for," said a grade three teacher from Matiti district. Others even thought they have tried using the laptops, but they still believe appropriate training is needed.

"My sense is that the department took it for granted that people are computer literate and will find their way around the laptops, but that is not so, especially in remote rural areas," said a grade two teacher from Barkly East district. "I'm lucky that I at least know the basics of using a laptop. However, I have colleagues near retirement who have never seen this thing before and they are not interested. So their laptops are at home gathering dust simply because they can't even switch them on."

Teachers also say the laptops are not insured. They were told that they'd have to pay if they lose them.

The provincial education department spokesperson, Malibongwe Makhubane, said the department was working to ensure that all teachers in the foundation phase received them.

The department had spent about "R260-million" on the laptops and Mtima said that teachers were expected to use them for "administrative tasks such as lesson planning, etcetera, and teaching."

He said that training for the teachers was "happening since the early 2000s" and that the teachers who had received the laptops were being provided with "intermediate advanced [and] integration courses".

The training was ongoing, he said, and would cover all teachers and that the distribution of laptops was part of the department's strategy to improve educational outcomes.

He disputed allegations that teachers had to insure the laptops because they were part of the school's asset register and that schools were required to insure them.

The Teacher Laptop Initiative was launched in 2008 and aimed at training teachers in computer literacy and pedagogy. It was initially managed by the Education Labour Relations Council. Later the department of basic education took over, with provincial departments having to fund it.

