DIFFERENT SHADES OF SUCCESS: EDUCATOR PERCEPTIONS OF GOVERNMENT STRATEGY ON E-EDUCATION IN SOUTH AFRICA

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ABSTRACT
In most literature evaluating ICT4D projects in education, the yard stick used to evaluate ICT implementation in business which seeks to establish value is used. As a result most of the projects are in our opinion, wrongly deemed to have been failed. We propose that a better measure of success should consider the context in which the project exists and the perception of the intended recipients – for example a similar objective measure of project outcome could be perceived differently by people of different economic and social status. In this paper, we will demonstrate this concept by evaluating the perception of success of the implementation of an e-learning strategy in disadvantaged areas in South Africa. Data for the study was collected through various qualitative means in selected disadvantaged areas of Cape Town. Even though a number of existing evaluations point to general failure of implementation of the e-learning strategy, our study showed that the teachers in the disadvantaged areas considered the system a success based on the intangible benefits they derived from the implementation. Therefore this paper calls for a different way of evaluating ICT for education systems.

Keywords: Information Systems Evaluation; ICT use in Teaching and Learning; E-Education; ICT use in Previously Disadvantaged Schools in Cape Town

1 INFORMATION TECHNOLOGY (IT) EVALUATION

According to James and Miller (2005), evaluation looks at performance against set goals. Where the ICT implementation is evaluated against policy goals there were two predominant approaches. The foundationalism and the constructivist approaches. These have however have been progressively merged as the current approach is to have evaluation establish the extent to which the goals and intentions of the policy have been achieved and the level of policy support. Within information Systems (IS), approaches to evaluation of information Systems is diverse. There are approaches which posit that IS evaluation should assess and inform economic returns, or assess social costs, political and social dimensions, power relationships or evaluate primary goods, mental states and those things that an individual attaches value to or craves in relation to the Information Technology (Brynjolfsson and Hitt, 1996; Hirschheim and Smithson, 1998; Wilson and Howcroft, 2000; Sen, 1999)

All these perceptions on what IS evaluation should focus on have led to different approaches to the evaluation process. There are evaluation approaches that take cognisance of value as the prime driver of Information Technology (IT) evaluation. There are several of these, namely the value scorecard evaluation technique which was developed by Remenyi (2002). Value under this approach is evaluated 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 (2003). This evaluation approach evaluates the social actions of the users of the information system. This is called the real use context. The other approach is the constructivist IS evaluation where the belief is that IT evaluation has to take into consideration the political and social dimensions. This approach proposes that 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).

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 aspects of IS implementation and facts. It posits that evaluation ought to encompass both cognition and action as organizations exist 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). Sen's notion of capabilities 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 argues that any evaluation of impact has to assess the extent to which these desired states of being or doing are achievable given the institution within which the implementers operate in as the institution can either enabler or inhibit change and practice (Sen 1999). The other dimension is impact assessment which assesses the "positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended" (OECD, 2002).

What emerges through literature on evaluation of IS, is that 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 (Saetren, 2005; Laizen, 1999). It is also apparent that IT evaluation should investigate alignment between the espoused intentions of the policy and the needs of the end users and assess the real impact of the project on the end users. In addition, evaluation studies are supposed to investigate the underlying mechanisms and structures within society that have a bearing on implementation and project outcome making the "essential implementation question not simply what's implementable and works but what is implementable and what works for whom, where when and why" (Honing, 2006; Remenyi, 2002).

The importance of researching into specific locations is that it helps uncover the minute issues at play in the implementation contexts and exposes "how deep seated historical institutional patterns such as race and class based tension affect implementation outcomes" (Honing, 2006). The importance of doing this is also argued for by Bourdieu (1984) who posits that people from different backgrounds tend to have differences in appreciation, appropriation and consumption of various things such as art, ICT's, an aspect he calls cultural capital. Similarly, Krauss (2012) states that in ICT4D studies, outsiders do not necessarily have the context based inside knowledge which will enable them to interpret certain facets of the social phenomena or understand the underlying values and views of that guided local logic. Therefore, in line with Moodley's (2005) call for frank and comprehensive diagnosis of the Information and Communication dimensions in South Africa's, this study investigated the perceptions of educators in schools in previously disadvantaged areas regarding the success of ICT's integration in teaching and learning from their perspective.

2 CASE CONTEXT: SOUTH AFRICAN EDUCATION SYSTEM

South Africa is undergoing political change which is driven by policy. In 1994, the Government of National Unity (GNU) was established to generate policies drawn from the new constitution to ensure equity in terms of access, reconstruction, development and reconciliation. One of the policies generated during this process is the white paper in e-education. The policy articulates the South African government's vision for transforming teaching and learning through using ICT. This transformation was necessary because under

apartheid, blacks underwent what was called Bantu Education. According to Enslin (1984) cited in Kruger (2008), Bantu education was supposed to be inferior and underfunded (Nkabinde, 1997). The key role of Bantu Education was to "miseducate the Africans so that their academic certificates became irrelevant for the labour market" (Hlatshwayo, 2000). The system led to a dysfunctional school system for black learners as its aim and focus was to ensure that blacks remained as a labour force (Hlatshwayo, 2000). As a strategy for redress, the white paper on e-education states that all South African educators and learners, irrespective of race 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).

Provincial governments were tasked with the implementation of the e-white paper in the different provinces. In the Western Cape, the department of education set up the Khanya project. The project, which began in 2001, has a target to provide ICTs to all public schools in the province by the year 2012. The key aim of the Khanya Project was to assist schools, especially disadvantaged schools, in the acquisition of ICT for purposes of curriculum delivery (Khanya, 2008). The project sought to become a "world leader in sustainable curriculum delivery through ICT; to increase educator capacity and effectiveness by means of technology; enhance the quality of the learning experience in the classroom providing an opportunity for learners to benefit from a variety of learning styles; assist differently abled leaner's to maximise learning" (Khanya, 2008).

3 RESEARCH PROBLEM

The government strategy on e-education is being implemented in all schools in South Africa. However, the reality is that this implementation is being carried out in a landscape that 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). Studies into the success of the implementation overwhelmingly point to failure. Evaluation into the impact of these ICT's has been extensive with researchers approaching it from different dimensions such as community informatics, digital divide, cost effectiveness of investments in ICT, adoption barriers and self-efficacy issues (Hodgkinson et al., 2007; Ng'ambi and Brown, 2004; Wilson-Strydom and Thomson, 2005). Research has established that the integration of these technologies into teaching and learning has been wrought with challenges (Tas and Tatnal, 2010; Wilson-Strydom and Thomson, 2005; Ford and Botha, 2010). Studies have also shown that there are problems realising the associated benefits (Hodgkinson-Williams et al., 2007; Ng'ambi and Brown, 2004; Ng'ambi et al., 2005). Bovee et al. (2005) state that social status has a bearing on computer experience of the students. They found out that students in schools that were more affluent tended to have more exposure and experience with computers either from home or school thus better attitude towards the use of computers whilst students from previously disadvantaged schools did not.

Studies that looked at the implementation process of the e-education policy have established that the implementation process is besieged with "dispersed and uncoordinated

programmes and projects" (Ford and Botha, 2010). Examples include the Gauteng Online which failed after about R1 billion was spent on it with an additional R2 billion invested with the hope of reviving the project (Ford and Botha, 2010). While the Khanya project is regarded as a success, it is not clear what its impact is on teaching and learning process, mainly due to the computer lab approach that the project uses. 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 ICTs into teaching and learning. Research into models similar to the one adopted by Khanya show that the effect of these computer labs on education is almost negligible" (Ford and Botha, 2010).

However, most of these studies in their evaluation of the ICT integration in schools and regional level, do not evaluate it holistically by looking at the implementation context and the implications thereof especially in previously disadvantaged areas. Studies into diffusion of ICT have established that the social system and cultural systems are critical in the innovation diffusion process. The social system is defined as "the social context in which the innovation diffuses" which is greatly affected by social norms whilst the cultural system look at how the history, culture affects perceptions and interpretation (Rogers, 1995). He defines norms as "the established patterns of behaviour that tell members of the system what behaviour is expected (Rogers, 1995).

Given the differences in the implementation context, this study investigated the perceptions of educators in schools in previously disadvantaged areas regarding the success of ICT's integration in teaching and learning from their perspective. The need is also motivated by Krauss (2012) argument that it is necessary to try "understand the underlying values and views of that guide local logic. South Africa is still a divided society, ranking ninth as the most unequal country in the world (Brown, 2006). The country is characterised by segmentation and dualism. The histories, backgrounds, needs of the people, despite all being South Africans with a common vision of reintegration and equality, are different. In terms of where people live, the geographic segregation instituted under apartheid has persisted and been repackaged in the 'new' South Africa (Beall et al., 2002; Tredoux and Dixon, 2009; Lemanski, 2004; Hook and Vrdoljak, 2002). Studies into the post-apartheid city have established that:

- There is more spatial fragmentation and social polarization than before democracy.
- Any changes that are taking place are driven by structural market forces.
- Due to the type of economy in place, there has been a widening of income inequality between skilled and unskilled workers leading to a further segmented housing market.

This lack of racial integration geographically has a bearing on a number of things. In schools, it has been established that desegregation has not happened as the racial composition of both black neighbourhoods and black schools has remained unchanged (Lemon, 2005; Lemon and Battersby-Lennar, 2009; Brown, 2006). For a space to be considered to be desegregated, all occupiers of that space ought to be on an equal footing, have equal rights and access within that space (Battersby, 2004). When schools in previously disadvantaged areas are compared to schools in middle-class areas they tend to have lower average test scores, limited curricula, less qualified teachers, fewer connections with colleges and employers, buildings in states of disrepair, higher levels of teen pregnancy and higher dropout rates and poor policy implementation (Chisholm and Vally, 1996).

This is the history, background and current circumstances surrounding the implementation context that the assessment of perceptions of educators will be looked at against. Whenever ICT policies are implemented, Mansell (2005) 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". Further to these, the assessment will also take into consideration the goals of education. There are calls that the evaluation of IS in education ought to take cognisance of the rationale for education and should assess IS based on its impact on the attainment of the intents of education (Trucano, 1999). To do this there is need to understand what education is all about. Whitehead (1929) defines education as the "acquisition of the art of the utilisation of knowledge". He states that at the core of education is the need to "produce men who possess both culture and expert knowledge in some special direction". Elaborating on the issue, he states that the most crucial intellectual development is self-development. Furthermore, when training children on the activity of thought, he argues that they should be trained not to be passive recipients of ideas, but rather be taught how to test ideas, internalise and apply them in their everyday life. This, he claims will get them to be more appreciative of discovery of knowledge. Whitehead (1929) also states that at its core education seeks to equip those who undergo it, with knowledge and critical abilities to enable them to make an informed assessment of the authenticity, relevance and value of the information as and when it is presented.

The Human capital theory posits that education or training raises the productivity of workers as it inculcates in them skills and knowledge that are regarded as useful by industry which ensures their lifetime earnings (Becker, 1964). It is therefore imperative that schools and education systems deal and address the need of the students to equip them to deal with the "the economy and not to the needs of the economy itself" (Brighouse, 2008). This stance is also echoed by Sen (1999) who argues that education ought to give one freedom as the ultimate purpose of education is to enable "individuals can effectively shape their own destiny and help each other" to make informed choices throughout life".

It is in view of these arguments that this study investigated the perceptions of educators in schools in previously disadvantaged areas regarding the success of ICT's integration in teaching and learning from their perspective. The key questions that guided this study can be summed up as:

- What are intended recipients interests regarding ICT use?
- What influences the intended recipients regarding ICT use?
- What are the intended recipients using ICT for in schools?
- What do the educators think about the impact of the implementation of ICT on their professional and personal life?

4 RESEARCH METHODOLOGY

4.1 Research Method

The selected research method for this study is case study. A case study allows for the study of the phenomenon to be done in its natural setting or place of occurrence without placing undue restraint or manipulation of the phenomenon (Benbasat et al., 1987; Flyvbjerg (2006). This is critical if this study is to come up with context-based insights into perceptions of success of the policy and integration of ICT's in teaching and learning. A case study is defined as "an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 1994). This is apt as these perceptions about ICT implementation are being investigated within the schools in previously disadvantaged areas. In addition, case study research focuses on getting in-depth understanding of a phenomenon within its locale or context as such producing context dependent knowledge (Cavaye, 1996). This is of great importance as "human behaviour cannot be meaningfully understood as simply the rule governed acts" (Flyvbjerg, 2006).

4.2 Study Area

This study focused on the Western Cape specifically the township of Langa in Cape Town. Cape Town was classified as the most segregated city in South Africa prior to democracy and is still seen as a city of "exclusions rather than inclusions" (Spinks, 2001). Desegregation in the Western Cape, as in other provinces, has been entirely "up" the racial hierarchy, in socioeconomic terms, leaving the racial composition of both black neighbor hoods and black schools unchanged (Lemon and Battersby-Lennar, 2010). Cape Town is also a fringe city as it has its growth predominantly on the outskirts, typical of South African cities during the apartheid era. Whites stay in the developed areas, near to all services whilst Blacks predominantly live in the townships away from the developed areas which were historically built to provide accommodation for the black population and were provided with minimal infrastructure as the blacks were regarded as temporarily resident in white South Africa and were expected to return to rural areas.

4.3 Data Collection Techniques

This study used qualitative data collection techniques. The key knowledge claims and views of qualitative data is that the social world holds specific meanings to actors which is apt for the study as it is interpretivist and assumes that meaning lies with the actors. To answer these questions the study obtained data from educators in four schools in Langa during in-depth semi-structured interviews which also gave at the researcher a chance to do a theoretical replication and cross-case comparison (Yin, 1994).

The respondents were interviewed at their places of work at times convenient to the respondents. The respondents were approached days prior to the actual interviews and asked if they would object to being interviewed. They were given an explanation about the identity of the researchers and the need for the research. The request letter also indicated to the research participants 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. The research participants were also assured that their identity was protected and would not be made public. The participants were also given an informed consent form that clearly described their right to not participate and right to withdraw. It was also explained to the respondents that the research was aimed at gaining an understanding of how educators in previously disadvantaged areas perceive the implementation of ICT in their schools.

Some of the interviews were tape recorded depending on whether the respondents agreed to it or not. In instances where the interviews were recorded, the notes were transcribed immediately after the interview to ensure that that as much as possible was remembered. After transcription, the interview notes were sectionalised in term of themes as reflected below. For all interviews notes were taken as the interviews progressed. To be able to tell the original intentions of the e-education policy, the study obtained data from sections of the white paper on e-education that are relevant to the study to establish the intended meaning of the white paper.

5 RESEARCH FINDINGS

5.1 Policy's Role in Practice

Given that South Africa's reconstruction is being driven by policy, this study wanted to establish how policy informed practice in schools in previously disadvantaged areas. We established that teachers' interaction with ICT's in schools was not informed directly by the policy document. When educators were asked what guidelines they referred to regarding their use of ICT for teaching and learning none of the respondents referred to the government strategy on e-education. The educators did not know about the government strategy on e-

education. One of the respondents stated that "*I have never seen the white paper on education*".

5.2 School Based Management Strategies to Sensitise Staff to Policy Document and Support Infusion

At school level it was also established that school management teams did not as would be expected in policy implementation make effort to reinterpret the meanings to staff. One of the respondents said "management some do not use ICT so they do not care" and others said "they (referring to management) too need support". When asked what school based strategies are in place to guide and ensure that teachers align their daily activities and key activities to the intentions of the government strategy on e-education, the study established that only 50 % of the schools engaged in practices that are supportive for in school staff development. However, educators in the said schools claimed not to know about these support strategies.

5.3 Forums on ICT Implementation

When asked about the forums on ICT implementation in schools that they had attended as it was assumed that at these the intentions of the government strategy on e-education would have been communicated, some of the responding teachers had not attended any forums whilst the rest had attended in-service workshops held by Khanya where they were told that ICT's enhance teaching and learning and were not meant to replace them as teachers.

5.4 Mastery of ICT Skills

Contrary to the expectation of the government strategy on e-education. that South African educators and learners should be able to apply ICTs in order to access, analyse, evaluate, blend, present and communicate information, this study established that there was no sync between the expectations of the government strategy and practices of the school and teachers. Teachers are still grappling with the mastery of the use of the ICT. This is despite the training done which sought to "empower all learners and educators in the schools to develop the necessary skills to use ICT in support of successful curriculum delivery" (Khanya, 2008). Despite the issues about mastery and skills, all teachers indicated that they used ICT for teaching and learning. Specifically they used Word processors to type and print assignments. One teacher reported that *"one of the things that I have learnt is the fact that you can also print two pages on one page*". Some of the educators used PowerPoint and Excel especially "when we prepare ourselves for doing the marks". They also reported that other than CAMY maths, they also use the internet and Google and whiteboard.

5.5 Feelings Associated with Learning to Use ICT

The study established that before teachers got to use ICT for teaching and learning, they experienced a whole myriad of emotions. The educators responded that they admired those who could use ICT's and wanted to, but were reluctant to touch the computers due to several reasons, as one of the teachers stated *" I was afraid to damage PC, as I was intimidated*". These feelings can be attributed to the fact that some of the teachers stated that they had never had a chance to use computers. These fears and uncertainties had however changed as they reported that since they started using ICT they are more confident as they are more advanced in their ICT skills. 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. The teachers also reported that they needed additional skills such as searching the web and designing skills.

They reported that their opinion about the use of ICT for teaching and learning changed since they started using ICT for teaching and learning. One of the teachers stated

that using ICT's and the Internet "has helped me get more information and more advanced which has helped me become more confident".

5.6 Factors That Influences Educators Regarding ICT Use

Factors that motivated educators to use ICT for teaching and learning were both personal and work related. These will be discussed in the following sub-sections.

5.6.1 Personal Reasons

ICT served other purposes other than the ones in the e-education government strategy. 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*" and to network with colleagues and former students**.** The study established that educators believed that ICT 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*".

5.6.2 Job Related Expectations.

Regarding job related reasons, this study established that teachers felt that ICT was important for teaching. The following were the specific factors that influenced their use of ICT.

a) Mandatory Requirement

Some of the teachers felt that they were "*forced and bound to bring the children to the computer laboratories 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*".

b) Fear of Knowing Less Than Students

Some of the teacher 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 then 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*".

c) Ease in Teaching and Learning

Most of the teachers stated that *ICT's* made their life very easy. This is twofold, one related to the teachers work load and the students learning process. 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"*. Regarding the students learning process the teachers drew a comparison between their learning process and the students. One geography teacher of 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. Technology makes their work easier. It makes learning and teaching easier. Even the ones who didn't understand in the classroom can see it here*".

The teachers also cited the fact that their dependence on the textbook is 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"*. 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*".

d) Access to Computers for All Students

The study also established that teachers reported given that most of the students had no access to computers at their homes the provision of computers for students at schools was a welcome development. We also established that the students were initially afraid to touch the computers but were encouraged by educators to touch and use computers and are said to be happy when they get a chance to interact with computers.

e) 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 educators 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". 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 DISCUSSION OF THE FINDINGS

6.1 Meaning Enactment

Despite not knowing the goals driving the introduction on ICTs in schools, educators on the ground found ways of interacting with the ICT artefacts in ways that made sense to them. The teachers enacted their own symbolic meaning on the ICT artefact that were brought into schools due to this policy as they embarked on using the tools to serve their own needs which are not necessarily in line with the intentions of the government strategy on e-education. This confirms the established fact that "to interact with technology, people have to make sense of it; and in this sense-making process, they develop particular assumptions, expectations and knowledge of the technology, which then serves to shape subsequent actions toward it" (Orlikowski and Gash, 1994).

6.2 Modernism

The feeling that ICT make teachers feel modern and not backwards 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).

6.3 School Based Strategies to Support Teachers in the Use of the ICT

School based strategies to support teachers in the use of the ICT to ensure that they systematically integrate ICT are also critical for success and this study established that these are not as good as they could be. Principals play an important role in staff development. According to the South African Schools Act (Section 16), principals are charged with professional management of public schools. They are to establish school management teams which run and cater to the professional and operational needs of staff. Research elsewhere has established that many principals of previously disadvantaged schools are inadequately trained in school management which can render them ineffective in management of school based programmes (Moorthy, 1992). There is need assist school principals with requisite

skills to enable them to take charge of staff development in their schools. Change normally calls for new ways of doing things, use of new materials and change of values and beliefs (Fullan, 1991). It is, therefore, imperative that teachers are equipped with necessary knowledge, skills and attitudes to enable them to implement change effectively.

The envisaged change of schools into e-education schools needs a healthy supportive environment. Scott and Jaffe (1989) state that it is crucial that while teachers are at the forefront of the change, the school administration has to support, encourage and be committed to the implementation process by making available resource assistance, monitor implementation activities and make provision for discussion of progress and areas of concern as well as collaborative decision making regarding ways of moving forward. Based on the findings that have emerged from the research and supported by literature the following propositions are presented:

a) Proposition

When an ICT artefact is introduced to a setting, various actors enact their own symbolic meaning on it.

This theoretical proposition is derived from empirical evidence and is supported by research findings. Yanow (1993) states that organisational symbols are subjected to interpretation by multiple receivers and thus cannot have just one intended meaning. In this instance, Khanya put across the message of the importance of ICT in teaching and learning without presenting all the other meanings or intended meanings and as such can be regarded as having derailed continued policy support. This is attributed to the "process through which members of a polity tell themselves who they are and what they value" (Yanow, 1993).

b) Proposition

When different agents pass on policy meaning they may choose to focus on intentions they deem critical resulting in loss of meaning and affecting achievement of policy goals which means there is need to re-evaluate the lens through which success is measured not just look at the goals in the policy as meaning get lost in the process of transmission.

Lee, (1994) supports this proposition as he states that texts become separated from their producers and adopt their own life. He states that there are a number of processes a texts undergoes, namely distanciation which is the separation in time and distance that takes place between a text and its author, its original intended audience and its originating culture, autonomisation which refers to the texts taking a life of its own, appropriation in which case one attempts to create a sense of ownership to what was foreign in this instance trying to own the government e-education strategy.

Khanya which was set up to drive ICT implementation in the Western Cape did take ownership of the policy and reinterpreted it to mean the provision of ICTs to all public schools in the province and by the end of 2008 the project had provided computers, network infrastructure and training to teachers in over 1000 schools out of about 1500 schools in the province (Khanya, 2008). This then means assessing the success of the policy based on objectives which were not part of the local context objectives can be regarded as flawed.

c) Proposition

When ICT implementation adds value to the processes of an implementer then the intervention can be regarded as successful

Given that in some quarters ICT policy is regarded as structure that guides ICT-related services then it is not surprising that policy failure is defined as failure of a policy to "achieve the goals that proponents set out to achieve" (Mashinini, 2008; Boin et al 2009). Typically, policy failures are characterised by:

- High media interest
- Low-level bureaucratic concerns.
- Small successes overshadowed by large scale failures.

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 may be rated as; total failure, largely unsuccessful, partial success, 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, we propose that evaluation of ICT4D in education projects should also take into consideration the key intention of education and establish the extent to which ICT's have

- equipped students and teachers to deal with socio-economic needs
- given educators 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.

In addition, it is important to 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.

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 ICT's to facilitate teaching and learning, reflects that implementation is not a total failure. Furthermore, 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 educators, given the odds due to their context like inadequate in service training to use ICT for teaching and learning are making a good effort. 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).

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. It should be clarified however that the quality of use was not evaluated. Whilst we 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 proposition that 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) 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. They also propose that in ICT4D studies ICT should be looked at as an enabler.

7 CONCLUSION

This study highlights the need to rethink assessment of ICT4D implementation in schools. 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 **or** adherence to expected processes during policy development.

8. REFERENCES

Agerfalk, P. (2003) Information Systems Actability Understanding Information Technology as a Tool for Business Action and Communication, Ph D Dissertation in Information Systems Development, Department of Computer and Information Science, Linköping University.

Aghion, P, Boustan, L., Hoxby, C. and Vandenbussche, J. (2009) The Causal Impact of Education on Economic Growth: Evidence from U.S. Mimeo. Harvard University, http://www.weareeducation.org/Harvard_Causal_Impact_Of_Education.pdf

Asmal, K. and James, W. (2001) Education and Democracy in South Africa Today. Education and Democracy in South Africa Today. *Daedalus*, 130, 185-204.

Battersby, J. (2004) Cape Town's Model C Schools: Desegregated and Desegregating Spaces? *Urban Forum*, 15, 3, 279-291.

Beall, J, Crankshaw, O. and Parnell, S. (2002) Uniting a Divided City, Governance and Social Exclusion in Johannesburg, London: Earthscan Publications.

Becker, G. (1964) Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education. Chicago, University of Chicago Press.

Benbasat, I, Goldstein, D.K. and Mead. M. (1987) The Case Research Strategy in Studies of Information Systems. *MIS Quarterly*. 11, 3, 369-387

Bourdieu, P. (1986) The Forms of Capital. In: Richardson, J. (Ed.) Handbook of Theory and Research for the Sociology of Education (New York, Greenwood), 241-258.

Boin, A., Hart, P. and McConnell, W. (2009) Crisis Exploitation: Political and Policy Impacts of Framing Contests. *Journal of European Public Policy*, 16, 1, 81-106

Bovee, C, Voogt, J. and Meelissen, M. (2005) Computer Attitudes of Primary and Secondary Students in South Africa. *Computers in Human Behaviour* 23, 4, 1762 – 1770.

Brighouse, H. (2008) Education for a Flourishing Life. Yearbook of the National Society for the Study of Education, 107, 58-71.

Brown, K. (2006) New Educational Injustices in the New South Africa: A Call for Justice in the Form of Vertical Equity. *Journal of Educational Administration,* 44, 5, 509-519.

Brynjolfsson, E. and Hilt, L. (1996) Paradox Lost? Firm-Level Evidence on the Returns to Information Systems Spending. *Management Science* 42, 4, 541-558

Cavaye, A.L.M. (1996), Case Study Research: A Multi-Faceted Research Approach for IS. *Information Systems Journal*, 6, 227–242.

Chisholm, L. and Vally, S. (1996) The Culture of Learning and Teaching in Gauteng Schools: Report of the Committee on the Culture of Learning and Teaching. Commissioned by the Gauteng Ministry of Education, Johannesburg, Education Policy Unit, University of the Witwatersrand.

Cordoba, J and Robson, W. (2003) Making the Evaluation of Information Systems Insightful: Understanding the Role of Power-Ethics Strategies. *Electronic Journal of Information Systems Evaluation* 6, 2, 55-64.

Flyvbjerg, B. (2006) Five Misunderstandings about Case-Study. *Qualitative Inquiry* 12, 2, 219-245.

Ford, M. and Botha, A. (2010) A Pragmatic Framework for Integrating ICT into Education in South Africa. In Cunningham, P. and Cunningham, M. (Eds.), IST-Africa 2010 Conference Proceedings (1–10) Dublin: IIMC International Information Management Corporation. http://www.ist-africa.org/home/outbox/ISTAfrica_Paper_ref_109_doc_3316.pdf

Fullan. M. (1991) *The New Meaning of Educational Change*. New York, Teachers' College Press.

Gomez, R. and Pather, S. (2012) ICT Evaluation: Are We Asking The Right Questions? EJISDC 50, 5, 1-14.

Government of South Africa, (2004) *Draft White Paper On e-Education Transforming Learning and Teaching through ICT* http://www.info.gov.za/view/DownloadFileAction?id=68777

Hirschheim, R. and Smithson, S. (1998) Evaluation of Information Systems: A Critical Assessment, in: Willcocks, L.P. and Lester, S. (Eds.) Beyond the IT Productivity Paradox. Wiley Series in Information Systems. John Wiley and Sons Ltd., West Sussex, UK, 381-410.

Hlatshwayo, S. (2000) *Education and Independence: Education in South Africa, 1658–1988*. London: GreenwoodPress.

Hodgkinson-Williams, C., Siebörger, I. and Terzoli, A. (2007) Enabling and Constraining ICT Practice in Secondary Schools: Case Studies in South Africa. *International Journal of Knowledge and Learning*. 3, 2/3, 171-190.

Honig, M. (2006) Complexity and Policy Implementation: Challenges and Opportunities for the field. In Honig, M. (Ed.), *New Directions in Education Policy Implementation: Confronting Complexity*. Albany, NY: The State University of New York Press, 1-24.

Hook, D. and Vrdoljak, M. (2002) Gated Communities, Heterotopia and a `Rights' of Privilege: A Heterotopology of the South African Security-Park, *Geoforum*, 33, 195-219.

Introna, L.D. and Whittaker, L. (2002) The Phenomenology of Information Systems Evaluation: Overcoming the Subject Object Dualism, *Proceedings of IFIP WG 8.2*, Barcelona.

James, T. and Miller, M. (2005) Developing a Monitoring and Evaluation Plan for ICT in Education. In Wagner, D., Day, B., James, T., Kozma, R., Miller, J and Unwin, T. *Monitoring and Evaluation of ICT in Education Project - A Handbook for Developing Countries*. *Info* Dev.

Khanya, (2008) Khanya Annual Report for the period March, 2007 to April, 2008. http://www.khanya.co.za/projectinfo/docs/khanya_annual_rep_2008.pdf

Krauss, K. (2012) Towards Self-Emancipation in ICT for Development Research: Narratives about Respect, Traditional Leadership and Building Networks of Friendships in Rural South Africa, *The African Journal of Information Systems*, 4, 2, http://digitalcommons.kennesaw.edu/ajis/vol4/iss2/1.

Krüger, R.A. (2008) The Significance of the Concepts 'Elemental' and 'Fundamental' in Didactic Theory and Practice. *Journal of Curriculum Studies*, 40, 2, 215–250.

Larsern, M and Myers, M. (1999) When Success Turns into Failure: A Package Driven Business Process Re-engineering Project in the Financial Services Industry. *Journal of Strategic Information Systems* 8, 395-417.

Laizen, F. (1999) Methodological and Substantive Issues in the Policy Implementation Process, in: Nagel, S.S. (ed) The Policy Implementation Process in Developing Nations, Volume 6., Stamford: JAI Press Inc. 149-162.

Lee, A.S. (1994) Electronic Mail as a Medium for Rich Communication: An Empirical Investigation Using Hermeneutic Interpretation. *MIS Quarterly*, 18, 2, 143-157.

Lemanski, C. (2004) A New Apartheid? The Spatial Implications of Fear of Crime in Cape Town. South Africa. *Environment and Urbanisation*. 16, 2, 101-112.

Lemon, A. and Battersby-Lennard, J. (2009) Emerging Geographies of School Provision in Cape Town, South Africa. *Geography*, 94, 2, 79-87.

Lemon, A. (2005) Shifting Geographies of Social Inclusion and Exclusion: Secondary Education in Pietermaritzburg, South Africa. *African Affairs*, 104, 414, 69-96.

Mansell, R. (2005) The Fragility of Knowledge Societies: Ambiguity, Cost Reduction and Access in Developing Countries In: Maitland+20: Fixing the Missing Link. The Anima Centre Limited, Bradford on Avon, UK, 81-97.

Moodley, A. (2005) The Promise of E-Development? A Critical Assessment of the State ICT for Poverty Reduction Discourse in South Africa. *Perspectives on Global Development and Technology*, 4, 1, 1-26

Moorthy, D. (1992) The Canadian Principal of the '90s: Manager or Instructional Leader? Or Both? *Education Canada* 32, 2: 8-11.

Ng'ambi, D. and Brown, I. (2004) Utilisation Focused Evaluation of ICT in Education: The Case of DFAQ Consultation Space, *Educational Technology and Society*, **7,** 3, 38-49.

Nkabinde, Z.P. (1997) *An Analysis of Educational Challenges in the New South Africa*. Lanham, MD: University Press of America.

OECD, (2002) *Glossary of Key Terms in Evaluation and Results Based Management.* DAC Working Party on Aid Evaluation.

Orlikowski, W.J. and Gash, D.C. (1994) Technological Frames - Making Sense of Information Technology in Organizations. *ACM Transactions on Information Systems,* 12, 2, 174-207

Remenyi, D. (2002) The Value Scorecard – Beyond the Business Case, *9th European Conference on Information Technology Evaluation*, Paris 15-16.

Rogers, E. (1995) *Diffusion of Innovations.* (4th ed.) New York, NY: The Free Press

Sætren, H. (2005) Facts and Myths about Research on Public Policy Implementation: Out-of-Fashion, Allegedly Dead, but still very much Alive and Relevant. *Policy Studies Journal* 33, 4, 559-582.

Scott, C. and Jaffe, D. (1989) Managing Organizational Change: A Practical Guide for Managers. Crisp Publications (Menlo Park, Calif.)

Seekings, J. (2011) Race, Class and Inequality in the South African City, in: Bridge, G. and Watson, S. (Eds) The New Blackwell Companion to the City Wiley-Blackwell, Oxford, UK.

Sen, A. (1999) Development as Freedom. New York: Knopf.

Shields, R. (2011) ICT or I See Tea? Modernity, Technology and Education in Nepal, *Globalisation, Societies and Education*, 9, 1, 85-97.

Spinks, C. (2001) A New Apartheid/Urban Spatiality, (Fear of) Crime and Segregation in Cape Town, South Africa. Development Studies Institute London School of Economics.

Statistics South Africa (2011) Strategic Development Information and GIS Department, City of Cape Town 2011 and 2001

Tas, A. and Tatnall, A. (2010) Use of ICT to Assist Students with Learning Difficulties: An Actor-Network Analysis. In Key Competencies in the Knowledge Society. IFIP Advances in Information and Communication Technology. Boston: Springer Boston, 1-11.

Tredoux, G. and Dixon, A. (2009) Mapping the Multiple Contexts of Racial Isolation: The Case of Long Street, Cape Town. Urban Studies.

Whitehead, A.N. (1929) The Aims of Education and other Essays: New York. Macmillian.

Wilson, M. and Howcroft, D. (2000) The Politics of IS Evaluation: A Social Shaping Perspective, *ICIS 2000 Proceedings.* Paper10. http://aisel.aisnet.org/icis2000/10

Wilson-Strydom, M., Thomson, J. and Hodgkinson-Williams, C. (2005) Understanding ICT Integration in South African Classrooms. *Perspectives in Education*, 23, 4: 71-85.

Yanow, D. (1993) The Communication of Policy Meanings: Implementation as Interpretation and Text. *Policy Sciences* 26, 41-61.

Yin, R.K. (1994) Case Study Research: Design and Methods (2nd ed.) Newbury Park, CA: Sage Publications.