

**The Impact of Contextual Factors on the Implementation of the E-Education Policy in
Previously Disadvantaged Areas in Cape Town: The Teachers Perspective**



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By

Bojelo Esther Sehuhula-Mooketsi

Supervised by Professor Wallace Chigona

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Thesis Submitted in Fulfilment of the Academic Requirements for the Degree of Doctor of Philosophy in the Department of Information Systems, Faculty of Commerce, University of Cape Town.

Bojelo Esther Seuhula- Mooketsi

Student Number: shhboj001

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Glossary of Terms

ANC- African National Congress

GNU-Government of National Unity

ICT- Information and Communication Technology

IS- Information Systems

IT -Information Technology

LAN-Local Area Network

MELLISA- Measuring E-Learning Impact in Primary Schools in South African

RSA-Republic of South Africa

SADTU- The South African Democratic Teachers Union

WCDE-Western Cape Department of Education

The following papers were published and presented in the process of conducting this PhD thesis. The papers do not constitute this PhD thesis as a collection of published papers.

Peer Reviewed Publications.

1. **Mooketsi, B. and Chigona, W. (2010).** A Critical Analysis of Media Discourse on a Western Cape Schools ICT Project: Khanya. *Proceedings of the International Conference on Information Management and Evaluation*. 2010, Cape Town.
2. **Bytheway A., Chigona A., Chigona W., Sadeck O., Dumas C., Mooketsi B., Fanni F. and Rega I. (2010).** Integrating ICT's into the classroom: Assisting teachers in disadvantaged primary schools. *Proceedings of the eSkills Summit 2010*, Cape Town
3. **Chigona, W. and Mooketsi, B. E (2011).** In the eyes of the media: Discourse of an ICT4D project in a developing country. *The Electronic Journal of Information Systems in Developing Countries*, 46 (6).
4. **Mooketsi, B. E and Chigona, W. (2014).** Different Shades of Success: Teacher Perceptions of Government strategy on E-education In South Africa. *The Electronic Journal of Information Systems in Developing Countries*, 64(8).
5. **Mooketsi, B.E. and Chigona, W. (2016).** The Impact of Contextual Factors on the Implementation of Government E-Strategy in Previously Disadvantaged Areas in Cape Town. *The Electronic Journal of Information Systems in Developing Countries*, 73 (4).

Conference Presentations

1. **Mooketsi, B. (2010).** E-Education and Its Implementation in Previously Disadvantaged Schools in Cape Town. Summit 2010, Cape Town.
2. **Mooketsi, B. et al. (2010).** Measuring e-Learning impact in disadvantaged primary schools. Summit 2010, Cape Town.

Panel Discussions

1. **Mooketsi, B.E. (2012).** The Impact of Social-Political Factors In the Uptake and Use of ICTS in Education. *Innovate 2012 ICT Conference 2-4th October, 2012*. Cape Town.

2. Technology Enhanced Summit (2013). *Training the Trainers, Using the Benefits of Technology as a Guide to Assist and Support Learning* 28th- 29 November, 2013. The One and Only Hotel: Cape Town

THESIS ABSTRACT

Despite the fact that it has been established that contextual factors affect implementation and implementation outcomes of ICT projects, there is a dearth of information on the impact of contextual factors on the implementation of the white paper in e-education in schools in previously disadvantaged areas in South Africa. To fill this gap, this study investigated how contextual factors affected the implementation and implementation outcomes of the white paper in e-education in schools in previously disadvantaged areas. In addition, the study sought to evaluate if these interventions added value to the teachers work.

This study adopted a critical interpretivist approach and used the contextual interaction theory to guide the investigation. The research data was obtained through semi structured interviews with teachers and school management staff of public schools in previously disadvantaged areas in Cape Town, a panel discussion and review of the pertinent policy documents on Information Communication and Technology implementation in South African government schools.

The findings of the study show that the implementation context, the history of the implementers, interactions between the policy actors and other issues that are in no way related to the implementation process affected the implementation process and outcomes. Furthermore, the implementation process was wrought with high degrees of ambiguity which is typical in public sector ICT policy implementation. The study also shows that there is need to have measures to evaluate ICT policy implementation which take into consideration the context in which the project exists and the perception of the intended recipients about the success or failure of the implementation. It is hoped that the results will assist those who carry out ICT implementation projects in disadvantaged areas in South Africa and similar context elsewhere insights into the implementation dynamics which can affect implementation outcomes.

This thesis contributes to the knowledge base for effective implementation of e-policies, particularly in contexts such as previously disadvantaged areas by pointing out contextual issues and factors that mitigate against implementation efforts. The thesis also reveals practical implications for policy makers by highlighting the need for policies to be based

on valid assumptions and be suitable to implementation contexts reflecting the needs, understandings and social realities of primary beneficiaries.

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CHAPTER ONE: IMPLEMENTATION OF THE E-EDUCATION POLICY IN PREVIOUSLY DISADVANTAGED AREAS

1.0 Introduction

This chapter gives an overview of the issues relating to the implementation of the white paper in e-education and the evaluation of the integration of information and communication technologies (ICT) in teaching and learning. This is done to contextualise the study and justify why despite all the previous research into ICT implementation in South African schools, there is still need to research into the problems related to implementation of ICT in teaching and learning in schools in previously disadvantaged areas.

1.1 Background to Research Problem

It is imperative that Governments invest in information and communication technologies for education (World Bank, 2013, Sarvi, 2009). This is based on the belief that for countries to succeed globally, they have to produce “well-educated, technically skilled workforce producing high value added knowledge intensive goods and services” (ADB, 2006, p.6). Information and communication technologies are regarded as a key driving force as all initiatives that rely on knowledge-based and skills-oriented development activities in all spheres of human endeavour depend on them (Rabah,2015; Altbach,2015). The perception that information and communication technologies are drivers of developmental activities is borne out of the philosophy that technology is a multi-dimensional tool that, if properly harnessed, can potentially emancipate and transform societies (Castells, 1997; Annan, 2003).

Information and communication technologies are also regarded as enablers of broad-based social and economic development as they are purported to have the capacity to improve the economy and enhance individual’s level of income (Avgerou, Smith and van den Besselaar, 2008; Malekian, Omar and Abdullah, 2011; Mamaghani, 2010; Sarvi,2009). This conclusion is based on empirical findings drawn from studies conducted in China, Brazil, India, Russia and other developed economies that showed a correlation between the rapid development of economies and information and communication technologies (Ezell and Atkins, 2014). As instruments, affordable and usable information and

communication technologies are believed to “transform the way societies work, entertain, study, govern and live at the individual, organisational sectors, and vocational level” (Rao, 2003, p.271). The instrumental value focuses on the influence of information and communication technologies on the daily lives of people socially and economically. Information and communication technologies enable “the small and new to compete on equal terms with the large and the well-established, and permit leapfrogging to an ‘information economy” (Heeks, 2002, p.1). This concept of information and communication technologies as development instruments is defined as “the conception, development, implementation, and use of ICT as an explicit vehicle for furthering developmental aims – where ICT functions both as an enabling artefact and enabled set of social behaviours” (Thompson and Walsham, 2010, p.3). The advent and proliferation of the Internet and ICT-based information system services in the 1990s further enhanced the role of technology as they evolved from just being tools to critical tools in the discourse on economic and social development (Chui et al, 2012; Bughin et al, 2011).

1.2 ICT Integration in Teaching and Learning

It is from these beliefs about information and communication technologies that institutions such as United Nations Development Programme, World Bank, International Monetary Fund and International Telecommunications Union have called on developing countries to invest in ICT infrastructure in education (Bollou and Ngwenyama, 2008). Developing countries heeded the call and have been investing heavily in ICT despite concerns being raised about the input costs versus benefits of the investments (Bollou and Ngwenyama, 2008; Mamaghani, 2010). In 2011, it was established by the Independent Evaluation Group of the World Bank that 70% of the World Bank ICT4D projects failed to achieve their goals (World Bank, 2013). The basis of these concerns are that research, practice strategies and technologies developed in western countries are not easily transferrable to developing countries contexts (Thompson, 2008; Heeks, 2009).

When successfully integrated into teaching and learning, proponents of the use of ICT for teaching and learning state that information and communication technologies enhance reasoning, problem solving, creative thinking and comprehension skills and gives students access to a diverse range of information (Asmal, 2003; Sarvi,2009). It is also a widely held belief that successful ICT integration in teaching and learning improves student learning

because it creates flexible learning opportunities and improves efficiency in schools (Vallance, 2008; Boakye and Banini, 2008;Altbach, 2011). Furthermore, when implemented and integrated properly in teaching and learning, ICT supported-education promotes the acquisition of knowledge and skills that empower students to compete in the ICT job markets (Asmal, 2003; Department of Education and Science, 2008).

Using ICT for teaching and learning is also said to be instrumental in shifting the focus of teaching and learning to a student centred approach (Wang and Woo, 2007; Sife et al., 2007; Heeks, 2002). Furthermore, when used in curriculum delivery, information and communication technologies are purported to;

- improve the internal efficiency of educational systems.
- double up as an administrative tool for teachers.
- enable all students from different economic status, physical ability, and geographic distance to access top notch information or teaching thus promoting equality.
- prepare students for participating in the global world (Grainger and Tolhurst, 2005; Tearle, 2003; Haddad and Jurich, 2002; Waycott et al, 2010; ITU, 2013).

1.2.1 Envisioned Education Sector in South African Schools

The government of South Africa adopted the white paper in e- education policy in 1994 because it believed that through the use of ICT, they could transform and reconstruct the education system (Government of South Africa, 1994). It should be pointed out that in societies like South Africa that are in transition, where the government is trying to root out the legacies of inequality, where oppression and injustice are still evident in the economic, social and political landscapes, the youth are being trained as a part of a national strategy of reform and reconstruction (Giddens, 2000). The process of social reconstruction seeks “to shape the experiences of the young so that instead of reproducing current habits, better habits shall be formed” (Dewey, 1916, p. 79). This is in some quarters, regarded as a “compelling ideal premised on the belief that division is not endemic, and underpins efforts to imagine and produce new social possibilities” (Staeheli and Hammett, 2013, p.3).

The education department envisions the transformation of the education sector into e-education. Information and communication technologies are projected as enablers for this

transformation as they can “enable teachers and learners to move away from traditional approaches of teaching and learning” especially since teachers are obligated to “deliver on public expectations of quality education for economic growth and social development” (Government of South Africa, 2004, p. 6). The envisaged transformation of the education sector and appreciation of information and communication technologies are a reflection of what is deemed important in education as values enshrined in the policies are not derived from the social context (Ball, 2007). This is validated by Alford (2005, p.2) who states that educational policy communicate “what, how and why of educational beliefs and practices”. The white paper in e-education quotes the then President of South Africa Thabo Mbeki stating that information and communication technologies are essential in the struggle “for liberation against poverty, underdevelopment, and marginalisation” (Mbeki, 2001, p 2.).

The belief that information and communication technologies are instruments that can be used to fight against under development is evident throughout the white paper in e-education policy as information and communication technologies are projected as enablers to the improvement of education and of a socially inclusive education system. The policy sets the context by stating that “the world is changing” and “digital media has revolutionised the world” (Government of South Africa, 2004, p.8). The policy also articulates the impact of these changes by stating that “these advances in ICT have dramatically changed the learning and teaching process and have expanded new learning approaches and access to educational resources beyond those traditionally available” (Government of South Africa, 2004, p. 3). In addition, information and communication technologies are projected as offering a better alternative to what was offered by the previous government. The document uses statements like “the use of ICT will create new ways of information gathering, sorting and analysis” (Government of South Africa, 2004, p. 3). Based on the above, one can conclude that the government was investing in Information and Communication Technology (ICT) in education with the intention to develop fully informed and responsible citizens who are ICT literate and inculcate in citizens, skills needed to drive change and transformation.

The need to transform the South African education system emanated from the history of South Africa pre democracy. Under apartheid, blacks underwent Bantu Education mandated by the Bantu Education Act (1953). This act legitimised the downgrading the quality and level of education for black people. The key role of Bantu Education was to “miseducate the Africans so that their academic certificates became irrelevant for the labour market” (Hlatshwayo, 2000, p. 65). Bantu education was according to Enslin (1984, p.140) cited in Kruger (2008) supposed to,

- “ be in the mother tongue;
- not be funded at the expense of white education;
- not prepare blacks for equal participation in economic and social life;
- preserve the ‘cultural identity’ of the black community
- be organized and administered by whites”.

Given the purposes and intentions of Bantu Education, the then government ensured that it invested as little as possible in the Bantu education as shown in table 1:1;

Table 1:1 Education funding across racial lines in South Africa pre-independence (Pillay, 1990; Nkabinde, 1997).

Year	Per white student	Per coloured student	Per Indian student	Per black student
1983-1984	R1654.00	R569.11	R1088.00	R234.45
1986-1987	R2508.00	R1021.41	R1904.00	R476.95
1993	R4,372	R2,902	R3,702	R1,659

This inevitably led to inequalities in service provision and access to educational services resulting in a dysfunctional school system for black learners. In efforts to remedy this past, the government of South Africa states that all South African managers, teachers and learners at all levels in the general and further education and training bands should be ICT's capable and be able to confidently use information and communication technologies. They are also expected to develop lifelong learning skills so that they can achieve personal goals and participate in the global community by 2013 (Government of South Africa, 2004). It encourages the integration of ICT for teaching and learning,

adoption and use of information and communication technologies in schools for administrative practices (Government of South Africa, 2004).

The white paper further states that South African teachers and learners ought to:

- recognize their information needs, search for information to meet these information needs to support curriculum delivery.
- be capable to use information and communication technologies that are readily available to locate access, assess suitability of identified information for information needs and repackage and redistribute the information.
- contribute to the knowledge pool by adapting, applying, designing information.
- use available information and communication technologies to actively participate and contribute to the knowledge society
- become efficient in communication and collaboration skills with or without use of information and communication technologies (Government of South Africa, 2004).

The white paper in e- education states that teachers and learners have to acquire and master ICT skills in order to be able to interact meaningfully with ICT. This was meant to enhance the teachers and learners appreciation of the value of information and communication technologies in teaching and learning and make them reflect on their belief systems regarding successes of information and communication technologies implementations (Government of South Africa, 2004).

1.3 Statement of the Problem

Despite the noble intentions and efforts driving implementation of information and communication technology (ICT) in education, the integration of information and communication technologies in teaching and learning has been wrought with challenges (Ford and Botha, 2010). Researchers have evaluated the implementation and adoption of information and communication technologies in education from different dimensions such as community informatics, digital divide, adoption barriers and self-efficacy issues. Studies show that there are problems realising the associated benefits of the ICT investments, inadequate ICT resources, limited access to the Internet, technophobia and age related adoption issues as older teachers have been found to struggle to adapt to using ICT for

teaching and learning; shortage of skilled teachers to teach ICT subjects and ICT equipment security issues. Social status of the potential users of information and communication technologies has also been found to have a bearing on computer use and experience. It has also been established that there are issues with the high costs of acquiring and setting up ICT-based Management Information Systems (Wilson-Strydom and Thomson, 2005; Government of South Africa, 2004; Ford and Botha, 2010; Hodgkinson-Williams, Sieborger and Terzoli, 2007; Ng'ambi and Brown, 2004; Tas and Tatnal, 2010).

Studies that have looked at the implementation process of the whitepaper have established that the implementation process is besieged with “dispersed and uncoordinated implementation programmes and projects” (Ford and Botha, 2010, p.1). These findings are not surprising as literature shows that planning and management of ICT projects is poorly done in developing countries (Banda, 2013; Siphiwosami, Mamba and Isabirye, 2015).

However, predominantly, existing studies have not focused on how the implementation process and how context could have affected the implementation outcomes. Implementation studies have established that context affects implementation. Context influences and is influenced by actions as events play out in the context of their setting and are shaped by the organization's social, economic and political context (Braa et. al., 2007). There is need for studies to establish if there is any relationship between the research findings and the implementation context. Overlooking the implementation process, the impact of the context on implementation and implementation outcome in evaluation studies especially in previously disadvantaged areas is a critical flaw as evaluation studies are expected to investigate the underlying mechanisms and structures within society that can potentially affect the implementation process and outcome (Bannister and Remenyi, 2004; Khalifa et al. 2004). Previously disadvantaged communities are defined as “those persons or categories of persons who prior to the new democratic dispensation marked by the coming into force of the new constitution of Republic of South Africa (no 108) were disadvantaged by unfair discrimination on the basis of their race and includes juristic persons or association owned or controlled by such persons” (Nefcorp, 2005, p. 1). This group collectively constitutes black people, mainly Africans, Coloureds and Indians. The terms previously disadvantaged individuals (PDIs) and historically

disadvantaged individuals (HDIs) can and are used synonymously (Nefcorp, 2005). The next section discusses the context of previously disadvantaged communities to validate the need to conduct the study.

The study proposes that a better measure of success should consider the implementation process, the impact of the context on implementation together with the perception of the intended recipients on the success. The need to do this is reiterated by Bhuyan et al. (2010) who states that amongst other factors, assessing policy implementation enhances effectiveness as it highlights barriers to policy implementation which can improve programme delivery. Research has shown that evaluation studies ought to investigate the underlying mechanisms and structures within society that can affect the implementation and project outcome (Heeks, 2002; Remenyi, 2002; Irani, 2002). Furthermore, calls have been made for studies to unpack the interaction processes between ICT and the social-cultural, organizational, economic factors and context-dependent power structures and their bearing on the failure and successes of such projects (Zheng and Walsham, 2008; Walsham and Sahay, 2006).

1.3.1 The need to study impact of context on implementation especially in South Africa

Citizenship in South Africa is still evolving as citizens see themselves as part of the global community whilst at the same time, within South Africa; they are dealing with racially framed policies of redress (Enslin, 2003). Apartheid ascribed and prescribed identities for people. Identity is that part of an individual self-concept which one draws from one's knowledge of his or her membership in a social group together with associated value and emotional significance attached to the membership (Tajfel, 1978).

Identity is not something that one has but it develops throughout life. Self-identity develops through one's interaction with the environment and social setting. Identity can be approached in two fundamentally different ways: essentially and non-essentially. The essentialist view posits that identity is "connected to a person's self and is singular and rather stable" whilst non-essentialist view states that "identity is unfinished, fluid, fragmented, multiple, constantly changing and transforming, and constructed across times, places, positions, practices, and discourses" (Hall, 1996, p.23). Others argue that one's concept of self can be defined as an organised representation of one's theories,

attitudes, and beliefs about self and is related to one's culture. One's identity is closely related to their culture (Rudrick, 2008). All previously disadvantaged groups were disempowered and made to believe that they are inferior and ought to behave in a given manner by the system of apartheid. Feeling inferior makes one feel inadequate and not even have a sense of ownership on one's destiny. Groups which are subjected to such domination have been found to "identify themselves with, or are obliged to assume a status and its associated social values" (Turner, 2004). Others go as far as to say blacks are still subjected to racism and prejudice albeit in a subtle form (Wiegman, 2005; Rudrick, 2008; Vandeyer, 2003).

Under apartheid, one's race determined where one lived, the services, educational and economic options that one could access and from where, resulting in cities that were highly segregated along racial lines. South African citizens were classified into four races: whites, black, coloured and Indians and each group had specific areas where they lived as per the group areas act of 1950 (Heller, 2011; Rudwick, 2008). Blacks were declared foreigners in "white" cities and relocated to Bantustans. Only those blacks who were providing labour were allowed access to urban areas on a temporary basis.

The Group Areas Act (1950) forbade non-white people, from living, working or partaking in any businesses or professional practices in any white areas unless they possessed a pass or permit. Whites were also not allowed to do the same in black areas. Townships were established to provide accommodation for the black population and were provided with minimal infrastructure. This was because there was no provision of funding for infrastructural development as the policies in place ensured that only the funds generated from within these poor neighbourhoods were used. The rationale behind this policy was that the blacks were regarded as temporarily residents in white South Africa and were to in time return rural areas (Rudwick, 2008; Heller, 2011). Blacks were not permitted to own houses or build. As a result, housing in townships was severely overcrowded and people resorted to building shacks in their backyards to deal with the shortage of accommodation (Swilling et al., 1991).

The geographic segregation instituted under apartheid, racial segregation and the resultant associated forms of racial inequality have persisted and been repackaged in the 'new' South Africa. As a result, the post-apartheid city is still divided along social status and racial lines. Whites stay in the developed areas, near to all services whilst Blacks

predominantly live in the townships away from the developed areas (Tredoux and Dixo, 2008; Lemanski, 2004). This is a factor that has to be accounted for in evaluation studies. As it is, the implementation context is uneven in terms of resources as post democracy, transition in education took place using “inherited assets and liabilities with the deracialisation of schools evolutionary” (Asmal and James, 2001, p. 3).

Further to the geographic segregation, It has been established that although 90% of South Africans are proudly South African” high levels of sub national self-defined identity groups exist (Mattes, 1999). Social identity in an intergroup context is derived from

- a) social categorization.
- b) the formation of an awareness of social identity.
- c) social comparison (MacNamara, 1997).

Ethnic groups “still distinguish themselves, and are distinguished by others, by means of so-called cultural criteria that are linked to the concepts of identity, ethnicity, and race” (Rudwick, 2008, p. 108). This is not surprising as in divided societies like South Africa, people are more likely to identify more readily with those similar to them in terms of ethnicity, racial or religious grouping than with the society as a whole (Mattes, 1999).

In addition, to South Africans identifying themselves by ethnic groups, there is continued reference to groups by race. Race is defined as “an inconstant socio historical construct dictated by economic variables as it is constructed differently across time by people of the same social class” (Vandeyer, 2003, p.3). The use of racial terminology is condoned by the government as it is regarded as a critical part of the process of redress and redistribution (Hammett, 2008; Soudien and Sayed, 2004).

1.3.2 The Impact of Sub Unit Culture, Race on Implementation

Research has established the success of ICT implementation is prone to be affected by national, organisational, group and sub-unit culture (Leidner and Kayworth, 2006). Furthermore, research has established race and class based tension affect implementation (Dumas and Anyou, 2006). This is reiterated also by Avgerou (2010, p. 5) that understanding information and communication technologies and the implementation

within context can “highlight distinctive features of historically formed collective behaviour that require attention when designing appropriate ICT systems”.

It is of utmost importance that evaluation studies have a full understanding of the place of implementation, the implementers, their beliefs and the context that has shaped them into who and what they are (Honing, 2006; Saetren, 2005; UNDP, 2003). The “essential implementation question then becomes not simply what’s implementable and works but what is implementable and what works for whom, where, when and why” (Honing, 2006, p.100). Others also argue that these evaluation approaches need to delve into the impact of the social realities of situated actors who can only work with ‘what is’ (Ravishankar, 2013, p. 317).

These approaches enable studies to figure out the “purpose of ICT innovation as arising from local problematizations, its course as being shaped by the way local actors make sense of it and accommodate it in their lives” (Avgerou, 2010, p.5). Thus enabling studies to contextualize the implementation process by situating it on “what is locally meaningful, desirable, or controversial, and therefore, on how technology innovation and organizational change emerge (or are retarded) amid the local social dynamics” (Avgerou, 2010, p.5). Others are of the view that social phenomena ought to be studied within its natural setting as “social phenomena are situated within and cannot be isolated from their social context” (Bhattacharjee, 2012, p.106).

Whilst numerous studies briefly mention the impact of South Africa’s history on resource availability in schools in previously disadvantaged areas, no study was found that sought to establish the impact of contextual factors on the implementation of the white paper in e-education policy in previously disadvantaged areas as these studies mainly focus on teachers’ perceptions about their own and their schools’ readiness for computer implementation the quality of ICT use in South African classrooms (du Plessis and Webb,2012.;Ndlovu and Lawrence,2012). It is in recognition of the dearth of information on how contextual factors affected the implementation of the whitepaper on e-education in schools in previously disadvantaged areas, that this study investigated the impact of contextual issues on the implementation of the whitepaper on e-education in argues that analysis of ICT implementation should not just focus on these schools. In addition, the

study evaluated the impact of the implementation of white paper on e-education to the teachers work.

In the context of this study, impact will be taken to mean “what has happened as a result of the programme, both in the short and long-term” (Weiss 1998). This will be inclusive of “the positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended” (Organisation for Economic Co-operation and Development, 2002, p.24). The validity of this stance is based on an assertion by White (2009) that it is imperative in developing communities that the impact of a project, programme or policy programme be assessed by looking at the results of these instead of just evaluating how the inputs were used or assessing alignment between activities and outputs against predefined targets or assessment of the efficiently or effectively these are being implemented or run (Bamberger and White 2007). Thus, in this study impact evaluation entailed establishing the impact of any changes that have taken place and questioning what would have happened to the intervention beneficiaries had the programme in question not been operationalised.

Whilst there are several definitions of policy implementation, in this study, policy implementation will be taken to mean the “activities or process that happen between the setting of goals and actions that lead to their achievement” (Pressman and Wildavsky, 1984). This is apt for this study as from an epistemological view point, this study argues that studies need to hear from teachers how they perceived the implementation process, the associated change and its management since a review of discourse has shown that the teachers’ voices are not represented in discourse (Mooketsi and Chigona, 2010 and Chigona and Mooketsi, 2011). It is imperative that they be heard both as individuals and as a community as their beliefs, attitudes and professionalism affect how they mediate and understand the e-education policy and influence their social interactions (Vandeyar, 2013). Furthermore, it is my belief that human action and perceptions of reality are all socially constructed (Walsham, 2006).

The need to investigate the implementation process and context and its bearing on implementation outcome is further to the reasons given above, based on arguments that research has to move away from just accepting that implementation failure is due to

resource and financial constraints or adoption challenges. There are calls for research to evaluate the validity of the policy assumptions and explore the suitability of the policies and their aims to bring about to change (Vally and Spreen, 2003). This entails investigating if the processes of designing and policy implementation is reflective of the “needs, understandings and social realities of its primary constituencies – not powerful stakeholders, protected interests groups or articulate policy crafters” (Vally and Spreen, 2003, p.3).

For the policies to be effective, relevant and applicable, their goals and aims should be inclusive of the needs of those at grassroots level and be “embedded in the ideas, dreams and visions that communities themselves are empowered to articulate” (Vally and Spreen, 2003, p.3). Thus ICT policies need to be an outcome of in-depth analysis of existing issues regarding the current context of the place of implementation in terms of the type of society, development plan and the requisite education system (Kendall et al., 2006; Cross and Adam, 2007). Research indicates that to maximise the benefits of ICT implementation, there should be extensive consultations with all stakeholders to ensure clarity regarding the intended purposes of the ICT innovation and efforts to accommodate other local needs other than the ones specified for the project (Markus, 2004).

In the design and implementation of the white paper on e-education, the South African government is said not to have been receptive to the views of all stakeholders but opted to listen to consultants from abroad (Vally and Spreen, 2003). de Clercq (1997) challenges the validity and relevance of the policies drafted by the GNU in South Africa, stating that these “were flawed in their conceptualisation and policy process and they misjudge the educational context and dynamic on the ground” (p. 127). This, in his opinion, resulted in policies that are likely to “create conditions that will assist the privileged education sector to consolidate its advantages whilst making it difficult for the disadvantaged to address their problematic realities” (de Clercq, 1997, p.127). Investigating the impact of contextual factors on the implementation of the white paper in e-education in previously disadvantaged areas and their impact on the implementation process and outcomes will enable this study to establish the validity of these arguments.

The process driving the white paper in e-education policy development and implementation is said to have been informed by a social reconstruction discourse that had an ideal image of teachers, students and parents as the state would like them to be whilst the reality is that these teachers were barely equipped or capable to given the education they underwent (Corneilse and Soudien, 2001). This has led to belief's that the South African education policies are ineffective and were never really meant to bring about transformation but were all made for "symbolic reasons and for their political currency without any real commitment to their implementation" (Valley and Spreen 2003,p.8). This the authors validate by saying that the government needed to attain "an achievement of a broad political symbolism that would mark the shift from apartheid to post-apartheid society" (Jansen, 2001, p.6).

Exploring the impact of the context will enable the study to explore the teachers capacity to drive this transformation vis a vis the projected idealized versions of teachers and students. This is also tied to the need to investigate the implications of unequal resources and access on the implementation process and outcome in previously disadvantaged areas. It is imperative we understand how the implementation process was affected by these differences. Investigating the implementation process will also give insights into engagement and interactions with stakeholders. Investigating the implementation process and context will also elucidate how change was managed during the process. By default the implementation of the white paper in e-education means that the schools and teachers underwent change and there should have been strategies in place to deal with this. This is critical as research has established that IT-enabled change projects at times fail due to nontechnical reasons (Levasseur, 2015). Literature argues that in instances where policies lead to new ways of doing things or provision of services there should be operational guidelines to guide both implementers and recipients to ensure understanding and management of the expected changes and implications (Apostolou et al , 2011; Vandeyar,2013).

Failure to put in place strategies to address change might validate the concerns raised by trade unionist such as SADTU that the provincial departments were "not promoting the interest of working class communities by addressing inequalities in the education system, failing to prevent overcrowding, failing to prevent additional costs of financing education

being passed on to schools and consequently to parents, and failing to create a funding mechanism to address the disparities between the previously advantaged and the previously disadvantaged” (SADTU, 1999 in Vally and Spreen, 2003, p.6).

Therefore, in line with Moodley (2005, p.259) call “to engage in a frank and comprehensive diagnosis of the information and communication dimensions in South Africa’s development challenges”, this study investigated the impact of contextual factors on the implementation process and implementation outcome of the e- education policy in previously disadvantaged areas in Cape Town.

1.4 Primary Research Question

The following research question was proposed to address the research gap:

How do contextual issues affect the implementation process and the implementation outcome of the e-education policy in schools in previously disadvantaged areas in Cape Town?

The main research question is explanatory in nature as results of the study will elucidate how context affects implementation of the white paper on e-education.

1.4.1 Sub Questions

The research question was subdivided into the following sub problems;

1. What is the impact of the implementation locale on the implementation of the e- education policy in schools in previously disadvantaged schools?
2. What is the impact of the implementation process on the implementation outcome of the e-education policy in schools in previously disadvantaged schools?
3. What factors affect policy implementation processes and outcomes?
4. What are the perceptions of teachers in previously disadvantaged areas regarding the implementation of the e- education policy?
5. What factors affect the teacher’s activities in relation to policy implementation during implementation of the e-education policy in schools in previously disadvantaged schools?
6. What is the value added by use of information and communication technologies for teaching and learning in schools in previously disadvantaged areas?

The sub questions sought to clarify the role played by cultural and social background on perceptions and attitude towards ICT in previously disadvantaged communities.

1.5 Objectives of the Study

This main objective of this study was to investigate the underlying contextual factors within schools in previously disadvantaged areas that affected the implementation process and outcome of the white paper in e-education policy.

1.5.1 Sub Objectives

The main objective is subdivided into the following sub objectives

- To investigate the impact of the implementation locale on the implementation of the e-education policy in schools in previously disadvantaged schools.
- To investigate the impact of the implementation process on the implementation outcome of the e-education policy in schools in previously disadvantaged schools.
- To investigate factors that affect policy implementation processes and outcomes.
- To investigate the perceptions of teachers in previously disadvantaged areas regarding the implementation of the e- education policy.
- To investigate factors that affect the teacher’s activities in relation to policy implementation during implementation of the e-education policy in schools in previously disadvantaged schools.
- To investigate the value added by use of information and communication technologies for teaching and learning in schools in previously disadvantaged areas

1.6 Delimitation of the Research Area and Problem

Given that interpretive research requires that the selection of study areas and respondents be based on their appropriateness to the phenomenon under study, in this study, appropriateness was informed by whether the selected study area and respondents had characteristics which were critical and uniquely suited for the study. In this study, the two criteria that were of importance were the social system which is the social context within which the implementation of the white paper on e-education occurs, namely schools in previously disadvantaged areas. This is important as the social context is greatly affected by social norms or “the established patterns of behaviour that tell members of the system

what behaviour is expected (Bhattacharjee, 2012, p. 106). The other criterion is naturalistic inquiry. Naturalistic inquiry posits that social phenomena ought to be studied within its natural setting as “social phenomena are situated within and cannot be isolated from their social context” (Bhattacharjee, 2012, p.105).

This study focused on the Western Cape, specifically the city of Cape Town. Desegregation in the Western Cape especially in Cape Town, has been entirely in socioeconomic terms, leaving the racial composition of black neighbourhoods and black schools unchanged (Lemon and Battersby-Lennar, 2009). This has affected post-apartheid educational policy changes as the inherited socio-economic geographies of inequality are still being played out. Eighty percent of children in Cape Town continue to attend schools intended for their race group under apartheid (Lam, Seekings, and Sparks, 2006; Lemon and Battersby-Lennard, 2009). Neo-liberalism is said to have made Cape Town, the most unequal city in the world (McDonald, 2008). The city is a fringe city as it grows predominantly on the outskirts. Despite recent expansions of the city, residential segregation by race has persisted; with the white suburban neighbourhoods predominantly on the northern and north-eastern periphery of the city, whilst African settlements are on the east; away from the city centre (Besteman, 2008). Post democracy, whites still stay in the developed areas, near to all services whilst Blacks predominantly live in the townships away from the developed areas.

The previously disadvantaged part of Cape Town that was selected for the study is Langa location which was established under the 1923 Urban Areas Act in Cape Town specifically to house black migrant workers (Smith and Hanson, 2003). Langa hosts approximately 49 667 people, 99.5% of whom are black African, 0.43% Coloured and 0.02% White. The community consists of both municipal houses and a growing number of informal dwellings with 48% of all housing in Langa categorized as informal dwellings or shacks, while 24% were formal houses. Resources are inadequate, crime is problematic and unemployment is high. The dominant language spoken in Langa is Xhosa (Statistics South Africa City of Cape Town, 2001).

1.7 Overview of Methodology Used In the Study

The overarching research approach of this study is critical interpretive. Critical interpretive research was selected because it enabled the study to explore what the teachers thought about the implementation process and their interaction with ICT within their schools in previously disadvantaged areas from their perspective in their own words (Klein and Myers, 1999; Walsham, 2006). Critical interpretivism was chosen as it also allowed this study to challenge assumptions and conclusion that are taken as facts about the causes of failure of the implementation process. This is done by thoroughly interrogating and exposing deeply entrenched structural contradictions within social systems and sassing out unspoken and taken for granted basis for existing situations.

This study used qualitative data as qualitative data enabled the study to solicit personal perspective data from teachers involved in the e-education policy implementation in schools in previously disadvantaged areas. This approach enabled the researcher to explore the viewpoints, as lived experiences, behaviours, feelings, as well as the organisational functioning and interactions with information and communication technologies of the teachers involved in the implementation of ICT for teaching and learning in schools in previously disadvantaged areas from within their social and cultural contexts (Myers, 1997; Strauss and Corbin, 1990).

Whilst the intention of the study is to get the perspectives of teachers, three regional e-education officers in the e-education unit from the district and regional office were interviewed and four school heads were interviewed. Education officers were also part of the panel discussion where the preliminary findings were presented. Interviewing different levels of employees in an organisation is according to Myers and Newman's (2007) vital as it enables researchers to include various points of view from different levels of the organisational structure. This is important as it also allows the study to obtain different perceptions of the same issues as different interviewees would be affected and respond to issues differently. Data collected from the school heads and education officers was used to validate the data collected from teachers which was critical especially since the study is critical intepretivist. The data sources included semi-structured interview

protocols, documents related to the implementation of the white paper in e-education policy (Myers, 1997). This research method is discussed further in Chapter five of this study.

1.8 Data Analysis Techniques

This study used thematic analysis. Thematic analysis is a qualitative descriptive approach and is defined as “a method for identifying, analysing and reporting themes within data” thus providing a purely qualitative, detailed, and nuanced account of data (Braun and Clarke, 2012, 79). This is apt for this study as the study sought to understanding of a particular phenomenon from the perspective of those experiencing it (Streubert Speziale and Carpenter, 2007). Thematic analysis enables the researcher to examine narrative materials from the respondents (Sparker, 2005). This was because the study wanted to find out about the actual behaviour, attitudes, or real motives of the teachers and understand what really happened (Ten Have, 2004). Thematic analysis enabled the study to explore the multiple realities of the respondents and to arrive at an understanding of a particular phenomenon from the perspective of those experiencing it (Streubert Speziale and Carpenter, 2007). All this is because thematic analysis is based on the “factist” perspective as it assumes that the collected data is accurate and is a truthful reflection of reality to be more or less accurate and truthful indexes of the reality out there (Sandelowski, 2010).

Data was reviewed and coded to establish recurrent themes for each participant. The unit of analysis was segments of texts rather than individual words. Data analysis was done iteratively and emerging patterns consistent with concepts and relationships derived from the Contextual Interaction Theory were established (Cresswell, 2007; Denzin and Lincoln, 1998).

Member checking was done during a national ICT in education conference held in Cape Town in October, 2012. This enabled the study to evaluate the authenticity of researchers’ representations of participants’ perspectives (Boyatzis, 1998). This research method is discussed further in Chapter five of this study.

1.9 Generalisability of the Study

Rodon and Sesé, (2008) define generalisability as the process of arguing that a knowledge claim already believed to be true in one or more settings can also be held true in other

clearly defined settings based on the principle of extrapolation. According to Gomm et al. (2000) and Sharp (1998), there are two types of generalization; namely theoretical and empirical. Empirical generalisation focuses on establishing if certain characteristics of a case or sample are representative of the population from which the case or sample was drawn or of another population. This inference about the population is based on empirical data collected from its sample. However, it is essential that the two populations should share certain essential features that justify the generalization (Compeau et al. 2012). In theoretical generalisation, researchers develop explanations of the relationships between variables observed in their studies which are applicable to the populations on which the studies were based or to other populations (Sharp 1998; Firestone 1993). It is also necessary to provide information about the context in which the study was conducted because the context can have a direct or indirect effect on the relationship under consideration. Walsham (2006) states that one has to show the specific conditions which are common to both the research group and the larger population to which the findings are extrapolated. This case study, in the previous section and in chapter 3, meets the criteria of making empirical generalisation by providing contextual information and a detailed description of the context to help validate the claim that the findings can be generalised to studies in implementation of ICT policy documents in schools in disadvantaged areas with similar socio economic conditions (Burawoy 1998).

1.10 Contribution Made By This Research

Locke and Golden-Biddle (1997) state that to validate a contribution, one has re-present and organise existing knowledge's to show the common thread running through the findings and then show incompleteness, inadequacy and incommensurability in the findings. One claims incompleteness by showing how the current literature does not address all issues. Incommensurability and inadequacy are shown by highlighting the failure of existing literature to address and encompass all perspectives thus drawing flawed and inaccurate claims and highlighting how the present study will address this. Once one has successfully defended the claims that there are gaps in knowledge the next step is to show how the proposed study will fill the gaps (Locke and Golden-Biddle, 1997).

When arguing for the relevance and persistence of the research problem, I have drawn from different bodies of knowledge to show incompleteness and inadequacies of evaluating ICT implementation in previously disadvantaged areas without taking into consideration the context, social capital, residential segregation amongst other factors. This study shows the shortcomings of evaluating integration of ICT for teaching and learning without taking into consideration the processes prior and during implementation to inform evaluation. This study argues that, in places like South Africa, there is need to investigate the impact of residential segregation or historical issues on implementation processes and outcomes. I claim that failure to incorporate or explore the impact of geographic segregation, self and group identity on ICT implementation processes and integration for teaching and learning in previously disadvantaged areas leads to inadequacy that the present work will address (Barrett and Walsham, 2004). I claim that an individual is a product of his or her society and carries this to work. Naidoo, (2013,p.56) concurs and states that “everyone is also a member of a smaller community which is defined by certain basic values that may exhibit real and potential value differences on some of the larger fundamental social issues”. The study looks at teachers as members of the community who are influenced by their social and cultural identity at work more especially since there is no racial diversity at the work place. The study makes theoretical, methodological and practical contributions to ICT4D evaluation by showing how a more holistic approach to studying implementation of ICT in previously disadvantaged areas gives better insights.

1.11 Structure of Thesis

The thesis comprises eight chapters, appendices and references. The appendices consist of examples of the semi structured interview protocols, letters and communication with others involved in the research study. The rest of this thesis is structured as follows;

Chapter 2 sets the context of the study by presenting the literature review within which this study is situated. The literature review is problematised to show the relevance and persistence of the research problem in the South African context. Chapter 3 presents the case description of the study. Chapter 4 presents the underlying philosophy used in the research and the theoretical framework used to guide the study.

Chapter 5 presents the research design and approach of the study. The chapter also presents the actual research strategy including data collection methods, sampling strategy together with the theoretical framework used to guide the study. Chapter 6 presents the findings from the study. Chapter 7 presents a theoretical discussion of the empirical findings. Chapter 8 presents the conclusion of this study by reviewing the study and showing the significance and contribution of the study to field of information systems. The chapter also presents a discussion of the limitations of the research and an indication of further research that could be undertaken along the lines of this inquiry.

2.0 Introduction

This chapter presents the literature review within which this study is situated. The literature highlights areas that have been addressed regarding ICT implementation and evaluation in South Africa and in previously disadvantaged areas. The literature review is divided into several sections. Section 1 presents literature on failure of ICT initiatives in education; Section 2 presents literature on approaches that are used to evaluate ICT Implementation. Section 3 presents literature on causes of failure of ICT4D projects followed by section 4 which focuses on policy implementation processes. The section also presents a discussion of the factors that are said to affect policy implementation and juxtaposes them against the South African context, as a way of validating the need to evaluate the possible impact of context on the implementation and implementation outcomes of the white paper in e-education in schools in previously disadvantaged areas. This is also meant to situate the study as Klien and Myers (1999, p.73) state that it is critical that a subject matter be situated in its “social and historical context so that the intended audience can see how the current situation under investigation emerged”. The chapter concludes by proposing a holistic context based evaluation approach of ICT implementation in previously disadvantaged areas.

2.1 Failure of ICT initiatives in education

Failure of ICT initiatives in education is a persistent concern reflected in Information Systems research (Wilson-Strydom and Thomson, 2005; Ford and Botha, 2010). These failures can be categorized as process, interaction, expectation and contextual failures (Lyytinen and Hirschheim, 1987; Pelgrum, 2001). Research has established the following about the challenges in the use of ICT in teaching and learning.

2.1.1 Personal Characteristics of Teachers

Personal characteristics have been found to have a bearing on the integration of ICT into school curriculum. Teacher’s preparedness, support and attitudes to integrate ICT into teaching determine the effectiveness of the technology (Buabeng-Andoh, 2012). Specifically, research has established that teachers will use ICT for teaching and learning if they

-
- believe that information and communication technologies will fulfil their needs and their students' needs.
 - had had positive experiences with information and communication technologies.
 - have high self efficacy (Keengwe and Onchwari, 2008; Buabeng-Andoh, 2012; Gilakjani, 2013).

2.1.2 Professional Development of Teachers

Teachers' lack of ICT knowledge and skills is a major obstacle to the introduction of ICT into the school curriculum (Buabeng-Andoh, 2012). The author argues that teachers should be trained so that they can integrate ICT in the curriculum with confidence. Whilst it is important to train teachers on basic computer skills they should also be sensitised to the fact that ICT can enhance pedagogy and improve performance. Others concur as Assan and Thomas (2012) claim that whilst teachers' technology skills are critical for ICT integration, they are not the only condition for effective use of technology in the classroom. Furthermore, teachers' understanding of content knowledge and how to apply technology to support students' learning and attainment have been found to increase the teachers' knowledge level, confidence and attitudes towards technology (Nyambane and Nzuki, 2014). Kozma and Wagner (2005) indicated that teacher' technology abilities and their pedagogical abilities are important as they determined how teachers perceive ICT integration, planned for it and assessed the outcomes.

2.1.3. School Leaders Interest in the Implementation

It is critical that school leaders spearhead ICT implementation in schools. Their interests, commitment and advocacy for the implementation are critical in ensuring the success of implementation (Hayes, 2007). Buabeng-Andoh, (2012) agrees that good leadership competent enough to identify and articulate policy vision, promoting acceptance of group goals, providing individualized support, and strengthening school culture could influence the integration of ICT. Sife et al., (2007) emphasize that for the integration of ICTs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, pedagogical, administrative, financial, and social dimensions of ICTs in education.

2.1.4 Problems with Infrastructure

The role of technology infrastructure in facilitating ICT in education has been acknowledged internationally. However, research has established that computers, where available in schools, often are not connected to the Internet, limiting their versatility (Isaacs, 2007). In addition, these information and communication technologies are not readily available in classrooms but are only found in computer laboratories which most of the time are not accessible to all teachers (Mingaine, 2013; Assan and Thomas, 2012). In addition, there are problems with the recurrent costs associated with maintenance and support and connectivity. This is further exacerbated by changes and innovations in technology which tend to be fast (Adam et.al, 2011).

2.1.5 Failure to Provide Technical Support to the Teachers

Adoption and integration of ICT for teaching and learning is affected by the level of technical support (Chigona et al, 2010). It is important for schools to have technical assistance in order to provide technical support with regard to repair and maintenance of ICT equipment. Sife et al., (2007) further mention that technical support includes issues like installation, operation, maintenance, network administration and security. Becta (2004) agrees that “if there is a lack of technical support available in a school, then it is likely that technical maintenance will not be carried out regularly, resulting in a higher risk of technical breakdowns” (p.16). The effect will be that teachers will be discouraged from using computers because of fear of equipment failure.

2.1.6 Lack of Guidelines to Compel Teachers to Integrate ICT for Teaching and Learning

Lack of guidelines to compel teachers to integrate ICT for teaching and learning makes implementation of the policy very slow. Lack of policies means the objectives are not really clear enough to compel the teachers to use ICT tools and there are no guidelines as to the specific tools to use (Anderson et al, 2002).

2.1.7 Quality of Use of ICT in teaching

Research into the quality of the use of ICT in South African schools has established that

- instead of using information and communication technologies to improve learning, teachers instead use them to transfer subject.
- Teachers lack the competencies and skills to fully optimize the potential of digital devices

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- Teachers are under the impression that the role of ICTS is to give them access to information from the internet which they are to use as is.
 - Whilst teachers have attended ICT training sessions they do not have adequate skills to infuse ICTs into their subject teaching.

These observations have led to conclusions that ICT policy is poorly implemented particularly especially in schools where the government was trying to obliterate economic discrimination, social discrimination and exclusion caused by the digital divide (PanAf, 2008-2011; Ndlovu and Lawrence, 2012; Hennessy et al: 2010).

2.2 Types of Evaluation Techniques

The reviewed research shows that ICT use in education is wrought with several challenges. However, this study argues that these findings are derived from approaches that are used to evaluate ICT implementation in business which seek to establish value. There are several of these approaches, namely the value scorecard evaluation technique which was developed by Remenyi (2002). Value under this approach is established by getting a comprehensive understanding of the Information systems implementation process. This is done by establishing the consensus amongst stakeholders of the requisite changes needed for the overall implementation objective to succeed and the extent to which these have taken place.

Information systems actability was developed by Agerfalk, et. al. (2003). This evaluation approach focuses on the real use context by evaluating the social actions of the users of the information system. The other approach is the constructivist IS evaluation research where the belief is that IT evaluation has to take into consideration the political and social dimensions thus evaluation ought to first off identify the various social groups involved in the implementation and take recognition of their divergent social, political interests and motivation. This is critical as each group will have different interests for either using or not using an information system (Wilson and Howcroft, 2000). Another aspect is the issue of power in IS evaluation.

Those who focus on power in IT evaluation research argue that evaluation is as much a political process as it is an understanding process. In this approach, evaluation takes into account both the political issues and facts. It posits that evaluation ought to encompass both cognition and action as organizations exists in a world which reproduces and replays

the power asymmetries upon which it depends for its functioning (Introna and Whittaker 2002; Cordoba and Robson, 2003). Lastly is Sen's notion of capabilities. The approach posits that evaluation should encompass primary goods, mental states and those things that an individual attaches value to or craves in relation to the IT. These can range from elementary things to intricate things such as achieving self-respect or taking part in the life of the community. Sen (1999) argues that any evaluation of impact has to assess the extent to which these desired states of being or doing are achievable which is dependent on the institutions within which the individuals operate (Sen, 1999; Chopra and Duraiappah, 2001). These approaches do not take into consideration the context in which the project exists and how the context might have affected the implementation, a serious oversight in the opinion of the researcher. It is important for studies to explore policy implementation as such studies evaluate the extent and efficiency of policy implementation activities.

Evaluating ICT policy implementation, enables one to

- highlight barriers to policy implementation (Bhuyan et al. 2010)
- evaluate the suitability of the processes undertaken during the policy formulation process to involve stakeholders (Brynard, 2011).
- evaluate the dissemination of the policy to the stakeholders (Brynard, 2011).
- assess the capacity of the organisations carrying out the implementation by interrogating the qualifications of the people in charge of policy operations and establishing if they have the requisite skills to implement the new policy.
- assess the sustainability of the initiative.
- assess the commitment of leadership to the implementation and evaluate the implementation plan (Brynard, 2011; Mthethwa, 2012 ; Bhuyan et al. 2010)
- evaluate the appropriateness of the policy's goals, objectives (Giacchino and Kakabadse, 2003 ; Goggin, 1986)
- study the various social, political, and economic factors outside of the policy process that can either enhance or hinder effective implementation.

This study argues that there is need to investigate the impact of contextual factors on the implementation process and outcomes of the white paper in e-education in schools in previously disadvantaged areas, an area that has not been fully researched (Adam et.al,

2011; Thompson and Walsham, 2010). Studying all this is vital as research has shown that “schools and teachers may enact their own policy to determine appropriate procedure and conduct, which may be documented and codified, or it may exist in unwritten form, through ongoing institutional memory and practice” (Vandeyar, 2013 p. 770; Hardee, Feranil, Boezwinkle and Clark 2004).

2.3 Causes of failure of ICT for development and transformation projects (ICT4D)

The limited research that has been done shows that generally across board, efforts across the developing world to use ICT as an enabler for development or transformation have not been as successful as initially anticipated (Şandor, 2012). These ICT4D projects have high rates of failure due to the following;

2.3.1 Poorly Formulated Policies

Gillwald (2010) states that predominantly ICT4D policies are ambiguous and riddled with hyperbole statements that are unrealistic to implement (Usman and Said, 2012). These policies are said to be informed by the global hype surrounding ICT4D and are manipulated to address and protect the interests or needs of the more powerful members of society (Lallana, 2010; Weber and Toyama, 2010) Similar concerns have been raised in South Africa that policy development was “mediated by a variety of responses and pressure groups wherein the interests of an expanding black middle-class and whites assumed precedence” (Vally and Spreen, 2003, p.440). Others state that the black political elite manipulated the process to “silently permit their own class interests to be taken care of without confronting their own, largely poor, constituencies” (Karlsson et al, 2001, p.151). Furthermore, private international consultants are said to have underplayed the social justice issues in policy development.

2.3.2 Lack of Understanding of the Link between ICT and Development

ICT4D failure has also been attributed to the lack of understanding of the link between ICT and development mainly because the implementers themselves do not understand the role played by ICT in the development nor understand what the targeted development is (Rao, 2005)

2.3.3 Tendency to Model Policies on Those from Developed Countries

Internationally, research has established that the policies do not take cognisance of the social reality (Baqir, Palvia and Nemat, 2009; Olsson, 2006). Studies show that when

formulating ICT policies, developing countries tend to model their policies on policies developed in developed countries (Duncan, 2015; Palvia, Baqir and Nemati, 2015; Dale, 1999). This results in policies which have principles that are based on neoclassical and mainstream economics, and do not take cognisance of the complexity caused by the social and historical contexts (Fine, Lapavistas and Pincus, 2001). Thus, the contexts upon which these policies are based are socially and politically different from the ones in developing countries (Haffkin, 2002).

2.3.4 Use of Empowering Rhetoric to Legitimise the Process of Policy Design, Adoption and Actions

Predominantly, developing countries, during policy design and adoption, use a lot of “empowering rhetoric to legitimize the process of policy design, adoption and actions” (Stahl, 2008). Similar observations were made regarding policy documents in education in South Africa as recommendations have been made that “policy documents should establish achievable, defined concepts rather than further turning controversial terms, such as ‘democratic’ and ‘literate, creative and critical citizen’ into rhetorical buzzwords or ‘magic-bullets’ that lose their distinctive meaning through their close proximity with the rhetorical use of ‘social hope poetry’” (Proctor, 2001, p.5).

2.3.5 Lack of Policy and Policy Implementation Guidelines.

Although developing countries are implementing or adopting ICT for teaching and learning, most developing countries are at different stages in the development of ICT for education policies. Furthermore, even in instances where the ICT for education policies exist, there are no policies which outline implementation strategies or commitment for implementation (The Lusaka Communiqué, 2010). Similarly other studies have established that many higher learning institutions in developing countries are integrating ICT in teaching and learning without clear plans or strategies to guide the processes (Sife, et al, .2007) .However, some African countries such as South Africa and Egypt have enabling policy environments for ICT integration in education (Farrell et.al. 2007).

It is on the basis of these findings and the calls by Bhuyan et al. (2010) and Vandeyer, (2013) that this study investigated the impact of contextual factors on the implementation

process and outcomes of the white paper in e-education in schools in previously disadvantaged areas.

2.4 Policy Implementation Process

Policy implementation is not easy to define as it is a polymorphic concept. In some instances it is taken to refer to the implementation process and in others, the output of implementation (Winter, 2003). Policy implementation can also be defined as “activities which are a collective effort towards the attainment of set objectives of a policy document” (Van Meter and Van Horn, 1975, p. 447). Others define policy implementation as “a process of interaction between the setting of goals and actions geared to achieve them” (Pressman and Wildavsky, 1984, p.xv).

Others define it as the “mechanisms, resources, and relationships that link policies to programme action” (Mthethwa, 2012, p.37). It can also be regarded as the process of executing or producing a given task (Paudel, 2009). It is clear from these definitions that policy implementation is a process ranging from perceptions that there is a problem to solve, coming up with strategies to solve it and translating all these into reality. In this study, policy implementation will be taken to mean “what develops between the establishment of an apparent intention on the part of government to do something or to stop doing something, and the ultimate impact in the world of action” (O’ Toole, 2000, p.266).

2.4.1 Policy Implementation Approaches

There are predominately two approaches to policy implementation, the top down approach, which according to Elmore (1979), is characterised by clearly articulated statements outlining the policy-makers intentions, goals, objectives, target recipients and steps outlining expectations and roles of all involved in the implementation process. The other approach is the bottom up approach which defines the problem to be addressed but leaves the choice of strategies of implementation to those carrying out the actual implementation as they are deemed better placed to handle the issues given their in-depth understanding of the contexts and interactions with the clients. The pros and cons of both approaches are discussed in table 2:1 below.

Table2:1: Comparison of top down and bottom up implementation approaches

	The Top-Down Perspective	Bottom Up Perspective
Implementation Approach	<p>Clearly articulates intentions of the policy.</p> <p>Outlines the guidelines for the attainment of the intentions.</p> <p>Outlines the deliverables and expectations from implementers.</p>	<p>Defines the problem.</p> <p>Outlines the roles and expectations of each stakeholder in the implementation process.</p> <p>Maps the interactions between the stakeholders; both formal and informal</p> <p>Links to other policies with vested interests in finding solutions to the same problem</p>
Prescription Of Implementation	<p>Outlines acceptable patterns in behaviour across different policy areas.</p> <p>Tends to be general as it does not cater for specific context based differences in behaviour</p>	<p>Makes provision for street level policy implementers to drive the implementation process in response to what may occur during the implementation process.</p> <p>Acknowledges the critical role of street level policy implementers as they are better placed to negotiate the process of policy implementation.</p>
Control Of Implementation Processes	<p>Has clearly articulated controls that spell out precisely what should happen as part of the expectations.</p>	<p>Gives precedence to responses that are contextual based</p> <p>Totally against centrally coordinated policy implementation initiatives since they make no provision for contextual situations.</p>

<p>Evaluation Criteria</p>	<p>Clearly states criteria to be met in order for the implementation process to be regarded as a success.</p> <p>The intentions of the policy determine the level of success</p>	<p>Implementation failure is attributed to discretion, routine and personal malfunctions.</p> <p>Implementation failure can be corrected through reflection and institution of requisite changes.</p>
<p>Weaknesses Of Approach</p>	<p>Fails to acknowledge the impact of actions taken earlier in the policy-making process.</p>	<p>Tends to be ineffective in solving problems of public policy.</p>
	<p>Does not take cognisance of political issues in policy implementation but regards it as an administrative process.</p>	<p>Assumes that all policy implementers will be proficient in coping with the implementation process.</p>
	<p>Assumes that control of the implementation process lies with the policy makers.</p> <p>Assumes that all variables and that can potentially affect the implementation process are predetermined and as such can be anticipated and pre-empted prior to implementation</p>	
	<p>Does not take into consideration the transformation of policy due to the behaviour of the policy implementer.</p>	

Source (Howllet and Ramesh, 2003; Hull and Hjern, 1987; Winter, 2003; Elmore, 1979).

2.5 Factors That Affect Policy Implementation.

Policy implementation process can be affected by several factors. This section discusses the factors that are said to affect implementation and juxtaposes them against the current social political context with the hope of validating the need to carry out this study. These factors reflect the environment from which teachers in previously disadvantaged areas live in and get to interact with the whitepaper in e-education and the information and communication technologies. The environment of implementation is critical to both the individual who is carrying out the implementation and the organization within which the implementation is taking place. This is because the environment within which implementation takes place is fluid because as policy is implemented new issues and requirements emerge. The problems which are being addressed constantly evolve through a multi-staged, iterative process (McLaughlin and Elmore, 1982; Sabatier and Mazmanian, 1980).

2.5.1 Contextual Variables

Contextual variables are critical in clarifying the issues that have a bearing on choices made by individuals involved in the implementation process (DeLeon and DeLeon, 2002). These variables can be divided into three: political factors, community needs, and socioeconomic issues (Pressman and Wildasky, 1984).

2.5.2 Local capacity and will

Success of policy implementation depends on local capacity and will which are in turn affected by stakeholder perception of the value and relevance of the policy and adequacy of the implementation strategy. Although capacity can be addressed in the policy by providing training, will is not easily addressed.

2.5.3 Motivation

Motivation is largely affected by other factors which are often not articulated in the policy such as environmental stability; the interrelated but different places of authority, differing priorities or pressures and other socio-political issues and the implementer's belief that the policy is needed and given the situation in question is bound to succeed (Milward, Denhardt, Rucker, and Thomas, 1983).

2.5.4 Policy transformation due to policy implementer's interpretation

Research has established that policy gets transformed during interpretation and interaction with readers. Consequently, whatever is delivered as a policy implementation outcome is dependent on the policy implementer not the organization nor institutional goals (Weatherley and Lipsky, 1977). As such there is need to acknowledge and mitigate the likely impact of individual incentives, beliefs, and capacity on implementation as “individuals responsible for carrying out a policy act not only from institutional incentives, but also from professional and personal motivation”(Odden,1991,p. 189).

2.5.5 Clarity on the role of different groups of policy workers in policy Implementation

Research has established that different cadres of organizational actors have different attitudes towards policies and react and contribute differently towards organizational policy implementation outcomes (Halligan, 1995; Stares and Weavers, 2002). This implies that there is need to delineate each cadre's responsibility and contribution.

2.5.6 Stakeholder Engagement

Poor stakeholder engagement spells doom for policy implementation as it can lead to misguided efforts in addressing the needs of target recipients due to inadequate understanding of these problems. Poor stakeholder engagement also increases the likelihood of lack of buy in or ownership which is critical for successful implementation (Blood, 2013).

2.5.7 Change Management

In instances where policies lead to new ways of doing things or providing services, there should be operational guidelines to guide both implementers and recipients to ensure understanding and management of the expected changes and implications (Sabatier and Mazmanian, 1980).

2.6 The South African E-Education Implementation Context

When the factors that are said to affect policy implementation are in the South African context, research shows the following;

2.6.1 Political factors

South Africa ranks as the ninth unequal country in the world (Gillwald, Moyo and Stork, 2012). The country is characterised by segmentation and dualism as a result of apartheid

which divided South Africa into two segments which have contrasting natures, levels and paces of development (Fourie, 2011; Gillwald, Moyo and Stork, 2012). There is rampant disrespect of the law and strikes which can partly be attributed to the fact that under apartheid, the socialisation process made people especially blacks have an understanding of how one behaves in order to gain status as a citizen (Cho, 1999).

2.6.2 Geographic Segregation

Despite Democratic rule since 1994, residential segregation has persisted in the new South Africa. “Deracialization” of the urban areas has been essentially “bourgeois”, as access to the city is based on money, leading to a segmented housing market. The removal of racial barriers to mobility has enabled those with money to move out of the townships (Gibson, 2011; Seekings and Natrass, 2005; Crankshaw, 2008 and Seekings, 2011). This, however does not necessarily translate to geographic racial integration as when a black middle class moves into middle-class white neighbourhoods, the white middle class leaves (Orfield and Boger, 2005; Patillo-McCoy, 2000).

2.6.3 Government’s Legitimacy

Rothstein (1998) argues that for successful policy implementation, it is critical that citizens trust the institutions tasked with implementation of policy. “Trust occurs when parties holding certain favourable perceptions of each other allow this relationship to reach the expected outcomes” (Wheels and Grosz, 1977, p. 251). Once there is trust between people, groups or institutions there are “freed from worry and the need to monitor the other party’s behaviour, partially or entirely” (Levi and Stoker 2000, p. 495).

Increasingly, in South Africa, there has been erosion of trust of the government which in essence negatively impacts the citizens’ moral justification for obeying its laws. There are a number of factors that affect citizen’s trust of public institutions. The annual transparency corruptions perceptions index of 2012 showed that South Africans feel that corruption is getting worse as the country was ranked number 69 in 2012 compared to number 54 in 2008. The Afro barometer survey of 2012 established that 40% of South African citizens feel that public officials and government representatives are involved in corruption. This kind of environment is detrimental for policy as the environment in which

policy implementation takes place affects both the organisation in which implementation takes place and the implementer (Pressman and Wildavsky, 1984).

Furthermore, there are a lot social issues such as wide spread disrespect of the law, service strikes for social services and calls for improved labour conditions which can partly be attributed to the fact that socialisation under the apartheid lead to a particular understanding of how one behaves in order to gain status as a citizen (Bolino et. al, 2013). There is the added burden of the influx of foreigners who perceived to be competing with locals for jobs which led to the xenophobic attacks in 2008. In general, one can conclude that South Africa is not stable in terms of dealing and making peace with its past or finding balance in the new system which is perceived as biased to blacks in some spaces.

2.6.4 Education

Post democracy, the dualism in South Africa has affected the education sector. Teachers on the ground feel that education is marred by a capitalist divide based on money and resources which make quality education accessible only to those who have access to the private schools (O'Connor and Geiger, 2009). They refer to education in state education as “gutter education” whilst private schools provide quality education (O'Connor and Geiger, 2009). Brown (2006, p.1) concurs and states she says “racism in the form of apartheid laws has been replaced by covert racism and class domination in the form of school fees”.

Chisholm et al., (2003) reports of an exodus of “rich black students” from former black schools to former white schools as efforts to escape the ‘historical disadvantage’ so as to access better quality education and improve chances of graduating. Schools in previously disadvantaged areas are said to be characterised by a breakdown in ‘proper’ teaching and learning, a predominance of negative attitudes amongst learners and teachers, inept school management, poor relationships among principals, teachers, learners and parents which inevitably make it difficult for any new initiatives to be successfully introduced and maintained (Blauw, 1998). It can be argued, however that the said dysfunction is due to the fact that prior to democracy, schools were not to the blacks at least, places of learning but of resistance and struggle (Asmal and James, 2001).

Van der Berg (2008) argues that there are marked differences in achievement tests and examinations which still reflect racial lines. The poor quality of education in previously poor

schools has been attributed to calibre of the teachers in previously disadvantaged schools. Asmal and James (2001) elaborate on the issue and state that under-qualified teachers are predominantly in areas where education performance is poor. The same findings were established in 2008 by Van der Berg. However in America, studies have established that the concentration of poverty, which is a result of residential segregation, is the main cause of problems that are prevalent in segregated schools (Massey and Denton, 1988; Quillian, 2014; Woo, 2012). These findings are backed by research findings from the U.K., Israel, Japan, India, and other countries that established that groups that are regarded as lower in social status consistently have lower academic achievement (Fischer et al., 1996). In addition, other studies have established that there is disillusionment that education and employment are not enough to improve one's social status.

2.6.5 Access to Services in Previously Disadvantaged Areas

Previously disadvantaged areas are also said to be wrought by service delivery issues. As part of the liberation, the ANC, on the basis of democratic values of human dignity, equality and freedom, promised all citizens especially those in previously disadvantaged areas housing, water, electricity and toilets with running water. However, the government has failed to deliver on these promises (Ruiters, 1996, Fjeldstad, 2003). The failure has been attributed to the adoption of “neo-liberal” policies by the ANC which are said to have reproduced the inequities of the past. These policies are reportedly hinged on redistributive financing. Municipal services have been privatised in pursuit of cost-recovery and private- public partnerships. This has allegedly led to the denial of basic social and economic rights of the poor as these policies are crafted such that those in high income areas pay more to get better services whilst those in poorer section pay less and get basic services (Beall, Crankshaw and Parnell, 2002; McDonald, 2008).

This perceived denial of service to the poor had led to service delivery protests in previously disadvantaged areas (Seekings, 2011; Nthambeleni, 2009; Atkinson 2007; Pithouse, 2007). Service delivery protests have been defined as ‘grass-roots protests against both the quality of service delivery and public representation of grass-roots service delivery needs’ (Booyesen (2007, p. 21). Predominantly, during service delivery protests, issues of concern are mainly dissatisfaction with the provision of municipal services such

as clean potable running water, electricity and water system toilets. The social protests are characterised by “intentional injuring of the police, foreigners, government officials, burning down of houses or other structures, looting of shops, tires are burned to blockade roads” (Karamoko and Jain, 2011,p.10).

According to Pithouse (2007, p.17), service delivery protests are about “citizenship”. The strikes y are driven by the need of residents in previously disadvantaged areas to have access to “the material benefits of full social inclusion as well as the right to be taken seriously when thinking and speaking through community organisations”. Some argue that this is indicative of inadequate opportunity for local political participation and residents in previously disadvantaged areas resort to these protests as the “only strategy available to the poor for compelling social and economic progress of their interests” (Alorton, 1979, p. 1003).

2.7 Implications

The teacher’s perception of the policy issues is likely to be influenced by the environment in which they work as text possesses different meanings for different individuals based on their biographies and positions in the social setting. Whatever meaning they construe on the policy and the policy issues is likely to be subjective as Ricoeur (1991) argues that meaning is situational in spoken discourse but in written discourse, where there is no interaction, the individual imposes his or her meaning (Miranda and Saunders, 2002). According to Schraw (2000) meaning is subjective as it is a personal construction of each reader’s interaction with the text highly influenced by the reader’s purpose and intentions. To sum these findings up, Smagorinsky, Cook and Reed (2005,p.75) state that “different readings of the same text vary, not just from reader to reader but from reading to reading by the same reader, depending on how each reading is situated in dialogue with and in extension of other readings and configured within the reader’s experience”.

2.8 Summary

This chapter has tried to show the importance of understanding the impact of contextual factors on the implementation of the e-education policy. The chapter highlighted the vast differences that exist in South Africa and justifies the need for evaluation studies to have information on the interaction processes between ICT and the social-cultural,

organizational, economic factors and context-dependent power structures as these too have been found to affect implementation (Diaz and Urquhart, 2009; Zheng and Walsham, 2008; Øvretveit, 2014).

The available literature highlights how integration of ICT in teaching and learning can be affected by how well policy makers understand and appreciate other issues related to the policy such as infrastructure, professional development, leadership, technical support, and personal characteristics and not just adoption and integration issues. This study argues that it is possible that implementation failure could be due to other factors other than resource and financial constraints or adoption challenges. It can be due to the policy being unsuitable because the policy assumptions are wrong thus making the policy aims wrong as it has been established that it is critical that policy implementation reflects the needs, understandings and social realities of the recipients (Vally and Spreen, 2003; Kendall et al., 2006; Cross and Adam, 2007).

The next chapter presents the Khanya project which drove ICT implementation in previously disadvantaged areas in Cape Town.

3.0 Introduction

This chapter discusses the Khanya project which was tasked with the implementation of the white paper on e-education policy in the Western Cape. The chapter does this by outlining the goals of Khanya, the implementation of the programme and a discussion why the Khanya project was selected for this study and the evaluation approach selected for this study.

3.1 Implementation of the E-Education Policy in Previously Disadvantaged Areas in the Western Cape: Khanya Project

The South African government through the department of Education embarked on initiatives to provide public schools with computers and other information and communication technologies in an effort to enhance learner's access to knowledge and information. Provincial governments were tasked with the implementation of the white paper on e-education policy. In the Western Cape, the Khanya Technology in Education Project was set up to drive the implementation (Gaum, 2002). The project, which began in 2001 and ended in 2013, had the mandate to assist schools, especially those in disadvantaged areas, in the acquisition of ICT for purposes of curriculum delivery by the year 2012 (Khanya, 2008).



Figure 3.1. Map of schools covered by the Khanya project source: Western Cape Education Districts

3.1.1 Goals of Khanya

The Khanya project sought to be on the forefront in the provision of sustainable curriculum delivery through ICT. According to then Western Cape Minister of Education, Helen Zille (2001), the project was carried out capitalise on the opportunities presented by ICT in teaching and learning. Beyond installing computers and teaching computer literacy, Khanya sought to develop models for electronic education and be a leading contributor to best international practice of delivering the curriculum in all subjects in cost effective ways that are sustainable and suited to poor communities in a bid to bridge the digital divide as “some of our children have access to television, video, cell phones, arcade games, radios, ATMs, computers and the Internet. Others do not, but have heard enough about them to realize that they are being left out of a magic world-on-demand” (Zille, 2001).

Prior to fully fledged implementation, Khanya embarked on pilot projects which were used as trial runs for the fully fledged implementation. For inclusion in pilot installations, poor schools with good management and good academic results were invited to join the project. Some of the lessons learnt from the pilot project included ways of reducing ICT installation times, strategies to ensure that the information and communication technologies had a maximum impact on teaching and learning, ways in which teachers could be trained to ensure that they use information and communication technologies

effectively for teaching and learning and how best to use computers in multigrade classes. Other lessons learnt during these pilot projects were that it was imperative that during implementation, the project took cognisance and was responsive to local conditions prevalent in individual schools. Furthermore, the pilot projects revealed that schools were unique thus making it difficult to impose one implementation model on all schools. In addition, whilst technology installation was the key goal of the project, it was not to be done at the expense of curriculum needs and curriculum delivery. To ensure sustainability of the project, the project realised that it was imperative that communities within which the Khanya project was launched were brought on board and that it was necessary to bring partners on board to deal with the prohibitive costs of technology

The implementation of the programme was done in two phases. In Phase 1, the project sought to identify, secure and install computers and educational software and Internet connectivity in computer laboratories. For each school, the curriculum focus was informed by national, provincial and local priorities. Examples include the Maths Schools Project and literacy and numeracy projects. Then in the Phase 2 of the project, teachers were trained on the educational use of the technologies for efficient and effective teaching and learning (Khanya, 2008). This was deemed critical as Van Wyk (2004 p.1) said "it's important to note that we are not only promoting computer literacy. We will use these systems to deliver curriculum. In the end, these systems must help to improve teaching and learning performance, especially in numeracy and literacy."

Khanya appointed facilitators who were trained to train teachers. These facilitators also served as contact and support persons between the Khanya project and the schools. The duration of training sessions for teachers varied depending on situations on the ground in school. The training sought to

- equip the teachers with basic computer theory and practice.
- equip the teachers with skills to enable them to Integrate technology into the curriculum delivery process
- equip the teachers with skills to use the computer and other information and communication technologies as tools for teaching and learning.

- increase learning by designing lessons that use instructional technology (Khanya, 2008).

The training sessions took place once the school laboratories were opened or upgraded. The training sessions covered basic computer concepts, operating systems, the Internet, electronic mail, electronic file management, word processing, spreadsheets, and presentations, computer literacy, educational software training and equipment training such as using scanners and interactive whiteboard. In addition, Khanya set up school based computer committees who were trained as local area network (LAN) administrators. The LAN administrators were also supposed to provide first-line support for the other teachers in the school.

The Khanya Project and its personnel have won a number of national and international awards as shown in table 3:1 below.

Table 3:1 List of awards won by the Khanya Project and its personnel posted on the project website (www.Khanya.co.za).

Year	Award
2004	<ul style="list-style-type: none"> • Finalist – Stockholm Challenge: Education • 2nd Runner-up Electronic Government Public Sector Award • Standard Bank CPSI Public Sector Innovation Award
2005	<ul style="list-style-type: none"> • Finalist – Technology Top 100 Awards: Leader in Social Innovation • Khanya Programme Manager winner of the Computer Society’s ICT Personality of the Year • Kobus van Wyk, winner of the ICT Social Response Award by Gartner • Silver Award at the Western Cape Premier Service Excellence Awards
2006	<ul style="list-style-type: none"> • Finalist ICT Achievers Award • Won the Technology Top 100 Awards: Leader in Empowerment • Awarded the Silver Award at the Western Cape Premier Service Excellence Awards
2007	<ul style="list-style-type: none"> • Won the Gold Award -Impumelelo Innovations Award Trust • Awarded Bronze - Western Cape Premier Service Excellence Awards • Won the CPSI Public Sector Innovation Awards

-
-
- Finalist in African ICT Achievers Awards
-

3.2 Why The Khanya Project Was Selected For This Study.

The Khanya project was selected because there are conflicting perceptions about the success of the project. The perception that Khanya project is a success has been challenged by some as research focusing on ICT in the schools under the Khanya project overwhelmingly show that the schools wrought with challenges regarding integration of the technology in teaching and learning as the uptake of technology is limited. Researchers have evaluated the adoption of information and communication technologies from different dimensions such as community informatics, digital divide, adoption barriers and self-efficacy issues. The studies consistently show that there are problems realising the associated benefits of the ICT investments, inadequate ICT resources, limited access to the Internet, technophobia and age related adoption issues as older teachers have been found to struggle to adapt to using ICT for teaching and learning; shortage of skilled teachers to teach ICT subjects and security issues. Social status of the potential users of information and communication technologies has also been found to have a bearing on computer use and experience. It has also been established that there are issues with the high costs of acquiring and setting up ICT-based Management Information Systems (Wilson-Strydom and Thomson, 2005; Government of South Africa, 2004; Ford and Botha, 2010; Hodgkinson-Williams, Sieborger and Terzoli, 2007; Ng'ambi and Brown, 2004; Tas and Tatnal, 2010). Specifically some of the established challenges are that;

3.2.1 Inadequate Infrastructure

Resources are reportedly inadequate as available resources are unable to meet the demand. The project installs one computer laboratory of 10-20 computers in schools with student-teacher ratios as high as 80:1 (Ford and Botha, 2010). The high ratio of student to computer access inevitably results in sporadic use of computer technology which results in neither the teachers nor the learners getting adequate exposure necessary for either ICT-literacy or integration of information and communication technologies into teaching and learning. This conclusion is not remiss as research into models similar to the one

adopted by Khanya show that the effect of these computer laboratories on education is almost negligible (Ford and Botha, 2010; Davids, 2009; Chigona et al., 2010; Miller et al., 2006). Furthermore, schools in previously disadvantaged areas cannot afford to upgrade their resources. A number of schools are reportedly unable to acquire additional ICT infrastructure to augment what was provided by the Khanya Project due to financial constraints (Davids, 2009, Isaacs, 2007).

3.2.2 Failure to Provide Technical to the Teachers

Adoption and integration of ICT for teaching and learning is said to have been affected by the level of technical support provided (Miller et al., 2006). Most schools in disadvantaged areas could not afford in-house technical support and relied on Khanya for this. However, it appears that the Khanya Project could not keep up with the demand for technical support (Chigona et al., 2010). Failure to provide support timeously has reportedly affected adoption as studies have shown that the level of adoption in schools with in-house technical support was higher compared to that of schools with no in-house technical support (Miller et al., 2006).

However, literature on project evaluation cautions that a distinction should be made to differentiate between evaluating project management and the project outcomes (Wit, 1988). As a project, Khanya can be evaluated based on time, cost, quality or an assessment of the perceptions of the different stakeholders in the project regarding the suitability of the outcomes in relation to their interests and expectations (Ojiako et al., 2008; Wit, 1988). The evaluation that led to the project winning awards was predominantly techno centric as the perception of success was based on the project attaining its targets. The project did reach its target of installing information and communication technologies in all public schools in the province and of providing training to teachers in the province and was not based on project outcome.

The project can also be evaluated to ascertain its impact on teaching and learning (Freund and Drori, 2003; Kozma and Wagner, 2005). Alternatively, the other approach can be to assess the implementation processes. There are two approaches to do this. The foundationalist approach that posits that success is easily identifiable and the constructivist approach which places emphasis on meaning and its interpretation. Alternatively, evaluation can combine the two approaches to establish the extent to which

the goals and intentions of the policy have been achieved and the extent of support for the policy (Gupta, 2001; Davidson, 2005). Assessment under this combined approach establishes;

- alignment between the implemented innovation and the original intentions.
- the extent to which the original policy implementation intentions have been delivered.
- the extent to which the different facets of the implementation have been conducted.
- the extent to which the implementation program is of interest to the participants.
- the extent of the amount of services received by program recipients and the level of involvement and representativeness of program participants (Durlak and Dupre, 2008; Dane and Schneider, 1998).

Within previously disadvantaged areas, the Khanya project can be evaluated as an ICT4D project. Research in ICT4D focuses on diffusion of ICT artefacts, infrastructure building, implementation of ICT services by analysing the different social, technical factors and actors that lead to failure of the implementation process, impact evaluation of ICT and the digital divide (Diaz and Urquhart, 2009; Thapa and Sæbø, 2014) Within ICT4D projects, evaluation is classified as total failure, largely unsuccessful, partial success/partial failure, largely successful and total success based on attainment of major goals of all stakeholder groups and desirable outcomes.

3.3 Evaluation Approach Selected For This Study

None of these evaluation approaches take into consideration the context in which the project exists and how the context might have affected the implementation. This study, therefore investigated how contextual factors affected the implementation process. The study also assessed the alignment between the goals and objectives of the white paper in e-education policy and the implementation context to be able to establish the extent to which the desired states of the e- education government strategy were achievable. This was critical as the successful transfer and eventual implementation of a policy is heavily dependent on the relationship between the context from which it came and that to which it is transferred (Deleon and Deleon, 2002). Furthermore, it is essential to highlight changes if any to policy that might have taken place. The approach provided an

understanding on which aspects of the policy were delivered. This is important as “negative results can occur if the program is not implemented sufficiently, or positive impact can be achieved through an innovation that, in practice, was very different from what was intended” (Bressers,2004,p.10).

3.4 Summary

This chapter, discussed the Khanya Project which was tasked with the implementation of the white paper on e-education policy in the Western Cape. The chapter outlined the goals of Khanya, the implementation of the programme and justified the selection of the project and the evaluation approach selected for this study. The next chapter will look at philosophical assumptions of the researcher and present the contextual interaction theory which is the theoretical framework used to guide the study.

4.0 Introduction

Lee (2001, p.iii) states that information systems research is more than an examination of “technological system, the social system, or even the two side by side but rather an investigation of the resultant phenomena that emerges when technology and the social system interacts”. To effectively carry out research, one needs to be guided by one’s beliefs and philosophy. This chapter discusses the philosophical foundations and assumptions underpinning the research problem. The chapter also presents the contextual interaction theory which is the theoretical framework used to guide the study.

4.1 Epistemology

Epistemology refers to the theory of knowledge acquisitions or assumptions about how best to study social reality (Hirschheim, 1985; Blaike, 1991). Hofer (2004) defines it as the study of beliefs about the origin and acquisition of knowledge. Epistemology provides clarification and anticipates the going on’s in the social world by “searching for regularities and causal relationships between constituent elements” (Burrell and Morgan, 1979, p.5). There have been several proposals on how knowledge should be studied. Burrell and Morgan (1979) suggest that there are mainly four research paradigms: functionalist, interpretive, radical humanist, and radical structuralist.

Guba and Lincoln (1994) suggest positivist, post-positivist, constructivist, and critical paradigms as paradigms which should be used for research. Within information systems, Orlikowski and Baroudi (1991) state that there are three philosophical paradigms. These are positivist, interpretivist and critical interpretivist. Others are of the opinion that IS research is mainly divided into two strands - positivism which is objective and interpretivist which is subjective (Bhattacharjee, 2012). However, research within these two domains have been found to be wrought with “theory practice inconsistencies”, which have been attributed to research practice, results and the researchers explicitly stated or implicit ontological assumptions (Smith, 2005, p.1).

The next section discusses the positivist, interpretivist and critical interpretivist paradigms as outlined by Orlikowski and Baroudi (1991).

4.1.1 Positivist Approach

Positivism is based on key beliefs that knowledge creation is restricted to what is observable, measurable and testable as abstractions are not real (Hirschheim, 1985). The key belief system of positivism presupposes that reality is driven by fixed laws of cause and effect and driven by natural laws (Guba and Lincoln (1994). Positivist also believe that although theories maybe created though the process of reasoning, it is necessary to verify their authenticity through observation as reasoning and observation have an iterative relationship (Bhattacharjee, 2012). Positivists are convinced that:

- technology implementation is enacted by human actors and as a result there is only one or similar experiences for all involved.
- words or any other semantic expressions are inadequate in articulating what transpires in the world (Hirschheim, 1985; Bhattacharjee, 2012; Ciborra, 2000; Ngwenyama and Lee, 1997).

4.1.2 Interpretive Approach

Interpretive research is concerned with deciphering what is publicly displayed but unseen. It aims at achieving three key goals namely “a richer understanding of naturally occurring events, criticism of false consensus and the forces which sustain them, and the expansion of the conceptual base from which organisational members think and work” (Deetz, 1982 p.137). Interpretivists believe that human beings enact their own reality (Walsham, 1993). Precedence is assigned to subjective meanings, contexts, social and political including symbolic actions (Burrell and Morgan, 1979). Interpretivists believe that there is no universality of causality and truth and opt to seek understanding of the diverse meanings of stakeholders (Lincon and Guba, 1994). Interpretivists are also of the opinion that whatever understandings and interpretations are there on any subject, the researcher’s bias is bound to be in it. Interpretive research attempts to interpret social reality through the subjective viewpoints of the “local” participants within the context where the reality is in (Bhattacharjee, 2012).

Interpretive research enables one to explore hidden reasons behind complicated and multidimensional social processes which would otherwise be difficult to explore using quantitative approaches. Interpretive research is useful for studying context-specific events. Context is an output of activity, and is reproduced in the course of the activity at hand (Pettigrew, 1985; Walsham, 1993). Context influences action and is iteratively shaped by actions. There are two contextual parameters to consider, namely the horizontal analysis, whereby researchers are concerned with the temporal sequences of events. This includes history, present, and the future, of events whilst the vertical analysis focuses the researcher's attention to the interplay among broader and more bounded levels of social contexts (Pettigrew, 1985).

Interpretive research attempts to provide insights on the impact of information technology in organizations and asserts that the same physical artefact in the same institution, undergoing the same acts can arouse "different meanings for different human subjects as well as for the observing social scientist" (Lee, 1991, p.347). According to Oates (2006), interpretive studies try to understand a pluralistic world based on the principle that people assign meanings and values to their unique contexts. This approach enables researchers to better understand contextual issues by focusing on the meanings and concepts of the actors in real settings. Interpretive research attempts to interpret social reality through the subjective viewpoints of the local participants within the context where the reality is in (Bhattacharjee, 2012). We can conclude that interpretive research posits that

- There are vast differences between physical reality, people, the physical and social artifacts.
- People construe and attach their own meanings to the world around them and to the behavior they manifest in that world.

4.1.3 Critical Approach

Critical research is credited with enhancing understanding of "communication deficits in the design, use and implementation of information technologies and information systems" (Kvasny and Richardson, 2006, p.1). The key objective of critical research is to force people to consciously and critically evaluate societal shortcomings and challenge these (Brooke, 2002; Orlikowski and Baroudi, 1991).

Critical research argues that assumptions that are held as givens about any society are in actual fact shaped by existing social and historical contexts. The premise of this argument is that the ways in which “shaping was recorded and represented were in themselves the product of their time” and were questionable (Brooke, 2002, p.49). Unlike interpretive research, critical research enables one to use ideas from different schools of theory and practice (Alvesson and Willmott, 1992; Walsham, 1993). Critical research tends to focus more on reflection upon experiences with IT artefacts and on what is wrong with the world rather than on what is right (Walsham, 2005; Trauth and Howcroft, 2006). It is “concerned with social issues such as freedom, power, social control, and values with respect to the development, use, and impact of information technology” which improves the conceptions about of IT by practitioners (Myers and Klein, 2011, p.17). Alvesson and Deetz (2000) propose that critical research comprises three intertwined elements namely insight, critique, and transformative redefinition.

4.2 Underlying Philosophy of This Study

The overarching research approach of this study is critical interpretive. Critical interpretive research was selected because it enabled the study to “understand human thought and action in a social and organisational context” (Klein and Myers, 1999, p.1), in this instance the implementation process and the policy agent’s interaction with ICT in their schools and area. This is important as Harley et.al. (2000) and Jita and Vandeyar (2006) have established that teachers adopt roles that are in sync with their personal value systems, local cultures and contexts. Given the current socio political landscape, there is need to critically hear the teachers personal value systems and assess the possible impact of these on implementation.

According to Orlikowski and Baroudi (1991) critical research seeks to challenge assumptions that are taken as facts concerning organisations and their interaction with information systems by critiquing the status quo. This is done by thoroughly interrogating and bringing to the fore “deep-seated, structural contradictions within social systems” (Orlikowski and Baroudi, 1991.p.5). They attempt to explore and expose the unspoken and taken for granted basis for existing situations and establish what it is that justifies the social order. Whilst information and communication technologies are seen as panaceas for a whole myriad of issues ranging from social problems to medical problems, the

implementation if ICT for teaching and learning are failing in schools. The critical stance will enable the researcher to scrutinise and provide an in depth interrogation of “relations or forces determining what counts as knowledge and information and what are their legitimate uses” (Klein and Myer, 2011, p.27). This is an attempt to uncover how knowledge “is conditioned by exercising power through regimes of truth, and how knowledge can be used as a tool of power once it has become available” (Klein and Myer, 2011, p.27).

In addition, the South African government believes that ICT initiatives are failing in schools in previously disadvantaged areas because of inadequate training. This claim is a problem in that the way problems are framed affects what people think about the problems as the framing may curtail people’s interrogation as “a question may block us from seeing solutions to problems that become visible through a different question” (Postman, 1992, p. 126). The position that failure is attributed to inadequate training subliminally prevents us from engaging in frank discussions about these issues which would probably help solve the problems of ICT integration in teaching and learning as reasons for failure are implicitly articulated (Bacchi, 2000).

This thesis argues that analysis of ICT implementation should not just focus on consideration of factual propositions but should take cognisance of the multiple interpretations by the actors of the policy implementation (Yanow, 1993). This is critical as it is an established fact that “multiple stakeholder interpretations may hamper the implementation of a policy's explicit mandate” (Yanov, 1993, p.23). Whilst it has been established that multiple stakeholders interpret policy differently, this study, focused on the teachers interpretations only. The need to hear the teachers’ perspectives is driven by the need to balance discourse as to date research findings indicate that predominantly, discourse is dominated by the voices of the project administrators and their project sponsors (Mooketsi and Chigona, 2010 and Chigona and Mooketsi, 2011). I believe that there is no “monopoly of truth and enlightenment” as such, policy interpretation will differ across groups and that there is need to understand these various interpretations to enhance implementation (Du Toit, 2004).

This is in line with the key beliefs of critical research which are that

- people would if not for existing economic, political, and cultural authority systems change their material and social circumstances.
- whatever contradictions exist in prevalent social forms lead to inequalities and conflict's.
- knowledge is rooted in pre-existing social and historical practices (Orlikowski and Baroudi, 1991; Alvesson and Wilmott, 1992).

4.3 The Contextual Interaction Theory

This study used the Contextual Interaction Theory in order to get an understanding of the implementation process and the impact of context on the process. The theory has been used widely in environmental sciences by Bressers and Lufos, (2010); Vazquez-Brust and Sarkis, (2012); Bressers (2013); Owens, (2008) and de Boer, Kruijf and Ozerol, (2013) and Danica, Adamowski and Reilly (2014). The theory has also been used by Spratt (2009) and Bakari and Frumence, (2013) to investigate Human Immune Virus policy implementation barriers and prevention of infectious diseases and by Javakhishvili, (2011) to investigate the implementation of domestic violence law.

4.3.1 Suitability of the Theory for This Study

According to Walsham (2006) selection of theory is essentially subjective. Thus, the key factor that influenced my selection of this theory is that this theory provides a framework that highlights factors that can potentially affect implementation of policy (Bressers, De Bruijn and Lulofs, 2009). This was critical as the function of a theory to focus research thus "preventing the observer from being dazzled by the full-blown complexity of natural or concrete events" (Hall and Lindzey, 1957, p. 9) According to Bressers and Lulofs, (2010), the theory is appropriate when one wants to investigate policy implementation irrespective of whether the implementation approach was top down or bottom up. The theory is also said to suitable for qualitative research which is the research approach of this study.

The theory claims that much of the policy that gets actualised in practice cannot be foretold making it is impossible to predetermine all possibilities. As a result, policy always ends up being modified to fit local situations for it to work. This stance is appropriate for

the study as it enabled this study to map the context to the expectations and establish if these were in sync or had to be modified.

The theory also states that it is the characters of the policy actors that ultimately determine the outcome. This is also appropriate for this study as it too seeks to establish how people and their beliefs and socialisation affect policy implementation processes and outcomes. The contextual interaction theory puts people, their interactions at the core of the analysis of policy implementation. I felt that this was appropriate as I wanted to get the perceptions of the teachers about the implementation process.

The theory claims that that the interactions between the policy implementers and the context have an impact on the implementation process. This also makes the theory appropriate for this study as it seeks to uncover the impact of the interplay of contextual factors on implementation of policy. The theory states that in instances where an implemented policy seeks to bring about behavioural changes in the target group, the implementation process has to produce these. The implementation of the white paper in e-education should result in behavioural changes in the teachers such as in their information searching approaches, teaching and teaching methods. This study sought to assess the presence or absence of these changes. Using the theory enabled the study to obtain more information about the implementation process as it analyses the implementation process, compliance of the implementation to the policy goals and provides an understanding of what happens during implementation and why. The suitability of this theory given the intentions of the study ensured the study uncovered the information it required.

4.4 Key Concepts and Claims of the Contextual Interaction Theory

4.4.1 The Setting

Whilst the characteristics of the geographical place and decisions surrounding the implementation provide an understanding of the setting, they do not determine the implementation process. Rather they set the “institutional arena for the process that influences which agent’s participate, the extent of their participation and the available legal resources and expectations” (de Boer, et.al. 2013, p.39). The Contextual Interaction Theory states that for a policy to be implementable, it has to be adapted to local situations

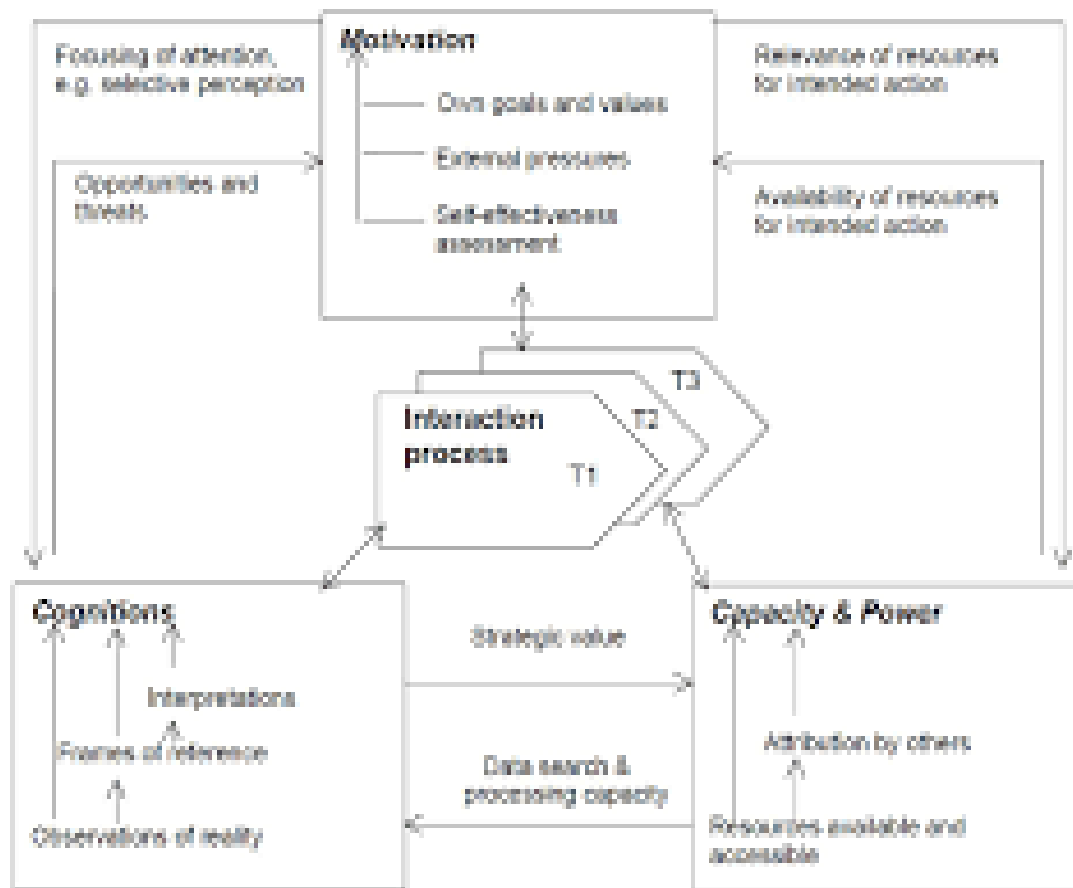
as the local situation has a bearing on what can be done and by whom (Bressers, 2004). This can affect the policy implementation process as it can determine if policy gets implemented as articulated or goes in a different direction by diverging from the goals of the given policy, leading to different outcomes (Bressers, 2004). Changes in the setting can be attributed to several factors namely:

- changes in the actor's cognition. These changes are due to the implementation process resulting in new learning processes that can bring about changes in the policy agents motivations, cognitions and even resources.
- actors may change in response to their experiences or behaviors of others involved in the implementation process
- the setting may change due to the actors deliberately changing the strategies they adopt to achieve such change.
- changes in the wider context, the structural context and the specific context such as the political, socio cultural, economic, technological context. These contexts can be affected by factors that are not related to the implementation process itself and not initiated by it. These changes can affect the policy implementers' cognitions, capacity and power during the implementation process (Bressers, 2004; Bressers and Lulofs, 2010; Ellis and Wildavsky, 1990).

4.4.2 Human Social Interaction Processes

The theory states that policy actors and their main characteristics shape the core of the policy implementation process and therefore should be at the core of any analytical model. The results of the relationships ultimately determine the course and results of the implementation process (Bressers, 2004). The Contextual Interaction Theory states that policy implementation is an interactive process which involves the policy proponents who by virtue of their official capacity have to actualise the implementation, the policy target groups and organisations. The resultant relationships are not vertical interactions between higher and lower authorities as the interactions are not determined by power structures but rather results of the relationships amongst the parties involved in the implementation process. These interactions play out in an arena where the rules of engagement, issues, actors, in a specific locale are explicitly or implicitly specified by common agreement.

Figure 4:1 Interaction between the actor-characteristics that affect the social-interaction processes. Source Bressers, (2007)



4.4.3 Factors That Affect the Human Social Interaction Processes

The human social interaction processes are affected by the **motivation, cognition and resources** of the involved agents.

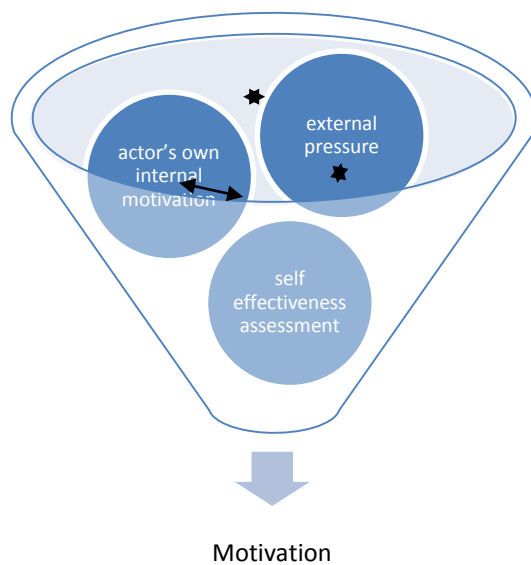
a) Motivation

Motivation drives action. The agent's motivation influences their activities and interactions and motives. Both the implementer and the target's motivation are inspired by the same aspects. Their motivation can be due to both internal and external factors (Bressers, 2004). Internally, the agent's motivation is informed by their

- standpoint regarding the policy problem.

- compatibility of the goal and objectives of the implementer with the goals of the policy
- belief systems and self-interests about the implementation goals.
- Priorities.
- attitudes to the implementation objectives.
- Self effectiveness assessment (Bressers, 2004).

Figure4:2 Factors that affects policy agent's motivation



b) Cognition

Cognition refers to what the agents in the policy implementation process believe to be the truth about policy problem based on the information they have about the situation. This affects ones perceptions, opinions and influences activities that one engages in regarding the situation (Bressers, 2004). However, information is based on one's interpretation of reality. One interprets, assigns labels to an occurrence based on the frames of reference they have which they believe to be true (Bressers, 2004). This interpretation can potentially limit and prejudice understanding and affect motivation (Bressers, 2004).

It is therefore critical that policy agents have readily available and adequate information. Policy agents also have to have the capacity to collect and process information to be able to deal with any uncertainties they might have concerning the implementation project (Bressers, 2004). The ability to seek for information is critical as it has been established

that if it happens that in the process of policy implementation, an agent's who is actively involved and is sufficiently motivated, lacks necessary information, they stop taking part or carrying out such activities temporarily until they have learnt enough to proceed (Bressers, 2004).

c) Resources and Power

Resources give policy agents power and the capacity to act as they are a prerequisite for action. One's power is legitimised and solidified by real resources such as formal rules, legal rights, institutional rules, money, skilled people and time as they are the sources of power (Klok, 1995). A resource, however, is only as powerful as its relevance in the actions that are to be carried out. The availability of resources influences the ambition of the agents as when agents believe that there is scarcity of resources, the agent is more likely to avoid carrying out policy implementation activities as agents want to avoid cognitive dissonance (Bandura, 1986). When an agent depends on the resources of another agent, then the one who has the resources has the power (Bressers, 2004). To maximise the resource base to improve action, agents can be form coalitions with others who have relevant resources although this might result in them losing their independence, autonomy and power.

4.4.4 Type of Cooperation between Stakeholders

The Contextual Interaction Theory states that although those engaged in the policy implementation process are working towards the same goal, their attitude and motivation will not necessarily be congruent. The differences in attitude and motivation are attributed to the fact that although the agents are representatives of either the organisation driving the implementation or recipients of the implementation, they are still individuals whose traits, beliefs, opinions or characteristics come in to play in the implementation process (Bressers, 2004).

The differences in attitude and motivation also affects the type of interaction between the policy actors. According to the theory, there are different types of interactions between policy implementers; namely joint learning, cooperation or collaboration and opposition. When both actors lack information about the project and they join forces to look for

information. This is called Joint learning (Bressers, 2004). In instances where both actors share the same vision and ambition for the implementation, the type of interaction that occurs is classified as active-constructive cooperation. In instances where actors who are implementing a policy do so formally but are not passionate or driven by real interest in its adequate implementation, the kind of interaction they give others is called Active-obstructive cooperation. Passive cooperation occurs when one party is impartial about the implementation whereas forced cooperation occurs when a more powerful actor forces a passive one to cooperate. Obstruction or opposition occurs when one actor attempts to prevent other actors from proper implementation and can result in conflict (Bressers, 2004).

4.4.5 Coherence of the Public Governance Component

In situations where several sectors or government or bodies are charged with implementation of the same policy, they have to be mutually dependent and cognisant of the impact of their actions on the outcome of the policy implementation process. To ensure that there is coherence, it then follows that there should be clarity regarding responsibilities by clearly articulating who is responsible for what, required resources and who is supposed to provide these and policy implementation activities of activities and their coordination (Bressers, 2004). Coordination of resource usage should be based on a common set of objectives and framework to ensure that any potential source of conflict in terms of goals and usage is resolved in pursuit of a common goal. This is necessary because at times policy actors have different perceptions of the same problem and these have to be reconciled. The advantages of coherence are that there is

- less discord in the goals of the implementers and target groups.
- less uncertainty.
- more and improved information exchange.
- high degrees of trust.
- a common way of resolving conflicts.
- standardised procedures, policies, guidelines.
- enhanced efficiency in carrying out tasks.
- better prioritisation of tasks to be carried out.

Typically fragmentation is characterised by more discord between the actors, their goals, more uncertainty, lack of clarity of confusion (cognitions), and more stalemates (power) and, thereby, can hamper implementation (Bressers, 2004).

4.5.6 Adaptive Management of Actors

The Contextual Interaction Theory states that as a response to unsatisfactory processes, those involved in the policy implementation can engage in adaptive strategies such as preventive action or avoidance tactics to avoid an unproductive setting before it becomes a fixed context for the process. The theory argues that it then becomes imperative that there are constant efforts to balance the evolving threats and opportunities of the context. These strategies can include but are not limited to the trying to alter the implementation process by either bringing in new actors or exclude existing ones or redefining the process and its issues, or even changing the implementation arena and its governance structure. In addition there can be efforts to change cognitions by introducing new information, creating media hype or repackaging the project and using new catchy key words and metaphors (Bressers and Lulofs, 2010; Van Buuren, 2008).

4.5 Research Propositions Drawn From the Theory

This section presents a set of propositions drawn from the theoretical framework. Given that a theory is “a statement of relations among concepts within a set of boundary assumptions and constraints” (Bacharach's (1989, p. 496) the theory was analysed to identify these concepts, boundaries and limits. This is because a theory provides information pertaining to the variables, constructs, concepts which ought to be considered as part of the explanation of the social or individual phenomena of interest. Furthermore a sound theory provides information on the

- the how which indicates how the what's are related in an attempt to highlight the cause and effect
- the why which provides the underlying dynamics that justify the selection of factors and the proposed causal relationships
- Who, Where, When which outline the conditions which place limitations on the propositions generated from a theoretical model.

These propositions provide an explanation of the relations between concepts in a theory

as they links two or more concepts together (McCain and Segal, 1988).

P1: The setting, historically constructed social conditions which are not related to the policy being implemented are implicated in the implementation processes and have to be managed as they affect implementation success.

P2: using institutional settings that provide legal coercion does not lead to successful policy implementation.

P3: If it happens that in the process of policy implementation, an actor who is actively involved and is sufficiently motivated, lacks necessary information, they stop taking part or carrying out such activities temporarily until they have learnt enough to proceed.

P4: Actors' cognitions, capacity and power can change during the implementation process because of factors from within or outside the system such as the political, socio cultural, economical, technological context.

P5: Fragmentation of policy implementers leads to more discord between the actors, their goals, more uncertainty, lack of clarity and more stalemates which hamper implementation.

4.6 Operationalising Constructs

This section draws research questions from the theory claims to ensure internal consistency. This is done to ensure that whatever questions are asked provide relevant and necessary information. The design of questionnaires, organisation of data and data analysis for this study will be drawn from the data requirements Table 4:1. There are some repetitions across sections in terms of information needed to answer an aspect, which will be omitted in the semi structured interview protocols and subsequent data analysis.

Table 4:1 Data Requirements Table

Proposition	Data Required
<p>The Setting</p> <p>Establish the impact of the context on institutional arena for the process.</p> <p>the extent of actors participation</p> <p>Legal resources and expectations of the policy actors.</p>	<p>What is the impact of the context on the policy implementation processes?</p> <p>What is the impact of the context on the legal resources and expectation on the actors?</p> <p>What political, socio cultural, economical, technological changes which are not related to the policy implementation process exist in the setting and how do they affect the policy implementation process, the actors' cognitions, capacity and power?</p>
<p>Establish the differences between the policy implementers attitudes and motivation and the causes of the differences</p>	<p>What type of interactions exists between policy implementers?</p> <p>What are the likely implications of these interactions on policy implementation?</p>
<p>Establish the types of Interactions between Policy Implementers</p>	<p>What changes have occurred during or because of the policy implementation process in the interactions of the policy actors?</p>
<p>Establish the impact of Interactions amongst policy implementers on policy implementation.</p>	<p>How have the actors' cognitions, capacity and power changed during the implementation process because of their experiences during the implementation process or other numerous factors from within or outside the system such as the political, socio cultural, economical, technological context?</p>
<p>Establish the changes in the Interaction, cognitions, capacity and power between the policy proponents, policy target groups and organizations during the policy implementation process.</p>	
<p>Establish the policy actors capacity to carry out the implementation</p>	<p>Do the actors have the requisite expertise to achieve or complete any given task?</p>

**Establish the policy actors
Information Seeking Skills and
access to information**

Do the actors have the requisite capacity to achieve or complete any given task?

Do the policy actors have readily available adequate information to carry out policy implementation activities?

Do the policy actors have the skills and capacity to collect and process information in order to deal with any uncertainties they might have concerning the project?

**Establish the type of cooperation
policy implementers give others
involved in the policy
implementation process and their
attitude and motivation.**

What is the type of cooperation between policy implementers?

What is the relationship between actors involved in the policy implementation process and their attitude and motivation?

**Establish the perceptions of the
policy actors about the policy
problem**

What do the actors in the policy implementation process believe to be the truth about policy problem?

How critical is the problem to be solved to the stakeholders?

What new information was introduced to teachers during the implementation process?

What is the relationship between the policy implementer's belief about the policy problem and their perceptions, opinions and influences activities that they engage in regarding the situation?

What is the relationship between the actor's perception about the problem, utilisation of resources and information?

Motivation

Do the actors have the motivating objective to achieve or complete any given task?

Establish the policy actors motivation

Establish policy actor confidence on their capacity to perform the required tasks

Establish the relationship between the motivating objective, requisite expertise, capacity and resources and the actor's standpoint.

Resources And Power

Establish resource availability to enable policy implementation.

Establish access to resources

Establish coalitions to maximise the resource base its impact on the policy actor's independence, autonomy and power.

Establish power dynamics due to resource ownership.

Experiences Of Actors During The Implementation Process

What is the relationship between the motivating objective, requisite expertise, capacity and resources and actor's actor's standpoint regarding the policy?

What is the relationship between the actors position about the policy problem and activities thy engage in regarding policy implementation?

What is the relationship between the actor's position about the policy problem and their interaction with other actors in the policy network?

Do the actors have the requisite resources to achieve or complete any given task?

Who owns the resources?

Who has the Legal power versus real resources?

Has there been any pooling of resources by policy implementation actors?

How has the coalition affected the actor's independence, autonomy and power?

What is the relationship between the perception about the availability of resources and actions they took regarding the implementation?

What type of cooperation do policy implementers give others involved in the policy implementation process?

What kind of experience during the implementation process do those involved in policy implementation and how have these the policy implementer's motivation and affected the policy implementation?

The Quality Of Implementation	What is the relationship between the quality of implementation and the perception of the stakeholders of its importance?
Coherence of the Public Governance Component	Is there clarity regarding who is responsible for what
Establish clarity in regards to <ul style="list-style-type: none"> • responsibilities in the implementation process • required resources and who is supposed to provide these • activities that are carried out and coordination of these • Coordination of resource usage 	Is there clarity regarding required resources and who is supposed to provide these Is there clarity regarding activities that are carried out and coordination of these Is there coordination of resource usage? Establish existence of discord between the actors discord in the goals of the actors uncertainty amongst the actors stalemates (power)

4.7 Summary

This chapter discussed the philosophical foundations and assumptions underpinning the research problem. The chapter also presented the contextual interaction theory which was used to guide the study. The next chapter presents the research approach of the study and the data collection methods used in the study.

5.0 Introduction:

This chapter presents the research design of the study and the data collection methods used in the study. It is the belief of the researcher that the proposed methodology helped attain the stated objectives. The chapter also discusses the suitability of the theoretical framework chosen to guide the study.

5.1 Research Strategy

This study sought to establish the impact of contextual factors on the implementation process and outcome of the white paper in e-education in schools in previously disadvantaged areas. Given that this study is idiographic and interpretivist, the chosen research strategy for the study is multi-site case study (Cavaye, 1996). Yin (1984) cited in Benbasat, Goldstein and Mead (1987) suggests that it is best to use multiple site case studies in studies that are aiming at describing a phenomenon, theory building, or theory testing. The multi-site case study was a follow up to a larger collaborative seven-year longitudinal research project called Measuring E-Learning Impact in primary Schools in South African disadvantaged areas (MELLISA) by the University of Cape Town, Università della Svizzera italiana in Switzerland and Cape Peninsula University of Technology. The project sought to familiarise primary school teachers with ICTs and their use in teaching and learning and study the impact of ICT training on primary school teachers in the Western Cape Province over an extended period. My involvement in (MELLISA) formed the exploratory phase which sensitised me to the use of ICT for teaching and learning in previously disadvantaged areas. The exposure provided me with insights on the problems and success of the usage of ICT for teaching and learning (Bytheway et al., 2010). The exposure did not, however, give me insights on the impact of the context on the implementation process

Adopting this strategy enabled the study to get in-depth understanding of the phenomenon within its context without placing undue restraint or manipulation of the phenomenon as such producing context dependent knowledge (Cavaye, 1996; Benbasat, Goldstein and Mead, 1987). This enabled this study to come up with context-based insights

into factors that affect implementation. This is of great importance as “human behaviour cannot be meaningfully understood as simple rule governed acts” (Flyvbjerg, 2006, p 223).

5.1.1 Familiarisation with the Research Context

This interpretive study was guided by the seven principles for conducting interpretive research of Myers and Newman’s (2007). One of the principles is that the researcher should position himself or herself in the research environment before the qualitative interview takes place. They state that this helps the researcher to be socialized into the social context. As a non-citizen, living in South Africa, it was necessary for me to get to know the country; its culture and specific education related challenges. I was involved in the following activities that enabled me to meet this criterion.

5.1.2 Field trip to schools in Previously Disadvantaged areas

As part of familiarisation, the researcher as part of the Measuring E-Learning Impact in primary Schools in South African disadvantaged areas project went on a field trip with officers of Khanya. Due to the scope of the MELLISA project the tour just covered schools in previously disadvantaged areas. This was in order for the team to get familiar with the ICT implementation project in schools.

5.1.3 Stakeholder Group Meeting

MELISSA organised a focus group meeting with experts some of whom were from the Department of Education. The goal of the meeting was to provide the project with additional data on the implementation (Green and Thorogood, 2009). I also went on a trip to Lugano where I gained insights from other researchers who had implemented a similar project in Brazil as a prelude to coming up with the research problem for the main MELISSA research project.

5.1.4 Participant Observation

It is in case study research possible for one to use participant observation alongside other qualitative methods (May, 2001). I met these criteria by being involved in the design and delivery of a digital literacy curriculum for teachers in previously disadvantaged areas. This engagement allowed me to not just view the research environment from the ‘outside’, but to actively interact with teachers and discuss the whole process of ICT use for teaching and learning thus socialising myself into the into the social context. This interaction with

the teachers enabled me to share their experiences, verbally and in their authentic context. This gave me a better understanding of constraints faced by the teachers, and a bit of insights to reasons behind things being done in a certain way. The interactions also gave me a chance to do more than just “access opinions as is the case in an interview-only study” (Walsham, 2006. p.321). The time spent in schools allowed me to be sensitised to the situation and get familiar with the teachers. This also helped build trust between me and the participants. During my interactions with the respondents, I made sure that I as much as possible kept neutral by making sure that I was not seen as part of any group or promoting the interests of any particular group. Maintaining neutrality was critical as Walsham (2006) states that it is very important for researchers to be neutral or not be seen as having pre conceived views of people.

5.2 Secondary Data

In preparation for the design of the semi structured interview protocols and to further enhance my awareness of issues at play in the implementation process, I perused secondary data sources. These included publications related to the white paper in e-education and its implementation in the Western Cape. These documents were obtained from the Khanya web site, press, web sources and other publications on Khanya. Widening the pool from which I got the articles ensured that the issue of selective deposit was avoided as selective deposit can limit generality of research findings. The selection was based on the articles dealing with Khanya or e- education policy in South Africa. I, together with my PhD supervisor did a critical discourse analysis of the reporting on Khanya to understand what other researchers have articulated on the project and the implementation of ICT in schools in previously disadvantaged areas. From the analysis, one peer reviewed paper was published and another was presented a conference viz Mooketsi and Chigona (2010) and Chigona and Mooketsi (2011).

5.3 Negotiating Access to Research Organizations

A letter was written to the Western Cape Department of Education (WCDE) to request for permission to conduct research in schools in Langa. The research proposal was attached. This was done to show the department how that the study was relevant and important to stakeholders in the implementation of the e- education policy. The department was

informed of my status as a student. A copy of the letter is attached as Appendix 2. Once permission was granted by the WCDE, a letter was written to the District Directors of the schools where the project was conducted. I held a meeting with the District Director where we discussed what the government had put in place and the problems they were experiencing regarding the implementation and outcomes of the implementation. Once permission was granted by the district director, permission to conduct interviews was sought from four schools in Langa. These schools are for purposes of confidentiality named school A, B, C, D. As part of protocol, I gave the schools copies of the letter from the department and district directors that granted me permission from the department and district directors. Selecting four schools was done to enable the study to do theoretical replication and cross-case comparison (Yin, 1994). The request letter was routed through the district director. The request letter indicated that the following ethics issues will be observed. The same was conveyed to individual participants who choose to take part in the study.

- *Voluntary participation and harmlessness.* Research participants were made aware that their participation in the study was voluntary and that they could decline or withdraw from participation at any given time and that taking part would in no way pose any harm or compromise them.
- *Informed consent* form that clearly described their right to not participate and right to withdraw.
- *Anonymity and confidentiality.* To ensure the participants interests and future well-being, their identity was protected and not be made public in addition real names of schools or participants will not be used in the final report to ensure that they are unidentifiable.
- *Disclosure* the participants were informed about what the study sought to uncover before data collection to help them decide whether or not they wished to participate in the study.

Once the schools granted me permission, I asked for a list of all teachers from each school which was used as the sampling frame. Given financial and time constraints it was decided to choose only 32 teachers, 8 from each school. Three regional e-education officers in the e-education unit from the district and regional office were interviewed as they were

charged with in service in the schools and four school heads were interviewed. Education officers were also part of the panel discussion where the preliminary findings were presented.

Table 5.1: Summary of Interviewees

Respondents Category	Numbers	Role In The Organisation	Type Of Interview
Officers	3	Implementation of Khanya	Face-to-face semi structured interviews
Teachers	32	Facilitators, provide support for teachers, integrate ICT in teaching and learning Teach, integrate ICT in teaching and learning	Face-to-face semi structured interviews
School Principals	4	Staff development. Oversee the day-to-day responsibility for the professional and operational management of the school.	Face-to-face semi structured interviews

5.4 Data Collection

This study used qualitative data collection techniques. An overview of the data collection methods used in the study is given in table 5:2. Qualitative data collection is based on constructivist and interpretivist philosophical assumptions. The key belief of the study is that the social world holds specific meanings to actors and that meaning lies with the actors. Qualitative data is perceived as suited to ‘opening up’ responses (Green and Thorogood, 2009). Others argue this is because qualitative data is derived from words; it tends to provide a richer explanation of human and social aspects (Miles and Huberman, 1994). Denzin and Lincon (2005) state that semi structured interviews allow one to explore issues better as they are guided by set of issues that the researcher would like to highlight during the interview whilst allowing one to follow up on issues as and when they emerge during the interviews. Following up on emerging topics may open up some issues that the researcher may not have anticipated. However, one needs to be cautious to ensure that the follow up questions are within the parameters of the research problem under

investigation. Semi structured interviews were chosen as a data generation method mainly because they enabled the respondents in their own words to share their experiences, in real time contexts which was critical as the goal of the research was to try and understand the respondents' accounts of their perception about the implementation process within their context. This approach also created a platform that allowed the researcher and the respondents to be equals thus enabling the respondents to elucidate their responses to the researcher rather than imposing my own interpretation of responses. This helped the study to be more holistic.

5.4.1 Pilot Study

It is vital that one carries out a pilot study as it helps highlight any potential problems which can then be avoided. It enables a researcher re-examine the instruments used in terms of language usage, scope of questions asked, sequencing and format of the questions thus improving the internal validity of the questionnaires (van Teijlingen and Hundley, 2001). The face-to-face semi structured interviews were administered to two teachers who were not involved in the full scale survey in school A. No errors or ambiguity of questions was noted as the responses from the respondents were clear and gave back the required feedback. However, School heads and education officers' instruments were not piloted as their numbers were already low and piloting would have reduced the number of respondents.

5.4.2 Final Interview Schedule

The primary data was collected by the researcher personally during visits to schools in Cape Town during the months of June, 2012 to October, 2012. Several field trips were made. The respondents were approached days prior to the actual interviews and asked if they would object to being interviewed. I explained to them who I was and why I needed to do the interview. The respondents were informed that the information was for academic purposes only. They were also informed that if they so choose, the research findings would be communicated to them. This was in accordance with Myers and Newman's (2007) guideline, that respondents be informed upfront on the purpose of the interview, their options regarding participation and after the interview.

5.4.3 The Interview Processes

According to Myers and Newman (2007), it is the responsibility of the interviewer to create a conducive environment for the respondents during the interview hence the respondents were allowed to choose the locations and times that suited them. During the interview, the researcher talked first with the respondents about issues that were not intrusive such as their age, perceptions about teaching. The respondents were also made aware that there were no right or wrong answers to the questions asked but their own perceptions which were held very important and critical to the study.

Allowing the participants to speak freely and express their point of view on the topic helped to minimise interviewer bias. In addition, when deemed necessary, follow up questions which were not necessarily part of the semi-structured interview protocols were asked in response or follow ups to some of the responses that respondents gave. This allowed the researcher to get additional information which may have not been part of the initial data pool. This approach is in line with Myers and Newman’s (2007) principle that a researcher should at times during the interviews adopt phrases and expressions from the interviewee’s responses to create comments or even subsequent questions to promote using the respondent’s language from his/her point of view. Effort was taken to ensure that all interviews were conducted in the same style.

Table 5.2 - Summary of the Different Data Collection Methods in my Research Approach

Data Collection Methods	Use in the Research Approach related to Research Problem	Role in the Data Analysis
Review of project documentation and media discourse	Studying documentation related to the implementation of the white paper in e-education. Studying media reporting on the implementation of the white paper in e-education in the western cape	establish what the Khanya project and e-education white paper in e-education aims to achieve and why. understand the role players and what they are expected to do establish the public and media perceptions about the project.

Semi structured interview	The semi structured interview	enabled the researcher to understand the interviewee's reality from their perspective,
		helped the study to minimise interviewer bias.
		Enabled the study to obtain additional information which may have not been part of the initial data pool.
Panel discussion	Presenting preliminary findings and allowing stakeholders to have discussions	Enabled the study to validate the preliminary findings. Encourage dialogue between the stakeholders on the findings

5.5 Data Analysis- Thematic Analysis

This study used thematic analysis as the approach enabled me to analyse qualitative, detailed account of data (Braun and Clarke, 2006). In line with the process of data analysis in thematic analysis, all data was collected prior to data analysis (Chamberlain et al., 2004; Braun and Clarke (2006). After data collection, I familiarised myself with the data by transcribing the interviews and reading through all the documents and these were uploaded into Atlas ti.

The next step was to develop a coding framework. The coding framework that was used was based on concepts and relationships derived from the Contextual Interaction Theory and the research's objectives which guided the research questions and any emerging issues that arose in the text itself. Once this stage was completed, themes are abstracted

from the coded text segments: the first level was to identify basic themes, then organising themes and global themes (Ryan and Bernard, 2000; Braun and Clarke, 2006).

5.6 Evaluation of the analysis process

Qualitative approaches are said to lack the scientific rigour and credibility associated with quantitative methods (Sandelowski and Barroso, 2003; Horsburgh, 2003). Credibility, dependability, confirmability, and transferability are the most common measures to achieve rigour in qualitative studies hence, a set of criteria generated by Lincoln and Guba (1994) was used to establish rigor namely;

5.6.1 Dependability

Interpretive research is regarded as dependable if two researchers assessing the same phenomenon using the same set of instruments can independently come up with similar conclusions (Bhattacharjee, 2012). To ensure this, this study has provided details about the subject of the study and the social context in which it is embedded as a way of enabling others to independently authenticate the interpretive inferences. The semi structure interview protocol is attached as Appendices 4 and 5.

5.6.2 Credibility

Credible Interpretive research is one in which readers are able to draw believable inferences. To this end, a researcher is expected to provide evidence that data was collected using various complementary methods and to keep a concise record of methodology and accurate records of contacts (Bhattacharjee, 2012). In this study, effort was made to keep the transcribed interviews and accurate record of the interview locations (Bhattacharjee, 2012).

5.7 Summary

This chapter presented the research design of the study and the data collection methods used in the study. This chapter also discussed the suitability of the contextual interaction theory to guide the study. The next chapter presents the findings of the study.

6.0 Introduction

This chapter presents an analysis of both the secondary and empirical findings. The data was analysed to establish patterns that were consistent with the claims and relationships derived from the theoretical framework. The key goals of this study was to enhance understanding of the implementation process “from within the social context and life world of actors” (Ngwenyama and Lee, 1997, p. 167) and in the process contribute to theory, practice and evaluation of policy implementation in schools in previously disadvantaged communities in Cape Town. This research was carried out in its local context, to enable the respondents to respond within their context about their context. This was done in recognition of the unique social structures that exist in South Africa due to the country’s long history of segregation and prejudice.

The results of the analyses can be encapsulated as this; that failure to understand the impact of implementation process and context limits understanding of reasons why ICT implementation in previously disadvantaged areas is failing hence impeding implementation processes. The study established that the implementation process was highly administrative and the social realities of situated actors was ignored. Failure to recognise and address this lead to failure. The success of policy implementation is hinged on it seeing what is rather than “social meliorism and political symbolism” (Harley et.al, 2000, p.301). Social meliorism is defined as “the belief or faith that the mere vision of the policy is sufficient to ameliorate the actual conditions” (Valley and Spreen, 2003, p.437).

6.1 The Social Context in Previously Disadvantaged Areas

The teachers felt that there have been some changes to their social context since 1994 as they had access to computers, feeding schemes in schools, improved school buildings, freedom to go to schools where ever one wants, improved housing infrastructure, better police protection, ability to own houses. Despite these changes, teachers mentioned that they were dealing with poverty and residential segregation. The study established that there were minimal changes in terms of racial groupings in previously disadvantaged areas which also extended to the schools. All schools in the study, with the exception of one school where one staff member was of a different race, had staff and students who were

all black. The teachers felt that the continued geographic segregation affected them badly and one teacher said that the geographic segregation made her feel that *“blacks are still treated as lazy people”* (Teacher 1-School A) and one teacher said that *“it seems apartheid is here to stay as we are still stuck”* (Teacher 6-School D). Whilst there was no movement to the previously disadvantaged areas of people of other races, the study established that there was an influx of students from the Eastern Cape. These empirical findings are supported by secondary data that shows that geographic segregation has persisted

6.2 Impact of Setting on Students Regarding ICT Integration for Teaching and Learning

Parents of students were reported not to be involved in school activities. The lack of parental involvement in school activities was attributed to the fact that students

“are from informal settlements, most of the parents are not educated and are unemployed and they hustle, so they do not have time and energy to come to school to help their children with learning” (Teacher 2-School D).

This assertion is backed up by secondary data as schools in previously disadvantaged areas are said to be in areas that are poverty ridden (McDonald, 2008). Most students were reported as having had no contact with computers prior to coming to school for Grade One. Due to this, one teacher reported that at the beginning of Grade One, she struggled with students and the teacher made them touch everything as a way of encouraging them to feel comfortable with the information and communication technologies. She stated

“That’s why I say the first day when they come in here: touch whatever you want, just don’t break it, just touch, because I know at the end of the day I am going back to do what I wanted them to learn” (Teacher 1-School B).

With time the students reportedly become very enthusiastic and enjoyed computer lessons. The teachers felt that poverty and lack of access to information and communication technologies outside school hours affected student’s perception of usefulness of technology for teaching and learning as

“some do not even have electricity or those who were very willing and eager to use these at school could not practice at home as they do not have these at home negatively affecting their desire to use information and communication technologies” (Teacher 2-School D).

In addition, the teachers felt that if schools were culturally diverse, it would help because other races were exposed to the technology before “*us and this could facilitate sharing and learning from each other*” (Teacher 6-School D).

6.3 Policies Being Implemented In the Wider Context

At the time when the white paper in e-education was being implemented, several policies were also being implemented both at school level and national level. These as outlined by the theoretical framework affected policy implementation and its success. It is imperative that policy implementers should have realised that where there was a lot of policies being implemented and as result policy incoherence. It was therefore necessary to manage this as failure to do so could potentially affect policy implementation (Bryk, Sebring, Allensworth, Luppescu and Easton, 2010). Some of the policies that were being implemented were;

6.3.1 The White Paper on the Organisation, Governance and Finance of Schools (DoE 1996), this policy allowed individual school governing bodies to establish and determine their own fees with no limitations. This led to a skewed education system where schools in catchment areas with more economically empowered parent could raise funds for resources whilst schools in poverty ridden areas have no way of raising funds.

6.3.2 The Norms and Standards for School Funding (DoE, 1996) which was implemented in 2001. This policy guides allocation of non-personnel expenditure between schools. Schools are ranked based on the poverty of the school community and the conditions at the school. Schools are ranked from poorest to least poor and resource allocation based on this ranking. “Given the lack of non-personnel expenditure invested at the school level, schools in practice increasingly rely on school fees to cover the basic costs of electricity, water, maintenance and textbooks” (Kgobe, 2007,p. 13). This is problematic as it has been established that “poor schools can still expect to have less than have the budget of a more advantaged school” (Porteus, 2002, p.13). As there is no provision in policy for compensation for schools where parents are exempted from paying fees, hence, the lower the socioeconomic status of a school community, the lower the school fees, the fewer who pay fees and the increased irrelevance of the exemption process.

6.3.3 The adoption of “neo-liberal” policies which are said to be hinged on redistributive financing and funding (Narsiah, 2002; Ncube, Shimeles and Verdier-Chouchane, 2012).

6.4 Impact of Resource Availability on ICT Integration for Teaching and Learning

In the Khanya report of 2011, prior to the implementation of the government strategy on e-education, the project established that public schools had no technology for use by students (Khanya, 2011). As a strategy to overcome this, the policy actors formed coalitions to boost resource levels. The project reported that by August 2010, 45447 computers had been installed for use in Khanya schools and of these, 28419 have been funded by Khanya or its donor partners, and the 17028 have been procured by the schools themselves. Despite contribution to the acquisition of some of the resources by schools and the resources being in schools and ideally being managed by school management teams, schools in previously disadvantaged areas did not have any control over the resources and how they are used. Khanya determined who used the computers, when and for what. It designed the training programme, the procurement and installation, determined who got a computer laboratory and when. The teachers remarked that

“Khanya is too strict, even if one does not feel competent; they have to come with their kids. It is a matter of doing it. Not for you but also for the kids. Because we got a time table. A scheduled time table that you as a teacher, class teacher, you must bring your kids to the classes” (Teacher 1-School B).

6.4.1 Adequacy of Resources for the Expected Tasks

When asked about the challenges they experienced in the schools regarding the use of ICT in teaching and learning, the teachers mentioned that they had issues with non-functional computers which could not be repaired as they has no funds for repairs. This meant that there were not enough computers for students. As a result, students had to work in groups of three instead of two which made it difficult for teachers to control students. Teachers felt that the problem of shortage of resources affected learners negatively as some of the teachers reported that *“learners should also have more time -if learners go once a day, how do you expect them to be literate?”* (Teacher 5-School B). Furthermore, teachers did not have access to computers outside the scheduled time. One of the teachers reported that

“we do not have computers in the staff room, only the principal and the secretaries” (Teacher 3-School B). She stated that *“teachers should have their own space to work and not having to share with the learners”* (Teacher 3-School B). This reportedly led to teachers disturbing others whilst they were having lessons as *“sometimes you are having a class here and just like this one wants to do her work here, and you are having a class here”* (Teacher 3-School B). The study established that with resources, teachers felt that they could do a lot more.

6.4.2 Self-Effectiveness Assessment of Teachers

The study established that the skills of teachers varied a lot within schools. Some of the teachers had no skills whatsoever whilst some had limited or good skills. Prior to Khanya’s training sessions, a large percentage of teacher teachers had never used technology in the classroom (Khanya, 2008). This determined the extent of their participation and to certain extent determined what could be expected from them. As a result, to improve capacity to drive the implementation, at the start of implementation, the teachers underwent training that was two dimensional – how to use computers and how to teach using information and communication technologies. This was meant to *“empower all learners and teachers in the schools to develop the necessary skills to use ICT in support of successful curriculum delivery”* (Khanya, 2008, p.3). In recognition of this and the fact that everything was all new to teachers, the project claimed that support would be provided to teachers after implementation until teachers were comfortable but teachers reported that the project *“just trains teachers and make no follow ups”* (Teacher 4-School B). One of the teachers stated that they were *“not given time to learn the skills”*.

The quality of training and its effectiveness was also affected by the duration of the training and issues outside the implementation processes itself. One of the teachers stated

“I think they have done their best, but it was only time. It was short, so we didn't have much knowledge. Maybe some of us needed more time, it was only once a week, for two or three hours. The next week we had forgotten what we have learned. So we need more time then we will be experts (Teacher 7 School C).

Whilst another teacher reported that the main problem was

“there are still things that other teachers do not understand. Before some of them didn't even know how to save on the memory. Now they need to know how to download something from the internet.... For example if somebody is downloading information that is PDF if they can't open it, they still need to know that you now close the document and click on Adobe reader and open it - So there are still small things that they still need to learn” (Teacher 3-School D).

6.5 Policy Role in Practice

Despite South Africa's reconstruction in education being driven by policy, this study established that teacher's interaction with information and communication technologies in schools was not informed directly by the policy document. This study established that teachers did not have information about the e- education policy. One of the respondents stated that *“I have never seen the white paper on e-education”* (Teachers 2,4,7,8 School D) whilst another said *“it is a proposal of policies in education”* which can be seen as an educated guess at most. One of the teachers reported that *“no, I don't know anything about the white paper on e-education”* (Teacher 3-School C). In one of the schools, a member of the school management teams did not know what the e-education policy was. Specifically, the study established that the teachers lacked information about the policy, its requirements, information about potential benefit from the policy, knowledge of their role in policy processes.

The respondents were asked about the forums on ICT implementation in schools that they had attended. Some of the responding teachers had not attended any forums whilst, those who had, had attended Khanya workshops. Predominately, the teachers reported that they were told that information and communication technologies were meant to enhance teaching and learning and were not meant to replace them as teachers. The emphasis on ICT integration seems to have focussed on assuring the teachers that they were not going to lose their jobs rather than re-emphasising the overall intentions of the implementation.

The study also established that the teachers did not make efforts to find out any information or documentation regarding ICT use for teaching and learning despite feeling that they *“need more information on policy documents like the white paper”* (Teacher 3-

School A). The teachers seemed to want to rely on reassurance from the Khanya which was not readily available. Some of the teachers stated that they needed

“guidance to know we are on the right track”. One of the teachers stated *“I wish I can get more other information from Khanya and MELISSA. The problem is that we seem to forget other things. We need to be uplifted about new things that we don’t know. We seem to forget about these things. We tend to be trained and then we don’t implement these things”* (Teacher 8-School D).

Lack of information affected policy implementation negatively as the teachers remarked that *“lack of information about equipment is a barrier to using information and communication technologies sometimes”* (Teacher 3-School A).

6.6 Perceptions of Teachers on the Intention of the Government Strategy

The study compared the intentions of the e-education policy and the beliefs driving ICT implementation as articulated in the e-education policy, the intentions of Khanya and beliefs of Teachers. Predominantly the teachers felt that the intentions of the white paper were *“positive for teaching and learning”*. Some of the teachers stated that *“if resources were enough, information and communication technologies can improve the quality of education”* (Teacher 5 School C). They reported that using information and communication technologies was valuable for teaching and learning and they were eager to use them. One of the teachers stated that *“ICT are pivotal to the learners of today who live in a technologically advancing society”* (Teacher 2-School A). The consensus was that although the intentions were good they were *“useless as we have no guidance, support to achieve these”* as they are *“difficult to implement as some teachers don’t know anything about ICT”* (Teacher 2-School A). The need for support in order to achieve these goals was a recurring concern expressed by teachers. Others felt that the expectations were too high thus unrealistic whilst expressed that government policies were good but failed because of lack of follow through.

They reported that using ICT for teaching and learning has helped them become more confident as teachers about gathering information as it has *“helped me get more information and more advanced”* (Teacher 5-School D). The study has shown that teachers believed that information and communication technologies are critical and that using

them for teaching and learning can bring about the desired changes in the teaching and learning and they despite all the challenges they face are trying to use ICT for teaching and learning.

6.7 Compatibility Of The Goals And Objectives Of The Implementer With The Goals Of The Policy

The study established that predominantly the goals and beliefs of the policy actors and policy were in sync. The results are shown in table 6.1. However, the study established that there were some intentions and goals that are articulated in the white paper that are not reflected by Khanya. Two such goals are;

- to train a pool from which the rest of the world would draw skilled ICT literate labor.
- making government services accessible to the South African populace. This has a bearing on the activities that Khanya carries out as the two goals would or are not covered.

Table 6:1.Comparison of the Intentions and Beliefs of Policy Implementers

White Paper In E Education	Khanya	Actor's Opinion On ICT
Technology can overcome some of the legacies of apartheid	Technology acts as an equalizing agent as all learners are exposed to the best learning material	Information and communication technologies cannot redress inequalities
Bridging the Digital Divide	The Internet and the use of technology provide teachers and learners with access to the rest of the world. Learners are exposed to the best learning material available; material	They believed that information and communication technologies create access to learning opportunities. enables students who would otherwise been unable to have access

The Revolutionary Role of ICT

that they may have been deprived of in the past.

to top notch information

Technological modernization of schools and brings teaching and learning into the modern era.

equips students with technological skills needed for the work environment

Project seeks to provide technology to the poorest of poor schools to bring their educational potential on a par with the more affluent ones.

The use of technology and, in particular, resources on the internet make the teaching experience far more relevant as it provides teachers and learners with access to the rest of the world.

If resources were enough information and communication technologies can improve the quality of education.

Using technology makes the teacher far more effective especially in large classes. Educational software helps improve the efficiency of under-qualified teachers

provides an environment that allows students to be actively engaged in their learning.

Teacher's efficiency in performing mundane tasks such as the maintenance of mark sheets and exam results, assessment of tasks is done electronically which frees and

Information and communication technologies improve the internal efficiency of educational systems.

	allows teachers to concentrate on teaching.	ease the burden of teaching
	Curriculum delivery is enhanced by the use of technology as lesson plans and learning materials can be prepared by experienced teachers and used by less experienced ones. Improves the professionalism of teachers and the quality of teaching	improves students interests in learning doubles up as an administrative tool for teachers.

6.8 Cooperation between Khanya and the Teachers

Khanya was perceived as being too controlling and not cooperative with others in the policy network. The teachers reported that Khanya designed the training programme, the procurement and installation, determined who got a computer laboratory and when. One of the teachers remarked that

“Khanya is too strict, even if one does not feel competent; they have to come with their kids. It is a matter of doing it. Not for you but also for the kids. Because we got a time table. A scheduled time table that you as a teacher, class teacher, you must bring your kids to the classes (Teacher 5-School A).”

Some of the teachers felt that policy makers really didn’t care as

“they know that our schools are no fee and thus we will not be able to maintain the labs but they made no plans to assist as they could have employed full time staff members to evaluate the use of ICT to ensure it is done in the school” (Teacher 8-School B).

In addition to this, when asked if they felt that policy makers understood the challenges faced by the schools in relation to the use of ICT for teaching and learning or implementation of the white paper in e-education, the teachers expressed that Khanya and officials in charge of implementation of e-education policy *“do not understand our situation as we are still struggling in terms of resources” (Teacher 5-School D).* Teachers stated that they needed

“Internet, needed support to upgrade software and hardware, ended up applying ICT in an inconsistent manner thus not fully utilising ICT and felt that Learner performance affected as they are not getting the exposure and support they need” (Teacher 5-School D).

Some of the teachers responded that the policy makers *“just implement without checking us”* (Teacher 8-School C). Teachers expressed feelings of us and them. They constantly used the word *“they”* which is in direct contrast to the sense of collective projected in the white paper of *“we and us”*. The officers felt that teachers were not pulling their weight and were concerned that a lot of money had been spent on training and procurement of resources which were lying idle in schools and not used. Whilst the teachers felt that the officers just dumped resources at their schools and were not doing enough to give them support. During the panel discussion where the preliminary findings were presented, the same sentiments were also expressed, once more it emerged that teachers felt that resources were just dumped at the schools and there was not enough support from the Department of education to ensure that teachers used ICT whilst the Khanya felt that teachers were not proactive in using resources.

6.9 Teachers’ Satisfaction with Their Job and Understanding of Role in ICT Implementation

The study sought to establish teachers’ satisfaction with their job. The teachers generally expressed discontentment with teaching. Some of the teachers reported that they did not like their teaching loads. One of the teachers reported that

“It is very frustrating. The same government that is implementing these loads is the same government that doesn't protect us. The focus is on learners, they never talk about the teachers (Teacher 4-School D)”

This sentiment is also reflected by secondary data which also shows that there has been erosion of trust of the government which in essence negatively impacts the citizens’ moral justification for obeying its laws (Majone and Wildavsky, 1984).

Regarding the implementation of the white paper in e-education, the study established that teachers did not have knowledge about their role and that of other stakeholders in the policy processes. When teachers were asked what they understood their role to be

regarding the use of ICT for teaching and learning, they stated that they had to assist where they could and encourage learners to use ICT. Some of the teachers felt that they did not have the responsibility to teach their students how to use ICT. Some of the teachers stated that they felt that ICT literacy should be a subject on its own. However from the white paper in e-education, the teacher's role is more than just assist.

There was also evidence of mental fatigue as some of the teachers felt that

“there are so many things, new things that are coming in and out. When you start adopting yourself in the new things, something else that will come in the next day. It is so confusing and there is a lot of paperwork (Teacher 4-School D).”

One of the teachers remarked that

“education is a mess...I am worried, from Bantu education we moved to national curriculum, Outcome Based Education which is not working in South Africa.... kids do not see the value of education as they see people with degrees unemployed...”(Teacher 1-School A).

Outcomes-based Education (OBE) was introduced in 1994 and ran till 2011. It was introduced as part of the government strategy to move away from the apartheid curriculum and to address skills, knowledge and values. However, due to the shortcomings and implementation problems, OBE was scrapped. This frustration with education and its value in improving social status has been established as secondary data reports that there is disillusionment that education and employment are not enough to improve one's social status.

In addition to being overwhelmed by the changes or policies being implemented, the teachers stated that over and above being teachers, they had to carry out the following activities

- policing students
- being an investigator
- counseling students
- registration of new learners

-
- tutor
 - social well-being teacher
 - LAN administrators

This dissatisfaction with their job does not seem to have affected the teachers' motivation to use ICT for teaching and learning. The teachers gave the following reasons as factors that motivated to use ICT for teaching and learning.

6.9.1 Motivating Factors

When asked to state the factors that motivated them to use ICT for teaching and learning the teachers gave the following reasons;

Internal Motivation Factors

- Keeping abreast with technological changes

It emerged that ICT served other needs other than the ones stated in the white paper in e-education as one of the teachers stated

“If I'm backwards in technology it means I won't be living in the era that people are living in. You need to know computer. When people say I need your email address and you don't have an email you are backwards in these days”. As such using ICT enabled them to “keep pace with what is happening outside” (Teacher 1-School D).

- Networking with Colleagues and former students

The study established that teachers felt that ICT also enabled them to communicate with other people like former students and colleagues. One of the teachers stated that

“I am learning every day, a lot. I didn't know how to use email, but now I know I can do it. I also use twitter to communicate. We are on face book. You will not believe..... some of my past learners, I communicate with them” (Teacher 1-School D).

External Motivation Factors

Externally, the need to act can be a result of job expectations, social standing, economic responsibility or political pressure (Bressers, 2004; Bressers and Lulofs, 2010). The

following were the specific factors that influenced the use of information and communication technologies by teachers;

Fear of Knowing Less Than Students

One of the teachers stated that

“If you come here not knowing exactly what is happening in the computer lab, what about the kids especially the older ones. You'll find that there are those that know more than what we know as teachers. They'll go to the sites that you do not know. They'll say: Ok teacher, let's go and check this information on this web site” (Teacher 4-School D).

Mandatory Requirement

Some of the teachers felt that they were

“forced and bound to bring the pupils to the computer laboratories because we got a timetable. A scheduled time table that you as a teacher, class teacher, you must bring your kids to the classes” (Teacher 3-School C).

Ease in Teaching and Learning

Most of the teachers stated that information and communication technologies made their life very easy. These benefits are twofold, one related to the teachers work load and the students learning process. This is because one some of the teachers stated that

“because now we got these computers everything is easier. We do all our things on the computer, our schedules and everything. Although there is too much paperwork, but not as much as it was before. It made it easier. We don't write all the time, we just use computers most of the time” (Teacher 8-School A).

Regarding the students learning process the teachers drew a comparison between their learning process and the students and stated that *“Technology makes their work easier. It makes learning and teaching easier. Even the one who didn't understand in the classroom can see it here”*. One geography teacher stated, *“When teaching about earthquake students can see. During our time we didn't even know, we didn't even see. But now the children see*

what they are doing". The teachers also cited that their dependence on the textbook was reduced. One of the teachers reported that *"We don't depend on textbook now, because there is information on this computer. It is so easy now. If I want to find something or a word I just come here and I know I will get the correct one"* (Teacher 8-School A). The other upside was a boost to confidence as teachers stated that *"even if I am not sure about something I'm going to teach in the class, I just come here and get what I want"* (Teacher 8-School A).

Ease in Handling Mixed Ability Classes

Teachers stated that they found that students who in a normal class room setup were quiet, or did not participate were very active in the computer laboratory. One of the teachers reported that

"not all learners are academically good. As I said before, you will find it is the learners who are not participating in class but come to computers, they are the ones who are sharp and who understands it quickly. So I should say if each and every learner could have a computer and do computers, I'm telling you it will make a difference" (Teacher 4-School C).

In addition, students are also said to help each other out. The students were also reported to be able to do their own research and the results for maths and science were also said to have improved.

6.10 Activities Carried Out By the Actors In Relation To the Policy Implementation Process

The study also interrogated the teacher's activities in schools to see which of the Khanya goals were evident in school activities without necessarily evaluating the success of the goals. The study established that it is evident that all of Khanya's goals were implemented and in the process;

- ✓ schools were modernised through the use of technology.
- ✓ curriculum delivery was enhanced as teachers reported that they used technology to prepare lesson plans and learning materials.
- ✓ the teachers professionalism was improved, as reports were typed
- ✓ teachers used the internet to make their teaching experience far more relevant.

-
- ✓ teacher's efficiency in performing mundane tasks such as the maintenance of mark sheets and examination results, assessment of tasks is done electronically which frees and allows teachers to concentrate on teaching.
 - ✓ teachers reported using the computer for marking maths
 - ✓ teachers reported feeling more confident and competent because of usage of technology.
 - ✓ the use of educational software helped improve the efficiency of under-qualified teachers.
 - ✓ technology was used as a medium to improve teaching.

6.11 Coordination of Policy Implementation Activities

At school level it was also established that school management teams did carry out coordination of policy implementation activities.

6.11.1 School Based Support

The support that teachers gave each other was informal as teachers would ask one another for assistance. One of the teachers reported that

“I assist the teachers in the computer lab, sometimes they ask for help that is technical and that they don't understand.” The teacher stated that assisting in the computer room disturbs her teaching *“even the principal. If there is something wrong with the email I have to come out of my class and sort it and if the secretary is having a problem with assignments; she comes and asks for assistance. I need to come out of the class”* (Teacher 1-School A).

One of the teachers stated that the school management team *“too need support that is why they did not provide support for the teachers”* whilst another stated that the *“management some don't use ICT so they don't care”* (Teacher 1-School D).

6.11.2 Skills Audit in Schools

At school level it was also established that school management teams did not as would be expected of stakeholders in policy implementation make effort to coordinate the policy implementation activities in schools. When asked what school based strategies were in place to guide and ensure that teachers align their daily activities and key activities to the

intentions of the e-education policy, this study established that only 50 % of the schools engaged in practices that are supportive for school based staff development.

Despite being charged with staff development school principals did not carry out skills audit to arrange for school based in service activities. There were instances where in one school; some of the teacher's level of expertise was excellent while some of the teachers cannot even access the Internet. The failure of school heads to identify skills in schools and use the available skilled teachers to train others points to their inability to run school based in-service activities.

Both schools and Khanya had no policies to guide implementation and to ensure consistency. Schools had no guidelines to support teachers in the use of the ICT to ensure that they systematically integrate ICT. In addition there were no strategies in place to consolidate gains and embed the change in culture. This study established that there was no sync between the expectations of the draft white paper on education, schools, teachers on students and practices of the school and teachers. When asked what their expectations were regarding ICT skills their students , some teachers stated that they expected the students to be able to use word to type and print assignments, make illustrations and graphical presentations and be able to use the Internet but no school had any school based plans to enforce this.

6.11.3 Management of Soft Side

It is clear that lack of skills, learning and using the new skills for teaching had an emotional impact on the teachers. Despite this, the study shows that there were poor strategies in place to deal with emotional reactions. The teachers stated that they *“admired those who could and wanted to, but were reluctant as I was afraid to damage pc, or I was intimidated”* (Teacher 7-School B). These feelings can be attributed to the fact that some of the teachers stated that whilst going to school they never had a chance to use computers. At school level, teachers said that some of their colleagues were excited about the use of ICT whilst some had a passive vibe as some were struggling and getting demotivated. Teachers who were confident in the use of ICT said they were self-taught as their curiosity enabled them to become *“self-empowered, keep up to date and overcome their fears of technology.*

Table 6:2 Summary on Changes If Any That Took Place during Implementation

Changes due to experiences	✓
Changes in cognitions	✓
Changes to resources	✓
Change in the setting of interactions	✓
Changes in strategies used by actors to achieve	✓
Changes in the involvement of the policy actors	✓

Based on the findings already discussed in the sections above, this study draws the following conclusions;

- There was inadequate coordination of policy implementation activities at school level.
- Khanya did its skill audit whereas schools did not.
- Khanya strategies for school based in service training were not effective.
- There are no school based strategies to guide and ensure that teachers align their daily activities to the attainment of the policy goals.
- There is no sync between the expectations of the draft white paper on education, schools, teachers on practices of the school and teachers

6.12 Evaluation of Impact of implementation of government e-education strategy for Teaching and Learning versus ICT Developmental Goals

The study evaluated the impact of ICT innovation for teaching and learning using goals of using information and communication technologies for teaching and learning without necessarily assessing proficiency.

Table 6:3 Developmental Role Due To Integration of ICT in Teaching and Learning

Developmental Role Of ICT	yes
Information and communication technologies transformed the way teachers work	✓
students' interests in learning improved	✓

Burden of teaching eased on teachers	✓
Double up as an administrative tool for teachers.	✓
Improve the internal efficiency of educational systems.	✓
Has enabled students who would otherwise been unable to have access either due to economic status, physical disability and geographic distance to top notch information thus promoting equality.	✓
Improve the quality of education and in the process equipping students with technological skills needed for the work environment.	Not assessed
Provides an environment that allows students to be critically and actively engaged in their learning which is a pedagogical shift from the traditional instructivist model.	
prepare students for participating in the global world	

6.13 Summary

This chapter presented the analysis of both the secondary and empirical findings. The results of the analyses highlight how the implementation process and context limits understanding of reasons why ICT implementation in previously disadvantaged areas is failing hence impeding implementation processes. The next chapter presents the theoretical explanation of the empirical findings.

7.0 Introduction

This chapter presents a theoretical explanation of the empirical findings. The validity of the findings is validated with findings from other studies.

7.1 The Impact of History, Geographic Setting and Other Policies in the Wider Context on the Implementation of the E-Education Policy in Previously Disadvantaged Schools

This study concludes that *the setting, historically constructed social conditions which are not related to the policy being implemented are implicated in the implementation processes and have to be managed as they affect implementation success*. The empirical analysis shows that Khanya at the start of the implementation process realised that the setting had an impact on the implementation process hence the strategy on procurement of resources and human resource development. However, it does not seem Khanya had a long term strategy to ensure sustainability of the strategies. Due to the lack of sustainability and maintenance the teachers expressed that Khanya and officials in charge of implementation of e-education policy “*do not understand our situation as we are still struggling in terms of resources*” (Teacher 5-School D). Teachers stated that they needed “*Internet, needed support to upgrade software and hardware*” (Teacher 5-School D).

7.1.1 Implementability of the Policy

According to 2011 Khanya report, prior to the implementation of the government strategy on e-education, public schools had no technology for use by students thus policy was not implementable (Khanya, 2011). Schools in previously disadvantaged areas had no computers or information and communication technologies and the teachers were not ICT literate and the students also had no access to information and communication technologies (Khanya, 2008). The lack of resources, lack of skills and exposure has a bearing on the extent to which the agents could participate and the extent and quality of participation (Bressers, 2004). This was as result of the history of South Africa and its past education policies. Whilst the policy sought to bring unity, this study argues that the continued geographic segregation affects undermines these intentions as the teachers expressed feelings that they were still caught up in apartheid. The white paper in e-education was meant to eradicate the legacies of apartheid and transform lives.

7.1.2 Impact of Policies Being Implemented In the Wider Context

Due to policies being implemented in the wider context, schools in previously disadvantaged areas are failing to source funding from parents, school fees or the government. The parents in these areas are exempted from paying fees due to their socio economic status as these schools in previously disadvantaged areas are situated in areas that are predominantly poverty stricken. However, as Porteus (2002, pg. 14) notes the policy “does not provide for state compensation of schools where parents receive this exemption”. This means the schools cannot afford to hire technical support, to pay for maintenance of malfunctioning resources and acquisition of resources to replace those being written off. Failure to maintain the available computers means that there were not enough computers for both students and teachers. This affects access and negatively affects learners learning processes especially since the home environment cannot provide them with required resources due to poverty. Research has established that technical barriers affect the smooth delivery of the lesson (Pelgrum, 2001). Research has also established that the breakdown of information and communication technologies causes interruptions which may result in teachers being discouraged from using computers in teaching because of fear of equipment failure especially where there is no technical support (Buabeng-Andoh, 2012). It is important that schools have technical assistance in order to provide technical support to deal with repair and maintenance of ICT equipment (Chisholm 2003; Corneilse and Soudien, 2001; Wang and Woo, 2007). Failure to provide this has a negative impact on implementation success as the kind of experiences teachers have with information and communication technologies affects their computer attitudes.

7.2 Information and Its Impact on Policy Implementation

Despite the South Africa’s reconstruction in education being driven by policy, this study established that teacher’s interaction with information and communication technologies in schools was not informed directly by the policy document. The teachers lacked information about the policy, its requirements, information about potential benefit from the policy, knowledge of their role in policy processes. The study also established that the teachers did not make efforts to find out any information about documentation regarding ICT use for teaching and learning at least to inform themselves despite feeling that they needed information. Lack of information affected policy implementation as the teachers

mentioned that “*lack of information about equipment is a barrier to using information and communication technologies sometimes*” (Teacher 3-School A).

This is supported by the theory as it states that *If it happens that in the process of policy implementation, an actor who is actively involved and is sufficiently motivated, lacks necessary information, they stop taking part or carrying out such activities temporarily until they have learnt enough to proceed.* Lack of information during policy implementation can be divided into two major categories. Namely missing information and information asymmetry (Lambert, et al, 2011). Missing information is information that is not available as and when it is needed to enable those who need it to carry out administrative or operational activities. Missing information may increase uncertainty about the appropriate policy actions and policy ineffectiveness. The other type is information asymmetry which refers to instances where participants in policy implementation have different levels of information on a given issue to the disadvantage of the one that possesses less (Lucas, 1976). This is attributed to the fact that policies only articulate expectations or desired behaviour, but do not describe the precise actions to be taken. To attain the desired behaviour, people need to understand what is required (Organisation for Economic Co-operation and Development, 2000).

One seeks for information, either by enquiring from formal systems like from an information system or from any other systems which may perform information functions in addition to other a primary, non-information functions such as the Khanya people. The teachers seem to have chosen the latter option as they seemed to want to rely on reassurance from the Khanya people which was not readily available. It imperative that teachers make sense of the whole process and negotiate their responses to the policy implementation and ICT integration in teaching and learning. One’s knowledge and understanding of reality depends on how one makes sense of what confronts him or her. This interpretation is socially constructed as the situation emerges (Kaplan and Maxwell 1994).

Heidegger (1976) states that in the everyday nature of a social actors existence, there are two types of phenomena, phenomena that constitute his life world and are part and parcel of the actor’s existence, these require no reflection nor understanding as they are familiar. The other is unfamiliar phenomenon. If it so happens that there is an event that

baffles or breakdown an actor's understanding or challenges the actor's conception of the phenomenon then the actor has to interpret the phenomena in order to understand it. This involves theoretical reasoning. The interpretation starts or is based on the pre understanding the actor has of the phenomenon. According to Heidegger, (1976) this pre understanding possesses historical and temporal dimensions. The process requires working out the legitimacy, origin and validity of the phenomena. This working out is intentional in that actors will purposefully set about repairing the breakdown and adopt whatever available means to achieve this end.

Failure to help the teachers to make sense of the integration process and the emerging challenges from the implementation was detrimental as when the teachers said they needed support, they essentially needed help with sense making and Khanya could have capitalised on this. Sense making is defined as the processes through which teachers' interpret policy demands and eventually conclude what to do in response to these demands (Seashore, Louis et al., 2010; Spillane, Reiser, and Gomez, 2006).

Furthermore, policy Implementation studies show that individuals assimilate or accommodate existing beliefs and practices in light of new demands from policy (Spillane, Reiser, and Gomez, 2006). It was imperative that Khanya should have recognised that information and communication technologies came from outside the teacher's existence, both at the personal and the professional level, hence the breakdown of their understanding. Whilst to the government of South Africa and maybe to Khanya, information and communication technologies were instruments of transformation, Yanow (1993) states that organisational symbols are subjected to interpretation by multiple receivers and thus cannot have just one intended meaning. It is therefore not surprising that teachers needed interpretation to support their understanding of information and communication technologies. Seashore et.al. (2005) states that "when teachers are confronted with a new policy, their interpretation of it will determine whether they engage in significant change, incremental change, or resistance" (p. 178). In instances where policies lead to new ways of doing things or providing services, it is imperative that operational guidelines to guide both implementers and recipients to ensure understanding and management of the expected changes and implications are put in place (Sabatier and Mazmanian, 1980).

Furthermore, Dunn (2004) states that policy issues tend to be influenced by the environment. Readers and text are products of culture thus meaning is situated in and mediated by culture (Smagorinsky, 2001). This is because the social setting in which information or text is encountered contributes to its meaning (Schutz, 1967). Text possesses different meanings for different individuals based on their biographies and positions in the social setting. Smagorinsky, Cook and Rees (2005,p.75) state that “different readings of the same text vary, not just from reader to reader but from reading to reading by the same reader, depending on how each reading is situated in dialogue with and in extension of other readings and configured within the reader’s experience. Ricoeur (1991) argues that meaning is situational in spoken discourse but in written discourse, where there is no interaction, the individual imposes his or her subjective meaning thus the information requires a subjective and social interpretation.

The teachers were aware of the need to change but they stated that they needed support. They did not have the information searching skills as evidenced in the failure to get the policy or any information related to ICT implementation in education. They needed assistance to implement the change on a day-to-day basis. They did not have any reinforcement to keep whatever change had taken place in place (Hiatt, 2006). This led to high levels of uncertainty and confusion hence the teachers need for reassurance that they were on the right track. When this was not forth coming, the teachers stopped acting. In addition, Jansen (2001) states that teachers can choose to withhold acting on policy reform initiatives if they believe that they are against their cultural beliefs or are disempowering. He elaborates that teachers can employ strategies to deal with policies that are not aligned to their personal and professional identities especially ones that make them feel disempowered. Teachers “attempt to deny the distance between image and identity between what is required and what is experienced in the classroom” and make claims that they implement policy reform whilst in actual fact they do not (Report of the Review Committee, 2000, p.8).

The study concludes that, as stated by the theoretical framework, during implementation, the setting changed due to

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- changes in the actor's cognition. The teachers had to learn new things to enable them to teach using ICT. This did not however give them the capacity to act effectively and they still needed support which was not forthcoming.
 - the inability of schools to maintain the resources resulting in changes in the actors resources. This affected their ability to act.
 - their experiences or behaviours of others involved in the implementation process. The teachers expected Khanya to give them support but none was forthcoming which probably resulted in their non-acting as reported by the Officers

According to the contextual interaction theory, it is imperative that emerging and evolving threats and opportunities of the context are managed and it is evident in this study that Khanya did not manage these. This led to demotivation as the teachers felt that the expected behaviour is beyond their capacity (Bryk, Sebring, Allensworth, Luppescu and Easton, 2010). The empirical findings validate the claim in the theoretical framework that if policy actors feel that resources are inadequate they will make avoid carrying out policy implementation activities as actors want to avoid cognitive dissonance (Bressers, 2004).

Over and above being an issue related to lack of information, in places where there is racial segregation the behaviour can also be explained as a multiculturalism issue. According to Mashau (2012, p. 58) multiculturalism describes the “social condition of diversity amongst the population”. Multiculturalism manifests itself either through spatial formations such across nations and cities. Myer et al. (2007) states that culture manifests itself in two predominant ways; highly visible ways such as in food, dress and language and in ways which are hidden from view such as attitude, values and beliefs. These traits mean different people will derive different meanings from the same activity as a result of their different historical life experiences. Langa is said to be predominantly Xhosa as the dominant language spoken in Langa. Research findings indicate that there are differences between South African cultural groups on the uncertainty avoidance dimension. Uncertainty avoidance reflects the degree to which individuals in a culture feel threatened by new situations, uncertainty and ambiguity. Cultures are classed as either high or low on uncertainty avoidance (Hofstede, 1993).

Low uncertainty avoidance cultures react positively to change and new opportunities whilst high uncertainty avoidance cultures do not as they prefer structure and consistent routine. Teachers in previously disadvantaged areas report fear and uncertainty and the need for reassurance. This is not structure or consistency but chaos due to the implementation. Khanya ought to have known enough about these and accommodated these in the implementation process and approach. As a people, black Xhosa and Zulu have been found to have the following traits;

Table: 7:1 Traits

	Power Distance	Uncertainty Avoidance	Individualism	Masculinity	Long Term Orientation
Black-Xhosa	-1.6	76.4	78.2	18.1	45.3
Black-Zulu	-1.6	58.7	82.8	26.5	57.5

Thomas and Bendixen (2000)

One can from all the above conclude that Khanya and the government of South Africa believed that IT could lead to organisational transformation. Markus and Benjamin (1997) attribute this to what they describe as the magic bullet theory of IT where it is erroneously assumed that IT can transform organisations. However it is an established fact that whilst information and communication technologies are enabling technologies, they cannot create organisational change (Markus and Benjamin 1997; McKersie and Walton 1991).

7.3 Perceptions of Teachers about the Government E-Strategy

This study established that predominantly the intentions and beliefs of the policy actors and policy were in sync. Teachers believed that information and communication technologies are critical and that using them for teaching and learning could bring about the desired changes in the teaching and learning. This made them to persevere despite all the challenges they encountered to use ICT for teaching and learning. This is similar to findings from elsewhere that show that personal characteristics such as teacher's

preparedness, teachers' support and attitudes to integrate ICT into teaching determine the effectiveness of the technology and not its sheer existence of ICT in the classroom. Studies elsewhere also show that when teachers believe that technology could fulfil their needs and their students' needs, they are more likely to integrate the technology into their teaching and learning (Buabeng-Andoh, 2012; Keengwe and Onchwari, 2008). These findings support the theoretical proposition that policy actor's perceptions, opinions influence the activities policy actors engage in regarding the implementation.

The factors that motivated teachers to use ICT for teaching and learning were both personal and work related. This is in line with research findings that show that individuals carry out policy from three dimensions- institutional incentives, professional and personal motivation. Furthermore, motivation is affected by the policy implementer's belief that the policy is needed and given the situation in question is bound to succeed (Milward, Denhardt, Rucker, and Thomas, 1983). In this study, whilst it was established that the teachers felt that the likelihood of success of the policy was limited, the teachers were still motivated to use ICT for teaching and learning. This can be said to be due the fact that other variables other than likelihood to succeed can take precedence. In this study, it emerged that the teachers felt that using ICT for teaching and learning made them feel that they were part of the global ICT revolution. This is not surprising as several studies elsewhere have established that the "symbolic value of ICT in education has become even more powerful than the instrument-effects vision of social planning and development that underlies it. Technology in education "has essentially become another 'compass point' through which individuals (whether students, teachers or policy-makers) and institutions construct modern and progressive identities" (Shields, 2011, p.11).

These findings validate the theoretical propositions that an actor's motives, interactions and activities in relation to the policy implementation processes are influenced by the actors' motivation. Furthermore, the above discussion also leads the study to draw a conclusion that if the goals and objectives of the policy actors are compatible to the goals and objectives of the implementer and the policy actors deem the problem to be important, the policy actors are more likely to be motivated.

7.4 Self Efficacy of Teachers

This study established that some of the teachers did not have good ICT skills which made them afraid to use ICT for teaching and learning. Furthermore teachers did not have access to computers outside the scheduled time which affects their competencies and confidence. It is an established fact that the quality of resources and technical issues affect integration of ICT for teaching and learning and self-efficacy of teachers. This lack of competence and its impact is not surprising as it has been established that teachers' competence with computer technology leads to effective use of ICT in teaching as when teachers have more experiences with computers, they are more likely to have more positive attitudes. Similarly, teachers with higher computer self-efficacy beliefs are more likely to use computers as they believe they have the capacity to whilst those with lower computer self-efficacy beliefs become more disappointed and pensive when working with computer technology and hesitate to use computer technology when they face problems (Gilakjani, 2013; Balanskat et al., 2007).

7.5 Types of Relationship between Policy Actors

This study established that Khanya was perceived as very controlling in the implementation process. They determined the activities that were carried out in relation to policy implementation activities. They designed the training programme, the procurement and installation and determined who got a computer laboratory and when. Despite principals being charged with professional management of public schools, they were powerless in the implementation as they were not in control of any of the resources and Khanya did not in any way engage them in the policy implementation activities. Khanya had the expert power and the resource power. This leads the study to conclude that legal powers mean nothing if one does not have the expertise to back the power up. Khanya issued instructions and could do so as they had the power to. They based their interactions on power structures. There are five sources that give others power over others; namely legitimate authority over the target, the ability to reward, the ability to coerce, expert knowledge and control of the target's critical activities (Thompson and Luthans, 1983). However, due to this control and attitude, Khanya was perceived as domineering as they did not negotiate any of the processes with schools. This was a critical flaw on the part of Khanya as rigidity in implementation is said to limit implementation as it stifles creativity

and adaptability. Implementers need leeway to adapt policies to make them suitable for their context. This study concludes that whilst the teachers, policy makers and Khanya all agreed that information and communication technologies were important for teaching and learning, they were not in sync in terms of how to implement and use the information and communication technologies which validates the proposition that despite working towards the same goal, the attitudes and motivation of policy implementers will not necessarily be similar or congruent as these are influenced by individual traits, beliefs, opinions or characteristics.

Whilst Khanya had the power to control the going on regarding usage of information and communication technologies in schools, the Khanya officers expressed that resources were just laying idle unused in schools. According to the theory, interactions of the policy actors should not be based on power structures but on influence. Khanya should have avoided using legal coercion options, which have been found to be difficult and lead to resistance (Yukl et. al, 1993). Khanya's power base was expert power and harsh tactics are incongruent with expert power (Klocke, 2000). Furthermore, Khanya seems to have overlooked the fact that they lacked legitimate authority and had limited powers to directly influence teachers. Khanya's power was weakened by their unfavourable position in the school hierarchy. They were dependent on the teachers for success and the teachers had the power to resist the implementation. They should have reflected on their source of power and carefully established which options of influence were available to them (Handy, 1973). They should have fostered a symbiotic relationship where both parties are dependent on each other for a particular behaviour. Already, for personal and professional reasons the teachers want to use and be seen using ICT so there was no reason for Khanya to opt for authoritarian tactics.

It is imperative that in instances where organizational actors have no authority over individuals on whom they depend to achieve their policy implementation goals, they enact effective influence or social influence approaches (Kotter, 1985; Cohen and Bradford, 2008) In such cases it is recommended that policy implementers deploy soft tactics such as consultations, education, rational persuasion and rewards to foster cooperation and change the policy actors behaviour and get them to commit to the project (Farmer and Aguinis, 2005; Schwarzwald, Koslowsky, and Agassi, 2001).

This study concludes that whilst the teachers, policy makers and Khanya all agreed that information and communication technologies were important for teaching and learning, they were not in sync in terms of how to implement and use the information and communication technologies for teaching and learning which validates the theoretical framework claim that *despite working towards the same goal, the policy agents attitudes and motivation will not necessarily be congruent as these are influenced by individual traits, beliefs, opinions or characteristics*. In addition this also validates the proposition drawn from the theoretical framework that *using institutional settings that provide legal coercion does not lead to successful policy implementation as legitimate power, perceptions, resources and cognitions are not enough to ensure success of the implementation process, influence is also critical*.

7.6 Coherence of the Public Governance Component

In situations where several sectors or government or bodies are charged with implementation of the same policy, the different sectors have to be mutually dependent and cognisant of the impact of their actions on the outcome of the policy implementation as this improves policy implementation (Bressers, 2004). However, this study has shown that there was no coherence of the public governance component. Khanya did not involve the school heads in the implementation process even the school facilitators did not.

Hayes (2007) states that although ICT implementation in schools is driven by classroom teachers, it is ultimately the quality of leadership and management of ICT in a school that determines the success of the process. Pelgrum (2001) reiterates this as he too states that positive attitude from administration facilitates efficient integration of information and communication technologies in the teaching and learning process mainly because by virtue of being school leaders they can motivate teachers to use technology in their lessons. Furthermore, It is imperative that school administrators be competent in the use of the technology and be conversant with the technical, pedagogical, administrative, financial, and social dimensions of ICTs in education for the integration to be effective and sustainable (Sife et al., (2007). This study established that the school heads in the study were not conversant in these and were not supportive nor did Khanya engage them to improve these skills.

Specifically Khanya could have helped school heads with human resource management and development. Khanya could have in effort to help improve policy implementation assisted school principals with requisite skills to enable them to take charge of the implementation process in schools. They should have assisted school heads with coordination of activities at school level .This assistance could have assisted school heads to ensure that requisite changes needed across all sub systems in schools were done as this study established that there was no sync between the expectations of the draft white paper on education, schools, teachers on students and practices of the school and teachers.. For policy implementation to succeed change cannot occur in one sub-system in isolation without considering the implications for the other sub-systems.

The failure of school heads to identify skills in schools and use the available skilled teachers to train others points to their inability to run school based in-service activities. This resulted in uncoordinated support which inevitably resulted in support that was disruptive to the teacher teaching process. In some instances it led to skewed skills bases amongst staff members in one school. This affected the implementation process as professional development of teachers is critical in the success of technology and education program (Nyambane and Nzuki, 2014; Assan and Thomas, 2012).

7.7 Stakeholder Consultation

The study established that schools and teachers were not involved in the decision making process regarding the implementation and usage of the ICT. This is problematic as evidence from behavioural science indicates that participation in the decision process encourages an increased level of compliance (Lewis, 2013; Hessing, et al. 1988).

Whilst to the government of South Africa and maybe to Khanya, information and communication technologies were instruments of transformation, Yanow (1996) states that organisational symbols are subjected to interpretation by multiple receivers and thus cannot have just one intended meaning. One's knowledge and understanding of reality depends on how one makes sense of what confronts him or her. Policy implementers ought to dialogue with the target group to ensure that they clearly understand the expectations, rights and responsibilities as a collective, make sense of their collective challenges and develop a strategy for action (Unger, 2002; Cerna, 2013). Given that Khanya

had espoused that they will take cognisance of the local situation, they should have consulted Teachers Unions who are the legal spokespersons for teachers. This might have enabled the policy actors to overcome differences in perceptions of reality. This is attributed to the fact that policies only articulate expectations or desired behaviour, but do not describe the precise actions to be taken. To attain the desired behaviour, people need to understand what is required (Cerna, 2013).

Khanya also failed to listen to stakeholders during policy implementation. This cannot in any way add value to the policy implementation process. During implementation, it is important for policy implementers to have as much direct personal communication with stakeholders as possible. Teachers unions are the legal spokespersons for teachers, at the very least given that Khanya had espoused that they will take cognisance of the local situation, they should have consulted unions. Policy implementers ought to dialogue with the target group to ensure that they clearly understands the expectations, rights and responsibilities as a collective, make sense of their collective challenges and develop a strategy for action (Unger, 2008; Organisation for Economic Co-operation and Development, 2000). This enables the policy actors to overcome differences in perceptions of reality. The importance of this was also highlighted during the panel discussion as the two teams did not take time to listen to each other but rather chose to appropriate blame. Listening to each other and understanding can help build trust. This could have also help build trust which is a strategy that Khanya should have adopted. The literature on organizational influence theory corroborates as the literature states that open communication creates an environment that fosters trust in targets that one seeks to influence (Gattiker and Carter, 2010).

In other fields like strategic studies it has been established that it is only when there is a general understanding amongst stakeholders about situations and less ambiguity and uncertainty that shared understanding and Systems of knowing can be reached. Systems of Knowing refer to “a variety of structural and social means of interaction, knowledge sharing, knowledge integration” (Reich and Benbasat, 2000, p. 164). Furthermore lack of clarity in roles, functions and accountability of the different sources of authority affects policy implementation. The teachers assumed that Khanya was there to provide in service

support. They did not take the school principals to task to get them to provide in-service training (Bryk, Sebring, Allensworth, Luppescu and Easton, 2010). Also it is important that policy implementers are seen as trying to advance others interests. Conceding on some issues can be used as a calculated risk to help to build a level of shared trust that will have returns later on. Based on the findings already discussed in the sections above, this study draws the following conclusion that *fragmentation of policy implementers leads to more discord between the actors, their goals, more uncertainty, lack of clarity of confusion and more stalemates (power) and, which hamper implementation*. The theory clearly states that it is important for all involved in policy implementation should develop a common set of objectives and framework to ensure that any potential conflict are resolved (Albirini, 2004).

7.8 Inadequate Support from Top Management to Enact the Changes Necessary for Implementation

Khanya gave priority to training of teachers and however, did not place much emphasis of training school management teams. This study established that the school heads in the study were not conversant in the use of ICT for teaching and learning. This is another flaw that affected policy implementation. Hayes (2007) states that although ICT implementation in schools is driven by classroom teachers, it is ultimately the quality of leadership and management of ICT in a school that determines the success of the process. Pelgrum (2001) states that positive attitude from administration facilitates efficient integration of information and communication technologies in the teaching and learning process mainly because by virtue of being school leaders they can motivate teachers to use technology in their lessons. Furthermore, it is imperative that school administrators be competent in the use of the technology and be conversant with the technical, pedagogical, administrative, financial, and social dimensions of ICTs in education for the integration to be effective and sustainable (Sife et al., 2007).

7.9 Lack of Sustainability of Interventions.

This study established that teachers had problems with maintenance of information and communication technologies in schools. Pelgrum (2001) states that the breakdown of information and communication technologies causes interruptions which may result in teachers being discouraged from using computers in teaching because of fear of

equipment failure especially where there is no technical support (Buabeng-Andoh, 2012). The teachers stated that they had the following challenges regarding the use of ICT in teaching and learning the teachers mentioned that there were non-functional computers with no funds for repairs. It is important that schools have technical assistance in order to provide technical support to deal with repair and maintenance of ICT equipment (Chisholm 2003; Wang and Woo, 2007). Failure to provide this has a negative impact on implementation success as the kind of experiences teachers have with information and communication technologies affects their computer attitudes. This failure can be attributed to policies that are being implemented in the wider context. Schools in previously disadvantaged areas are unable to maintain or upgrade their resources because of the neo liberal policies of cost recovery and cost sharing. They do not necessarily have access to resources because service provision is driven by redistributive financing which has reproduced the inequities of the past. These schools are in areas that are poverty ridden (Beall, Crankshaw and Parnell, 2002; McDonald, 2008).

7.10 Evaluation of Impact of ICT Innovation for Teaching and Learning versus ICT Developmental Goals

Predominantly, evaluation of ICT4D projects is based on the extent to which the major goals of all stakeholder groups and desirable outcomes are attained. Based on this principle, projects outputs are rated as; total failure, largely unsuccessful, partial success, and partial failure, largely successful or total success. If evaluation of the implementation of the government strategy on e-education is done against this criterion of assessment, then the success of the strategy might be questionable. However, I propose that evaluation of ICT4D in education projects should also take into consideration the key intention of education and establish the extent to which information and communication technologies have

- equipped students and teachers to deal with socio-economic needs
- given teachers and learners a chance to shape their own destiny and help each other to make informed choices.
- Improved the teaching and learning processes of the beneficiaries.

Furthermore, it is important to prepare students for global and multicultural citizenship. Whilst at local level students' school in a residentially segregated environment,

information and communication technologies affords them access to interact with others who are outside their community. Students who possess the skills, knowledge and attitudes of global and multicultural citizen ultimately have a competitive edge over those who do not (Mashau, 2012). The use of information and communication technologies can be leveraged to teach students to negotiate the cultural, religious and linguistic differences within their communities (Mashau, 2012).

The study established that it is evident that all of Khanya's goals were implemented and in the process schools were modernised through the use of technology. Furthermore it can be argued that curriculum delivery was enhanced as teachers reported that they used technology to prepare lesson plans and learning materials thus improving the teachers professionalism was improved, as reports etc. were typed. This improved the teacher's efficiency in performing mundane tasks such as the maintenance of mark sheets and examination results, assessment of tasks is done electronically which frees and allows teachers to concentrate

Regarding the relevance of the use of ICT for teaching and learning teachers stated that they used the internet to make their teaching experience far more relevant for example, one teacher reported that she used the internet to teach concepts like earth quakes which would otherwise be foreign concepts.

This improved the teachers confident and competency because of usage of technology. This leads the study to conclude that whilst it is questionable if the educational potential of the poor schools was brought on par with that of the affluent ones, it is an undeniable fact that transformation did take place. Learners are exposed to the best learning material available; material that they may have been deprived of in the past. Learners certainly have wider access to learning resources.

Whenever ICT policies are implemented, Mansell (2005, p.93) argues that "people's livelihoods do not change because of technology; they change in the light of the way technology becomes embedded in the overall context". This divergent view of perception of success which is context based is supported Larsern and Myers (1999) who argue that "success" is open to many different interpretations and it complexion changes depending

on the time at which the evaluation is done and who is talking. In addition, basing the perception of success on intangible benefits is also proposed by Gomez and Pather (2012, p.5) who suggest the ICTD evaluation field should rather than focus only on “measuring the tangible and quantifiable economic benefits of ICT for development” take cognisance of intangible impacts as these are likely to be important for human development than the tangible and quantifiable ones.

The findings also prove that for one to evaluate one need to understand the implementation process and the implementation context. It is also imperative that one also has an appreciation of the changes that might have affected the implementation outcome and appreciate the changes brought about by the implementation. This is in line with perceptions that as instruments, information and communication technologies as long as they are affordable and usable can transform the way societies work, entertain. The teachers report that the ICT have positively affected their personal life’s and enhanced their social standing as they have enable them to keep up to date with the technological changes in the rest of the world. It can be concluded that the teachers, given the odds due to their context like inadequate in service training to use ICT for teaching and learning are making a good effort.

One can safely say that from being education products of an education system that sought to mis-educate, make their labour irrelevant to the market need, working in under resourced schools and communities, the mere fact that teachers use information and communication technologies to facilitate teaching and learning, reflects that implementation is not a total failure. Teachers are overwhelmed by changes in the system, and they do not have the capacity to implement, but believe that the use of ICT is important for teaching and learning, they despite the shortage of resources have delivered something. Ford and Botha (2010) also acknowledge that teachers do know the value of ICT in teaching and learning but are unable to use them as they are not competent, or do not have the adequate infrastructure (Ford and Botha, 2010). Thus the failure to change mind sets as stated by the government is not an issue. It is a fact that prior research had established that students in schools that were more affluent tended to have more exposure, experience and better attitude towards the use of computers than students from previously disadvantaged schools. This study established that students in previously

disadvantaged schools are overcoming this attitude. Teachers reported that they were encouraging students to interact with the ICT and it was bearing fruits as students were reportedly using them. Whilst the study cannot say with certainty what overcoming this attitude will translate to long term, the bottom line is attitude and fears are being dealt with. Had there been no intervention, this would not be possible with dire consequences for the students as education and economic growth are related (Aghion, 2009).

This study also proposes that evaluation should realistically assess the extent to which the desired outcomes and goals of the e- education government strategy are achievable in the context within which the institutions and individuals operate. It can be concluded that the teachers, given the odds due to their context like inadequate in service training are making a good effort. The assessment should not just be based on attainment of policy goals which in any event could have been adapted based on need or context as evidenced in this study. Khanya which was set up to drive ICT implementation in the Western Cape and they reinterpreted it to mean the provision of information and communication technologies to all public schools in the province. Research has established that policy gets transformed during interpretation and interaction with readers. Consequently, whatever is delivered as a policy implementation outcome is dependent on the policy implementer not the organization nor institutional goals (Weatherley and Lipsky, 1977). As such, there is need to acknowledge and mitigate the likely impact of individual incentives, beliefs, and capacity on implementation.

This study therefore concludes that success is fluid and the implementation of information and communication technologies for teaching and learning is yielding some results. Larsen and Myers (1999) argue that “success” is open to many different interpretations and it complexion changes depending on the time at which the evaluation is done and who is talking. In addition, basing the perception of success on intangible benefits is also proposed by Gomez and Pather (2012) who suggest the ICTD evaluation field should rather than focus only on “measuring the tangible and quantifiable economic benefits of ICT for development” should take cognisance of intangible impacts as these are likely to be important for human development than the tangible and quantifiable ones. On the basis of this the study proposed another proposition to add ***When ICT implementation adds***

value to the processes of an implementer then the intervention can be regarded as successful.

7.11 Summary

The key contribution of this study is that implementation problems or lack of attainment of implementation goals are not just management problems due to the ongoing in a single institution but a rather intertwined. This study highlights that it is important that those who assess and evaluate take into consideration the validity and suitability of policy assumption and not just use these to guide assessment. It is imperative to also investigate if the policy in question is reflective of the needs, understandings of the policy agents. In addition, it is important that implementation projects are evaluated against the existing social realities. The study validates assertions made elsewhere that ICT policies need to be an outcome of in-depth analysis of existing issues regarding the current context of the place of implementation in terms of the type of society, development plan and the requisite education system for them to be effective. As it this policy has made it difficult for the disadvantaged schools to address their problems as they are still battling with lack of resources. In addition the study shows that the teachers still need to be capacitated to drive the transformation effectively.

Policy actors need to manage the entire process and not just assume that the success of the process depended on the provision of initial resources. Failure to help the teachers to make sense of the integration process and the emerging challenges from the implementation was detrimental.

8.0 Introduction

This chapter evaluates the interpretive research in terms of significance and contribution to the information systems body of knowledge. This chapter is organized as follows: the research questions are revisited and the extent to which the research has answered them is discussed. This is followed by a review of the Research Objective. Then a discussion on whether the outcomes of the research can be utilised by practitioners and an evaluation of the inquiry. Finally, the thesis is concluded with a self-Reflection on the study and a discussion of the limitations of the research and an indication of further research that could be undertaken along the lines of this inquiry.

8.1. Review of the Research Objective:

The main objective of the research was to investigate the underlying contextual factors within schools in previously disadvantaged areas that affected the implementation process and outcome of the white paper in e-education policy. It is hoped that the study has highlighted these. This investigation was driven by the need to have an informed understanding of “how” and “why” there are conflicting perceptions about the Khanya project and how the persisting residential segregation might have affected the implementation process. This study has in the opinion of the researcher provided insights that were previously not available. Thus, the study adds to knowledge about what is it that can make or break policy implementation success in previously disadvantaged areas context.

The main objective was broken into several objectives, namely to investigate:

Objective 1: The impact of the implementation locale on the implementation of the e-education policy in schools in previously disadvantaged schools.

The study established that history and other contextual factors affect implementation of the white paper in e-education in schools in previously disadvantaged areas and subsequent achievement of the implementation objectives. Due to geographic segregation implemented under apartheid, schools in previously disadvantaged areas are on the peripheries of cities. They do not necessarily have access to resources because

service provision is driven by redistributive financing which has reproduced the inequities of the past. These schools are in areas that are poverty ridden (Beall, Crankshaw and Parnell, 2002; McDonald, 2008). This is also confirmed by the student exodus. Blacks have to leave the townships to access better quality teaching and resources. Thus the study concludes that policies that are being implemented in the wider context affect policy implementation and policy implementation outcome.

Objective 2: Appropriateness of the policy

The study established that the white paper in e-education did not take into consideration the social and historical context as it would have made provision to cater for maintenance and running cost including change management processes. The study shows how schools in previously disadvantaged areas are unable to maintain or upgrade their resources because of the neo liberal policies of cost recovery and cost sharing.

Objective 3: the impact of the implementation process on the implementation outcome of the e-education policy in schools in previously disadvantaged schools.

The study established that policy implementers were not receptive to the views of other stakeholders. Even at school level teachers were not really listened to. This led to numerous problems leading the study to conclude that the “government’s centralized approach to policy, not involving all stakeholders and distance relation between policy makers and the people have badly affected the policy’s ability to bring desirable outcomes for the South African” (Brown and Brown, 2008, p109). It is important for policy implementers not to adopt a domineering approach to push adoption and implementation as it cannot bring about the desired change. It was important for Khanya to use influence as it is a very critical strategy in the success of change especially in cases where the project team has no real power and authority over the policy actors.

Objective 4: factors that affect policy implementation processes and outcomes.

The policy implementation process was not comprehensive and did not take into consideration the local norms, values, and culture and provide guidance. The implementation process also shows that there was inadequate analysis of the implementation context.

There is no coherence in the governance structures as there is no coordination of policy implementation activities by the different stakeholders involved which affected policy implementation outcome. Furthermore, the failure of Khanya to recognise the organisational context within schools and the education department affected policy implementation. Khanya should have involved the e- education department officers to oversee the implementation and mediate between schools and the project in their capacity as administrators. They should have also recognised and utilised the school management structures in schools. These would have helped in as at the end of the project they could provide support to teachers as they have systems in place.

Change management practices are very critical during policy implementation especially where the outcome is behavioural change. This called for the management of the soft side and hard side issues and Khanya and schools had no strategies in place to manage these.

Objective 5: factors that affect the teacher's activities in relation to policy implementation during implementation of the e-education policy in schools in previously disadvantaged schools.

Several factors affected the teacher's activities in relation to policy implementation during implementation of the e-education policy in schools in previously disadvantaged schools. The teachers did not have information about their roles and responsibilities in the implementation processes which affected implementation. They were not clear in terms of other functions they had to engage in to ensure the attainment of the policy goals. Similarly schools had not clear set guidelines to guide implementation to ensure consistency. A list of factors that affected implementation are given in figure 1.1. below

Figure 8: 1 factors that affected implementation



8.2 Emancipatory Knowledge Interest of the Study

It is believed that one of the best ways for judging the quality of findings is to establish if the study has provided new insights into the studied phenomenon and if these have been provided, the study has increased the understanding of particular phenomena or informed practical actions (Krippendorff, 2004).

The new knowledge that this thesis contributes is that ICT integration for teaching and learning in previously disadvantaged areas is affected by a whole range of issues some which are not related to the information and communication technologies themselves or the implementation process. The study shows that failure in ICT4D projects is not only due to training but to several factors that are intertwined. The South African government claim

that ICT implementation failure is due to inadequate training to change mind sets or inadequate resources is not wholly true and allows a situation that can be addressed to continue. The study also shows how widely held beliefs and claims can impede efforts to remedy situations. These claims according to Klein and Myers, (1999) constrain people's ability to change. This study, argues that it is no longer credible to blame the education crisis on poor implementation.

The study has highlighted the importance of understanding the implementation process and context as it informs and explains why what is seen comes to be. The study further reiterates Motala and Pampallis (2001) assertion that the expected transformation is not successful as it is proving difficult to align the state's macro-economic policies and the social justice intentions. This study argues a one size policy in the implementation of ICT in South African schools is a mistake given the historical, social and cultural differences. Furthermore, the study has also shown that even in instances where mainline evaluation says there is failure, there is need to acknowledge the developmental impact brought by the ICT interventions. The outcomes of this study can be directly put to use since its outcome sensitises ICT policy implementers on issues that affect policy implementation and outcome.

8.3 Review of Research Methodology and Approach

This research showed that theoretical frameworks such as contextual Interaction theory which has been widely used in environmental science studies can be used to evaluate the implementation and evaluation of ICT projects. The theory provides an integrated way which holistically assesses the process and assess the impact of factors related to the implementation and those not that have a bearing on the process. I believe that this research methodology and approach enabled the study to contribute new understanding of the impact of contextual factors on policy implementation.

8.4 Assessment of the Research

Using the Contextual Interaction Theory allowed the study to gather the required information which was the teacher's perceptions about the implementation process and the impact of context on the process. To get this understanding, this study required information on how suitable that implementation context was for the implementation and

insights on modifications to the policy intentions that may have taken place. The study also needed information on how people and their beliefs and socialisation affected policy implementation processes and outcomes.

It is the opinion of the researcher that the required data was successfully collected as the study was able to solicit for the right information and used qualitative data approaches which enabled the respondents to articulate their experiences using their own words. Whilst I consider the data collection to have been a success, I feel that if I could speak Xhosa, which was the dominant language spoken in Langa, it would have allowed me to interact better with the respondents in their own language which would have improved trust between me and them.

In addition, this study was evaluated using the principles for interpretive field research criteria proposed by Klein and Myers (1999).

8.4.1 The Principle of Thinking Critically About the Research Environment

According to Klein and Myers (1999) a researcher has to reflect critically about the social and historic conditions of the research environment, so that the readers of the study can understand how the depicted view came about. In the case description, I explained the setting of this study in depth to reflect how the current situation arose. This study gave a historically based account to explain why things are as they are and how the current policies affect the implementation of policy in previously disadvantaged schools. It situated the teacher, schools in the history of South Africa.

8.4.2 The Principle of Interaction between the Researchers and the Subjects

This principle requires that a researcher makes critical reflections on how the research materials were socially constructed through the interaction between the researchers and participants., the first contact I had with the schools in previously disadvantaged areas was as part of MELLISA, which in a way helped build rapport between me and the respondents or teachers in schools, I was involved in teaching them how to use ICT for teaching and learning as part of MELLISA. When I conducted the interviews of this study, I already was a familiar member of the school. This enhanced social interactions with the respondents and improved the level of trust between the teachers and the respondents and impacted the quality of data received.

8.4.3 The Principle of Dialogical Reasoning

Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings with subsequent cycles of revision. This principle required that I reflect on the theoretical framework, the research design and research results with consequent iterations. I discussed my preconceptions and how they influenced my research design and choice of theoretical framework and constantly re-evaluated each to establish if there were any contradictions and none were found.

8.4.4 The Principle of Multiple Interpretations

At the start of the study, I explicitly stated that this is an account of the teachers about their perceptions within their context. However in recognition of the fact that there were possible differences in interpretations among the participants, others involved in the implementation process were interviewed for triangulation. The multiple interpretation were evident in the perception about non-usage of resources in schools, to teachers resources were dumped and left to the officers, the teachers were not pulling their weight as they despite being provided with resources.

8.5 Self Reflections on the study

The study has been an eye opening experience for me. I have learnt the importance of understanding things within context and realised that judging things in isolation based just on what one sees is dangerous and very misleading. I have seen the importance of appreciating others despite my expectations on them or prejudice I might have had.

8.6 Limitations and Suggested Future Research

Based on some of the findings, further research could can explore ways in which the implementation process was carried out and perceived by teachers in areas that are regarded as previously advantaged areas and the findings be compared to the perceptions of those in previously disadvantaged areas. It will be interesting to uncover similarities and differences if any, in implementation approaches and teacher behaviour to then be able to explore the causes of the differences and similarities.

Another areas of interest might be to study causes of communication breakdown or lack of understanding between the schools and Khanya. In the process, it is also important to

research into ways of improving Information flow to teachers from government on policies and the requirements, information about potential benefit from the policy, knowledge of their role in policy processes. One way of doing this can be to look into information seeking behaviour of teachers and schools heads in previously disadvantaged areas and maybe compare this with those in previously advantaged areas.

There is also need to explore ways of ensuring sustainability of implementation strategies in previously disadvantaged areas by examining the Impact of policies being implemented and ways to source funding for schools in previously disadvantaged areas as they cannot source the funding from parents, school fees or the government to enable such schools to hire technical support, to pay for maintenance of malfunctioning resources and acquisition of resources to replace those being written off.

Perpetuation of residential segregation is a social ill that has to be addressed as evidenced by a study by Nattrass, (2014). There is need to also explore ways of increasing racial integration in schools as continued geographic segregation undermines the implementation intentions as the teachers expressed feelings that they were still caught up in apartheid. It is also imperative that studies explore ways in which teachers can be helped to make sense of the ICT integration process and deal with other emerging challenges from the implementation especially since policy Implementation studies show that individuals assimilate or accommodate existing beliefs and practices in light of new demands from policy. These can be explored as part of change management strategies to manage emerging and evolving threats and opportunities of the context during implementation.

8.7 Summary

This chapter evaluated the interpretive research in terms of significance and contribution to the information systems body of knowledge. The evaluation focused on the relevance of the research and the theoretical contribution of the research. Finally, the thesis is concluded with a discussion of the limitations of the research and an indication of further research that could be undertaken along the lines of this inquiry.

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Appendix 1 – Cover Letters for Request for Qualitative Interviews



UNIVERSITY OF CAPE TOWN

Department of Information Systems

Leslie Commerce Building
Engineering Mall · Upper Campus
OR Private Bag · Rondebosch 7701
Tel: 650 2261
Tel. Add.: ALUMNI, Cape Town
Fax No: (021) 650-2280

The Research Director
Western Cape Education Department (WCED)
Cape Town.
Dear Sir/Madam,

**RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN PUBLIC
PRIMARY AND SECONDARY SCHOOLS IN THE WESTERN CAPE**

I am writing to request permission to conduct research in primary and secondary schools in the Western Cape Province.

I am doing a PhD in Information Systems at the University of Cape Town and as part of my studies I have conduct research in to ICT issues. I have attached a letter that confirms that I am a registered student at University of Cape Town.

My study will focus on e-education and its implementation in schools in the Western Cape. The study will investigate the meanings the educators ascribe/assign to the policy and how that affects the implementation of the policy. The aim is to try and explain further why there are still problems with ICT integration in teaching and learning.

The study will seek for responses from twenty four teachers and principals who will be interviewed outside teaching hours. Consent will be sought from the respondent's teachers and they may, even after giving their consent, decline being interviewed without consequences of any kind. The respondents will also be furnished with information about the study and why it is being done and how the data will be used and handled. Effort will be taken to ensure that the responses from the respondents are kept confidential and will not be identifiable by name

Yours Faithfully,

Bojelo Esther Mooketsi
mooketsibe@mopipi.ub.bw

Appendix 2 – Response Letter for Request for Qualitative Interviews

Audrey.wyngaard2@pgwc.gov.za

tel: +27 021 467 9272

Fax: 0865902282

Private Bag x9114, Cape Town, 8000

wced.wcape.gov.za

REFERENCE: 20120611-0053

ENQUIRIES: Dr A T Wyngaard

Mrs. Bojelo Mooketsi
Department of Information Systems
UCT

Dear Mrs. Bojelo Mooketsi

RESEARCH PROPOSAL: THE IMPACT OF SOCIALLY CONSTRUCTED MEANING OF THE E-EDUCATION POLICY BY TEACHERS IN PREVIOUSLY DISADVANTAGED AREAS

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, teachers and learners are under no obligation to assist you in your investigation.
2. Principals, teachers, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Approval for projects should be conveyed to the District Director of the schools where the project will be conducted.
5. Teachers' programmes are not to be interrupted.
6. The Study is to be conducted from **23 July 2012 till 04 August 2012**
7. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
8. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
9. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
10. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
11. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
12. The Department receives a copy of the completed report/dissertation/thesis addressed to: **The Director: Research Services Western Cape Education Department Private Bag X9114 CAPE TOWN 8000**

We wish you success in your research.

Kind regards.

Signed: Dr Audrey T Wyngaard
for: **HEAD: EDUCATION**
DATE: 14 June 2012

Appendix 3: Letter to Respondents to Request for Permission for Interview

UNIVERSITY OF CAPE TOWN

Department of Department of Information
Systems

Leslie Commerce Building

Engineering Mall – Upper Campus

OR Private Bag – Rondebosch 7701

Cape Town

Telephone: +27 21 650-2261 Fax: +27 21 650-2280

17th July, 2012

Sir/Madam

RE: PARTICIPANT REQUEST FORM

I am a research student in the doctoral degree programme in Information Systems in the Faculty of Commerce at the University of Cape Town. As part of my studies, I am conducting a study on the impact of the socially constructed meaning of the e-education policy by teachers in previously disadvantaged areas on implementation of the policy.

Your participation in this study will be greatly appreciated. Please be aware that your participation in this project is completely voluntary and there will be no consequences whatsoever if you decide not to participate or discontinue participating. The interview is envisaged to last for about an hour to an hour and half at most. In the event that you do not feel comfortable answering a particular question, please indicate that you do not want to answer it and you do not have to explain why.

Whatever we talk about during the interview is completely confidential. No one other than me will be able to identify or link your name to the things you tell me. You may give me your name or we may agree on ways in which I may identify you without using your name so that if I need to conduct a follow up interview, seek clarification or discuss the findings of this study I may be able to contact you. In the event that I need to make a follow up interview or seek clarification, I will need your consent. You are not obliged to grant the follow up interviews but it would be greatly appreciated.

I would also like to request your permission to tape-record the interviews. If you are not comfortable with this please say so and the interview will not be tape-recorded. You do not have to give reasons. The Interview tapes will not leave my possession for any reason and they will be destroyed after the research.

If you have questions or you want information from me after the interview, please feel free to contact me at University of Cape Town. My email address is Mooketsibe@mopipi.ub.bw

Thank You

Yours Sincerely,

Bojelo Esther Mooketsi

Interviewee Consent

I, Code number _____ accept the invitation to participate in this research interview. I acknowledge that I am participating in this study of my own free will. I understand that I may refuse to participate or stop participating when I feel like. I agree / disagree _____ to have the interview tape recorded.

Participant's Signature: _____ Date: _____

Appendix 4: Interview Guide Teachers

DEMOGRAPHIC DATA

Name of School: _____

School District: _____

Language: _____

Quintile: _____

StudentTeacher ratio: _____

Racial Composition of School Staff: _____

Racial Composition of Students: _____

(Do not have to answer)

Racial composition of neighbourhood or catchment area _____

(Do not have to answer)

TEACHER

Designation: _____

Number of years in Service: _____

Qualifications: _____

Subjects Taught: _____

Age: _____

Gender: _____

SECTION TWO

Do you mind if I record our conversation?

SELF PERCEPTION

1. Please tell me your position and the nature of work you do on a day-to-day basis

2. Is this in line with what you perceive to be your job as a teacher? Please explain by clarifying what you think is your role as a teacher and what you end up doing

INTERPRETATION OF WHITE PAPER ON E-EDUCATION

3. Teaching and learning has changed over the years now you are expected to teach using ICT_ all because of the White paper on e-education. Are you familiar with this document?

4. Who if any one interpreted the White paper on e-education to you?

5. Who else was present at the meeting please if you can give specific times and places

a) Physical context

6. What were you told about the White paper on e-education?

a) Do you agree with what you were told?

b) What do you think?

c) Were you at these meetings given a chance to voice your concerns or opinion?

d) Was anything done about the concerns or your opinion?

e) Do you as a teacher feel you have a say in how best the White paper on e-education can be implemented in the school? Please give reasons for your answer

TEACHER'S OPINIONS ABOUT THE USE OF ICT FOR TEACHING AND LEARNING

7. How does the use of ICT for teaching and learning affect your role as a teacher?

a) Teaching

b) Administrative work

c) Research Work

8. How do your students use ICTs as part of their learning activities and how does this affect you as a teacher?

9. What has been the impact of ICT on your teaching methods?

10. What new skills in terms of teaching have you acquired because of the use of information and communication technologies?

11. Before you used ICT for teaching and learning what did you think about the use of ICT for teaching and learning?

12. Has your opinion about the use of ICT for teaching and learning changed since you started using ICT for teaching and learning? Why?

a) In your opinion, what value does the use of ICT have on teaching?

b) In your opinion, what value does the use of ICT have on learning?

c) When you talk to your colleague's about teaching using ICT -what are their beliefs, opinions?

d) When you talk to parents about how you teach using ICT, what do you think is their opinion about usefulness of technology for teaching and learning?

13. Does your opinion differ with those of other teachers and parents of students? How?

14. Do you think it's crucial for you to use ICT for teaching and learning in order to be an effective teacher? Please give reasons for your answer.

ADDITIONAL GUIDELINES ON IMPLEMENTATION

15. What resources are available to you as a teacher to assist and enable you to implement the White paper on e-education?

16. Do you feel you have enough support when it comes to the implementation of Information and communication technologies for teaching and learning to assist you to embrace all these changes?

17. What else do you think should have been done to assist you to incorporate ICT for teaching and learning?

18. Do you think teaching, the way things are done in the school for example, working towards exams, getting high pass rates etc. gives you enough time to teach students how to use ICTs and then how to search for information using ICTs and help them develop the expected skills regarding ICT that the government expects?

19. Do you feel the policy makers understand your challenges when it comes to implementation of the White paper on e-education?

20. What are the implications of this on your success in implementing the White paper on e-education?

21. Do you feel that using ICT is a challenge?

22. Do you feel competent to use ICT for teaching and Learning?

23. As a student were you exposed to ICT for learning? How does this help you in your teaching?

24. The white paper states that South African teachers and learners should be able to:

- apply ICTs in order to access, analyse, evaluate, blend, present, and communicate information.
- create knowledge and information by adapting, applying, designing information.
- function in a knowledge society by putting to use the right technology and become proficient in communication and collaboration skills with or without use of ICTs.
- integrate ICT to enhance teaching and learning.
- use ICT in planning, managing and executing administrative duties.
- search for and access ICT resources that support curriculum delivery (Government of South Africa, 2004).

a) Can you tell me what you think about these expectations regarding the students given the type of students you have?

b) Do you feel that your students are ready and can meet the expectations?

c) What are your reasons?

d) Do you feel that your school is ready to train and produce people such as that? Why?

e) Can you explain to me what it says about you as a teacher and what is expected of you?

IMPACT OF THE EXISTING GEOGRAPHIC SEGREGATION

25. We are in Langa, has the place changed in terms of accommodation, access to electricity, roads and other services and racial integration of people who live here since 1994?

26. Please tell me the differences or similarities that are there between the time you started teaching here and now? In terms of resources

27. How do you think it makes parents, students feel?

28. Given the circumstances you have just described, do you think it is right for the government to put money into ICT for teaching and learning?

29. How do you think the continued geographic segregation affects you as a person?

30. How do you think the continued geographic segregation affects you as a teacher?

31. How affluent are the parents of your students?

32. Do you think the social background of students affect their perception of usefulness of technology for teaching and learning? How?

33. Do you feel that that the environment they live affects them in terms of their desire to use ICT for teaching and learning? How?

TAKING PART IN THE DECISION MAKING PROCESS

34. Were you consulted in the drafting of the White paper on education?

a) How does it make you feel that you were consulted / not consulted?

OPINION ON ICT PERCEPTIONS BY GOVERNMENT

35. Do you believe that ICT can

Government Stance	Teachers Opinion
Enable students who would otherwise been unable to have access either due to economic status, physical disability, and geographic distance to top notch information or teaching thus promoting equality.	
Improve the internal efficiency of educational systems.	

Improve the quality of education and in the process equipping students with technological skills needed for the work environment.	
provides an environment that allows students to be critically and actively engaged in their learning which is a pedagogical shift from the traditional instructivist model.	
ease the burden of teaching on teachers.	
improve students interests in learning and	
Doubles up as an administrative tool for teachers.	
poverty eradication	
Puts people at par globally as unequal access to ICT and digital exclusion leads to people being disempowered or disadvantaged.	
Can bridge the digital divide thus everyone irrespective of social standing has to have access to ICT.	
is an enabling technology that transcends institutional and infrastructural obstacles that are in place	
Can create a conducive environment to help social development and economic growth.	
Investment should not be scrutinised in terms of costs versus benefits as it a new paradigm of thinking.	
initiative are failing because of inadequate training but should not be taken as indicative of misjudgement in ICT investment per se	

36. The Department of Education believes that developments in ICTs create access to learning opportunities, redress inequalities, improve the quality of learning and teaching, and deliver lifelong learning do you believe this_ do you think the White paper on e-education helps in any way or the use of ICT for teaching and learning helps in any way in achieving these ?

Enkosi / Thank You so much for time. Le kamoso

Appendix 5: Interview Guide- Education Officers

Designation:

Number of years in Service:

Qualifications:

Age:

Gender:

SECTION TWO

1. Do you mind if I record our conversation?
2. Please tell me your position and the nature of work you do on a day-to-day basis

INTERPRETATION OF WHITE PAPER ON E-EDUCATION

3. Teaching and learning has changed over the years teachers are now expected to teach using ICT_ all because of the White paper on e-education.
 - a) Are you familiar with this document?
 - b) Which stakeholders were consulted in the drafting of the White paper on education and why?
 - c) Who interprets the e-education policy to teachers?
 - d) Who else is present at the meetings? Please if you can give specific times and places
 - e) physical context
 - f) What do the teachers get told about the White paper on e-education?
 - g) Do they usually agree with what they are told?
 - h) What do they think?
 - i) Are teachers given a chance to voice their concerns or opinion?
 - j) Are the teachers concerns followed up and are they given feedback?
 - k) Do you feel that teachers have a say in how best the e-education policy can be implemented in their schools? Please give reasons for your answer

THE USE OF ICT FOR TEACHING AND LEARNING

4. How does the use of ICT for teaching and learning affect teacher's roles?
 - a) Teaching
 - b) Administrative work
 - c) Research Work
5. How does student's use of ICTs as part of their learning activities affect teacher's roles?
6. What new skills in terms of teaching do teachers need to have or acquire because of the use of information and communication technologies?
7. In your opinion, what value does the use of ICT have on teaching?
8. In your opinion, what value does the use of ICT have on learning?

ADDITIONAL GUIDELINES ON IMPLEMENTATION

9. What resources are available to teachers to assist and enable them to implement the White paper on e-education?
10. Do you feel that teachers have enough support when it comes to change management to embrace all these changes?
11. What else do you think should be done to assist teachers to incorporate ICT for teaching and learning?
12. Do you think teaching, the way things are done in schools for example, working towards exams, getting high pass rates etc. gives teachers enough time to teach students how to use ICTs and then how to search for information using ICTs and help them develop the expected skills regarding ICT that the government expects?
13. Do you feel as a policy maker you understand the challenges teachers face when it comes to implementation of the White paper on e-education?
14. Please outline the challenges you think they have and how you assist
15. What are the implications of these challenges on their success in implementing the White paper on e-education?
16. Do you feel that using ICT is a challenge?
17. The white paper states that South African teachers and learners should be able to:
- apply ICTs in order to access, analyse, evaluate, blend, present, and communicate information.
 - create knowledge and information by adapting, applying, designing information.
 - function in a knowledge society by putting to use the right technology and become proficient in communication and collaboration skills with or without use of ICTs.
 - integrate ICT to enhance teaching and learning.
 - use ICT in planning, managing and executing administrative duties.
 - search for and access ICT resources that support curriculum delivery (Government of South Africa, 2004).
- a) What you think about these expectations regarding the students in previously disadvantaged areas?
- b) Do you feel that the students are ready and can meet the expectations?
- c) What are your reasons?

IMPACT OF THE EXISTING GEOGRAPHIC SEGREGATION

18. How do you think it the continued residential segregation makes parents, students feel?
19. Given the circumstances that still exist in these schools what do you think is top priority to be addressed first?
20. Now, please tell me what you think about the following:

- a) Student integration across race in schools in previously disadvantaged areas?
- b) Teacher integration across race in previously disadvantaged areas schools?
- c) What do you think is the impact of this on the attitude of learners?
- d) What do you think is the impact of this on the attitude of teachers?
- e) How affluent are the parents of your students?

21. Do you think the social background of students affect their perception of usefulness of technology for teaching and learning? How?

22. Do you feel that that the environment they live affects them in terms of their desire to use ICT for teaching and learning? How?

23. Do you think that if staff in schools were culturally diverse it would help change this?

24. Do you feel that students are independent enough to find information on their own?

OPINION ON ICT PERCEPTIONS BY GOVERNMENT

25. Do you believe that ICT can

Government Stance	Officers Opinion
Enable students who would otherwise been unable to have access either due to economic status, physical disability, and geographic distance to top notch information or teaching thus promoting equality.	
Improve the internal efficiency of educational systems.	
Improve the quality of education and in the process equipping students with technological skills needed for the work environment.	
provide an environment that allows students to be critically and actively engaged in their learning which is a pedagogical shift from the traditional instructivist model.	
Ease the burden of teaching on teachers.	
improve students interests in learning and	
Doubles up as an administrative tool for teachers.	
poverty eradication	
Puts people at par globally as unequal access to ICT and digital exclusion leads to people being disempowered or disadvantaged.	
Can bridge the digital divide thus everyone irrespective of social standing has to have access to ICT.	
is an enabling technology that transcends institutional and infrastructural obstacles that are in place	
Can create a conducive environment to help social development and economic growth.	
Investment should not be scrutinised in terms of costs versus benefits as it a new paradigm of thinking.	

initiative are failing because of inadequate training but should not be taken as indicative of misjudgement in ICT investment per se	
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26. The Department of Education believes that developments in ICTs create access to learning opportunities, redress inequalities, improve the quality of learning and teaching, and deliver lifelong learning do you believe this_ do you think the e-education policy helps in any way or the use of ICT for teaching and learning helps in any way in achieving these ?

Enkosi / Thank You so much for time. Le kamoso

Appendix 6: Panel Discussion Slides

The impact of Social-Political Factors on the Uptake and Use of Information and communication technologies in Teaching and Learning

By Bojelo Mooketsi (UCT) and Osman Sadeck (WCDE)

1. Beliefs of the South African government in relation to ICT

The South African government is investing in computers and other ICTs for teaching and learning.

The belief of the South African government in relation to ICT and its deployment is that ICT puts people at par globally as unequal access to ICT and digital exclusion leads to people being disempowered or disadvantaged.

ICT can bridge the digital divide thus everyone irrespective of social standing has to have access to ICT.

ICT is an enabling technology that transcends institutional and infrastructural obstacles that are in place.

can create a conducive environment to help social development and economic growth.

ICT investment should not be scrutinised in terms of costs versus benefits as it a new paradigm of thinking.

ICT initiatives are failing because of inadequate training and changing mind sets but should not be taken as indicative of misjudgement in ICT investment per se (Moodley, 2005; Snyman and Snyman, 2003; South Africa, 2005; Cullen, 2002).

2. E-Education in South Africa

E-education in the South African context is defined as, “the use of ICTs to accelerate the achievement of national education goals”

3. Objectives

To connect learners and teachers to professional support services,

To provide platforms for learning.

To connect learners and teachers to better information, ideas and one another via effective combinations of pedagogy and technology in support of educational reform.

(Government of South Africa, 2004).

4. White Paper on e-education

The white paper on e-education policy adoption is expected to take place in a mutually exclusive way in South African schools.

The reality on the ground is that this implementation is being done against a landscape that has been found to be uneven in terms of resources as post democracy, transition in education took place using “inherited assets and liabilities with the deracialisation of schools evolutionary” (Asmal and James, 2001; Lugg, 2008).

To sum the situation up, Johnson, Monk and Hodges (2000) state that South Africa has two education systems that are in operation in the country, in view of the differences in teacher education and educational provision.

South Africa is considered to be facing mammoth education challenges on whole and in particular with integration of ICT into schools (Tas, 2010).

Despite the noble intentions, e-education implementation is regarded as besieged with ‘dispersed and uncoordinated implementation programmes and projects’ (Ford and Botha, 2010).

5. Problems with e-education implementation

Despite the noble intentions, e-education implementation is regarded as besieged with ‘dispersed and uncoordinated implementation programmes and projects’ (Ford and Botha, 2010).

Professional development literature categorises the factors which mediate the impact of programmes and initiatives, according to different criteria.

These are educational, innovating, predisposing, enabling and reinforcing factors affecting teachers’ adoption and application of what they have learned during their professional development courses.

A broader categorisation of the factors influencing the impact of professional development programmes divides them into two main groups school and system factors (Smith and Gillespie 2007)

System-level policies and practices

System-level policies and practices are considered to influence indirectly the effectiveness of teacher professional development to integrate technology (Darling-Hammond and McLaughlin 1995).

Such policies and practices can promote and legitimatise particular professional development programmes and their goals, as well as enhance or inhibit the ability of schools to support them (Smylie et al. 2001).

System Level Factors at the level of the school system were grouped into three categories:

- concept transfer, or dissemination and transfer of the professional development;
- experience transfer, or learning from experience and lessons learned;
- establishment of standards.

Factors supporting the dissemination and transfer of professional development
System-level sustainability of a professional development programme is demonstrated by the extent to which the professional development concept is accepted and implemented by different schools.

The implementation of the programme is facilitated when the authorities provide support for it, integrate it in the structure of professional development and are directly engaged in its promotion.

Factors for the sustainable implementation of the programme in this group are related to educational policy developments, the mechanisms for reaching teachers and for motivating them to participate in the professional development offering, as well as communicating the objectives and nature of the programme effectively

6. Research Findings

Are you familiar with the white paper on e-education?

Yes No

8% 92%

What do you know about the white paper on e-education?

Proposal of policies in education

Nothing

Forums on ICT use for teaching and learning you attended

None 45 Yes 55

Were you given a chance to comment on the use of using ICT for teaching and learning?

No 85% YES 15%

Would have said it's pivotal to the learners of today who live in a technologically advancing society

Would have discussed the issue of availability and sustainability of ICT in a previously disadvantaged area

Teachers reluctant to use technology coz they are not confident of their skills

Discussed how the schools was responding to the use of ICT for teaching and learning

Support from the school management to successfully implement the White paper on e-education

None 100% of the respondents

School management team does not run workshops

They too need support

Some of the people in management do not use ICT so they do not care

Need information on policy documents like the white paper

Have never seen the white paper on education

Do you feel the policy makers understand the challenges faced by the school in relation to the use of ICT for teaching and learning or implementation of the White paper on e-education? Please elaborate.

No –just implement without checking us

No just have good policies on paper but no follow through

Policy makers should come to schools to see things as they are on the ground

No they know that our schools are no fee and thus we will not be able to maintain the labs but they made no plans to assist

No could have employed full time staff members to evaluate the use of ICT to ensure it is done in the school also make sure they keep teachers well informed about changes in technology_ just train teachers and make no follow ups do not know what is happening on the ground

No they do not they do not involve us when they formulate these policies they when they implement these do not monitor nor make follow ups

They do not understand our situation as we are still struggling in terms of resources

Research Findings

What are the implications of these on your success?

Detrimental as we need guidance to know we are on the right track

Cannot upgrade software and hardware

No internet

Learners who are frustrated

Inconsistent application of ICT

Not fully utilising ICT

Learner performance affected as they are not getting the exposure and support they need

White Paper on E-Education

The white paper states that South African teachers and learners should be able to:

Apply ICTs in order to access, analyse, evaluate, blend, present, and communicate information.

Create knowledge and information by adapting, applying, designing information.

Function in a knowledge society by putting to use the right technology and become proficient in communication and collaboration skills with or without use of ICTs.

Integrate ICT to enhance teaching and learning.

Use ICT in planning, managing and executing administrative duties.

Search for and access ICT resources that support curriculum delivery (Government of South Africa, 2004).

Research Findings

What do you think about these expectations?

Positive for teaching and learning

Good expectations but no guidance on how these can be achieved

Good as it will empower teachers and students but teachers do not have the skills nor time and have problems with accessing computers and school politics

Good but useless as there is no support to achieve these

Difficult to implement

Learners do not have sufficient exposure

Learners should also have more time if learners go once a day how do you expect them to be literate

In this regard ICT should be offered as a subject in schools

Research Findings

Do you feel that your students can meet the expectations? Please give details

Yes if given enough opportunities with the right support because they are eager to learn

IMPACT OF THE EXISTING GEOGRAPHIC SEGREGATION

What changes have occurred in the racial groupings which reside in this area since 1994?

None or very minimal

Anyone can go to school where they want

How do you think the geographic segregation affects you as a person?

Very bad

Seems apartheid is here to stay as we are still stuck

How do you think the geographic segregation affects you as a teacher?

Negatively

Does not affect me

Blacks are still treated as lazy people

What is the socio economic status of the parents of your students?

poor

Do you think the social background of students affects their perception of usefulness of technology for teaching and learning? How?

Yes coz some do not even have electricity

Very willing and eager to use these at school as they do not have these at home

Do you feel that the social environment in which students live affects their desire to use ICT for teaching and learning? Please elaborate.

Yes

