

UNIVERSITY OF KWAZULU-NATAL

WESTVILLE CAMPUS

**LEADERSHIP AND INFRASTRUCTURE DELIVERY PROGRAMMES IN THE
SISONKE DISTRICT, KWAZULU-NATAL EDUCATION DEPARTMENT.**

**BY
LULEKO ZANGOXOLO XOKO
208523514**

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Supervisor: Dr Stanley Hardman

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ABSTRACT

Sisonke District is situated in a deep rural area and the poorest of the twelve education districts in KwaZulu-Natal. Illiteracy, poverty and unemployment rates are extremely high. Compounding these socio-economic ills are problems with the provision of basic physical infrastructure, maintenance and repairs. Politics have contributed to the current situation; however, it is naïve to think that politics alone is to blame for the prevailing conditions. Nine infrastructure delivery programmes are fully operational and funded. Despite such endeavours backlogs in basic infrastructure provision, maintenance and repairs persist. The situation is messy, ill-structured and unpredictable. This problematic situation is so complex, dynamic and turbulent that it seems no permanent solution has, as yet, been found. This research study investigates the perceived impact of infrastructure delivery programmes in addressing basic infrastructure backlogs with regard to the provision of classrooms, water and sanitation, electricity, laboratories, libraries, administration blocks together with maintenance and repairs at schools in the Sisonke district.

Critical Systems Thinking is used as a meta-methodology that provides a specifically interpretive perspective approach which is subjective and participatory. Soft Systems Methodology (SSM) has been identified and used as a suitable methodology for this messy, pluralistic and ill-defined problem situation. Its flexible and participatory nature has ensured the use of different actors' perspectives to dig deeper and to determine the perceived issues impacting upon infrastructure delivery programmes at Sisonke schools. A qualitative research approach has been used because it is suitable for social and cultural contexts that deal with opinions, attitudes etc. A case study approach has been adopted resulting in the use of two infrastructure delivery programmes that allow for an in-depth study of the problem situation given the time and financial constraints. The study focuses on successful eradication of mud and inappropriate structures (Tonjeni Primary school in Umzimkhulu) and unsuccessful emergency repairs programmes (Bhidla Primary school in Bulwer). A purposive sampling approach has been used to identify two research sites mentioned above and sixteen respondents hoped to provide quality data. The study was further supplemented by participant observation and existing data that was drawn from

minutes of meetings. The choice of two primary schools and exclusion of high schools was a matter of coincidence and it is hoped it would not adversely affect the quality of results. As facilitator, the researcher sought and was granted permission and consent from stakeholders and respondents for their participation. Thereafter, the researcher conducted unstructured interviews to get a deeper understanding of this problematic situation. The researcher drew a rich picture, formulated a root definition and determined subsequent Soft Systems Methodology (SSM) steps prior to focus group discussion. During the focus group discussion the respondents deliberated and engaged SSM steps and at an opportune time the researcher introduced his rich picture for comparative analysis and subsequently one rich picture was drawn out.

The study answers questions like what perceived problems are impacting upon the infrastructure delivery programmes in the Sisonke District. The study highlighted seven problems which were divided into three main groups: the poor or broken communication system, the corruption system and the capacity or skills transfer system. Lastly, the researcher hopes to be empowered by the research skills he will use and will hopefully contribute to knowledge creation. As a District Planner the researcher's skill will, hopefully be upgraded to enhance his service delivery capabilities.

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DECLARATION

I, Luleko Zangoxolo Xoko, declare that

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- (ii) This dissertation has not been submitted for any degree or examination at any other university.**
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Signed:.....

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CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 Introduction

This chapter highlights the background of the study, the statement of the problem, the aim of this study, the rationale of the study, research questions, assumptions of the study and limitations and will present a brief overview of the chapters. This chapter provides important information regarding the reasons why this study is significant and also encourages the reader to read through this document with interest. The background will be discussed first.

1.2 Background to the study

Since the democratic elections in 1994, physical infrastructure delivery in South Africa has been one of the key factors in redressing the imbalances created by the Apartheid Government. The Reconstruction and Development Programme (RDP) of the African National Congress (ANC) sought to reconstruct and develop the country (ANC's RDP Policy Framework document, 1994). The physical infrastructure development and delivery are regarded as critical in rebuilding the racially divided country. Infrastructure development simply means the process or vehicle through which infrastructure will be provided and infrastructure delivery refers to the outcomes or outputs of the infrastructure development process. The researcher maintains that these concepts can be used synonymously. Physical infrastructure delivery targets have been set and missed since the first democratic government in 1994. This implies that the country is still experiencing acute backlogs in infrastructure delivery especially in rural areas.

The Government introduced a number of intervention programmes like the Expanded Public Works Programme (EPWP) which is primarily aimed at providing infrastructure and secondarily to create jobs, transfer skills and to empower entrepreneurs especially blacks, women, youth and the disabled. The infrastructure delivery backlogs affect every department in our country.

However, the Department of Basic Education (DoBE) attracted the researcher's attention because as its employee the researcher experiences frustration caused by the shortages or lack of infrastructure in schools. In its endeavour to transform education, DoBE in KwaZulu-Natal adopted a Strategic Plan 2010 to 2015 with the slogan "Dedication to Service and Performance

beyond the Call of Duty.” In its Strategic Plan (2010 to 2015: 9) the department’s vision is to produce “A well-educated, skilled and highly developed citizenry.” In order to realize this objective the department set its mission as “To provide equitable access to quality education for the people of KwaZulu-Natal.” The equitable access to quality education by all is critical in redressing the imbalances of the past (South African Schools Act No.84 of 1996).

According to the researcher, this background information would not be enough without the district profile. According to Sisonke District profile (2010) the district is a rural district with 561 schools and about 250,000 learners annually. Approximately 85% of the schools serve rural, poor, unemployed and uneducated communities whose standard of living is very low. Most of the grade twelve learners of this district persistently perform dismally. In 2007, 2008 and 2009 the district obtained the last position in the province according to the Provincial Examination Report of the corresponding years. A slight improvement was achieved in 2010 and 2011 matriculation results.

All these schools are characterized by acute shortages of both human and material resources. The basic infrastructure resources in these schools are in dire straits. However, the remaining 15% are well resourced, perform very well and are either former model C schools, town schools or affluent township schools.

In view of the background information, this study focuses on leadership and infrastructure delivery programmes in the Sisonke District of Education in KwaZulu-Natal using Checkland’s (1975, 1980 and 1990) Soft Systems Methodology (SSM).

1.3 The statement of the problem

The DoBE is a very large and bureaucratic organization. Each directorate seems to operate in silos. As a practitioner researcher, the researcher has witnessed that a strategic planning meeting is convened annually to craft a turnaround strategy but such strategic plans have not produced the planned outcomes. Immediately after the strategic plan has been crafted and paid for at an exorbitant rate the complex and dynamic environmental factors steer the organization off plan and expose the futility of long-term planning. This assertion is vindicated by (Levy, 2000:79)

where he references Cartwright (1991) who acknowledges that concerning urban planning “a complete understanding of some of the things we plan may be beyond all possibility.”

Stacey (1996:187) share similar sentiments when he concludes that through short-term behaviour might be predictable, “members of an organization, no matter how intelligent and powerful, will be unable to predict the specific long-term outcomes of their actions.” As a consequence thereof backlogs in infrastructure delivery increase despite a considerable effort being taken to address them.

The researcher’s view is that the organization follows a scientific management approach as advocated by Taylor (1947) because the organization proposes one best way of operation and hence it operates as if it is a machine. It has adopted a ‘reductionist’ approach which weakens it. It fails to appreciate that our context warrants a complex and systems approach to the problem situation. District Planners closely monitor school’s infrastructure and relay information to Head Office Planners to take decisions. The infrastructure planners always lament that head office treats them as if they are ‘conveyor belts’ of information who are unable to make any sound decisions.

The researcher observed with disbelief that the Manager Infrastructure Planning at head office always contended, in their meetings, that the district planners are ‘the eyes and the ears of the Department of Education.’

Again, information and funds to expedite physical infrastructure delivery are centralized at Head Office. Sisonke District is a unique district that is situated deep in a rural area surrounded by farm land and acutely underdeveloped. Yet its funding is based on similar parameters to other well developed districts. Funding is based on learner numbers per district. What the researcher noticed is every year plans are crafted and funds are made available, however, there is no improvement in infrastructure provision.

Furthermore, the majority of schools that achieve good results are well resourced while those that perform dismally are under resourced.

The following table is based on school performances in the 2011 matriculation results:

Table 1: School Performance in the 2011 Matriculation Results.

CATERGORY	NO OF SCHOOLS	OVERALL PASS %	WELL RESOURCED SCHOOLS	PERCENTAGE	UNDER RESOURCED SCHOOLS	PERCENTAGE
>60	47	55%	38	80.9%	9	19.1%
T60	38	45%	9	24%	29	76%
TOTAL	85	100%	47		38	

Source: KwaZulu-Natal /Sisonke District Matriculation Results 2011.

>60 = Schools performing from 60% & above. T60 Schools =Underperforming schools (0-59%) as per KZN DoE benchmark.

The table shows that among >60 schools 80.9% are well resourced schools and only 19.1% are under resourced schools. Among T60 schools, 76% are under resourced and only 24% are well resourced.

Teachers from schools are employed to provide infrastructure management services involving facilities maintenance, repairs and construction of buildings. Planners craft infrastructure plans and project manage its implementation by attending and reporting on progress meetings and project closure meetings. In some instances planners have no choice but to quality assure work despite the lack of the required skills. There is a commonly held view among the district planners that the DoBE is acting unfairly by expecting them to perform duties without any skills training within the construction sector. It should be mentioned that the Sisonke District, like all other districts has nine infrastructure delivery programmes running concurrently. They are:

- ❖ building of new schools,
- ❖ eradication of mud and inappropriate structures,
- ❖ upgrades and additions,
- ❖ rehabilitation,
- ❖ water and sanitation,
- ❖ electrification of schools,
- ❖ supply and relocation of mobile classrooms,
- ❖ fencing of schools, and
- ❖ repairs to storm damage.

Despite the existence of all these programmes our district lags behind in the provision of basic infrastructure to schools. The problem impacting upon infrastructure delivery programmes in the Sisonke District is messy or unclear. The eradication of mud and inappropriate structures and repairs to storm damage are the two programmes the study concentrates on. The researcher has selected the Tonjeni Primary School as a case study because it satisfied the project management principles of quality, time and cost. The second case study selected is Bhidla Primary School that has been storm-damaged annually since 2007 and unfortunately the reconstruction was undertaken only late in 2010. Schools in the storm damage repairs programme wait longer for repairs.

This study will therefore assist the department in identifying areas of concern with regard to leadership and infrastructure delivery, to inform the development of corrective actions to address infrastructure backlogs in public schools.

1.4 Aim of the study.

Upon realizing how complex and turbulent the environment in which the organization, Sisonke District Planning Section, operates the researcher could see that his attempts at improving the status quo in terms of addressing infrastructure delivery backlogs (both the space and maintenance backlogs) appear to be in vain. The situation is dynamic, unpredictable and non-linear. The more the researcher tries to sort the challenges out; new and more advanced ones emerges spontaneously. Every plan the researcher crafts quickly becomes obsolete. As already mentioned in the problem statement, as district planners we submit infrastructure plans to the provincial office to formulate a provincial plan. Once the provincial plan has been finalized it becomes our operational plan. However, even projects planned for the year are not always implemented. For instance, the Horseshoe Primary School Project in Kokstad had not commenced in December 2011 even though it was budgeted for the 2009/2010 financial year.

The aim of this research project is to investigate the impact of infrastructure delivery programmes in addressing basic infrastructure backlogs (classrooms, water and sanitation, electricity supply, administration blocks, computer rooms, libraries, science laboratories, nutrition rooms etc), maintenance and repairs.

Luckett (2004:11) expresses the purpose of my research dissertation concisely when he refers to the facilitation of a 'problem situation.' Engaging in this research will, hopefully, enhance the researcher's research skills and enable him to contribute to knowledge creation or to re-evaluation given the complexity and turbulence of the environment in which we operate (Levy, 2000). The study seeks to unpack the following:

- ❖ The perceived issues impacting upon infrastructure delivery programmes;
- ❖ The effectiveness of communication system in the Sisonke district;
- ❖ The impact the capacity of planners has on service delivery; and
- ❖ The correctness of the planners' priorities.

1.5 A rationale for choosing my topic.

South Africa's rich history and development can never be fully dealt with without linking it with the events that engulfed the whole continent of Africa and world politics. However, that would unfortunately be beyond the scope of this research. The researcher therefore briefly covered this rich history and development of South Africa.

South Africa like any other African country was colonized. According to Ross (1999) a small party of Dutchmen under Jan van Riebeeck arrived in Table Bay to establish a trading post or a refreshment station. Later the Dutch resolved on establishing a colony. For the colony to be established they had to expropriate land and seize cattle from the inhabitants, Khoi and San people. South Africa and her people had to fight to defend their sovereignty as this imposed civilization and development started to destroy the African social fabric of traditional society and dispossessed them of their most valued asset 'land.' The intensification of the struggle against colonization left the colonialists with no other option but to relinquish power and to move out.

According to Okoth (2006:21) "Ghana was the first black African country to achieve independence" and many others like Zimbabwe and South Africa followed. Okoth (2006) maintains that four factors were responsible for Ghana's nationalization and decolonization namely:

- The vision and organisational genius of Kwame Nkruma;

- The Gold Coast (Ghana) was more advanced than any other African country by the end of World War II;
- Ghana was also advanced economically; and
- World War II had a powerful influence on the growth of Ghanaian nationalism.

According to Levine (1997:93) “Early in nineteenth century the Cape area on the Southern tip of the continent was a perfect stopping point for ships sailing between India and Britain and that made securing the Cape for British interest a priority. The annexation of land in the region began in earnest in the early 1840s and culminated in the establishment of the British South Africa Company in 1889 which paved the way for imperial expansion in Africa.”

When the Afrikaners won political power over the English, Britain decolonized South Africa and handed power to the Afrikaners who introduced the apartheid policy in 1948 Allen (2005). Worden (2012) maintains that the heydays of apartheid entrenched among others the following: the white supremacy, racial segregation, disenfranchisement of blacks, forced removals; pass laws, brutal force/fear/terror, inferior Bantu Education of 1953, dehumanizing migrant labour system (blacks and poor left their homes and families to work in white owned mines, factories and farms as cheap labour). Racial segregation was meant to ensure white areas are well developed at the expense of black areas in particular and other races in general. Infrastructure like road networks, telephone networks, electricity, water and sanitation, proper schools, healthcare centres, security and services were all provided in abundance and were of best quality for white communities while that of blacks was either of low standards or not provided at all. McLenna (2007) contends that Apartheid ideology was based on inherent culture and level of development of racial groups. Its legacies were complex: unequal and illegitimate governance and delivery structures; fractured social relationships, limited resources, high poverty and unemployment.

When the white Nationalist Party government could no longer resist Black people’s struggle for freedom led by African National Congress (ANC) a process of a negotiated settlement commenced culminating in the release of high profile political prisoners like a former President Nelson Rholihlahla Mandela, Govan Mbeki, and Walter Sisulu. In the 1994 democratic elections

the ANC had a landslide victory which marked the demise of Apartheid and the beginning of the new era of hope, equal rights and justice for all. The clear mandate of the people in 1994 for the subsequent democratic government was to redress the imbalances of the past created by the white minority apartheid government. The unjustly skewed manner of provision of resources in favour of the white minority at the expense of the black majority meant that there were huge backlogs that the democratic government has to contend with. Acute shortages were experienced among others in housing (low cost housing), road construction (access roads), water (provision of piped water to rural areas/ free basic water), sanitation (provision of toilet facilities to rural areas), electricity (roll out of electricity supply to rural areas and towns), healthcare facilities (hospitals and clinics), building more and proper schools facilities (classrooms, libraries, laboratories, computer rooms, administration blocks, learner recreational facilities), telecommunication facilities etc. A concerted effort had to be made and a commitment had to be undertaken if the democratic government was to seriously extricate its people from poverty, degradation and the dehumanization resulting from white domination and oppression.

McLennan (2007:1) writes in support of the above assertion to say “the newly elected government was required to transform this racially and ethnically fragmented and unequal system into one which would meet the demands of economic, social and political development.” The ANC government of 1994 repealed policies like the Group Areas Act of 1948 and adopted the Reconstruction and Development Programme (RDP) as its macro-economic policy. The RDP gave a clear mandate to government to reconstruct and develop the country ravaged by the Apartheid legacy.

Khosa (2000:1) cites a former Deputy President and President of South Africa (Thabo Mbeki) when he says “the government needed to provide infrastructure that would meet the country’s economic demands, while simultaneously redressing apartheid imbalances.” This meant government had to budget billions of rands to roll out projects like low cost houses, rural electrification, water supply, construction of access road networks, construction of hospitals and clinics and building of more and proper schools’ basic physical infrastructure like classrooms, libraries, laboratories, computer rooms, administration blocks, water and sanitation, supply electricity, telephone communication, provision of recreational facilities etc.

The provision of these services was not an easy task. Some of the challenges that the government met were poor budgetary and financial management, massive backlogs in basic facilities, race and regional inequalities in provision and conflict-ridden social relationships limited the opportunities for development and delayed delivery (McLennan, 2007).

As already mentioned above, the democratic government had to introduce different intervention programmes like the Expanded Public Works Programme (EPWP) to deliver basic physical infrastructure. The belief was that the roll out of infrastructure would reduce backlogs, create jobs, transfer skills to people and empower youth and women for total emancipation. The RDP policy made considerable changes to the lives of our people as +/- 900 000 people were provided with low cost houses, 73% people accessed water, 1,9 million people accessed electricity (Statistics South Africa Household Survey/Government report as quoted by Hassen (2000). More access roads were constructed, more clinics/hospitals and schools were built or refurbished as well as electricity supply in the poorest of the poor rural areas. However, that was not enough as some communities are still waiting for their turn. Budget constraints, lack of skills and capacity to deliver services and corruption hinder progress.

In the light of such a situation former President Thabo Mbeki's government changed from the RDP policy and instead introduced Growth, Employment and Redistribution Policy (GEAR) as a macro-economic policy. The focus was on growing the economy through infrastructure rollout with the hope of creating more jobs, increasing productivity and ultimately redistributing the wealth created. Gear was from the outset not welcomed by the Congress of South African Trade Unions (Cosatu). Gear grew the economy but it did not create the anticipated jobs hence Cosatu termed it a 'jobless growth policy.'

The Black Economic Empowerment (BEE) policy and its implementation have both supporters and detractors. Its supporters are the few rich young people who have made millions of rands over a short space of time and are popularly known as 'Tenderpreneurs' (Nzimande in Mabilu 9 December 2012 City Press newspaper article). Its detractors claim that the BEE policy has benefited very few politically connected people and it has corrupted the system of government

and hence it needs to be abolished.

Lately, government has begun to refer to itself as a developmental state, as per the legislation, implying that it seeks to deliver on its social development mandates. The examples of development mandates it has delivered on are housing, electrification, water supply, education health and social welfare (Chikulo, 2013). Since 1994 many infrastructure delivery targets have been set and missed hence backlogs are still prevalent 18 years into our democracy. The people's patience has run out and they have started venting their anger and frustration through violent service delivery protests happening throughout the country. (Magubane, Khulekani in Business Day of 30 September 2013) cited the case of the residents of Mooiplaas informal settlement, near Centurion, who staged a violent service delivery protest on Monday morning, during which they demanded housing, water and electricity. As I have mentioned before, the focus of this research remains An Investigation into Leadership and Infrastructure Delivery Programmes within the context of education in the Sisonke District. Education is critical in ensuring development, success and the bright future of any society.

As a consequence of the apartheid legacy huge disparities in infrastructure provision in education left an indelible mark on blacks especially those in deep rural areas and homelands. The basic physical infrastructure at schools in the rural Sisonke area is in dire straits despite the democratic government's desperate attempts at redressing the backlogs. As a planner in the district the researcher has realized that most schools either experience shortages or have dilapidated and inappropriate structures whose renovation or repairs could be more expensive compared to building of new structures. Funds are allocated and plans are put in place, however, backlogs still persist. The problems besetting the Sisonke District infrastructure delivery are 'systemic' and hence 'messy.'

Therefore, the outcomes of this research project will be to:

- ❖ gain a better understanding of the perceived issues impacting upon the infrastructure delivery programmes;
- ❖ apply SSM to search for alternative ways to improve the messy problem situation;
- ❖ learn how to improve planning and delivery of infrastructure from the experience of the two

case studies to be used (Tonjeni and Bhidla); and

- ❖ contribute to the theoretical knowledge of infrastructure delivery programmes and strategies.

1.6 Research questions

In view of the above-mentioned statement of the problem numerous questions require answering. The researcher felt the following questions are the most suitable and relevant for the problem situation. They are subdivided into two categories:

Main question

- ❖ What are the perceived problems impacting upon leadership and infrastructure delivery programmes in the Sisonke District?

Sub-questions

- ❖ Is there an effective communication system in the Sisonke District?
- ❖ How does the capacity of planners impact on the service delivery?
- ❖ Are planners' priorities right?

1.7 Assumptions of the study

The success of the study depended on the following assumptions:

- ❖ The state of infrastructure at Sisonke District of Education Schools is a major cause for concern to all stakeholders. Therefore, everyone would appreciate an opportunity to participate in finding a solution; and
- ❖ The School Governing Bodies (SGBs), teachers, parents, learners and citizens have explored all avenues they could think of to address the dire shortages or lack of critical and basic educational facilities and proper buildings at schools in the Sisonke District, but in vain. Therefore, they are going to seize the opportunity to participate in this research in order to expose their plight to society.

1.8 Limitations to the study

The first limitation to this study was the time restriction to conduct unstructured interviews that

take longer than strictly structured equivalents. Sisonke District is a rural district with towns and villages far apart from each other. This meant that this research involved a great deal of travelling for the researcher. Unfortunately some areas do not have proper road infrastructure which meant that during a rainy season the researcher was unable to reach all the destinations leading to further time delays.

Also, travelling proved to be expensive and this necessitated more money for transport, food and accommodation than had originally been budgeted for. This led to further strain on the limited budget. All implementing agents, project managers and contractors did not reside in the Sisonke District which meant that it was very hard to get them for interviews at their construction sites. Hence the researcher chose to visit them in their work places.

Furthermore, some individuals were willing to participate but because of fear of divulging sensitive information they withdrew or did not answer questions freely. They were extremely careful with regard to what information they divulged. Lastly, all projects are of a temporary nature. Once the project was complete the project team dissolved and hence the researcher confronted difficulties in accessing all stakeholders. However, such problems were compensated for by the other stakeholders, through reference to minutes of meetings, observation notes and informal conversation.

1.9 Structure of the study

This dissertation is structured according to chapters as follows:

Chapter one outlines the general introduction, the background of the study which together with the problem statement clearly shows the extent of the problem situation. The aim of the study and its rationale has been elaborated to highlight its importance. The questions the researcher seeks to address are listed and the success of the research depends on how these questions have been answered. The assumptions and limitations of the study are mentioned to ensure readers have realistic expectations about the outcomes of the study. The study outline is presented to give an overview to the reader.

Chapter two concerns itself with the literature review of material dealing with the problem found in institutions in the rural Districts of Education. It also deals with the theoretical concepts namely: infrastructure, infrastructure delivery, infrastructure development, background of systems thinking and complexity, systems methodologies, complex adaptive systems, literature review (general infrastructure and school facilities), management, management styles, leadership, leadership theories, difference between management and leadership, project management and the integration of leadership and infrastructure development.

Chapter three outlines the study design with specific reference to the positionality of the researcher, qualitative research approach, methodology/ meta-methodology and methods of data collection. The reasons for the choice of Soft Systems Methodology were mentioned as well as a critical analysis of SSM. This chapter indicates to the reader exactly how the information required was obtained as well as the means by which the data was analyzed and interpreted. The ethical requirements and limitations are also mentioned.

Chapter four analyzes the results and implications of the study.

Chapter five contains the fulfillment of the aim of the study, answers to the research questions, limitations of the study, lessons learnt by the stakeholders and the discussion and the recommendations on how to address problems identified during the study. The chapter offers an overall conclusion to the study.

1.10 Conclusion

Compiling chapter one took the researcher through the intensive planning stage of the intended study. The researcher had a clear mind map of how he was going to conduct the study. The researcher's ill-structured problem situation would be unpacked using Checkland's (1981) Soft Systems Methodology. SSM is suitable for this context and enables me to unpack the problem with the intention of producing new knowledge and alternative ways of improving the impasse. However, the researcher is aware of the complexity and dynamism of the environment.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The researcher has conceptualized the problem situation that he is focusing on as being infrastructure delivery programmes, maintenance and repairs within the context of education and in particular within the context of the Sisonke District of Education.

Therefore, the researcher has considered literature that is locally produced as well as international literature to inform the study and the analysis. In this literature survey the researcher has deliberately taken an holistic approach by including information on the provision of basic infrastructure broadly. Such an approach is meant to expose the severity and magnitude of infrastructure delivery challenges not only in South Africa but as a worldwide phenomenon.

This chapter concentrates on the definition of infrastructure concepts, background of systems thinking and complexity, systems methodology, complex adaptive systems, a literature review, theoretical concepts of leadership and management including the difference between leadership and management, project management, integration of leadership and infrastructure development and lastly, the conclusion. The definition of infrastructure concepts will be discussed first.

2.2 Definition of infrastructure concepts

The definition of infrastructure concepts has received considerable attention by different theorists; however, for purposes of this study the researcher decided to include the following.

According to Heymans and Thorne-Erasmus (1998:1) “Infrastructure is a means to an end.” Hope, Sr (2010, 91) in OECD (2008) concurs with this point by maintaining that ‘infrastructure is therefore not an end itself. Rather, it is a means for ensuring the delivery of goods and services that promote prosperity and growth and contribute to quality of life, including the social well-being, poverty reduction, health and safety of citizens, and the quality of their environments.’

In economic terms, the demand for ‘infrastructure’ like the demand for transport is a ‘derived’ demand. This simply means that infrastructure is not needed for its own sake but it is required to

serve a specific purpose. For example, in the Sisonke District more classrooms need to be built, not for their own sake but to properly accommodate learners and teachers and hence render effective teaching and learning. Therefore, classrooms and other amenities are provided to create a conducive environment that enables the education system to attain its set goals.

Infrastructure has been defined differently by different writers who work in a variety of contexts. As already mentioned above, the researcher chose to define infrastructure broadly and then narrow it down into infrastructure in the context of education in order to inform this study. The broad definition of infrastructure according to Seeley (1993) in Frank (2003:5) maintain that “public infrastructure include almost every support system in modern industrial society, public or private. Infrastructure is said to include not only roads and sewers, but national transportation grids, communication systems, media, housing, education ... computer networks and fibre-optic information super-highways.”

In order to clarify the concept of infrastructure further, Frank (2003:6-8) “classifies infrastructure into seven categories namely: physical (highways, water mains, sewerage, public transport network, telecommunications etc), economic (places of business, skills training etc.), housing (owner-occupied, private, rented etc.), educational (schools, colleges, universities), health (clinics, hospitals), community (community halls, recreational facilities, fire stations etc) and environmental infrastructure (landscaping, open space, ecological).”

To narrow down the discussion two categories of infrastructure were chosen based on their relevance to the study. According to the South African Department of Finance (1998) in Khosa (2003:3-4) the economic infrastructure is “that part of the economy’s capital stock that produces services to facilitate economic production or serve as inputs to production (e.g electricity, roads and ports) or are consumed by households (e.g water, sanitation and electricity). While social infrastructure provides services such as health, education and recreation and has both a direct and indirect impact on the quality of life.”

In view of the above explanations it is clear that infrastructure refers to both human and social capital. In this study infrastructure is used in the context of delivery, maintenance and

refurbishment of basic societal needs. Because this research project is within infrastructure delivery programmes in the education context the researcher will limit his examples accordingly. The basic infrastructure needs in a school's context are classrooms, water and sanitation, electricity, computer rooms, laboratories, libraries, multipurpose rooms, administration blocks, media centres, nutrition rooms etc.

As already mentioned before, infrastructure delivery refers to the outcomes or outputs of the infrastructure development process whilst infrastructure development is the process or vehicle through which infrastructure will be provided. In the context of my research project infrastructure delivery programmes are a schedule of intervention endeavours to improve infrastructure in schools and offices. The researcher therefore holds a view that this study concentrates on social infrastructure. The discussion of the background of systems thinking and complexity is next.

2.3 Background of systems thinking and complexity

In order to create a basis for systems thinking and to ensure easy comprehension of same this section begins by describing 'a system.' According to Waring (1996:21) "A system is a recognizable whole which consists of a number of parts (called components or elements) which are connected up in an organized way (the system's structure). These components interact, that is, there are processes going on." Because this description is basic Waring (1996) modifies it when he asserts that a comprehensive description of a system should consist of the following characteristics:

- ❖ A system does something (there are processes and outputs);
- ❖ Addition or removal of a component changes the system;
- ❖ A component is affected by its inclusion in the system;
- ❖ Components are perceived to be related in hierarchical structures;
- ❖ There are means for control and communication which promote system survival;
- ❖ The system has emergent properties, some of which are difficult to predict;
- ❖ The system has a boundary;
- ❖ Outside the boundary is a system environment which affects the system; and
- ❖ A system is owned by someone.

2.3.1 Definition of systems thinking

Besides knowing a system, the next question to ponder is what is Systems Thinking? Although different systems thinkers define it differently they are unanimous on its main features. The researcher is impressed by Capra's (1996:27) definition: "A system has come to mean an integrated whole whose essential properties arise from the relationship between its parts and systems thinking refers to the understanding of phenomenon within the context of the whole."

2.3.2 Characteristics of systems thinking

In order to have a better understanding of systems thinking one needs to first understand its main characteristics. Upon the analysis of the above definition the following main characteristics of systems thinking were identified:

a. Holism, that is, systems thinking considers views from all the actors in an organization when attempting to learn about a complex social problem context. Wholeness (looking at the organization as a whole rather than looking at parts in isolation) allows for spontaneous 'emergent properties' which are suppressed and removed once a 'reductionist' approach is adopted. Mingers et al (2010) further clarifies holism when he maintains that it means viewing the system holistically, as opposed to 'reductionistically' as a set of diverse interacting elements within an environment.

b. Interconnectedness, that is, systems thinking takes full cognizance of the interconnectedness of different actors or elements that form the whole organization. It emphasizes the importance of interdependence of component parts which results in synergy. When put in simple terms interconnectedness in systems thinking means the various parts of a system are connected in an organized manner and interact continuously. Mingers et al (2010) advances a critical point that the relationships or interactions between elements are more important than the elements themselves in determining the behaviour of the system.

c. Cognition/ 'embeddedness.' Systems thinking conceives of real world phenomenon as systems and further stresses interrelationships and interconnections. 'Embeddedness' actually means that every system is part of a bigger system comprising of many subsystems and shares common properties with other systems that help in transferring understanding and solutions from one

system to another. As a result of the failure of the scientific management approach with its emphasis on objectivity, systems thinking brought some relief because of its emphasis on stakeholder participation (subjectivity).

2.3.3 Systems methodologies

Jackson (1991) identified five systems methodologies. The following figure gives a graphic representation of the systems methodologies.

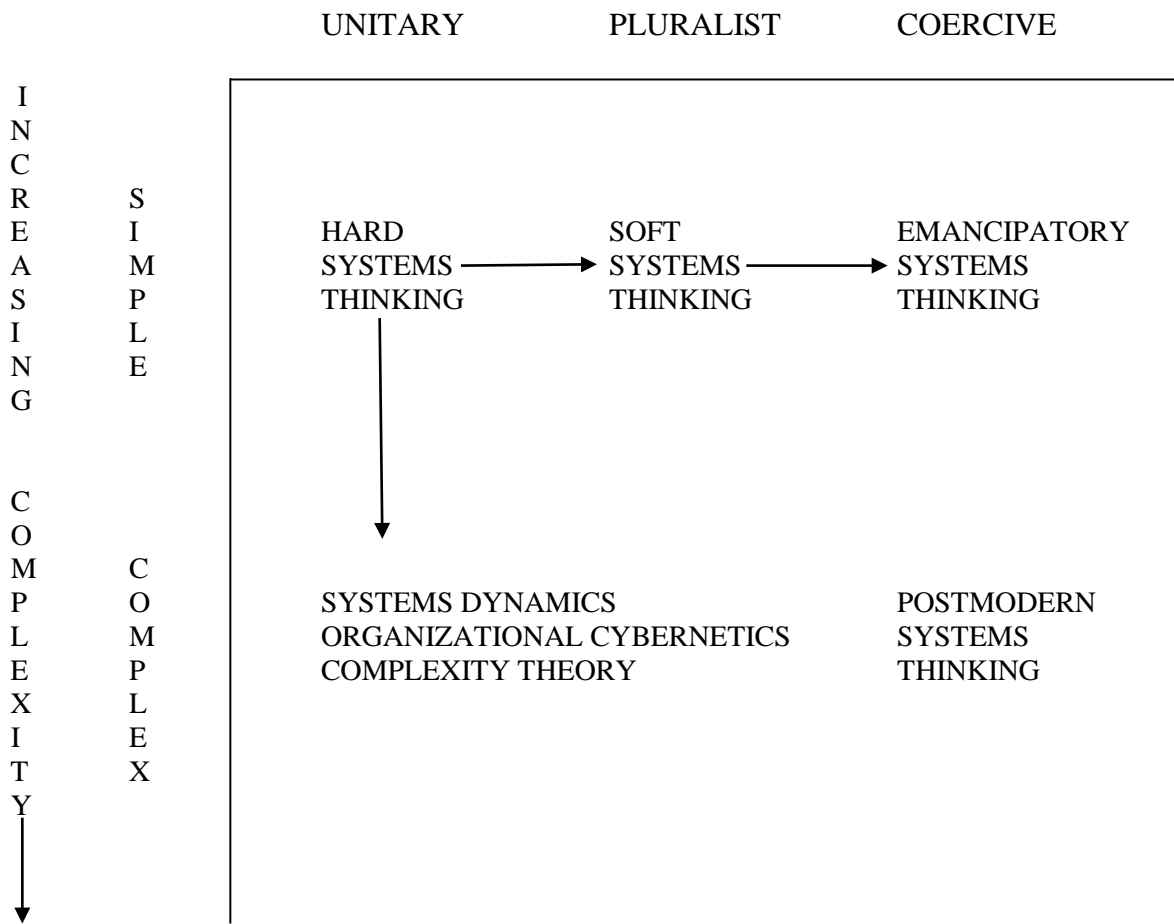


Figure 1: Systems methodology adapted from Jackson and Keys’ (1984) ‘system of systems methodologies.’

However, the researcher focuses on three systems methodology felt relevant to the study. The following paragraphs briefly explain the hard systems, soft systems and critical systems methodologies.

Hard systems thinking refers to the scientific and machine age where objectives for the organization were determined in advance implying the possibility of 'predictability.' Waring (1996) distinguishes between hard and soft systems approaches. He argues that hard systems relate to those situations in which individual human behaviour is perceived to play a minor role, even though many people may be involved in the system. He further clarifies that 'hard' does not imply 'difficult' situations but rather to attributes perceived to be quantifiable, predictable and undisputed.

In advancing the features of hard systems thinking Jackson (2000) asserts that hard systems thinking is based on a number of important characteristics. However, for the purpose of this study the researcher mentions only four.

The first one is that hard systems thinking demands that the objectives be clearly defined at the beginning of the methodological process. The individuals in the organization purposefully engage in activities that are meant to achieve the predetermined objectives. The hard systems approach assumes the existence of one objective reality and hence it is a good example of Morgan's 'machine metaphor' (1986). Yin et al (2010) supports this contention when he maintains that hard systems thinking regards a system as an objective part of our world which is an ontological definition of system derived from von Bertalanffy's GST of the 1960's. The requirement that objectives are clearly defined in advance of the methodological process exposes the serious flaws in Hard Systems Thinking (HST). This is untenable given the complex and unpredictable problem situations. The multiple stakeholders with different worldviews, values and interests make it very difficult or impossible to define objectives in advance.

The second feature is that users of the hard systems approach regard people as mere components to be engineered or fixed as if they are machines. In so doing they fail to acknowledge that human beings are capable of understanding and that they are motivated to support change and perform optimally if they derive favourable outcomes. It is rather unfortunate that the proponents of HST ignore the fact that human beings have brains, can think and are capable of influencing anything that happens to them, instead of the belief that the future is shaped by factors beyond human control. Jackson (2000) cites Ackoff (1979) when he criticizes the hard systems approach

for its deterministic tendencies that fail to acknowledge the ability of human beings to determine their own future. Essentially the hard systems approach is unholistic.

The third feature is that hard systems are assumed to be measurable and quantifiable. This again is very easy to do in an engineering-type problem but very difficult, if not impossible, in heterogeneous and dynamic problem situations. An attempt to quantify and measure social and cultural aspects of human beings can lead to unintended consequences like the distortion of facts about the social problem situation.

The fourth and last feature is that Hard Systems Thinkers prefer maintenance of the status quo and to bury conflicts. The desire to maintain the status quo while avoiding any dissenting views is yet another sign of the failure of HST to acknowledge the inevitability of change and the positive benefit an organization derives from operating towards the 'edge of the chaos.' Stacey (2007:199) asserts that "at the edge of the chaos, systems are capable of endless variety, novelty, surprise – in short, creativity." The open system where an organization influences and is influenced by its environment afford it an opportunity to learn from the feedback loop either positive or negative and hence its survival.

In view of hard systems failure, more specifically as a result of its inability to deal adequately with the behavioural and social aspects of complex situations, alternative systems approaches emerged. Consequently the soft systems approach was developed.

Soft systems thinking seek to address complex human and social problems through the involvement of all stakeholders in a problem domain. This subjective approach complies with Senge's (1990) assertion of the need for personal mastery, mental models, shared vision and team learning if the organization is a 'learning organization.' The SSM's suitability will be explored in the methodology chapter.

According to Flood and Jackson (1991) CST basically "refers to a wide range of research and practice." Jackson (2001:238) suggests that "Critical Systems Thinking is essentially about putting all the different management science methodologies, methods and models to work, in a

coherent way, according to their strengths and weaknesses, and the social conditions prevailing, in the service of a general project of improving complex societal systems.” Its heavy reliance and commitment to systems ideas, critical awareness, social awareness, human emancipation, theoretical complementarity and methodological complementarity earns it much credibility because it adopts wholeness when dealing with complex human and social phenomenon.

CST further affords an opportunity for the different multiple approaches to complement rather than compete with each other. Jackson (2000) mentioned the four systems approaches namely: functionalism which is objective and goal seeking, interpretive which is subjective and considers different worldviews, emancipatory which ensures fairness through the empowerment of the vulnerable and the postmodern which promotes diversity.

CST and its multi-perspectives approach is relevant to learning about and improving Leadership and Infrastructure Delivery Programmes in the Sisonke District. However, its multi-methodology approach means results take longer to show up and that it lacks specifics in terms of which specific methodology helps improve a problem situation.

2.3.4 Complexity theory

2.3.4.1 Definition of complexity theory.

In his endeavor to define complexity theory Levy (2000:68) defines “complexity theory as the study of complex, nonlinear, dynamic systems with feedback effects.” The researcher’s view is that complexity can best be understood through understanding its pertinent characteristics which will be discussed next.

2.3.4.2 Characteristics of complexity theory.

A significant number of complexity theorists have contributed in this body of knowledge, however, few will be quoted to inform this study. The chaos and complexity theory writers like Stacey (2003) contends that organizations must operate ‘far from equilibrium’ if they are to survive and realize their objectives. The ‘equilibrium’ point is where the organization stagnates and becomes incapable of learning and adaptation to the environment in which it is embedded. In simple terms when an organization is operating ‘far from equilibrium’ means the organization

interacts with the environment in which it is embedded and hence it lives.

Stacey (2003, 2007:199) insists that an organization should strive towards ‘the edge of the chaos’ a stage where ‘stability and instability’ occurs simultaneously. The organization operates in a turbulent and dynamic environment where it needs to adapt through self-organization hence become what Senge (1990) calls a ‘Learning Organization.’ An organization acquires such a status through interaction and adaptation to the prevailing social context. The lessons learnt through the interactive engagement result from both positive and negative feedback loops.

Jackson (2000:270) cites Senge (1990) where he maintains that “besides systems thinking there are four other disciplines of a learning organization namely: personal mastery, mental model, shared vision and team learning.” These warrant a brief elaboration.

Senge (1990) asserts that personal mastery pertains to how the individual views his or her own abilities to contribute to the achievement of a system’s overall goals and objectives. The assumption is that every individual or agent in an organization is intrinsically motivated to contribute towards the realization of the organization’s vision. While mental models are about a ‘cognitive concept’ which reflects how we view the world and how we take actions to improve the situation. The building of a shared vision is critical in that it consolidates individual worldviews (personal mastery level) about an organization into a well- coordinated and collective organizational vision Senge (1990). Senge (1990) identifies team learning as significant in improving the performance of the organization. It enables individuals to act as a collective and vigorously engage in discussion and dialogue resulting in the co-creation of the organization’s future.

In the light of the above assertions, the researcher suggests that the Sisonke District Infrastructure Planning and Delivery Directorate becomes a learning organization. In order to achieve this it must adopt the approaches as advanced by Senge (1990).

Further to this the unpredictability and non-linearity about what the future holds for us is enough caution for those who think they can maintain the status quo. Also, the ‘sensitive dependence to

initial condition' or what Lorenz (undated) calls the 'butterfly effect' vindicates the inevitable need for change. The 'butterfly effect' is based on the findings of Lorenz, a meteorologist, who found that a butterfly flapping its wings in one area could have a disproportionate effect on a distant area. If that be the case change then is unavoidable and hence must be embraced. As already acknowledged above, systems thinking has undergone a critical developmental and change process. However, tracing the origins of systems thinking is rather difficult. In support of this contention Ackoff (1999) asserts that no age has a definite starting point. Instead, it emerges incrementally so that an awareness that something fundamental is happening occurs, thus providing a new world view.

Furthermore, Burrell and Morgan's (1996) metaphors of the organization specifically the 'machine metaphor' means that organizations or people are thought of as being capable of operating as if they are machines. Its underlying philosophy is that complex phenomenon can only be understood by analyzing its elementary parts in isolation, that is, breaking the whole into parts, understand the parts in isolation and ultimately understanding the whole. This critique about "reductionism" is based on its tendency to overlook the significance of the spontaneous 'emergent properties' or 'synergy' that emerges as a result of the interaction of the component parts making up the whole (holism). Its proponents fail to acknowledge that the whole is bigger than the sum of its component parts. The researcher holds a view that complexity theory overview is not complete without a brief explanation of complex adaptive systems as advanced by theorists like Maxfield, (1996); Anderson, (1999); Levy, (2000) and Stacey, (2003) for instance.

2.4 Complex Adaptive Systems (CAS)

2.4.1 Definition.

Many theorists have defined CAS differently, but are unanimous on its features. According to Bodhanya (2006:19) a 'complex adaptive system is a system comprised of heterogeneous agents that interact locally with each other based on local schema, such that the behaviour of the system arises as a result of feedback relationships between the agents, and the system evolves as the schemata of the agents adapt based on the feedback.' The general view is that all organizations are operating within complex environment and therefore are complex adaptive systems. The

reason being that these organizations have to adapt to the complex environmental context they are embedded. The researcher holds a view that CAS can best be elaborated by briefly explaining its characteristics.

Many complexity theorists like Maxfield (1996); Anderson (1999); Levy (2000); Stacey (2003); Escobar (2003) etc are unanimous on the characteristics of CAS that follow.

2.4.2 Characteristics of complex adaptive systems (CAS)

2.4.2.1 CAS have heterogeneous agents with schemata.

These agents are a representation of things like elements, people, departments or institution that interact or function without any set rules. Schemata refer to mental model that defines behaviour of agents. As agents interact they influence or are influenced by other agents and are capable of influencing the whole organization and hence the development of emergent behaviour through self-organization.

2.4.2.2 Self-organizing networks sustained by importing energy.

As a result of agent interaction among each other, new properties emerge which confirm non-linearity. This implies that self-organization is a hierarchical and decentralized system. Escobar, (2003, 351) picks on 'existence of bottom-up process in which simple beginnings lead to complex entities, without there being master plan or central intelligence planning it.' Thus the system is able to create order from disorder or disorder from order spontaneously.

2.4.2.3 Co-evolution to the edge of the chaos.

The first thing the researcher notes is that agents co-evolve with one another. All agents have to adapt to the environment. Holland and Miller (1991) maintain that such adaptation happens through an agent striving to increase a pay off or fitness function over time. Kauffman (1995) took this argument further when he talks of fitness landscapes as he tries to give some insights into the evolutionary process. In Kauffmann's analogy of fitness landscapes we have movement up the hill or mountain representing an increase in fitness and hence survival and movement down into a valley representing a decrease in fitness and hence extinction. According to

Kauffman (1995) a challenge is to avoid valleys and climb peaks as far as possible in order to reach a stage between stability and instability called the 'edge of the chaos.' As already mentioned earlier the edge of the chaos is attractive because it brings creativity and success to the organization.

2.4.2.4 Recombination and system evolution.

CAS co-evolve with time as a result of either entry, exit and transformation of agents. The qualities of successful agents are attractive and hence copied through process of recommendation to form new agents. Furthermore, the interconnectedness of agents is dynamic and hence will evolve with time, shift interconnectedness.

2.5 Infrastructure provision.

As already alluded to earlier, infrastructure development means the process or vehicle through which infrastructure will be provided and infrastructure delivery refers to the outcomes or output of the infrastructure development process. These two can safely be used synonymously.

Many writers have written about the provision of basic infrastructural needs, maintenance and repairs thereof. This speaks broadly to infrastructure as it pertains to delivery of basic societal needs like housing, water and sanitation, energy, telecommunication, road networks, health and education. However, little has been written about the infrastructure delivery programmes and their impact in South Africa (SA) generally and more specifically within the education sector. The researcher therefore relies on literature based on infrastructure provision broadly as well as the delivery of school infrastructure. The background material is covered next.

2.5.1 Background material

According to Verwey (1998:3) "Power supply to schools is a basic infrastructure need that is a matter of concern, because without power basic equipment such as photo copiers, fax machines, computers, e-mail and even light globes and heaters cannot operate." In order to inform the extent of infrastructure needs at schools Verwey (1998) provides a summary of basic infrastructure needs following a survey conducted at 27188 primary, secondary and combined schools in SA in 1996. The researcher acknowledges that these figures show the trend the new

government had to contend with.

Table 2: Department of Education School Register of Needs Survey

Schools without:	Number	Percentage
Electricity and not wired	14145	52%
Water on site	6516	24%
Toilet facilities	3288	12%
Telephones	16666	61%
Libraries	22550	83%
Biology laboratories (Secondary school)	6121	77%
Science laboratories (Secondary school)	5471	69%
Building conditions:		
Not suitable for education	1713	6%
Major repairs	3090	11%
Minor repairs	10785	40%
Good or excellent	11095	41%
Awaiting verification	505	2%
Total SA	27188	100%

EduSource, 1997.

This report clearly indicates how bad the situation was in 1996. However, the report is flawed in that it does not show backlogs in terms of short fall in number of classrooms.

2.5.2 General infrastructure delivery

As already referenced in chapter one, the African National Congress (ANC) writes in its Reconstruction and Development Programme (RDP) policy framework document (ANC, 1994) that physical infrastructure delivery is the means through which it could redress the imbalances created by the apartheid government. The ANC further notes huge disparities between whites and blacks in terms of access to essential services and therefore resolves that the provision of basic physical infrastructure like housing, electricity, water, roads, hospitals/clinics and schools to the blacks and poor is the main priority.

The democratic government mandated the Department of Public Works to facilitate

infrastructure delivery. The government intervention through the Expanded Public Works Programme intends to fulfil the need for job creation, skills transfer and empowerment of women, youth and disabled people.

The huge number of research output on delivery or provision of general infrastructure attests to its strategic and political importance to countries. The researcher makes a careful choice of literature suitable to inform this study. The following literature is reviewed.

Hope (2010) reviews and assesses infrastructure constraints and development in Kenya within the context of meeting the country's 2030 vision and its long-term development goal. He shares similar sentiments with a number of writers who regard adequate supply of infrastructure as having a direct link to productivity and growth. This is substantiated when Hope (2010:92) cites Delmon (2011) who maintains that "poor infrastructure impedes a nation's economic growth and international competitiveness." The infrastructure backlogs in Kenya are mostly prevalent in power supply. The country is engulfed by power outages which affected all sectors of the economy until the country entered into strategic partnerships with private sector to upgrade power supply and invest in other sectors like airline. As a result of investment in power generation infrastructure and airport Kenya's economic growth started to be vibrant. Therefore, the results of this study clearly indicate the relationship between infrastructure constraints and development in Kenya.

Different theorists hold divergent views on how infrastructure provision can be improved. Anwar (2010) is concerned about the exclusion of local actors and organizations like SMEs in reforming infrastructure in developing countries. He considers such omission as a serious flaw. This author emphasizes the importance of the role local actors and organizations can make in upgrading infrastructure for sustainable development of the country. The article advances deregulation and privatization because they both enable private sector to pursue competitiveness based policies which assist economic development throughout the world. Using a case study of Sialkot, Pakistan, Anwar (2010) analyzes how an informal process based on collective learning for problem solving developed and enabled SMEs and state to improve inadequate infrastructure to enhance competitiveness. The study result is emphasizing on importance of partnerships between

the SMEs and state in solving the country's problems.

Fourie (2008) notes in his research report that South Africa puts more emphasis in quantity of infrastructure than on improving its quality. The clear distinction between quantity and quality of infrastructure by Fourie (2006) asserts that quantity of infrastructure refers to size or volume while quality refers to both physical condition and service.

Therefore, he criticizes South Africa's research or policy emphasis on provision of more infrastructure and of disregarding the importance of quality of infrastructure. He contends that lack of quality indicators in South Africa's policy is a major flaw. The challenge in South Africa is not only lack of enough infrastructure but also the non-existence of a maintenance or refurbishment strategy. Because of this, existing infrastructure deteriorates faster until it can no longer be economically refurbished.

Fourie (2008) further asserts that South Africa's research or policy on infrastructure suggests that more investment on infrastructure solves infrastructure backlogs. There are three main reasons advanced as to why South Africa should increase its investment on provision of more infrastructure:

- ❖ Research into infrastructure investment, both local and international, suggests a positive relationship between higher infrastructure investment and higher economic growth (Calderon and Services, 2004 et al);
- ❖ South Africa was lagging behind the rest of the world in terms of a number of infrastructure variables and hence a concerted effort to increase and improve infrastructure was necessary (Bogetic and Fedderke, 2006); and
- ❖ Lastly, South Africa won a bid to host the 2010 Soccer World Cup, an event that became an important catalyst for increasing government investment in infrastructure (Fourie, 2006).

However, the solution to the backlog in infrastructure does not solely lie with provision of more new infrastructure but also with a better planned maintenance and repair of existing infrastructure. An improved condition and performance of infrastructure through relevant policy proclamation by the government is needed. It is also recommended that new infrastructure provision should be based on demand otherwise we are risking unintended oversupply.

In support of the preceding author, Klytchnikova and Lokshin (2009) explore the advantages of providing better quality infrastructure (welfare gains). They acknowledge that the benefits of improved service quality though significant, are often overlooked because they are difficult to quantify. This study analyses four methods that can be used to evaluate changes in infrastructure service quality and demonstrates the application of these methods to assess the impacts of infrastructure reform on household welfare. Klytchnikova and Lokshin (2009) use the four methods as follows:

- 1.The exact welfare impact can be measured with the direct demand estimation method, that is, measuring the gap between the initial demand curve and new demand curve resulting from the change in service quality;
- 2.Welfare can be approximated using the averting behavior model, that is, substitution of commodities or services whose quality has changed;
- 3.Exact welfare can be measured using the intermittent supply model, that is, measuring the welfare effect of a change in frequency and duration of supply interruption; and
- 4.Expected welfare impact can be measured using conjoint analysis, that is, random utility model (McFadden, 1994) which asserts that households have choice of services and providers. The choice made is based on the highest utility achieved.

The findings of the study indicate that analysis of welfare impact of change in service quality can be reliably achieved through demand and supply models; however, they are the most data demanding approaches.

Another reading reviewed is that of Heymans and Thorne-Erasmus (1998) who concluded in their report to the Development Bank of Southern Africa (DBSA) that infrastructure is a foundation for development. They analyze the way infrastructure services support development and make proposals for optimizing the development impact of infrastructure. They highlight three major contributions in this report namely:

- ❖ That the report focuses on South and Southern African Countries. Such a focus is important because these countries are the worst affected by huge backlogs in infrastructure provision;

- ❖ That the report provides new econometric and conceptual perspectives on the contribution of infrastructure to development and shows how infrastructure services stimulate economic growth, promote equity and support sustainable development; and
- ❖ Lastly, the report reflects on the institutional and financial incentives needed to achieve these impacts.

The report further maintains that there are positive spin-offs from infrastructure delivery.

The first point advanced is with regards infrastructure and growth. Infrastructure provision positively influences economic growth as infrastructure lowers cost of production and consumption. Infrastructure improves economic activity in different regions and cities. However, negative consequences do arise as a result of infrastructure provision. For example, excavation during construction of schools, stadia, roads destroys the fauna and flora of our environment.

The next advantage is that infrastructure contributes to income distribution and poverty eradication. In South Africa the provision of infrastructure like building and renovation of schools is done by Small Medium and Micro Enterprises (SMMEs) as per Black Economic Empowerment (BEE) policy. The Expanded Public Works Programme (EPWP) and BEE policy are meant to provide infrastructure, create jobs, transfer skills and develop entrepreneurs.

Another advantage is that infrastructure provision encourages Public-Private Partnership (PPP). The public sector alone cannot succeed in the provision of infrastructure due to both capacity and financial constraints. Again, infrastructure is to the benefit of both public and private sector hence shared responsibility is encouraged.

Lastly, infrastructure provision and maintenance supports decentralization and participation. Decentralization requires accountability of government, it promotes administrative efficiency and it leads to procurement approaches that benefit small entrepreneurs and local labour. However, decentralization faces many unprecedented challenges. The people in power do not like to devolve power through decentralization. In most cases they decentralize certain unimportant processes or on paper they do, but they have a tendency to put conditions or to indirectly manipulate processes.

Fedderke and Bogetic (2009) disagree with Heymans and Thorne-Erasmus' belief in a link between infrastructure and growth. They expose some contradictions in this link. They maintain

that the link between infrastructure provision and growth cannot convincingly be substantiated because other uncontrollable factors like the stage of economic cycle might impact growth. This paper further seeks to determine the labour productivity impact of the provision of public infrastructure.

Bogetic and Sanogo (2005) as quoted by Fedderke (2009:1523) examine “the impact of infrastructure on labour productivity and resolve that there is positive correlation between the two.” In support of the existence of the link between infrastructure provision and growth Hassen (2000:14) asserts that “Infrastructure expansion has also closely been associated with economic growth in South Africa.” This leads to the use of term ‘infrastructure led growth.’ Hassen’s (2000) paper assesses how the delivery of basic needs like housing, electricity etc impact positively on job creation. The findings are that infrastructure delivery creates jobs, but Hassen (2000) is quick to point out that, for the sake of sustainability, government has to increase its budget, improve its planning and employ better skilled staff.

In response to this question, Gramlich (1994) seeks to clarify three important issues about infrastructure investment namely:

- ❖ How to identify shortage of infrastructure investment;
- ❖ How to determine whether there ever was an overall shortage; and
- ❖ Whether or not this possible shortage has been a factor in the aggregate productivity decline.

He acknowledges the four ways (engineering assessments of infrastructure needs, political measures based on voting, economic measures of rates of return and econometric estimates of productivity impacts) that have been used by the majority of writers in trying to determine existence or lack thereof of the shortage of infrastructure investment (Gramlich,1994). He contends that the most fundamental issue that needs attention is not whether or not shortage exists, but whether or not the country has good policies in terms of infrastructure investment. He advocates changing of policies to enable government to invest more in infrastructure. He recommends the use of a federal grant system and user fees. The federal grant system is good because it affords citizens a voice on where investment in infrastructure must be made. The user fees are advantageous because they create a new source of revenue; proceeds are used elsewhere and also minimize demand for more tax.

Gramlich (1994) concludes by suggesting that policies must be changed to allow states to do their own infrastructure investment, giving states their own sources of revenue and according them powers to make their own key decisions and to be independent of the federal grant system. It is questionable how far these suggestions can go in our South African context because provinces are hamstrung by policies that are national directives, such as the use of Public Works Department for maintenance of government buildings even though its performance is below par.

2.5.3 Schools infrastructure delivery.

There is a commonly held view across nations about the significance of education to the development and prosperity of countries. The adoption of education as item two of the Millennium Development Goals (MDGs) that, by 2015, children of educable age should have free, affordable and accessible education attest to the above contention (Edho, 2009).

According to the Bill of Rights the South African Constitution promulgates education as a human rights issue (SA Constitution, 1996). The present government of South Africa made education its first priority among the five priorities it set to address.

Therefore, the researcher holds a view that the significance of education should and must translate into treatment of infrastructure delivery as an apex priority too because effective teaching and learning can only be realized if a conducive learning environment is provided. However, this does not happen. The scarcity of literature on infrastructure delivery in the context of education, especially in South African, bears testimony.

The researcher reviews the following literature based on its relevance to the study.

Ikoya and Onoyase (2008) examine the availability and adequacy of schools' infrastructure facilities for effective implementation of Universal Basic Education (UBE) in Nigeria. The study critically evaluates whether schools' infrastructure facilities are available in appropriate quantity and quality to meet the minimum standards for promoting effective teaching and learning. Ikoya and Onoyase (2008) acknowledge that not much research has been conducted to

answer the above question. They reference Ehiamentor (2001), Osagie (2001) and Salami (2004) whose studies reveal the enormity of the task of provision, maintenance and refurbishment of dilapidated classrooms and building of new ones for effective implementation of the UBE. The findings in this study suggest lack of fundamental structures necessary for the successful implementation of the UBE.

Ikoya and Onoyase (2008) identified five factors impeding availability and adequacy of schools' physical facilities as:

1. inadequate funding of schools' infrastructure programs;
 2. inefficient and ineffective schools' facilities management;
 3. poor maintenance of schools' facilities by principals and head teachers;
 4. poor political leadership commitment to schools' infrastructure provision and management;
- and
5. inadequate security of schools' physical facilities.

Consequently, the two researchers recommended that the political leadership should show greater commitment to the provision and management of schools' infrastructure facilities to ensure both availability and adequacy for the implementation of UBE program.

Since the funding model for schools' infrastructure delivery seems problematic the researcher focuses on the following readings to establish facts about the shortfall in funding school physical infrastructure and suggest alternative funding models. According to Piphoo (1990:502) "Capital funding for new school and college construction and for renovation or maintenance of other buildings is a rapidly growing problem." The sharp increase in building costs has led to deferment of construction of new or maintenance of existing buildings for some time due to lack of funds. Unfortunately, a stage is reached where large quantities of infrastructure are crumbling, unsafe to use and hence need exorbitant amounts of money to maintain. The inadequate funding of school infrastructure facilities also caught the attention of Stainback and Donahue (2005). They acknowledge the apparent contradictions that prevail in our society. Public schools are under pressure to upgrade and expand facilities to create an enabling and conducive teaching and

learning environment in order to achieve higher quality education while government experiences budgetary constraints.

Stainback and Donahue (2005) suggest the use of public-private partnership (PPPs) as an alternative funding source to the delivery of social services, specifically educational facilities and construction. The definition of PPP according to Stainback and Donahue (2005:293) is that “PPP is a contractual agreement formed between public and private sector partners which allows more private sector participation than is traditional.” This partnership is advantageous in that it ensures synergy between partners specifically with sharing of skills, knowledge and financial resources.

Furthermore, “PPP permits the private sector to share in a certain amount of the risk relative to long-term life and utility of the project and accompanying operation and maintenance costs, as well as the risk associated with the cost of capital and the capital investment in the deal” (Stainback and Donahue, 2005:294). However, the disadvantage of PPPs is that there is no assurance that cost and time savings are always realized. Ahmed et al (2007) agrees with Stainback and Donahue in the use of PPPs in public infrastructure delivery. Augenblick and Custer 1990; FHWA 2005 as quoted by Ahmed et al (2007:918) assert that “with the increased demand for new developments and for maintaining existing infrastructure, public funding resources were unable to keep pace with the demand.”

Therefore, PPP funding was used based on two approaches namely: finance-based and service-based approaches. The use of PPPs in the development of schools, hospitals, prisons etc was successful especially in United Kingdom (UK). However, they generally encountered several problems like social, political and legal risks as well as unfavourable economic and commercial conditions and lack of mature engineering techniques (Ahmed et al, 2007).

Gunhan et al (2007) acknowledge the increase in learner enrolments in public schools which was impeded by poor state of school facilities. An urgent need to provide more school buildings and to refurbish existing ones required more funds from government. Unfortunately, the government is experiencing financial constraints and hence she cannot fund public school construction.

Therefore, Gunhan et al (2007) identify change orders as major contributors to the escalation of projects costs and posit that if change orders can be avoided more funds will be made available for the provision of more public school facilities. The study explores the causes of change orders that occur in the construction and refurbishment of school buildings. The change orders are commonly experienced under five categories including owner-directed changes, code compliance issues, errors/omissions in contract documents, discovered or changed conditions, and others. The results of this study indicate that the value of change orders compared to the initial contract sum can be significantly reduced if precautionary measures are taken like employment of credible construction management companies.

Martine and Richard (1993) take a different view from the preceding writers by focusing on provision of school infrastructure for rural schools. They identify the existence of small schools with one to three teachers per school as a contributory factor to lack of facilities. Facilities at these schools are very bad and unfortunately, due to their size, they neither have enough funds allocated by government nor capacity to raise them on their own. They suggest a merger of these small schools within the same locality into the formation of one big communal school that can be well resourced. However, when the French Education Minister proposed such amalgamation it became a very sensitive political issue.

In South Africa backlogs in the delivery of school infrastructure is as a result of apartheid legacy according to the ANC. Gibberd (2007) agrees with the ANC when he maintains that the Apartheid policies seem to have left huge school infrastructure backlogs in black areas while white areas are well resourced. He asserts that even though the Department of Education has developed good policies and funding norms to ensure equitable provision of infrastructure that this can only be achieved through focusing funding on backlogs.

2.6 Conclusion

In conclusion, this section defined infrastructure concepts. A detailed coverage of the background to systems thinking and complexity theory and complex adaptive systems (CAS) was done. This section was concluded by focusing on literature review pertaining to infrastructure delivery. The literature review concentrated on general infrastructure delivery as

well as school infrastructure delivery. The next section begins with the theoretical concepts of leadership and management.

2.7 Theoretical concepts of leadership and management

2.7.1 Introduction

A variety of project leadership and management concepts are important to define at this stage of the researcher's literature review in order to inform the type of leader required to address the research problem. To start with it is important to highlight the fact that management and organization theory has developed over years. The researcher chose to start from the era of the traditional approach, the human relations approach and then to systems thinking. The traditional approach is based on Taylor's scientific management approach (1947) as cited by (Jackson, 2000), Fayol's (1864-1925) administrative management theory and Weber's (1864-1920) bureaucracy theory.

The perception in the public discourse encourages understanding that during this era organizations operated like machines. The human relations approach is based on theorists like Mayo (1927-1932) who put people at the centre of organizational analysis by studying individual behaviour, group motivation and leadership. Jackson (2000, 62) criticizes the human relations approach "for being reductionist as well by concentrating on human beings and neglecting some of the most important factors like markets, technology, competition and organizational structure."

Systems Thinking comes as a solution to weaknesses of the traditional and human relation's approach. It argues that the organization has to be viewed as a whole and as an open system that continually interacts with its complex and dynamic environment. It is therefore a shift from machine model to organization model. KZN Department of Education and specifically Sisonke District Planning operates within this complex, turbulent, dynamic and heterogeneous environment. Therefore, my investigation of the impact infrastructure delivery programmes have in addressing backlogs of basic infrastructure, maintenance and repairs, considers the contextual factors. I have dealt with numerous project leadership and management concepts but for the purpose of this research study the researcher focuses on those most relevant.

2.7.2 Management

2.7.2.1 Definition of management.

According to Smith and Cronje (1997:11) “management can be defined as the process of planning, organizing, leading and controlling the resources of the organization to achieve stated organizational goals as efficiently as possible.” This definition declares the core duties of management as ‘efficient achievement of organizational goals.’ What matters to management is the attainment of organizational goals set in advance through long-term planning. As Infrastructure Management Services Directorate we undertake strategic planning with specific targets selected from the nine infrastructure delivery programmes but the plans are not fully implemented or have to be changed due to the complexity of the environment we operate in. Such flexibility surely needs to be accounted for in the leadership concept.

2.7.2.2 Management styles

a) Autocratic Management style: The popular view is that the autocratic manager gives instructions to staff to perform duties, without any prior consultation and does not expect any questions (Dransfield and Needham, 2000). The manager projects himself as a very powerful and uncompromising person. The manager claims to be very knowledgeable and does not give any room for others’ opinions. It is only his or her way and hence he or she normally claims to be in full control of the situation.

This manager’s communication approach is a top-down one implying that communication flows in one direction (Likert, 1967 in Dixon, 2003). Its advantage is that decisions are taken quickly. However, its disadvantage is that it demotivates employees from taking an initiative. It encourages a very bad culture of waiting for the manager to give instructions.

Another snag with this management style is that diligent and skilful employees easily get dejected and leave the organization.

b) Democratic management style: It is a commonly held view that a democratic manager engages in a consultative process with staff members in an attempt to get as many views on an issue as

practicable. This willingness to involve people enables the manager to empower and delegate others to do different tasks. The delegation comes with shared responsibility and authority to perform tasks. The decision making is a team effort which is guided by majority views and that benefits the organization because the staff owns up to decisions, become emotionally attached to the organization and are prepared to go an extra mile for the organization without complaining (Dransfield and Needham, 2000). The manager is least concerned with controlling staff because once the decision is taken it becomes their shared vision and all of them are intrinsically motivated to succeed. The disadvantage with the democratic management style is that decision making takes a very long time.

c) Laissez-faire Management style: The manager here gets the job done through people. The manager stipulates the task to be done and allows staff to complete the task without his involvement (PM4DEV Organization, 2007). Whilst staff is allowed some degree of autonomy its critics complain that the managers are managing nothing. Some believe that it is a total abdication of responsibility and therefore unacceptable.

d) Participative Management style: The decision-making is done after a well thought-through consultative process. The manager will then evaluate and modify opinions to manipulate the decisions he wants. This management style has elements of democracy but is different because it involves more intensive input from others (Likert, 1967 in Dixon, 2003). The distinguishing characteristic of participative management style is based on rationality and logical evaluation. However, its disadvantage is that decisions take longer to be made.

e) Choice of management style: The researcher acknowledges that all the four management styles have both advantages and disadvantages. This means each methodology has instances where it is most relevant and suitable. For example, the military works very well with the autocratic management approach because soldiers are given orders to carry without questions. The point here is the work context determines which management style is suitable.

2.7.3 Leadership

2.7.3.1 Definition of leadership

The researcher acknowledges that Leadership is evolving very fast and hence theorists do not have a common definition. Leonard (2003:5) makes a very interesting reference to Blackmar (1911) who viewed leadership as the “centralization of effort in one person as the expression of the power of all.” This definition mainly emphasizes the power and control that the leader has over others.

Again Leonard (2003:5) cites Bass (1985); Bennis, (1983); Burns, (1978); and Tichy and Devanna (1986) when they define leadership as “a transformative process that creates visions of a future state for the organization and articulates ways for the followers to accomplish this goal.” What is good about this definition is that it acknowledges a pertinent role to be played by the followers. McLeod and Smith (1996:322) describe leadership as “that quality of an individual that motivates others to willingly participate to achieve goals which they come to share with the leader.” Leadership must be viewed as a relationship between the leader and the led. According to Kenichi (2005: 38) “Leadership consists of three axioms namely: leadership is situational, non-hierarchical and relational.”

Also, the unified theory of leadership states: “Leadership is the result of the combined influences of a leader interacting with and adapting to stakeholders and conditions” (Alexander, 2005:41). These definitions declare that leadership is not about the position one holds but also about the environment that is important to the success of a leader. For example, the researcher occupies a very junior position within the Infrastructure Planning and Delivery Directorate but he took a lead in identifying and acting upon a need to bridge the information gap that seems to haunt everyone involved with Infrastructure Management Services (IMS) provincially and nationally. For me and my work situation management alone is not enough and hence we need to practice more leadership if we are amicably to address infrastructure backlogs, maintenance and repairs challenges.

Therefore, the adoption of complex leadership style which considers the non-linearity, dynamism and turbulence of the environment as advanced by Marion et al (2001) is the best way to go.

2.7.3.2. Leadership theories.

Leadership, as already alluded to in the previous paragraph, has been extensively researched and written about. Most of the leadership theorists do not seem to agree on a suitable definition of leadership as well as what makes up a good leader.

However, for purposes of this research the researcher chose to concentrate on the four theories of leadership as advanced by Smith et al (2004:80) namely: charismatic, transactional, transformational and servant leadership.

a) Charismatic leadership. The commonly held view about charismatic leadership is that good leaders possess certain characteristics which make them succeed. Max Webber in Smith et al (2004:81) defines the leader as “A charismatic person who exercises power through followers’ identification with and belief in the leader’s personality.” However, a different view is propounded by Trice and Beyer (1986) that charismatic leadership requires more than just extraordinary personal characteristics. The researcher is of the view that basing leadership success on charisma only is wrong. It is likely to condemn people without charismatic features as if they are the only recipe for success. According to the researcher, charismatic characteristics together with training will enhance a leader’s capabilities.

b) Transactional leadership. This is characterized by social exchange between the followers and leaders and it involves numerous reward-based transactions. The transactional leader set goals, expected performance level and consequent rewards. The leader monitors performance and takes corrective action should a need arises. In simple terms transactional leaders are motivated by the reward they get.

c) Transformational leadership. The commonly held view here is that transformational leaders inspire followers to share a vision, empower them to achieve the vision and provide the necessary resources for developing their true potential. Smith et al (2004:80) cites Bass et al (1996) where they asserted that transformational leaders serve as role models, support optimism and mobilize commitment, as well as focus on the followers’ needs for growth. The researcher supports transformation leaders because they recognize that the success of an organization is not

the sole responsibility of the leader. The holistic approach adopted by transformational leaders is strongly supported.

d) Servant leadership. Smith et al (2004:81) maintain that Robert Greenleaf conceptualized the idea of the servant leader. The servant leader is selfless in that he or she assumes a non-focal position within the group and provides resources and support without expecting any acknowledgement whatsoever. In fact the servant leader is seen first as a servant to others. It is further suggested that through the display of servant behaviour an individual emerges as pivotal for group success and eventually will be entrusted with a leadership position. The followers play a significant role in the choice of who leads the organization. The researcher acknowledges that Greenleaf did not provide the definition for servant leadership and therefore concurs with Laub's (1999:83) interpretation that "Servant leadership is an understanding and practice of leadership that places the good of those led over the self-interest of the leader."

Smith et al (2004:82) maintains that "Servant leadership promotes the valuing and development of people, the building of community, the practice of authenticity, the providing of leadership for the good of those led and the sharing of power and status for the common good of each individual, the total organization and those served by the organization." The researcher is convinced by this definition because the needs of the members are prioritized. The servant leader assumes leadership to serve and develop followers to realize their true potential. Servant leadership is good in that it advances personal development of followers which invariably benefits the leader as well. The researcher supports servant leadership ideals because it has adopted systems thinking characteristics of holism, interconnectedness and 'embeddedness.' Lastly, the researcher proposes the adoption of servant leadership ideals if Sisonke District Planning Directorate is to effectively and efficiently address infrastructure backlogs, maintenance and repairs.

2.7.3.3 Difference between management and leadership.

Management and Leadership concepts may not have a clearly discernible difference to some people. They are at times used synonymously. However, some theorists distinguish between the two. For instance, Marion and Uhl-Bein (2001:406) maintain that "Leadership can be roughly

defined as tending to growth, fitness innovation and the future of the organizations. Management is tending to the nuts and bolts of detailed operations.” In simple language leadership is at the strategic level, focusing on long-term and future direction of the organization while management is at operational level merely focusing on the implementation of the day-to-day operation of the organization.

2.7.3.4 Project management

Before the researcher could define project management he felt it necessary to define a project. Gray and Larson (2008:5) define a project as “a complex, non-routine, one-time effort limited by time, budget, resources, and performance specifications designed to meet customer needs.” The researcher agrees with Larson and Gray because in reality and as per Project Management Body of Knowledge (PMBOK) guide a project has a specific time horizon, it is new and has to contend with inevitable limitations of time, cost and scope. The school construction projects I manage must comply with these limitations too. In defining project management the researcher is particularly convinced by Project Management Institute’s (PMI) position in their PMBOK.

According to PMI’s PMBOK guide book, project management refers to “the application of knowledge, skills, tools and techniques to project activities in order to meet stakeholder’s needs and expectations from a project.” Saynisch (2005:556) asserts that “Project management is the planning, organizing, monitoring and control of all aspects of a project and the motivation of all involved to achieve the project objectives safely and within agreed time, cost and performance criteria.” Project management skills with their emphasis on both management and leadership are invaluable and critical to my success in addressing infrastructure delivery backlogs, maintenance and repairs as a Sisonke District Planner.

2.8 The integration of leadership and infrastructure development.

As already alluded to in paragraph 2.5.3.2 (d) the researcher chooses the servant leadership style as the most relevant and suitable approach. The dire shortages, dilapidated and inappropriate infrastructure at the Sisonke District necessitate an intervention that is driven by selfless leadership who seek to solve the infrastructure backlog holistically and in the process empower the stakeholders for self-reliance. The process of delivery of infrastructure involves huge sums of

money and therefore cannot be entrusted to leaders with corrupt tendencies.

The problem situation warrants leadership with a clear vision, insight and passion.

According to the researcher these characteristics befit those of the servant leadership approach which he considers as the best suited to deal with the infrastructure development at Sisonke. Furthermore, the researcher recommends that the servant leadership approach be adopted in other districts of KwaZulu-Natal and nationally.

2.9 Conclusion

This chapter has defined infrastructure delivery programmes as a schedule of intervention endeavours to improve infrastructure in schools and offices. The South African history and development has been used to elaborate and give insight into how the country ended up languishing in dire shortages of basic infrastructure especially within the context of education. Basic infrastructure delivery in the education context refers to provision of services like water and sanitation, classrooms, laboratories, libraries, electricity, administration blocks etc.

Among the reasons given for the acute shortages in infrastructure delivery are political, social and economic factors. Colonization and Apartheid legacy have left an indelible mark in the lives of blacks and poor South Africans. The literature reviewed both locally and abroad clearly shows that delivery of basic infrastructure experiences problems across the world and that different authors approach it differently.

The ANC RDP programme (1994) maintains that physical infrastructure delivery is the means through which it could redress huge imbalances in service delivery between blacks and whites. Fourie (2005) contends that we should emphasize quality of infrastructure rather than quantity. Gramlich (1994) says that instead of worrying about existence or non-existence of shortages of infrastructure we should be concerned about changing policies of infrastructure investment. Therefore, such differences of opinion are normal and indicate different contexts from which these writers come. However, the provision of basic infrastructure needs by governments will never be enough.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction.

This chapter outlines the research methodology to be used in this study. The research design for this study was informed by the aim of the study, the research paradigm the researcher subscribes to and the complexity of the problem situation under study.

The qualitative research approach was used to inform this study. It was the researcher's view that the complex nature of the problem situation can best be studied using qualitative research approach because the qualitative research approach is suitable for a messy problem situation of leadership and infrastructure delivery programmes in the Sisonke district. The advantage of using a qualitative research approach is succinctly put by Mayer (2007) in Iqbal (2007:15) where he describes the advantage of qualitative research; it is to "understand people and the social and cultural context within which they live."

The problem situation of this study, as already mentioned in the problem statement in chapter one, warranted the use of critical systems thinking as a meta-methodology and SSM as a qualitative research process methodology.

This chapter covered this introduction, positionality of the researcher, research design and methodology, methodology overview-SSM application and criticism, methods of data collection, sample, instrumentation, procedure and data collection, data analysis, ethical requirements, limitations and conclusion. The positionality of the researcher will be discussed first.

3.2 Positionality of the researcher

The researcher has spent the last four years of his career as a District Infrastructure Planner and he acquired first-hand experience with the complex and turbulent construction sector environment. The researcher's core duties involve among others prioritization of infrastructure needs, initiation and monitoring of construction and maintenance projects, undertaking feasibility studies in preparation for the registration of new schools, engage in property development, resolve land issues and support curriculum.

The researcher bases his choice of practitioner research approach on McCutcheon and Jung, (1990:148) who define practitioner research as “a systemic form of inquiry that is collective, collaborative, self-reflective, critical and undertaken by the participants of the inquiry”. The use of practitioner research approach enables the researcher to study his own organization in order to better understand the perceived problems impacting upon infrastructure delivery and, to create new knowledge about infrastructure delivery programmes. The hope was that such knowledge would further enhance the researcher’s skills and attainment of the vision to become an excellent person.

As a practitioner researcher the task was to evaluate how infrastructure delivery programmes are working. While doing this study the researcher enjoyed some advantage because he researched his own organization and thus his access to information was unlimited. However, because he wanted transparency about his perspective it is possible that his personal values and bias might have effect in the quality of this research study.

3.3 Research design and methodology

The research approach that was used in this study is the qualitative approach. Qualitative research is defined as a multi-method that provides an interpretive and naturalistic approach to research (Denzil and Lincoln, 2007). Qualitative research was selected based on the nature of the problem which requires to be studied in depth and in detail. According to Ghauri et al (2002:87) “qualitative research is well suited for research problems meant to uncover a person’s behaviour or experiences and understanding a phenomenon about which little is known.”

Also, Vivar (2007:64) in agreement with the above quotation cites Creswell (1998) who maintain that “qualitative research is often used when variables cannot easily be identified, and theories are not available to explain the behaviour of participants and need to be developed.” The messy situation reflected in the problem statement warrants that the researcher uses an interpretive perspective in order to thoroughly investigate it. It allows for the participation of different individuals hence the researcher will be able to get different world views.

To assist the researcher in collecting in depth and comprehensive information about leadership

and infrastructure delivery programmes in the Sisonke district, a case study research method was used in this study. The description of a case study used in this study bears a lot of resemblance to Yin (2003:18) who maintains that “a case study is best described as an empirical inquiry that investigates a contemporary phenomenon within its real life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used and it is often used in qualitative research.”

This enquiring process was done using Critical Systems Thinking (CST) as a framework and Soft Systems Methodology (SSM) as a methodology, because it is a qualitative methodology process Checkland (1975, 1980 and 1990). Because SSM requires a deep appreciation of the views and perceptions of individuals it is best served by observations and interviews in which these views and perceptions are explored. Thus SSM draws on qualitative research approaches.

As already mentioned above, the researcher chose a qualitative research approach because according to Bowen (2005:209) ‘qualitative research approach provides data that reveals depth and detail to create understanding of phenomena and lived experiences.’ The qualitative research method is well-suited for my study because the objective of my study demands in-depth insight into phenomenon. The following qualitative research methods may be used:

- ❖ Historical review;
- ❖ Focus groups; and
- ❖ Case studies.

In this study the researcher used two case studies that allow for an in-depth study of a problem situation given the time and financial constraints. The first case study selected is Tonjeni Primary School in Umzimkhulu because this project satisfied the project management principles of quality, time and cost.

The second case study selected is Bhidla Primary School in Bulwer which was repeatedly hit by storms since 2008 and unfortunately, our Emergency Repairs Programme takes a long time to sort out the problems. Also, the researcher used an historical review which is the use of existing

documents like minutes of site meetings, letters and prescripts. The existing documents are normally produced for a different purpose like minutes of meetings but are applicable to this study.

3.4 Methodology overview-soft systems methodology.

The discussion covered the definition of soft systems methodology, the summary of seven steps and four activity steps within SSM, discussion of SSM and criticism of SSM.

3.4.1 The summary of seven steps and four activity steps within SSM.

Checkland and his Lancaster colleagues (1970s) initiated the seven-stage version of SSM which is the methodology that has been chosen to inform this research. Checkland (1975, 1981) depicts the seven-stage version of SSM diagrammatically as follows:

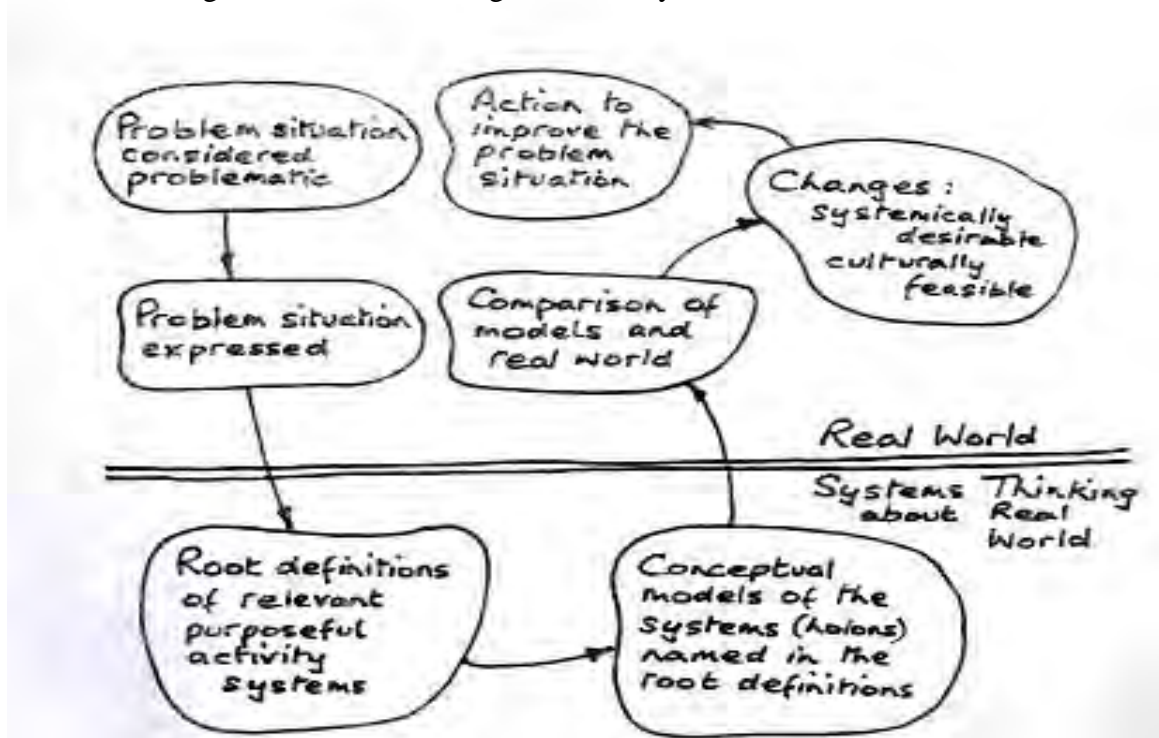


Figure 2: Traditional seven steps version of SSM adapted from Checkland and the Lancaster team (1981).

Also, the researcher summarizes the traditional seven steps version of SSM in the table that follows.

SSM 7 steps	Brief description
1. Problem situation unstructured	The researcher derives broad knowledge about the problem, get to know how the organization works, the language used and its operational procedures as well as its stakeholders and their perceptions of the problem area.
2. Problem situation expressed (rich picture)	The researcher writes down knowledge gained from the previous step in a more simplified and understandable manner. Checkland (1981) makes use of a 'rich picture', that is, cartoon-like diagrams to clearly explain, simplify and summarize the problem situation experienced by the stakeholders. Kinloch et al (2008:5) endorse this where they maintain that "the best way of expressing the problem situation is through rich pictures. A picture is worth 1,000 words." Also, the use of a rich picture is advantageous because it aids creativity, allows the easy sharing of ideas between organizational actors, shows interrelationships better than linear prose and act as an excellent memory aid (Jackson, 2000).The researcher should and must concentrate on primary and issue-based problems as advanced by Checkland (1981).
3. Root definitions of relevant purposeful activity systems	This is where the researcher shifts focus from the 'real' world to the 'conceptual' world, tries to create a system at a conceptual level that will address the problem domain. This stage is where the researcher is expected to decide what different perspectives can be used when looking at the problem situation. According to Checkland (1981) and his Lancaster team this stage involves choosing the relevant human activity systems called 'holons'. As a result of a need to test the authenticity of a root definition Checkland and the Lancaster team introduced the mnemonic CATWOE (See explanation in page 50).
4. Building conceptual models	This stage involves the construction of conceptual models which depict the human activities necessary to fully implement the root definition. Checkland (1981) suggests about seven essential activities or verbs to be used in determining these activities. According to Jackson (2000) the root definition expresses 'what the system is' and the conceptual model expresses 'what the system does.' The conceptual model like the root definition can also be put to test using Checkland's (1981) 'formal system model' to ensure that they are not fundamentally deficient.
5. Compare the conceptual models with the real world situation	This stage marks the return from the abstract, systemic thinking to the real world thinking. The researcher engages in the actual comparison of conceptual model with the real world to identify differences and similarities. The researcher then concentrates on the gaps in the real world situation. According to Warring (1996:95) "the aim of the comparison stage is to draw a list of activities or topics that are missing or unsatisfactory in the real world." He warns though that the researcher should not pre-empt the taking action stage by offering practical solutions to the problem situation.
6. Identify feasible and desirable options for changes that would improve the situation	This stage involves the identification of culturally feasible and systematically desirable changes. The researcher as a facilitator encourages the individuals to decide on which specific activities are deficient and need attention. New information may still be introduced. The agreed upon changes normally fall within structural (physical), process (activities), policy (overall objectives) and cultural changes (attitudes).
7.Implementation of the action(s) agreed upon in stage 6.	At this stage the recommendations to improve the problem situation are made. The researcher decides how changes in step 6 above could be implemented. Once more the researcher must be acutely aware of the obstacles in the way of implementing the changes. The implementation of proposed changes identified at stage 6 leads to the commencement of yet another 'cyclical learning' phase. Jacksons (2000) concurs with Checkland when he maintains that problem solving in social systems is a never-ending process of learning. Therefore, implementation of the proposed changes would lead to another 'messy' problem situation and thus a new learning cycle begins.

Table 3: Summary of traditional seven stages version of SSM adapted from Checkland (1981).

As already mentioned in the table above (Table 3), the best way to test for the adequacy of root definition according to Warring (1996) is the use of the CATWOE mnemonic which stands for:

- . C for customers: (beneficiaries or victims of the system; not necessarily customers of a company);
- . A for actors: (those involved in operating the system);
- . T for transformation: (the essential change process);
- . W for weltanschauung (en): (world view(s) of actors);
- . O for owner(s): (power figures who control the existence of the system; not necessarily owners of the company); and
- . E for environment: (constraints on the system).

The researcher observed that like any methodology SSM influenced and was influenced by changes that take place as a result of the complex and dynamic environment referenced earlier. The process towards change was informed by among other things Checkland et al (1990) who criticized the traditional seven-stage version of SSM for being a too rigid and conservative approach that must be followed chronologically from stage one through to seven. Checkland et al (1990, 1998 and 1999) opted instead for a more flexible approach-the four activities model represented diagrammatically in the following diagram. In order to represent same clearly the researcher decided to use the seven steps version, already mentioned above, together with four activity model.

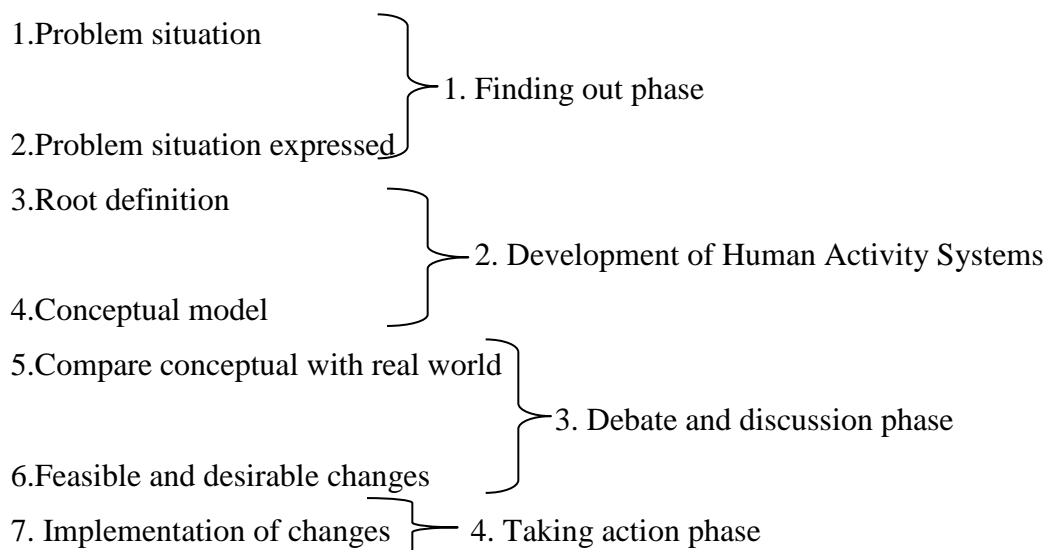


Figure 3: Derivation of four activity phases from the seven steps version of SSM.

3.4.2 Discussion of SSM.

Purnomo et al (2004:108) cites Checkland (1989) where he defines SSM as “a learning system designed for complex human-dominated systems.” In simple language SSM is fundamentally designed and meant to be a tool to understand the system and not to solve a problem as is the case of formal hard system-based approach (Rosenhead, 1989). The researcher agrees with Rosenhead’s assertion because he makes use of SSM to understand and ultimately improve the complex and ill-defined problem situation, not to provide a practical solution as per hard systems thinking. In order to find a practical solution the researcher would consider Viable Systems Methodology (VSM) of Beer (1985) which is most suited to manage delivery. As already mentioned, due to time and financial constraints the researcher concentrated on SSM. While agreeing with the above theorists Checkland and Scholes (1990) reference Von Bulow (1989) when he asserts that

“SSM is a methodology that aims to bring about improvement in areas of social concern by activating in the people involved in the situation a learning cycle which is never-ending. The learning takes place through the iterative process of using systems concepts to reflect upon and debate perceptions of the real world, taking action in the real world, and again reflecting on the happenings using systems concepts. The reflection and debate is structured by a number of systemic models. These are conceived as holistic ideal types of certain aspects of the problem situation rather than as accounts of it. It is taken as given that no objective and complete account of a problem situation can be provided.”

The fundamental principles of SSM as initially expressed by Checkland and his Lancaster team are that SSM involves:

- ❖ Stakeholder participation. SSM’s interpretive stance requires active participation of all relevant stakeholders, that is, individuals in a problem situation. The thinking behind this being that the opinions of all concerned are critical to the successful understanding of the problem situation and ultimately to the choice of action to improve the problem situation;
- ❖ Team or group learning. Through debate and discussion at stages 5 and 6 of SSM both the researcher and key individuals agree on alternative course of action to be adopted in a problem situation. All participants learn to accommodate each other’s different worldviews or ‘weltanschauungen’;
- ❖ Changing the way people think and hence the whole organization (perceptions);
- ❖ Seeking accommodation because consensus in situations involving many people with

different worldviews is unachievable;

- ❖ Use of a rich picture and application of the CATWOE mnemonic as already referenced earlier and
- ❖ Recognition that the SSM process takes place at the real world stages 1,2,5,6 and 7 and at systems thinking /conceptual world stages 4 and 5.

SSM has been widely and successfully used as a ‘seven-stage model’ also known as ‘mode 1’ application by many writers. The Humberside Training and Enterprise Council case study is cited as a very good example (Jackson, 2000). The purpose of this study was to discover ways to improve economic growth and uplift the standard of local communities through strengthening the local skill-base. Basically this project seeks to interrogate and develop actions to improve contracting processes. The other collaborator was Waring (1996) who sought to study a project in crisis at Northwood Training Materials Unit. In this study the problem situation was messy and ill-defined because a project designed to publish and sell learning materials could not take-off the ground. SSM was thus used to unpack the perceived challenges facing the project team. The study ultimately identified among other things the lack of leadership and poor communication as the main problem area.

The other complementary challenges to the problem situation were: lack of team-work, staff competencies, lack of business and marketing plans. The authors of this paper successfully applied the seven stages of SSM from data collection, rich picture through root definition to plan of action. The course of action to improve the situation included among other things that workers adopt a more disciplined way of working, adopt proper ways of conducting and recording minutes of regular meetings and that open communication channels among project team members are to be maintained and improved. All the stakeholders engage in a participatory process and hence learned together how to better discharge their duties as team members. On the basis of this case study it can safely be claimed that SSM can indeed be employed to make it possible for the team members to think abstractly and to reach a turning point where they are prepared to accommodate each other’s worldviews. They would be able to see a bigger picture (the success of the project as their common vision and goal) irrespective of who leads the project.

Brenton (2007) applied SSM to improve a communication problem between an Acute Inpatient Unit and a Rehabilitation Service within a Health and Social Care NHS Trust in West Sussex. What was at issue here was the feeling held by some that too many referrals are being rejected and some think there are unnecessary delays in transferring referrals and admitted patients. This situation was really complex and hence Brenton used SSM to unpack it. He used the seven-stage model with all SSM terminology like rich picture, root definition and the mnemonic CATWOE etc. Brenton took advantage of the stakeholder participation and team learning tendencies derived from the use of SSM resulting in their buy-in and active participation in determining their own destinies. What is good about SSM is that it allows for group learning for both the problem solver and problem owner. Brenton (2007) argues that SSM allows the researcher to take stock of the 'whole picture and refocus thinking.'

Sanchez et al (2008) uses the seven-stage version of SSM despite the recent popularity of mode 2 application. Mode 2 application of SSM refers to the use of SSM as a four-activity approach rather than the traditional seven stages model (Checkland et al; 2006). He applied this version of SSM to enquire into a messy problem situation in the Learning Support (LS) Department of a private International School in Bogota, Columbia. The LS is provided for the learners experiencing Learning Difficulties (LD) at school. These learners are referred by their teachers, parents or psychologists. However, LS created many problems at school: relationships among staff are not harmonious, there is an inefficient administration process and sessions are only used to solve urgent issues. This was a 'messy' or ill-defined problem situation (Ackoff, 1978) and it warranted urgent intervention. This study sought to enquire into the problem situation (through a learning process) and to take action to improve the status quo hence SSM was used as a relevant methodology. The three main objectives for LS were identified as follows: to ensure students' well-being, to improve students' academic performance and to promote students' autonomy. Subsequently, three administrative weekly meetings took place to ensure objective alignment to review LS administrative processes and to ensure permanent communication between the stakeholders.

The SSM's mode 1 approach is still appealing to some users despite criticism that it is 'a rigid step-by-step process' of enquiry. In fact its flexible use means academics, consultants and /or any

interested party can successfully use it in whatever manner they deem fit for their problem situation.

SSM has undergone fundamental changes over time. These fundamental changes emanate from the turbulent and dynamic environment within which all living organisms and organizations exist. As already alluded to in figure 2 earlier, Checkland himself is no longer applying SSM in its traditional form called 'mode 1' application (7 stage-version of SSM). He cooperates with numerous writers in his developmental process of SSM. Checkland and Winter (2006) make use of the four-activity approach. In pursuing this venture they identify two ways to understand the problem situation namely: process and content of perceived problem situation. Checkland and Scholes (1990, 1999, and 2000) also adopt a four-activity approach (see figure 2 above).

Checkland and Scholes (1990) assert that SSM is flexible and versatile hence it applies in any problem situation whether this be in the private or public sector. Connell (2001) concurs with Checkland and Scholes when they advocate for the flexible use of SSM. Another important point they raise is that SSM can either be applied holistically or partially depending on the problem situation, however, for the sake of completeness it is best to focus on a complete use of the methodological cycle meaning from 'finding out' to 'taking action' in a problem situation. The complex application of SSM is signified by the use of multi-methodological approaches. The main purpose of combining methodologies is to ensure they complement one another. The complex environment within which organizations or people exist warrant a complex approach and thus combining methodologies is likely to be capable of addressing the complex problem situation.

Luckett et al (2003) applied SSM to report on a critical systems intervention to improve the implementation of a District Health System in KwaZulu-Natal. These authors followed the four-phase learning cycle developed by Kolb. In order to tackle this huge responsibility a need for what Luckett (2003) calls a 'governing approach' arose. They use critical systems thinking, a meta-methodology as a framework and soft systems methodology as one of the problem structuring methods. The main purpose of critical systems thinking, as a higher level methodology, is to learn about and harness the various systems methodologies, methods and

models to enable managers to address complex, turbulent and heterogeneous problem situations.

Luckett (2003) used an interpretive governing approach that would facilitate debate amongst different stakeholders with different worldviews on the 'real problems' impacting upon the implementation of the District Health System in KwaZulu-Natal. The interpretive approach is subjective and participatory and thus it ensures stakeholder buy-in and affords them an opportunity to craft their own destinies. Several writers endorse the use of the interpretive approach. Jackson (1997:374) has this to say: "the use of interpretive approach enables the intervention to proceed more smoothly than those governed by the functionalist and emancipatory rationales." In this study Luckett et al (2003) used a combination of the four-phase activity model (SSM) and Kolb's Learning Cycle. The Diverging phase coincided with finding out, assimilation coincided with structuring the problem situation, converging coincided with debate and decision making and accommodation coincided with the implementation of what is considered desirable and feasible. The use of concept maps and sign-diagrams versus the use of rich pictures with SSM is important to note.

Cordoba et al (2008) use SSM to enquire into skills development and technology transfer at the Durban Institute of Technology. Basically, the authors reported on a skills capacity-building intervention involving the application of systems thinking approaches and methodologies in South Africa. The situation in the South African context and skills development sector is 'messy' and ill-defined hence the application of SSM. These authors maintain that SSM is suitable because it is capable of accommodating a variety of perceptions, learning about and acting upon the cultural context in which skills development projects are being defined and implemented. Cordoba (2008), like other writers, adopts a participatory and team learning approach which forms the basis of SSM use. He applies SSM in a flexible manner using the terminology 'café dialogue' while at the same time retaining something like a 'rich picture and root definition.'

Kinloch et al (2009) combines methodologies in their study that seeks to enhance crime detection and operational planning. They developed a new generic framework which integrates SSM (Checkland, 1972) and VSM (Beer, 1985) while embracing self-adaptation and autonomy. In support of the combination of methodologies Kinloch et al (2009:4) cite Skyrme (1997) when he

“argues that to try and apply a single methodology however appropriate it may be to its opponents, does not reflect the richness, diversity and interdependence of most real-life situations.” The multiple methodology approach is appealing especially because it is a fact that in the real-world, problem situations are unavoidably highly complex and multi-dimensional. A multi-pronged approach seems to be inevitable in order to deal holistically and effectively with the turbulent real world problem situations. Combining methodologies enables them to complement rather than to compete with each other. Kinloch et al (2009) uses SSM to determine ‘what’ changes are happening and VSM to decide ‘how’ to take the necessary corrective action. In support of their approach Kinloch et al (2009) cite Checkland’s SSM (1981, Checkland and Howell, 1998; Checkland and Scholes, 1999) when they maintained that SSM is suitable for investigating ‘what’ happens in a problem situation and not ‘how’ to solve it.

This study utilizes the seven-stage version of SSM’s interpretive perspective as a dominant approach because it is the most appropriate and assumes a participatory, social and cultural multidimensional approach to the problem situation. It does not use a mechanistic and scientific lens which assumes the existence of one best way of solving a problem situation. What the emancipatory and postmodern perspectives address is already covered by the participatory interpretive perspectives that accommodate different worldviews. The researcher uses the seven-stage version as the most suitable approach to deeply interrogate the leadership and infrastructure delivery programmes in the Sisonke District and ultimately come up with the best possible action to improve the situation. In the main the study unpacks the perceived issues impacting upon the infrastructure delivery programmes, the effectiveness of our communication system, the impact the capacity of planners have on service delivery and the correctness of our priorities.

As already mentioned earlier in the chapter, Checkland’s SSM (1975, 1980 and 1990) is most suitable for analyzing my problem situation because it recognizes complexity, dynamism and turbulence.

3.4.3 Criticism of SSM.

The Soft Systems Methodology (SSM) has been successfully applied in different contexts. A common view is that it is well-suited for messy and ill-defined real-world problem situations. It

is commended for its transparent manner in allowing for stakeholder participation and group learning in a problem situation. The use of SSM is held in high regard because it allows for abstract thinking which is not possible with other methodologies. However, SSM has had its fair share of criticism as well. Connell (2001) maintains that SSM criticism is quite vociferous at the epistemological level where questions are posed about its theoretical underpinning. SSM is alleged to be advancing a 'managerialist perspective.' It deals with a most powerful section or group of our society-'managers', who unfortunately always dominate debate and discussion (stage 5 and 6 of SSM) and hence what is considered desirable and feasible reflects their aspirations. This compromises the quality of the outcomes.

Also, Connell (2001) cites Mingers and Taylor when they advance three problems based on SSM use, namely: those concerning the methodology (time consuming, need experienced practitioners), those concerning management of intervention (establishment of trust, ensuring stakeholder participation) and those concerning problem content system (imbalanced power relations, change of face of internal politics). Jackson et al (2000) comment that SSM follows an interpretive perspective and hence it is not a problem structuring methodology. Therefore, its use can lead to multiple interpretations. This is true because SSM is flexible and thus two researchers researching the same problematic situation may not reach the same conclusion. The reason is very simple, different people have different worldviews. In support of this point, Jackson (2000:251) cites Atkinson (1986) when he asserts that "even those regarded as familiar and experienced with SSM methodology seem to use it differently or inconsistently."

The other complicating factor is that some uses of SSM are applicable to hard system reasoning as well. Sewchurran (2007) contend that SSM lacks techniques required to initiate taking action. It dismally fails to show clearly how 'taking action' to improve the problem situation is going to be implemented. In simple terms there is little in SSM to guide the stakeholders towards taking action. Therefore, taking action is context-bound hence there is no guarantee that two researchers will achieve the similar outcomes. In full support of Sewchurran's assertion Jianmei (2010:173) adds his voice to point out that different types of soft problems exist in the real world situation like the 'soft problem of interests conflict.' He criticizes SSM to say that although it is meant to tackle all soft problems it lacks operable measures to tackle some special soft problems such as

the one of interests conflict. The SSM radicals assert that it thrives in hierarchical settings and in the process severely constrains genuine participative debate. Checkland's SSM is ill-equipped to deal with issues of power. In support of this contention Jackson (2000) cites Thomas and Lockett (1979) when they suggest that power must inevitably shape which world views come to the fore and influence change in SSM.

It is therefore clear that whatever results are achieved through the use of SSM it unfortunately favours the powerful and thus casts a dark cloud on the success of SSM as a good methodology to enquire into messy and ill-structured social problems. SSM's interpretive approach makes it very subjective or idealistic in the sense that it provides a different response in each situation depending on the user and the nature of the situation.

Logically, this point raises serious doubts about the neutrality of the facilitator/researcher. Although I welcome the flexible application of SSM to the different problem situations, the generalist applicability seems to undermine and underestimate the complexity of the environment in which all organizations and people exist. Jackson (2000) remarks that in the same way that hard systems thinking has limited domain of effective and legitimate application, so too does SSM. The general applicability of SSM suggests the existence of a 'one-size fits all' mindset. This is far from any truth because the complexity theory posits that organizations and people exist in a turbulent, dynamic and heterogeneous environment wherein there is no one best way to deal with any particular circumstance and that today's solution to a problem situation may not necessarily be a solution tomorrow (Maxfield, 2008).

3.5 Data collection methods

One of the advantages of a case study methodology is that it allows the researcher to be able to use numerous data collection methods according to Yin (2003). According to Yin (2003), the ability to use multiple sources of data ensures reliability and validity of the outcomes of the study. It is therefore, the researcher's view that the outcomes of this study should be credible. Data for this study was collected over an eight months period through multiple sources commonly known as triangulation.

Two types of data were used namely: primary and secondary data. Primary data refers to data collected for a specific study. The following means of primary data collection were utilized: unstructured interviews, participant observation, and informal conversation and focus group interviews. The secondary data refers to data that was initially generated for other purposes, but is now used to shed some light on the current problematic situation. The study makes use of documents like letters and minutes as sources of secondary data.

Data was collected using unstructured interviews, participant observation, informal conversation existing documents and focus group discussion.

3.5.1 Unstructured interviews

This study makes use of mainly unstructured interviews of the sixteen targeted respondents. Ghauri (1948:101) maintains that “unstructured interviews are interviews where the respondent is given almost full liberty to discuss reactions, opinions and behaviour on a particular issue. The interviewer is just there to give lead questions and to record the responses in order later to understand how and why. The questions and answers are often unstructured and are not systematically recorded beforehand.” The guide does not prescribe which aspect to start and end with. The researcher asks open ended questions that do not require a ‘yes’ or ‘no’ answer and that do not have one correct answer. The different theorists hold a view that unstructured interviews possess the following advantages:

- ❖ Are advantageous in the context of discovery;
- ❖ Collect first-hand information in a natural setting;
- ❖ Are flexible;
- ❖ Are highly suitable for more exploratory and inductive types of study; and
- ❖ Enable the researcher to probe sensitive matters easily.

On the basis of the above advantages unstructured interviews were deemed suitable for providing a rich qualitative data required to inform a soft systems methodology study.

However, disadvantages also exist in that interviews are:

- ❖ Time consuming and costly;

- ❖ Demand greater skill from the researcher;
- ❖ Prone to interviewer bias that may compromise validity and reliability; and
- ❖ Based on a sample size that in qualitative research interviews is generally small and not a true representative of the target population.

3.5.2 Participant observation

In recognition of the need for a multidisciplinary approach to solving organizational matters and the need for an holistic approach to critical systems thinking the researcher also used a participant observation approach and informal conversation. This mixed methods approach enhances the quality of this research output and is consistent with a critical systems thinking framework used in this study. Participant observation refers to the situation wherein the researcher actively participates in activities of the very organization he or she seeks to study.

Waddington (1987) cites Taylor et al (1984:15) when they say that “participant observation involves social interaction between the researcher and informants in the milieu of the latter, the idea being to enable the observer to study first-hand the day-to-day experience and behaviour of subjects in particular situations, and, if necessary, to talk to them about their feelings and interpretations.” The researcher chose participant observation because it affords him an opportunity to participate fully in group activities, his presence raised no suspicion among participants and therefore they hopefully, interacted freely and honestly. The first-hand information obtained is accurate and thus increase the credibility of research data.

According to Schwandt (1997) data from observation are valuable for a number of reasons:

- ❖ The Researcher is a natural part of the situation or event under investigation;
- ❖ Different perspectives of the people being studied is understood;
- ❖ Great attention can be paid, such as interactions, events, personalities and relationships; and
- ❖ The dynamics of social behaviour are captured in a way impossible through some approaches like questionnaires.

Disadvantages

- ❖ The observer might be influenced by the situation, culture or events to such an extent that he

or she might not be neutral; and

- ❖ The observer's perception of inferior culture might jeopardize validity and reliability of outcomes.

3.5.3 Informal conversations

Informal conversations were held with many stakeholders from the selected categories. Additional information was gathered through conversations with the four programme managers that were not interviewed. An ample opportunity presented itself when the researcher accompanied them to monitor problem projects. The researcher was able to observe non-verbal reactions like happiness, anger and frustration. The use of informal conversation assisted the researcher to get in-depth information about the problem situation required when a qualitative research approach and specifically soft systems approach is used. Informal conversations were also held with colleagues from other districts, other professional team members, contractors and labourers to ensure data was gathered from a variety of sources.

3.5.4 Existing documents.

The advantages of using the data collected through participant observation and informal conversation complement the use of unstructured interviews in producing rich data. Furthermore, because the disadvantages exist for both unstructured interviews and participant observation the researcher has included minutes of meetings and letters as his primary data sources to ensure that these approaches complement each other and hence produce the richest data possible. Irvine et al (2006) hold a view that to ignore the use of documents like minutes of meetings, reports and other documents as data sources would be to distort the context in which organizational behaviour occurred.

Documents are advantageous because they are readily available, cheap and fast to gain access to. Under normal situations institutions archive their minutes, reports and letters for future reference and hence are readily available on request. According to Hodder (1994, 394) documents are disadvantageous because written text is an artifact "capable of transmission, manipulation, and alteration, used and discarded, reused and recycled." The researcher holds a view that because documents were initially generated for other aims they may be incomplete and irrelevant.

Written text is always susceptible to misinterpretation and thus might taint credibility of the outcomes of the research if they are solely relied upon.

3.5.5 Focus group discussion.

In order to obtain a rich and credible data suitable to inform this study the researcher included focus group discussion. The purpose of focus group was to facilitate an in-depth exploration of the research topic (Krueger and Casey, 2000). As already mentioned earlier, purposive sampling was used to select participants in the focus group discussion. The researcher intended to use ten participants used for unstructured interviews. However, because the researcher wanted to ensure data was received from the most representative sample possible, five new principals were selected from Sisonke district schools to inform the research study. Therefore, an invitation for group discussion was extended to five unstructured interview participants.

Focus group interviews were invaluable because they allowed participants to freely express their opinions about the problem situation under study. Also, focus group enabled the researcher direct interaction with participants which further clarified issues and gave the researcher an opportunity to observe the non-verbal responses like feelings of excitement, anger and concern.

3.6 Sample

The sampling method used was purposive sampling. According to Welman et al (2005:69) “purposive sampling occurs when a researcher relies on experience, ingenuity or previous research to choose a sample.” The use of personal experience by the researcher is also welcome in purposive sampling method. Jankowicz (1991) describes purposive sampling as a sampling method which involves targeting a group of people believed to be typical to the study population, or whose views are relevant to the subject matter.

Neuman (2006) maintains that purposive sampling also known as judgemental sampling is a valuable sampling type for special situations. It uses the judgement of an expert in selecting cases, or it selects cases with a specific purpose in mind. However, it is Creswell (2012:206) who puts it very clear when he maintains that “in purposive sampling, researchers intentionally select individuals and sites to learn or understand the central phenomenon.”

In view of the above information as well as the practitioner researcher point of view explained in paragraph 3.2 above, the researcher selected two infrastructure delivery programmes because one was successful and could be used as a benchmark and the other one had problems. The two programmes selected were the Eradication of Mud and Inappropriate Structures and Emergency Repairs programmes.

Furthermore, the researcher selected the two host schools based on the above criteria. The researcher used his own discretion to select target population. The target population is the study object and consists of all stakeholders about whom the researcher wants to draw conclusions. In this study the target population is Sisonke District Education sector inclusive of all those involved in infrastructure delivery programmes. Because it was practically impossible and too costly to study the whole population of Sisonke District a representative sample was used.

Eleven categories of people were selected based on their knowledge and the nature of the study question. The researcher targeted 16 interview respondents to inform this study. The table below presents a breakdown as follows:

Category	Number
Provincial Infrastructure Planners,	1
District Infrastructure Planner,	1
Principals,	2
Teachers,	1
School Governing Bodies,	2
Learners,	2
Local Councilors,	2
Implementing Agents,	1
Project Managers,	1

Professional Team, and	2
Contractors/workers.	1

Table 4: List of respondents and their numbers

3.7 Instrumentation.

The researcher used unstructured interviews to collect data. In unstructured interviews a framework or schedule guide is used. The interviewer is at liberty to ask probing questions aimed at clarifying or obtaining the perceptions or opinions the interviewee is unwilling to share especially those regarded as sensitive. The extent to which the interviewee would be willing to divulge information depends on the skill of the interviewer. For the framework or schedule guide (See appendix A).

The researcher has complemented in-depth interviews with notes from participant observation, informal conversation and the existing documents. Thereafter, the seven stages of Soft Systems Methodology as advanced by Checkland et al (1975, 1981) were applied.

3.8 Procedure for data collection

Sixteen respondents from eleven stakeholder groups were approached for one-on-one interviews (See paragraph 3.6 above). As already mentioned earlier, the targeted respondents were identified using purposive sampling. The researcher then contacted each respondent to explain the purpose of the research. The reluctant respondents were met for further explanation. Subsequent to that a detailed letter of request and consent form was dispatched (See appendix D). The respondents were expected to sign and return these after seven days. The researcher therefore set up an interview schedule and phoned to confirm if allocated dates and times were convenient for them. The researcher had to remain flexible and hence he had to postpone some due to unavailability of some respondents, work pressures and inclement weather.

Also, one focus group discussion was organized to engage in the application of SSM process as a qualitative research approach. Since participants in unstructured interviews were informed and gave consent to participate in subsequent interviews five of them were selected and other seven School Management Team members were selected from Sisonke district schools. The researcher phoned the respondents to arrange for this important meeting. On the basis of tight schedule of

interviews, especially school principals, focus group discussion was held in the evening, from 18:00 to 21:30. The new participants signed consent forms and were informed about all ethical issues like their right to withdraw at any stage of the discussion, recording of discussion using cell phone device etc.

Sourcing of data using participant observation was on-going and the necessary protocols were observed. Since the researcher is researching his own organization he had access to all the minutes of meetings, reports and letters.

3.9 Data analysis.

Since this study adopted a qualitative research approach data was analyzed through a qualitative analysis approach and SSM. The researcher wishes to remind the reader that qualitative research is broadly defined as any kind of research that produces findings not arrived at by means of statistical procedures or quantification (Strauss & Carbin, 1990). Because this study seeks to unpack a 'messy' social problem which is complex and dynamic (Stacey, 2003) the researcher gathered massive qualitative data through a variety of primary and secondary data sources explained earlier.

Data analysis involves collection, organization and interpretation of data (Irvine & Graffikin, 2006). During the collection process data were first reviewed to ensure authenticity. Faced with this massive data the researcher moved into sorting and arranging data bearing in mind not to lose its richness. This process was made easy because the researcher decided to do data collection, analysis and theory development simultaneously in order to understand and shape the study as it continues.

The analysis process used in this study is summed up by Glesne and Peshkin (1992:128-137) who assert that 'data analysis can be accomplished by means of a reflective diary, the filing of data by categories, simple coding schemes, monthly reports, organization, refinement of coding system as the study becomes more focused, and the display of data by means of visual representations such as diagrams, spreadsheets or flowcharts.'

The researcher summarized data into meaningful format using data coding. Data coding refers to

a tool used to categorize the data into meaningful themes for analysis and study (Creswell, 2009). The categories used are analytical categories which were derived inductively as they emerged from data. In summing up this data analysis process the researcher adapted that of Creswell (2009) as follows:

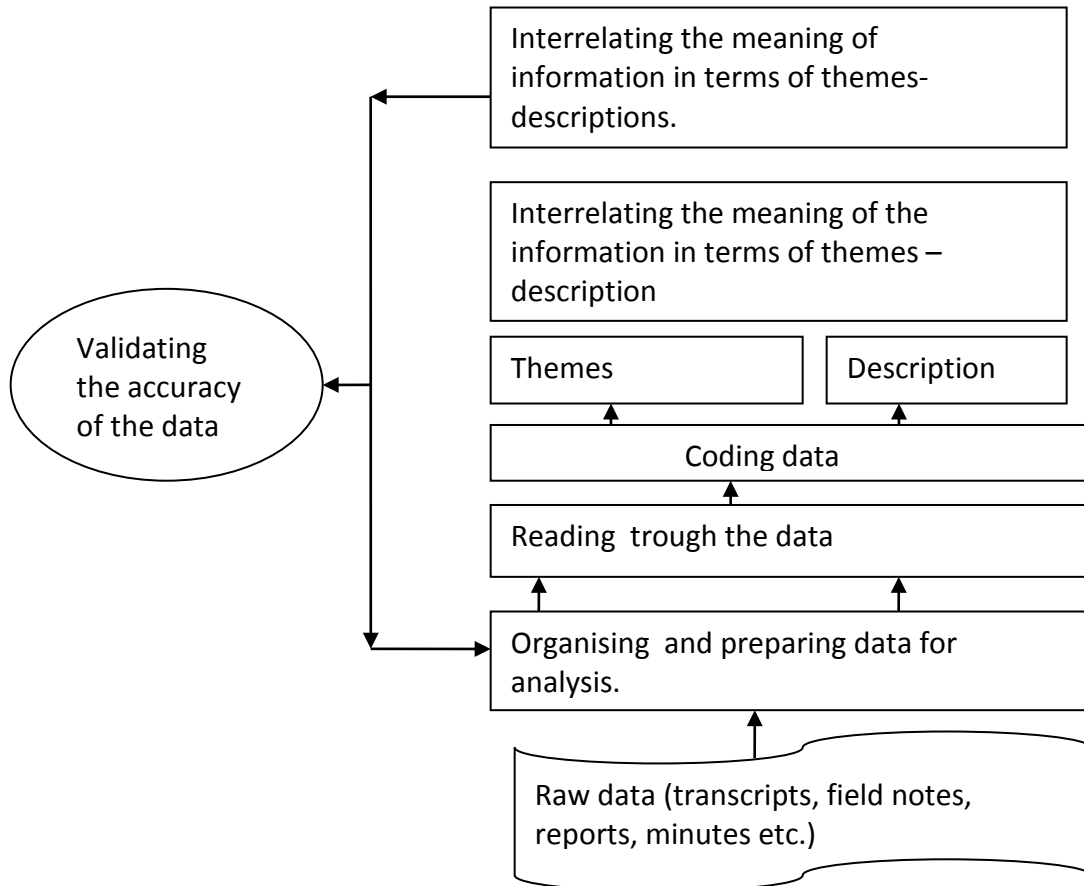


Figure 4: Data analysis process as adapted from Creswell (2009).

The sequence of analysis started by cell phone recorded unstructured interviews, interview notes, participant observations, informal conversation, existing documents, focus group and lastly, literature review. The researcher warns though that since he is dealing with a complex situation, flexibility as a result of iterative process was accommodated. The outcomes of the analysis were first packaged per category, coded and summarized. Then interpretation of ordered data using theory was engaged resulting to the researcher creating a richest picture, determining root definitions and taking the subsequent SSM steps.

3.10 Ethical requirements.

The need to secure ethical clearance before undertaking a research study is an internationally agreed upon principle. In compliance with such principle and UKZN procedure the researcher applied for and was granted ethical clearance by UKZN's Social and Humanities Research Ethics Committee (See appendix B).

According to Cooper and Schindler (2003), the goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities. Fontana and Frey, (1994:372) as quoted by Irvine and Graffikin (2006:15) share the same sentiments as Cooper and Schindler by maintaining that, "since the objects of inquiry are human beings, extreme care must be taken to avoid harming them, and to ensure that their right to privacy is respected." The purpose of ethical clearance is to ensure that respondents are not ill-treated, prejudiced and coerced. The researcher fully agrees with these writers because it cannot be that the researcher conducts research using an organization without knowledge and permission of its leaders. Consent by respondents is also crucial because it is morally and legally unacceptable to trample on other peoples' rights; the right to privacy being constitutionally enshrined.

Therefore, the researcher applied for and was granted permission to conduct this study by KwaZulu-Natal Department of Education's Head of the Department (H.o.D). (See appendix C). The researcher also applied for and was given permission by the District Director and Chief Education Specialist of District Planning Section in the Sisonke District (gate keepers).

Since this study involves the use of children (minors) the researcher requested permission from their parents or guardians to interview them (See appendix D). The permission and consent granted has in an ethical sense legitimized my study. The researcher have also made copies of the letter of permission and sent this to circuit managers, principals and school governing bodies of the host schools to ensure buy-in. With regards to key respondents the researcher started by phoning them to request their participation and arranged to meet those who were reluctant to participate. The researcher also sent out letters of request and letters of consent to all parties involved in the study.

The respondents were also notified that unstructured interviews would be recorded to ensure ease of transcription however, if a respondent objected such a choice would be respected. Furthermore, all respondents would be treated with dignity, respect and trust. The recorded tapes will be kept by UKZN for five years as per the requirement of the University and will thereafter be disposed off by the Ethics Committee of the university.

3.11 Limitations.

Unstructured interviews take longer to complete and as a result the researcher had to limit his sample to sixteen participants. Even though that number is less than what the researcher would have wished to use he managed to get information regarded as enough for the purpose of the study. Sisonke District is a rural district with towns and villages far apart from each other. This compelled the researcher to spend more hours of each day travelling to and from interview meetings than the actual time spent on interviews. Also, some areas do not have proper road infrastructure which means that on rainy days the researcher had to postpone interview meetings at the eleventh hour because he could not reach all his destinations. This led to further schedule delays.

Also, extensive travelling necessitated more money for transport, food and accommodation than had been budgeted for. This caused great strain on my limited budget. All Implementing Agents, Project Managers and Contractors do not reside within the Sisonke District making it very hard to get them for interviews at their construction sites. In fact the researcher had no choice but to travel to their homes or offices +/- 350 kilometres from my residence. Furthermore, as pointed out earlier, some key participants were unwilling to participate for fear of divulging sensitive information.

Again, as has already been pointed out, all projects are of a temporary nature. Once the project is completed the project team dissolves and hence the researcher encountered difficulties in accessing all stakeholders. However, the researcher compensated for such problems by making use of secondary data available at my disposal like minutes of meetings, letters and information gathered through informal conversations with stakeholders as well as participant observation.

3.12 Conclusion.

In conclusion, this chapter explains the research methodology used which is Checkland's Soft Systems Methodology (SSM). This qualitative research method has been used because it is well suited for this research study which is messy, ill-structured and unpredictable. In this study a combination of two qualitative research methods were used namely: a case study and historical reviews. The mixing of methods was applied because the researcher hoped they would complement rather than compete with each other. As already pointed out earlier, the researcher used two case studies, Tonjeni Primary School in Umzimkhulu representing Eradication of Mud and Inappropriate Structures Programme and Bhidla Primary School in Bulwer representing the Emergency Repairs Programme.

This study strives to unpack the perceived issues impacting upon leadership and infrastructure delivery programmes in the Sisonke District of Education in KwaZulu-Natal. The data collection method used was mainly unstructured interviews, participant observation, informal conversation, existing documents and focus group interviews. The list of respondents was carefully chosen from all stakeholders affected by infrastructure delivery programmes in the Sisonke District.

CHAPTER FOUR: ANALYSIS OF RESULTS AND IMPLICATIONS

4.1 Introduction

The preceding chapter discussed the methodology used for the study. This chapter discusses data analysis from unstructured interviews, participant observation, informal conversations and existing documents in order to provide responses to the research questions that enquired into:

- ❖ The different perceptions of the issues impacting upon leadership and infrastructure delivery programmes in the Sisonke District;
- ❖ The effectiveness of communication system in the Sisonke district;
- ❖ The impact the capacity of planners has on service delivery; and
- ❖ The correctness of the planners' priorities.

At this juncture the researcher reminds the reader that critical systems thinking as a meta-methodology and soft systems methodology as a dominant methodology were used. Besides the above-mentioned data collection methods, SSM as a flexible methodology afforded me an opportunity to use group discussions as well. The group discussions with key participants enhanced the quality of data received from the unstructured one-on-one interviews because these could be criticized for being tainted with interviewer bias. It is critical to complement the findings using other methods to enhance the quality of the debate and discussion at stages 5 and 6 of the SSM.

Besides, group discussions are critical and unavoidable when an interpretive paradigm is applied. It is argued that the interpretive approach is a 'soft systems thinking' approach because it has adopted a subjectivist approach. It focuses on the comprehension of perceptions of different individuals in their endeavours to understand social phenomena or problem situations. Vickers, (1970; Checkland, 1981) calls this an 'appreciative system.'

This chapter pays particular attention to: this introduction, infrastructure delivery stakeholders and their roles, expression of the problem situation from the stakeholders' perspective, the findings with respect to the problem associated with infrastructure delivery programmes in the Sisonke District, rich picture formulation, formulating relevant activity model, transformation

process and root definition, models compared with reality (stages 4 and 2), discovering the feasible and desirable changes, taking an action to improve the problem situation, results and implications and conclusion.

4.2 Infrastructure delivery stakeholders and their roles.

The researcher acknowledges that infrastructure delivery programmes in the Sisonke district are a 'messy' problem situation as earlier referenced. The messy problem situation is difficult to comprehend and as such Checkland and Scholes (1990) insist that a better way to learn about a messy problem situation is through getting the stakeholder's perspective.

As mentioned earlier in section 3.6 the researcher made use of the following infrastructure delivery stakeholders: learners, parents (SGB), teachers, principals, district planners, provincial planners, politicians, implementing agents, project manager, professional team and contractor to inform this study. The learners, parents, teachers and principals are categorized as end users, district and provincial planners as officials of the DoBE (client), politicians (councillors), implementing agent, project manager, professional team and the contractor.

The different roles played by the stakeholders helped to highlight their importance in the process of unpacking the challenges impacting upon leadership and infrastructure delivery programmes in the Sisonke district. The roles of the stakeholders are explained next.

4.2.1 Learners

The learners are the primary beneficiaries of an improved infrastructure delivery at schools and therefore the continued failure of the system of education to provide a conducive learning environment directly affect their performance and health. The poor performance by the grade 12 learners in this district is generally linked to its poor infrastructure delivery record.

4.2.2 Parents (SGBs)

Parents are also concerned about learning conditions of their children and hence they make a careful choice of the school to send their children. According to the South African Schools Act (1996) each school must elect an SGB to ensure democratic and effective governance and

management of the school. This involves recommending the employment of staff and development of school through infrastructure upgrading and facilities management.

4.2.3 Teachers and Principals

The responsibility of teachers is the effective and efficient delivery of curriculum and therefore they are also directly affected by the condition of the teaching and learning environment. The responsibility of a principal is curriculum delivery, leadership and management of the school. The South African Schools Act 84 of 1996 mentions one of the duties of a principal as management of physical infrastructure.

4.2.4 Officials /Client

The officials, that is, district and provincial planners are charged with infrastructure planning and delivery through engaging in project management cycle of planning, execution and closing of infrastructure delivery projects. They also engage with maintenance of infrastructure. Also see the core duties of district planners in paragraph 3.2 above.

4.2.5 Politicians

The politicians, that is, councillors at local government level are responsible for policy making as well as representing the development interests of their wards at the local and district municipality levels. Whether or not they exercise this invaluable task proficiently is a subject for further debate and deliberations. The researcher holds a view though that violent service delivery protests alluded to earlier in the study suggest some dissatisfaction from the communities.

4.2.6 Implementing Agents

According to the South African Constitution (1996) the department of Public Works is the custodian of government assets and hence is responsible for their maintenance and upgrading. However, due to lack of capacity at Public Works and the serious backlogs in infrastructure provision implementing agents like Independent Development Trust, Coega Development Corporation etc were introduced to help in the expedition of infrastructure provision and maintenance. The implementing agents outsource contract and project management to private consulting firms in exchange for fees. Whether or not the implementing agents are succeeding in

performing this huge task is debatable. The researcher views this process as being cumbersome.

4.2.7 Professional Team

Professional team comprises of experts in the construction and building sector like engineers, architectures, quantity surveys and project managers. The services of experts or consultants are solicited through open tender to ensure equitable distribution of work. The objective for the consulting companies is profit making.

4.2.8 Contractors.

Contractors are private enterprises that are employed to implement the projects. They are under contractual obligation to build structures as per the specifications in the contract document signed between them and the client representative in the form of implementing agents. Their main objective is to make profit. Since contractors are business owners they hire workers to do the actual construction at agreed upon wages. The motive for workers is to earn good wages.

4.3 Expression of the problem situation from the participants' perspective.

The stakeholders' perspective is very important in unpacking the problem situation impacting upon leadership and infrastructure delivery programmes in the Sisonke district. In support of this contention Anwar (2010) expressed concern about the exclusion of local SMEs in reforming infrastructure in developing countries. He considered such exclusion as a serious flaw because local actors and organizations always have a significant role to play in infrastructure upgrading for sustainable development. As already mentioned earlier the researcher uses SSM to learn about and to improve the messy problem situation in this study. Rose and Haynes (1999) in Hardman and Paucar-Caceres (2010) endorse SSM's participative and collaborative nature as its strongest point. As mentioned in 3.5 above the different role players' perspectives were obtained through employing various data collection methods. The findings are presented next.

4.4 The findings with respect to problems associated with leadership and infrastructure delivery programmes in the Sisonke District.

4.4.1 Unstructured interviews.

Eleven respondents were interviewed from a variety of categories of stakeholders mentioned

earlier. The end users expressed different views depending on the school they came from.

4.4.1.1 The learners.

The analysis of unstructured interviews revealed that the learner from the upgraded school was motivated, excited and proud of the department of education (client) for rebuilding their school. He wished that the department of education could rebuild many schools per year. The learner was happy with the effective teaching and learning taking place at his school. However, the learner expressed some frustration about the construction delays as a result of inclement weather conditions, shortage of construction materials and cash flow problems. The learner also appreciated the job opportunities created, but indicated that government should ensure local contractors, artisans and suppliers of materials are given first preference. Furthermore, since the school experienced storm damage to existing buildings the client was criticized for delays in repairing storm damaged schools. The learner wished that the department of education (client) could improve its communication strategy.

However, the learner from the storm damaged school expressed bitterness at the department of education (client) for failing to repair their school through emergency repairs programme. She enquired as to how they were expected to learn whilst being exposed to extreme weather conditions and lack of basic services like clean water and proper ablution facilities. She expressed her dismay at overcrowding at the school. She contended that during the storm damage most of their learner teacher support materials (LTSM) were damaged and were not replaced. She recommended that all schools be granted section 21 status (receive their norms and standard budget allocations to manage on their own) so that they can either maintain or provide school facilities on their own. This feeling resulted from the department's failure to respond promptly to the school request for repairs to storm damage or other school facilities.

4.4.1.2 Parents/SGB.

Two SGB chairpersons were interviewed from the two schools. The analysis indicated that the SGB chairperson from the rebuilt school was happy with the department of education (client) intervention. The community was also happy that the school was ultimately upgraded. The SGB chairperson asserted that the community had lost hope that the school would ever be built because they submitted their request many years ago and there

was no feedback whatsoever. Furthermore, the chairperson expressed concerns about being sidelined when important decisions were taken like positioning of the school and intended demolition of the existing structures. Lastly, the chairperson held a view that infrastructure provision and maintenance could only be improved if district and head office officials could prioritize monitoring and assessment of schools facilities and make prompt decisions.

However, the SGB chairperson of the storm damaged school was disappointed with the department of education (client) for failing to repair her school. She expressed her frustration because the children were exposed to extreme weather conditions resulting in some getting sick and most parents transferred their children to other schools. She lamented that the client did not even have the decency of visiting the school or writing to update the school. As mentioned earlier the storm damage destroyed 7 out of 9 classrooms and only 2 classrooms were in good condition. The few classrooms used were overcrowded with +/- 65 learners each. The school requested for mobile classrooms without success.

4.4.1.3 Teachers / Principals

Two principals from the selected case study schools were interviewed. They expressed different views about the challenges impacting upon the infrastructure delivery programmes in the Sisonke district. The principal from the rebuilt school appreciated the client for introducing the eradication of mud and inappropriate structures programme. She felt it was an excellent programme because it targeted rural areas that were desperate for development. She asserted that the community was excited and grateful for the job opportunities created.

Furthermore, this principal held a view that the amount of money invested in her school was exorbitant. She suggested that schools be self-reliant. Money must be transferred to schools to prioritize and implement maintenance and construction projects on their own. The devolution of funds would reduce the turnaround time from project initiation to implementation. Again, the department of education (client) would save money because schools would employ local contractors and labourers who are not as expensive. By employing local contractors and labourers the unemployment problem would be reduced and hence poverty and crime would be alleviated. It was hoped that such would be followed by an improved standard of living.

Also, her views on storm damage repairs programme were that it was a very bad programme that was badly managed and hence the delays.

However, the principal of the storm damaged school expressed anger, frustration and disappointment at the failure of the department of education (client) to repair his school. He alleged that the client was treating him unequally compared to township or town schools. He concurred with his colleague in advancing for self-reliance of schools through the devolution of funds. He complained about having reported the storm damage following line function but in vain. In his own words the principal asserted, 'the client never wrote to explain the steps it was taking to help the school.' He assumed that the "red tape" in the system of education was the main cause for their suffering. He concluded by appealing to the client that his school experiences shortages of classrooms, toilets, soup kitchen and a proper administration block.

One teacher was interviewed from the storm damaged school. The researcher's analysis of her responses indicated the expression of frustration like her principal. She asserted that storm damage repairs programme was a bad programme. She alleged that the people in charge (client) were abdicating their responsibilities and were dismal at giving feedback because the school wrote several times without any response. She advanced for the redeployment of the district and head office infrastructure planning and delivery personnel to other directorates and employment of the qualified personnel who would give priority to emergency repairs like theirs. She felt there was a need for additional staff to cope with infrastructure planning and delivery.

4.4.1.4 Officials (client)

One provincial deputy manager for infrastructure delivery was interviewed. His responses revealed that it was difficult to plan for storm damages because no one could predict their occurrence with certainty. Since projects are too many it was difficult to supervise quality and progress resulting in incomplete projects or shoddy workmanship. He also blamed the use of emerging contractors for the failure of many construction projects. He felt the use of these contractors with little or no skills and experience in the construction sector was a recipe for disaster. He claimed that most emerging contractors engaged in corrupt activities to get jobs like manipulation of procurement processes and falsification of CIDB rating of companies.

As a result of cash flow problems the emerging contractors fail to pay their employees and suppliers. Consequently, progress on site stalls and the project ends up being abandoned. Financial mismanagement was also mentioned as the major cause for the contractor's failure to deliver infrastructure. The deputy manager suggested that the 'Construction Indaba' be held by the departmental officials, banks, contractors and their associations to discuss the mode of operation as well as the training opportunities. Lastly, the deputy manager advanced for more investment on infrastructure in order to reduce the infrastructure backlogs.

4.4.1.5 Politicians

Two councilors were targeted from the municipalities where the two case study schools are located. As already mentioned earlier one councilor could not be reached for interviews. The analysis of the responses from the interviewed councilor revealed some level of satisfaction with infrastructure delivery in his ward and the rebuilt school. The responses examined indicated that the turnaround time, lack of feedback, corruption in the tendering process as major problems impacting upon infrastructure delivery and maintenance.

Like all politicians this interviewee was not prepared to say many negative things about government for fear of jeopardizing his political career. The researcher deduced from the responses that the councillor acknowledged that backlogs persisted despite their intervention programmes like Expanded Public Works Programme (EPWP) and Municipal Infrastructure Grant (MIG) programs. Lastly, the councillor expressed a need for capacity development of stakeholders in infrastructure delivery and maintenance.

4.4.1.6 Implementing agent

One programme manager from IDT was interviewed. As already mentioned earlier this manager was skeptical about the objective of the study. He made a careful choice of the information he could divulge for fear of being victimized by his seniors in the company.

The analysis of responses suggests a high level of satisfaction with the eradication of mud and inappropriate structures programme because it (eradication of mud and inappropriate structures) addresses the core challenges of infrastructure delivery and maintenance. The challenges

highlighted are huge infrastructure backlogs and lack of maintenance strategy by the DoBE. The respondent held a view that the DoBE and DoPWs were slow in delivery of infrastructure and hence the use of private public partnership like IDT and others was inevitable. The responses further portray IDT as being meticulous with planning and hence the rebuilt school was completed two months before the expiry of the sixteen months contract period, with good quality work and within budget.

As already indicated by other interviewees the analysis reveals problems of poor planning, poor performance of contractors, budgetary constraints, delays in transfer of funds from DoBE to IAs and poor financial management as the main contributors to backlogs in infrastructure delivery and maintenance. The respondent proposes a workshop or training of contractors on business and financial management by CIDB.

4.4.1.7 Project manager and the professional team.

One project manager or a principal agent in the eradication of mud and inappropriate structures programme was interviewed. The examination of his responses indicated that he appreciated the eradication of mud and inappropriate structures programme and felt that it should be expanded. He concurred with other interviewees that the storm damage repairs programme was failing as an emergency repairs programme. The researcher summarized the project manager's responses as revealing manipulation of procurement processes, lack of maintenance plan, lack of feedback, lack of financial support and awarding of tenders to mediocre companies as major problems impacting upon infrastructure delivery and maintenance.

The analysis also revealed that cash flow problems, lack of skills and inexperience by stakeholders like officials, consultants and contractors cause delay in completion of projects. This project manager recommends the introduction of mentorship programmes where a panel of say ten contractors would be taken through a three years training programme to ensure knowledge and skills transfer.

4.4.2 Participant Observation

The researcher observed a site progress meeting and colleagues in the Sisonke district.

The first observation was done on a site progress meeting on 12 November 2009 held at the

rebuilt school under eradication of mud and inappropriate structures programme. The researcher gathered that the project manager, the professional team members, contractor, foreman, labourers, SGB and the principal felt the eradication of mud and inappropriate structures programme was a very good programme. These stakeholders were all touched by the appalling condition of the school and were therefore intrinsically motivated to finish the project on or before time. Also, the researcher observed that building regulations were adhered to, progress was closely monitored and the contractor's report was submitted. The professional team members cooperated in ensuring adherence to quality, time and budget. The end users and the researcher (district planner) were happy with good progress.

The second one involved the observation of colleagues in the Sisonke Planning sub-directorate beginning from January 2010 to November 2010. The three colleagues observed were one Chief Education Specialist Planning, one Deputy Chief Education Specialist Infrastructure Management Services (IMS) and one Senior Education Specialist IMS. The researcher observed that all the planners regarded the eradication of mud and inappropriate structures programme as a good programme, but criticized it as a top-down approach because it was nationally driven and as district planners they had little or no influence on the choice of schools to be prioritized. Planners criticized the Head Office planners' attitude that district planners were conveyor belts of information who were incapable of making any sound decision.

As already mentioned by other stakeholders the planners were concerned about corruption and self-enrichment, shoddy workmanship and incomplete projects by unscrupulous emerging contractors. The manipulation of procurement processes in favour of contractors from other areas and exclusion of local contractors, financial crisis caused by delays in transfer of funds from DoBE to IAs and contractors were also blamed for infrastructure delivery challenges in the Sisonke district. The transfer delays affected progress on site and contractors abandoned sites leading to further project slippages.

Also, the planners were against the centralization of power and authority at head office because they felt it was the major reason for prolonged turnaround time in infrastructure delivery. The lead time from the date the school requested for services through district, head office, IAs,

consultants and appointment of contractor and ultimately site handover was too long. When principals make follow up to their applications the district planners have no information either because there is no communication strategy or feedback mechanism.

Furthermore, the poor construction and financial management, lack of building skills and inexperience by the contractors were also raised as major concerns contributing to the infrastructure backlogs and maintenance challenges in the Sisonke district.

Lastly, the planners propose the decentralization of infrastructure delivery mandate, budget, power and authority to districts to expedite infrastructure delivery. The devolution must be linked with retraining of planners on basic construction supervision and project management. They envisaged the training of contractors on building skills, construction and financial management will alleviate the messy infrastructure delivery and maintenance challenges in the Sisonke district.

4.4.3 Informal conversation

Informal conversation was held with one deputy manager who could not be interviewed due to personal reasons. The conversation revealed the following: that turnaround time in infrastructure delivery concerned the interviewee, that corruption and self-enrichment, unskilled and inexperienced contractors and flawed tendering process were not helping the DoBE in reducing infrastructure backlogs.

The architecture, a professional team member, expressed his dissatisfaction with non-payment and poor communication channels. He maintained that backlogs in infrastructure delivery and maintenance will persist until decision making is decentralized so that districts take their own decisions based on the prevailing circumstances.

The conversation with the contractor revealed that she concurred with other stakeholders in that while the eradication of mud and inappropriate structures programme was good it needed to be expanded in order to reduce backlogs in infrastructure delivery and maintenance in the Sisonke district. She also complained about delays in payment because it affected her credit worthiness

and plans.

The colleagues from other districts shared similar sentiments with the Sisonke district that backlogs in infrastructure delivery and maintenance challenges could be reduced through decentralization of some functions from head to district office.

4.4.4 Existing documents.

Firstly, the researcher studied journal articles regarding infrastructure provision and funding. For information see chapter 2.

Next, the researcher studied minutes of site progress meetings number eight and number ten held at the rebuilt school under eradication of mud and inappropriate structures and made the following analysis: that the contractor was doing very well with no injuries on site, that progress was pleasing, that all professional team members were working harmoniously towards completion of the project and that IDT complemented the contractor for good work. The researcher, as a client representative, echoed similar words of appreciation to the contractor, professional team and entire school community for cooperating with each other for the smooth running of the project.

Also, the researcher studied infrastructure reports compiled and presented to district management by the section head. Since these reports were formulated by the same planners who have been observed over the period mentioned above they provided no new information and hence the researcher will not mention them again.

4.5 Rich picture formulation

Before the group discussion the facilitator, after some iterations drew his rich picture based on the perceptions of the interviewees, existing documents, observation notes and informal conversation presented above. The rich picture was presented to four key interviewees for endorsement. They were requested to sign the rich picture as a sign of endorsement. Eden (1992) in Hardman and Paucar-Carceres (2011) pointed out to the need for stakeholder validation of mind maps.

The researcher feels that if more interviewees were consulted for endorsement the research process and outcome could have even been more inclusive, transparent and rich. However, the following are some of the many reasons why such a wish could not be fulfilled:

1) A project is of a temporary nature, that is, it has a specific start and finish date. Once the project has been completed the project team disbands and hence it is very difficult and costly to reassemble. In short I could not get hold of other interviewees.

2) That it would cost me more in terms of time and money to travel to all the eleven interviewees.

3) Some of the contacted interviewees exercised their democratic rights by turning the researcher down claiming to be very busy. The ethical requirements clearly stipulate that the participants are free to withdraw at any stage of the research.

As already mentioned earlier drawing a rich picture according to Checkland and the Lancaster team (1981) is a tool in SSM used to articulate the problem situation at the start of the analysis process. The researcher acting as SSM facilitator gave the ten focus group participants an introduction to the SSM. The researcher informed members that the discussion was to take 2 hours and also reiterated that members were free to withdraw at any stage of the discussion to ensure the research remained ethically compliant. The group discussion then commenced the formulation of rich picture. During the group discussion the researcher allowed the ten participants to engage for twenty minutes and then presented his summary for critical evaluation. The researcher decided not to present his own rich picture prematurely in order to allow for serious engagement by the key participants and also to avoid affecting and limiting their divergent worldviews. At an opportune time the researcher had to present his rich picture and explain it. The group identified some similarities and ultimately merged the two into one rich picture. The rich picture depicting challenges impacting upon infrastructure delivery programmes and processes as viewed by the role players and comprehended by the researcher follows:

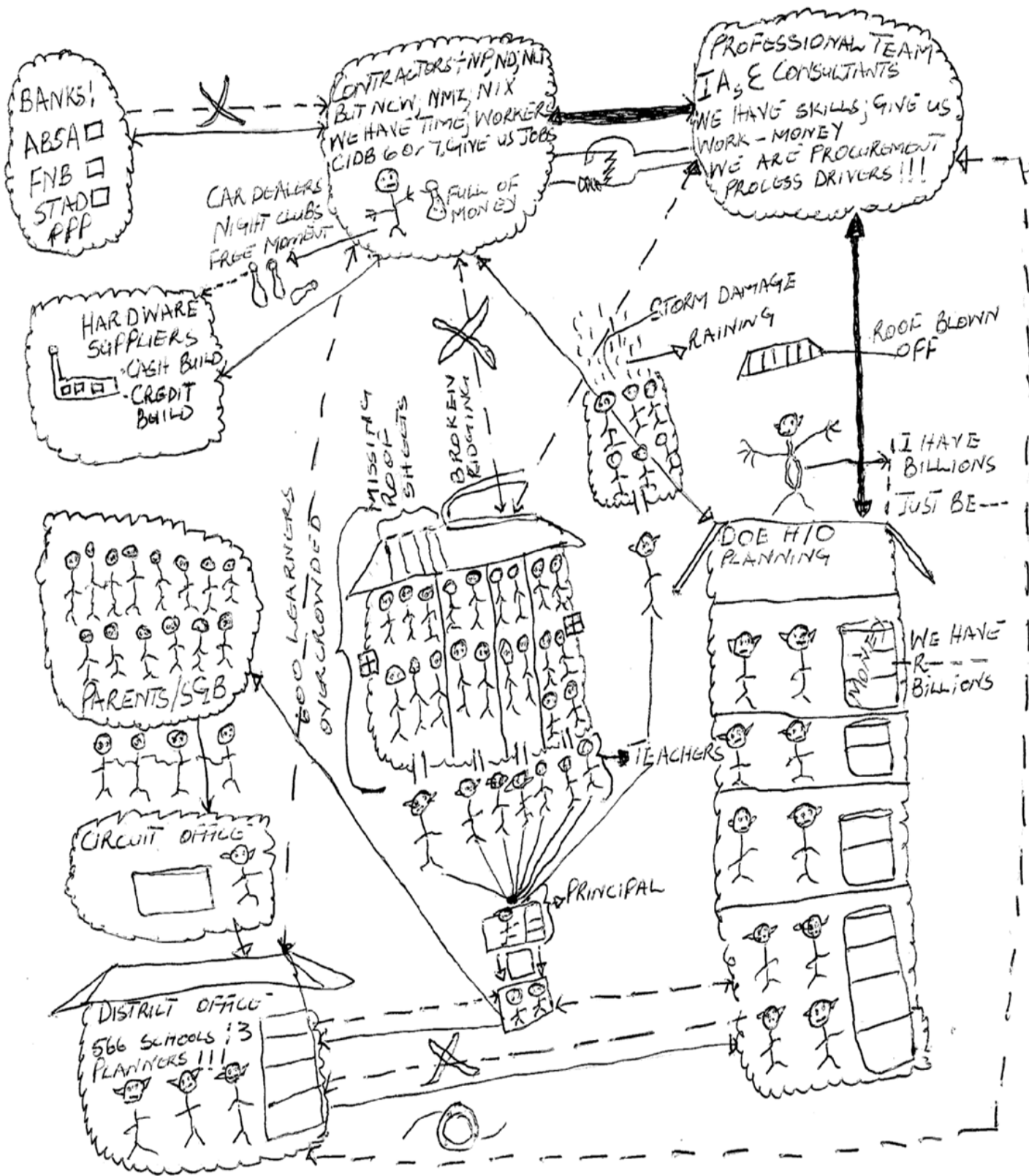


Figure 5: The Rich Picture.

The rich picture depicts the primary school characterized by numerous abnormalities like backlogs in infrastructure provision and maintenance. The researcher has decided to focus on those abnormalities he feels are most relevant to his study and is quick to mention that his list is far from being exhaustive. The reader is also pre-warned that due to the uniqueness of human beings, specifically, the ability to hold different worldviews or 'weltanschauung' the same rich picture could be interpreted differently. The first impression is one of shortage of learning space and hence the school is characterized by overcrowding and grade combination. As referenced earlier Ikoya and Onoyose (2008) examined availability and adequacy of school's facilities to meet minimum standards for promoting effective teaching and learning in Nigeria. They found shortages as reflected in this rich picture. The classrooms meant to accommodate 35 learners each accommodate between 75 and 100 learners. In some instances two teachers are allocated in one classroom that accommodates two grades and they are expected to deliver quality public education in those unpalatable conditions.

Next, the classrooms are made up of mud and inappropriate structures. The structures are looking dangerous as they may fall at any moment should weather conditions deteriorate. The partly open roof, damaged chalkboards, broken window panes and doors are a clear sign of lack of a maintenance plan and strategy. As referenced earlier Fourie (2008) concurs with this view where he maintains that the challenge in South Africa is not only lack of enough infrastructure but also the non-existence of a maintenance or refurbishment strategy. Structures deteriorate until they reach such a stage of disrepair that they can be repaired at more or less the same cost of building new structures. Learners and teachers have to use a classroom whose roof was blown off by the storm in 2009 but is yet to be fixed through the storm damage repairs programme in 2011. Learners and teachers had to endure inclement weather conditions especially in the storm damaged classrooms. The rain falls whilst teaching and learning is in progress. The previous weekend the torrential rain fell and thus damaged learners' and teachers' workbooks, desks, charts etc.

The teachers who have had enough of it approach the small principal's office, threaten to boycott classes and demand to meet the School Governing Body. Under immense pressure the principal obliges and hence a resolution is taken to approach the ward manager's office as the next line

manager. A letter is crafted tabling all the grievances (infrastructure needs). The ward manager immediately visits the school and writes a covering letter to motivate the school's request and forwards it to the District Planning Directorate who responds promptly by visiting the school to assess the situation, take photos, sympathize with stakeholders and promptly cascade the information to Infrastructure Planning and Delivery Directorate at Head Office. The communication and relationship is strong among the school, SGB, Ward Manager and the District Office, but the feedback from the district and onwards is scant or non-existent (dotted line). The Infrastructure Planning and Delivery Directorate take its time to prioritize projects and programmes and in that process scant or no feedback is sent to the district.

The unreliable information is received mainly telephonically. Once my colleague asked "Why does Head Office fail to provide feedback of the prioritized list of projects to all the districts?" The communication and relationship from the district to Head Office is strong and friendly as indicated by a bold line, however, it is very weak and unfriendly (dotted or broken line) from the Head Office to the district. One wonders whether these top managers realize that withholding information does not necessarily make them powerful and worse still does not help our cause.

The lack of transparency and information sharing is a major cause for concern. The infrastructure budget is controlled by Head Office and the district controls the maintenance budget only. However, the lack of a clear mechanism to decide on structures in need of repairs (routine maintenance) and the hamstringing regulations about capital projects (projects costing R50 000 and more) frustrate the disbursement of the maintenance budget. Consequently a large percentage of the maintenance budget is returned to treasury at the end of each financial year. Hassen (2000) referenced earlier acknowledges the existence of a link between infrastructure expansion and economic growth in South Africa. He proposes that government should increase budget and employ better skilled personnel to deliver infrastructure.

However, Gramlich (1994) contends that the fundamental issue is not whether or not shortages exist, but whether or not countries have good policies in terms of infrastructure investment. He advances for policy reviews to allow states to do their own infrastructure investment and have powers to generate own resources and take own decisions.

The Head Office Infrastructure Planning and Delivery Directorate upon the finalization of the provincial infrastructure plan and the budget permitting appoint implementing agents/consultants/professional teams who then appoint contractors for different projects. The communication channels and relationship among them is very strong, vibrant and cordial as reflected by the bold line in between them. It is indeed a healthy two way communication process hence appreciation of both positive and negative feedback loops. Such a close relationship is worrisome because in the eyes of the public objectivity and professionalism is compromised and hence the allegations of corrupt practices, nepotism and favouritism in awarding of tenders. Many such fears are vindicated by contractors who get tenders left, right and centre irrespective of shoddy workmanship in their previous projects. The employment of inexperienced and cheap workers, contractors and consultants contributes to shoddy workmanship. Also, the employment of educators to initiate, manage and at times quality assure construction projects without any relevant training exacerbates the problem.

The expected progress on site becomes a huge problem because the appointed contractor does not meet the requirements like having about 10% of the project sum as working capital and the necessary Construction Industry Development Board (CIDB) rating. Projects are abandoned because of lack of funds and such delays affect our plans. The creditworthy contractors obtain credit from either hardware shops or banks and promise to repay upon receipt of payment. At that stage the relationship is sound and good (bold line), but unfortunately it deteriorates as unscrupulous contractors vanish into thin air once they get their first payment. Instead of servicing the debt, paying workers and buying materials to finish up the project they use money for other things like buying expensive cars, liquor etc. Once the money is finished the project is abandoned because there are no materials, workers down tools, hardware suppliers remain unpaid and cannot extend credit anymore and banks need installments.

The cash flow problem and financial mismanagement contribute to the liquidation of several businesses especially small and emerging contractors. The relationship between Head Office and banks is very cordial in projects where contractors sign cession to the banks because their monies are guaranteed. Lack of leadership and a well-executed strategy to implement municipalities' and all government departments' integrated development programmes leave departments,

directorates and sub-directorates operating in silos. The suitable metaphor to explain this collapse of the system is like when a human system malfunctions-a head does not know what the left or right hand is doing or intends doing.

In the light of the above information the researcher and focus group identified several issues and primary tasks as being critical in informing the problem domain. However, because it is impossible to consider all of them in this study due to time and budgetary limitations the researcher has had to merge some and disregard others.

The researcher considered the following as most relevant to unpack challenges impacting upon leadership and infrastructure delivery programmes and maintenance in the Sisonke district in order to improve provision of infrastructure.

- 1) Communication;
- 2) Centralized authority;
- 3) Lack of team work;
- 4) Corruption;
- 5) Lack of capacity/skill;
- 6) Business & Financial mismanagement; and
- 7) Politics.

4.6 Formulating relevant activity model

Once the problem situation has been expressed graphically, a number of activity systems considered relevant to the problem situation are identified. The researcher and the focus group picked on the seven issues and primary tasks (themes) deemed suitable for learning about and improving Leadership and Infrastructure Delivery in the Sisonke District of Education.

The analysis of the perceived impact of infrastructure delivery programmes in addressing backlogs, maintenance and repairs of basic infrastructure in the Sisonke District schools has uncovered the relevant activities as listed above.

Considering several relevant systems simultaneously exposes yet another important characteristic of SSM. Neves et al (2009:844) assert that “an important characteristic of the SSM is precisely its ability to model multiple relevant systems, each one potentially bringing fresh perspectives on the elicitation of objectives.” This further enhances its capacity to tackle ill-defined and messy problem situations like the area of this study.

Each of the role players analyzed perceived the problem situation differently hence several root definitions. Based on the seven themes the researcher and focus group identified the following human activity systems and subsequent root definitions were drawn out:

- 1) A communication system. A system to determine the best and the most reliable means of maintaining communication among stakeholders: SGBs, principals/teachers, Learners and Department of Education officials at ward, circuit, district and provincial levels;
- 2) A system of centralized authority. A government system to design the most efficient and effective means of control of government resources (centralized versus decentralized authority);
- 3) A system of team work. A system by government and all industry role players to improve team work;
- 4) A system to eradicate corruption. A system to determine the most appropriate strategy and plan to fight the scourge of corruption ravaging the South African society in general and KwaZulu-Natal (Sisonke District Education) in particular;
- 5) A system of capacity/skills transfer. A system by government and all stakeholders to establish the best and most workable steps to improve capacity/skills transfer among construction industry role players;
- 6) A system of business and financial management. A system by government and the construction industry role players to try to intervene by improving business and financial management skills of both emerging and seasoned contractors; and

7) A political system. A political system by government to improve /enhance active participation in the running of the affairs of the state by all stakeholders.

However, due to the time and budget constraints the researcher influenced the group to concentrate on communication system which transcends all the above-mentioned systems, corruption system since it is one of the current government's priorities and capacity or skills transfer system since it is the primary objective of the Department of Education. Once the root definitions have been crafted they need to be tested.

In the study the facilitator applied Checkland's (1981) mnemonic CATWOE to validate the root definition. The analysis of the root definitions makes use of the following catwoe analysis:

A communication system. A system to determine the best and the most reliable means of maintaining communication among stakeholders: SGBs, principals/teachers, Learners and Department of Education officials at ward, circuit, district and provincial levels.

C= Society in general, Department of Education/Sisonke District Planning and Delivery Directorate, School Governing Bodies, Principals/Teachers, Learners, Implementing Agents, Project Managers, Consulting Companies, Contractors, Materials Suppliers, Banks and the researcher.

A= Department of Education/Sisonke District Planning and Delivery Directorate, SGBs, Principals, Learners, Society and Researcher

T= Improve poor/broken communication into an effective and efficient communication system/channel.

W= The existence of ineffective and inefficient communication system/lines between and among stakeholders concerned with the provision of leadership and infrastructure delivery programmes. An awareness of the importance of communication for effective service delivery.

O= Department of Education, Sisonke District Planning and Delivery Directorate, SGBs, Schools.

E= The means of communication selected must fall within a pre-defined budget.

A system to eradicate corruption. A system by government to determine the most appropriate

strategy and plan to fight the scourge of corruption.

C= Civil Society, government, private sector, researcher

A= Government, private businesses, civil society, researcher

T= The transformation from the most unsuitable corruption-ridden system into the most appropriate and relevant crime fighting mechanism.

W= Design and implement a well suited strategy and plan to move from a corruption-riddled society to a corruption free and prosperous citizenry. A will among people to eradicate corruption because they understand its harmful impact.

O= Civil society, public and private sector

E= Lack of appropriate protocols, enforcement thereof and political will to deter members of society from indulging in corrupt practices.

A system of capacity/skills transfer. A system by government and all stakeholders to establish the best and workable steps to improve capacity/skills transfer among construction industry role players.

C= Society in general, Department of Education, Sisonke District Planning and Infrastructure Delivery Directorate, Parents/Principals/Learners, professional team, contractors and the researcher.

A= Department of Education, Sisonke District Planning and Infra Delivery Directorate, construction role players and the researcher.

T= The transformation of construction industry stakeholders from unskilled level through to highly skilled and expert level.

W= Enhance capacity/skills training and retraining of industry role players from sub-standard level to an advanced empowerment level (beginners through to an advanced level) through accessing regular short and refresher courses. The provision of strict control measures is also critical. A will among people to improve their skills levels because they appreciate lack thereof has dire consequences for the industry.

O= Society in general, Department of Education/Sisonke District Planning and Infrastructure Delivery Directorate, contractors, skills training service providers, construction industry, banks and researcher.

E= Lack of enforceable measures that monitors and controls who enters and exit the construction

industry.

In the light of the above root definitions the researcher and focus group identified four possible main objectives for leadership and infrastructure delivery programmes in the Sisonke District:

- 1) To provide a conducive teaching and learning environment;
- 2) To provide resources equitably to all schools;
- 3) To increase access to quality public education; and
- 4) To improve infrastructure delivery processes and procedures.

The researcher acknowledges though that due to the multiple stakeholder views expressed more objectives are possible, but the researcher and focus group selected the four main objectives relevant to learn about and improve the problem situation in this study.

4.7 Transformation process and root definition.

Once the root definition for a system has been established the next step required is the construction of the conceptual model. As already mentioned earlier this stage is considered the 'core' of soft systems methodology because models are formed which shed some light on the relevant activities that need to be engaged in, in order to implement the transformation process (Checkland et al (1981, 1990, 1998).

The researcher and the focus group identified up to seven activities considered as relevant to implement the transformation process in each of the three root definitions adopted in this study. The key activities are introduced by means of verb phrases which have to be ordered following a chronological and sensible order. Checkland (1981) advocates the use of the following verbs: determine, identify, define, establish, write, discuss, evaluate and gather.

This process has been applied in the following transformation processes:

- 1) Improve poor/broken communication by instituting an effective and efficient communication system/channel. Brenton (2007) successfully applied SSM approach to improve communication between an acute inpatient unit and a rehabilitation service.

In trying to implement this transformation process the stakeholders and the researcher

unanimously agree on the following activities namely: hold regular meetings, formulate policy on communication, increase the budget, increase personnel, provide the central office with technical resources, provide training to staff, establish an appeals tribunal and evaluate performance. The first conceptual model follows:

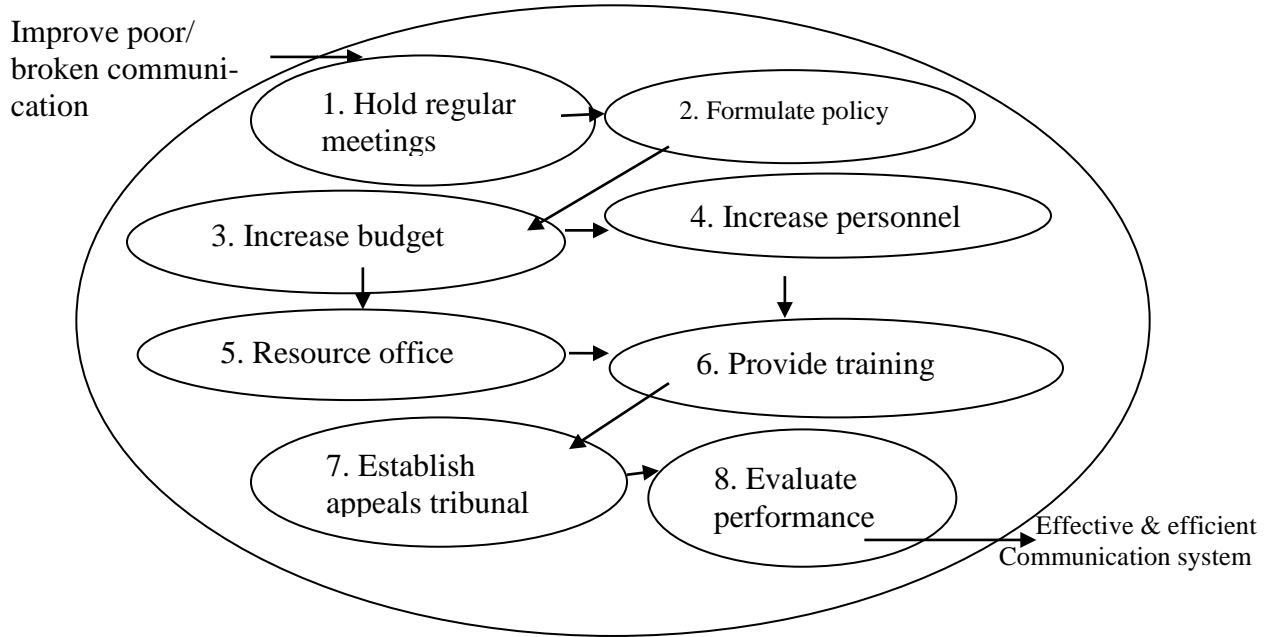


Figure 6: Graphic representation of the first conceptual model of this study.

2) The transformation from the most unsuitable corruption-ridden system to the most appropriate and successful crime-fighting mechanism. The implementation of this transformation process is dependent on these activities: detect crime early, formulate policy, provide incentives for informants, ensure confidentiality, safety and security to crime informants, establish special unit, introduce hefty fines, provide regular reports on successful conviction of perpetrators, use a transparent adjudication process through the involvement of all stakeholders and introduce Information and Communication Technology (ICT) based adjudicating device.

Graphical representation of the second conceptual model follows:

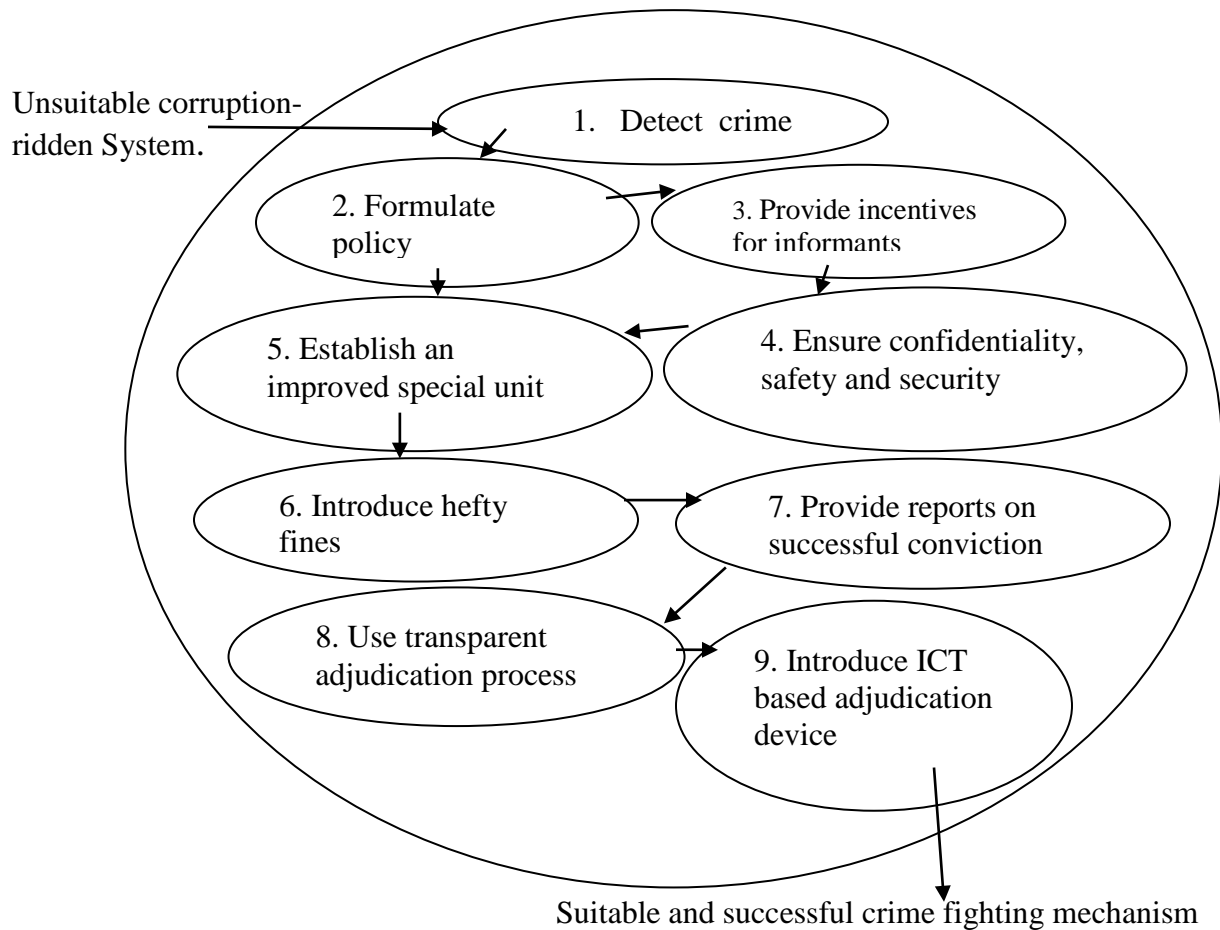


Figure 7: Conceptual model for the transformation from unsuitable to most appropriate and crime-fighting mechanism.

3) The transformation of construction industry stakeholders from unskilled level employees to highly skilled and expert level contractors. The stakeholders agree that the mechanism to apply this transformation process should be based on fulfilling the following activities: audit skills levels, formulate policy based on findings, provide skills training centres, increase funding for skills development, determine special funds for retraining and refresher programmes, introduce mentorship programmes, establish effective contractors grading system and ring fence certain projects for contractors who persistently produce quality jobs, within budget and on time.

Graphical representation of the third and the final conceptual model of this study follows:

Transformation from unskilled level

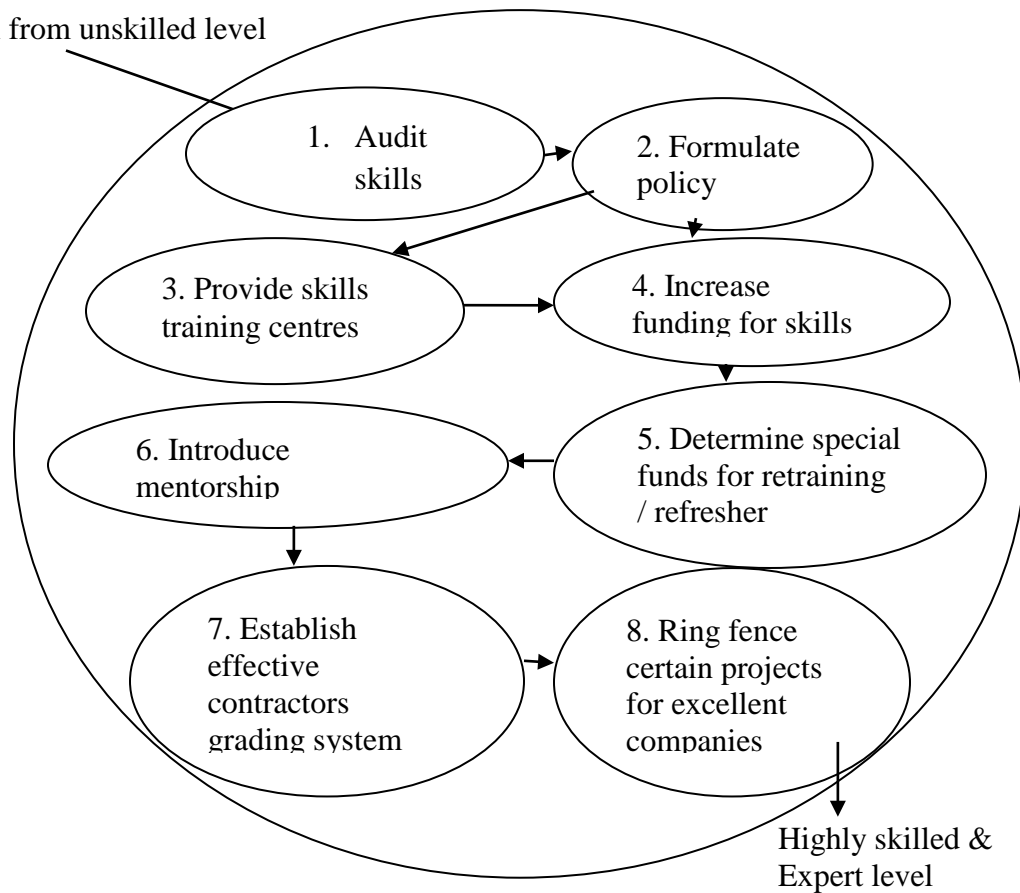


Figure 8: Conceptual model for the transformation of construction industry stakeholders from unskilled level employees to highly skilled and expert level contractors.

For the purposes of this study the implementation of the conceptual models were monitored and evaluated using a special task team comprising the researcher and two principals from the focus group schools. They discussed implementation, identified disparities where they existed and reported to the participants of the group discussion.

The group deliberated and compared the models with reality. The politicians as stakeholders mentioned earlier took up the policy discussions with relevant authorities and the proposed policy amendments like introduction of hefty fines, special crime unit and court were passed. In support of this Gramlich (1994) recognizes the shortages in infrastructure provision but his major

concern is whether or not countries have good policies in terms of infrastructure investment. He insists that the main focus should be on changing policies to allow states to be self-reliant on infrastructure investment, funding and decision making.

Self-reliance in the context of leadership and infrastructure delivery challenges in the Sisonke district calls upon for servant leadership. As already referenced earlier Smith et al (2004:82) maintains that “Servant leadership promotes the valuing and development of people, the building of community, the practice of authenticity, the providing of leadership for the good of those led and the sharing of power and status for the common good of each individual, the total organization and those served by the organization.”

4.8 Models compared with reality (stages 4 and 2)

The participants in the group discussions meeting made a direct comparison of models with reality, that is, stages 4 and 2. The objective of this stage is to reveal the similarities and differences that exist between the model and reality in order to gain insight and to identify areas in need of improvement. It was felt that the ‘Structured questioning of the model using a matrix approach’ was the most relevant. Its relevance is based on its ability to present information in a clear and structured way which facilitates easy understanding.

The participants use three conceptual models and several conceptual activities. Among the questions posed about each activity are whether it exists or not, how it can be implemented, by whom/at what rate? Further comments were also considered. The following table elaborates on the comparison as follows:

Table 5: A communications system.

Activity	Does it exist?	Mechanism	Performance/ Judgement	Comments
Hold regular meetings	No	Have monthly and semester standing meetings for progress reports.	Monthly/ Semester	Need for more regular gatherings to address issues immediately. Emergency meetings to be called as and when a need arises.
Review and formulate policy	Partial	Open direct lines of communication between society and Head of Directorate. Legislate two-way communication. Top down and bottom up. Authorities are to acknowledge receipt of requests and stipulate the extent of the waiting period via sms, email etc	KZN Provincial Legislature	Direct lines of communication will enhance service delivery Ensure beneficitation from both positive and negative feedback loops
Increase budget in order to: appoint a full-time communications officer.	No	Creation of the position and employment of a Communications Officer for the Infrastructure Directorate.	HR in consultation with the Head of the Department of Education.	Employment of relevantly qualified and experienced incumbent will aid free flow of information.
Resource office	No	Purchasing and use of advanced ICT equipment	MEC / Hod / Province / Districts	Advance ICT enables fewer employees to work faster, cheaper, efficiently and effectively.
Provide training	No	Provide yearly staff training to ensure improved levels of efficiency in the discharge of duties and operation of equipment	MEC, Hod & Directorate: IMS	The training will hopefully improve performance of duties and the effective use of equipment.
Establish appeals tribunal	No	Tribunal shall hold quarterly meetings for progress reports and new cases	Special committee presided over by the General Manager of Directorate and Communications Officer to hear and address complaints and grievances.	Will facilitate dialogue and amicable resolution of differences. Therefore, fairness, accountability and sense of responsibility will be promoted.

Table 6: A system of corruption

Activity	Does it exist?	Mechanism	Performance	Comments
Detect corrupt practices	Partial	Whistle blowing and crime hotline	24 Hours a day	Early detection enables the intensification of preventive measures.
Formulate user-friendly policy	No	Time taken from commission of crime, investigation, arrest and conviction is reduced to a maximum of 12 months. The minimum sentence legislation of 10 years imprisonment must be imposed on corrupt people. The courts shall impose a lesser sentence if there are substantial and compelling circumstances. The blacklisting of culprits and their companies will hopefully serve as deterrent to the commission of crime.	KZN Provincial Legislature and Justice system.	Displays political will, conviction and expediency in reducing crime in our society.
Provide incentives for informants.	Yes	Cash payment for information leading to a successful conviction of those involved in corrupt activities.	Government and Law enforcement agencies: police, Hawks, judiciary and private security agencies	Sends a strong message that it pays to be a law abiding citizen.
Ensure confidentiality, safety and security for crime informants	Partial	Non-disclosure of identities of crime informants including testifying in camera and providing security until court satisfies itself that the informants are no longer under threat. This may take three months but should not exceed six months.	Police, Hawks, Justice system and Private Security Agencies to provide security	Communities develop trust in the law enforcement apparatus and hence many will report crime.
Establish special investigative unit and corruption court	Partial	Establish a special investigative unit and corruption court in order to expedite the process from the commission of crime to the arrest and sentencing of the culprits.	Government, Law enforcement agencies and KZN Legislature.	Displays political will, conviction and expediency in reducing crime like embezzlement of public funds in our society.
Introduce hefty fines for criminals involved in serious criminal activities like	Partial	The strict bail conditions must be imposed on these criminals. Courts are to impose hefty sentences: a minimum of 10 years imprisonment, seizure of all their assets and life	Government & Law enforcement agencies	Sends a very strong message that crime does not pay. Serves as deterrent to crime.

Activity	Does it exist?	Mechanism	Performance	Comments
theft of huge sums of money, murder, robbery with aggravating circumstances, drug dealing and trafficking, rape etc.		sentence etc.		
Employ regular spot checks on suspicious business transactions	Partial	Routine random searches and investigations of suspicious business transactions	Law Enforcement agencies.	Displays vigilance and robustness in the fight against crime.
Provide regular reports on successful conviction of perpetrators	Partial	Regular communication of information on successful conviction of culprits through organizing press conferences, monthly bulletins etc.	Courts of law	Keep the communities apprised of who are the criminals and which type of crime is on the increase or decrease.
Use a transparent adjudication process.	No	Ensure all the relevant stakeholders participate.	Ongoing meetings	The bid adjudication and evaluation committees be compelled to do their work with transparency.
Introduce ICT-based advanced adjudicating	No	Take advantage of technological advancement by establishing a device for preliminary screening, adjudicating and appointment of qualifying credible service providers. Also, to include commissioning and establishment of the device to detect and track irregular practice by senior management of the DoE/I.As/ Consultants/ Project Managers/ Contractors. This is done in the best interest of the public.	KZN Legislature, KZN DoBE, MEC, SGMs Infrastructure Planning and Delivery Directorate and Professional bodies in the Built Environment.	Ensures fairness in the adjudication and evaluation of bids. The stakeholders' involvement would also expose any wrong doing, improve trust in the outcomes and hence avoid delays caused by contestations.

Table 7: A system of capacity/skills transfer

Activity	Does it exist?	Mechanism	Performance	Comments
Introduce compulsory skills audit	No	Presentation of skills audit by Human Resource representatives.	Yearly	Indicates on an on-going basis the production rate of critical skills to avoid either under or over-supply thereof. Such information assists in strategic planning of government.
Formulate policy based on findings	No	KZN Provincial Legislature	Yearly	Ensures correct policies are in place to better regulate the supply thereof.
Provide skills training centres	Partial	KZN DoE, CIDB, Construction Sector, Built Environment Sector and Financial Sector	Ongoing	Ensures regular supply of new and critical skills especially among the youth.
Increase funding for skills development.	No	KZN Provincial and Local Govt to budget, source donor funds and use Private & Public Partnership.	Yearly	There will be an increase in the enrolment at skills training centres and thus ensure more production of the needed skills. Unemployment and skills shortages will be reduced.
Determine special funds for retraining and refresher programmes	Partial	KZN Provincial & Local Govts, CIDB, Training Centres. Construction Sector leadership and management	Ongoing Incentivize refresher courses to be attended biennially	Attracts the youth into critical skills hence address shortages. The retraining programmes help retrenched people to get work. Incentives obtained through attending refresher courses like certificates and letters of acknowledgements for excellent work would be treated as an advantage for promotion purposes. As a result productivity will hopefully improve.
Introduce advanced mentorship programmes	Partial	KZN DoE, CIDB, Built Environment Sector, Business & Financial Sector	Yearly	Individuals and companies benefit from skills transfer and work experience through mentorship programmes. Business and financial management skills obtained will hopefully increase the success rate of companies.
Determine an effective contractors' grading system	No	Construction Sector	Ongoing	The CIDB will change from the grading system which is based on monetary values to one based on the quality of work completed. The contractors will be expected to prepare portfolios of progress on site with endorsements from project manager, implementing agent, professional team and the client. The CIDB inspectors will visit sites to verify information contained in these portfolios and make their recommendations. The CIDB quality assurance committee will upon satisfying itself either up or down-graded the contractor. The contractors that perform badly will have their licenses suspended until they finish a six months mentorship programme. The researcher hopes this new contractors' grading system will improve workmanship on sites and reduce failure rate

Activity	Does it exist?	Mechanism	Performance	Comments
Provide better incentives for excellent companies	Partial	Government to ring fence projects for effective and efficient contractors	Yearly	Enables companies to strive for excellence

4.9 Discovering feasible and desirable changes

The main focus of the participants at the previous stage was engagement in comparison between the conceptual model and the real life situation. Such engagement helps in highlighting numerous feasible and desirable changes for implementation which is the main focus of this stage. As already mentioned in this chapter, Checkland et al (1981, 1990 and 1999) argues that the agreed changes normally fall under the following interrelated categories: structure, process, policy and cultural changes.

In this study the changes deemed feasible and desirable by the participants pertain to changes in the following aspects: the organizational structure, process and procedures for infrastructure provision, policy and cultural changes.

The changes in the organizational structure or institution’s organogram resulted from the addition of communication officer. The proposed changes in terms of the process and procedures for application for infrastructure provision are that applications should be made through the direct communication lines with the Head of the Directorate Infrastructure Planning and Delivery. The policy changes involve changes that make provision for legislation of top-down and bottom-up communication channels, introduction of hefty fines and establishment of special crime unit and court. While the cultural changes deemed necessary involve changes in how head office perceive principals and SGBs who after waiting for far too long to be provided with infrastructure decide to approach the head office or worse still the office of Member of Executive Committee for Education (MEC).

The key participants in this study have identified numerous feasible and desirable changes that fit into these classifications. The question now is whether or not it would be possible to implement

all these proposed changes given the fact that some like attitudinal changes are influenced by factors beyond the control of the participants and the researcher. The following list of issues and potential changes were identified. These emanate from the analysis of the three systems felt most relevant to investigate, learn about and hence improve the leadership and infrastructure delivery challenges in the Sisonke district. The other systems were infused into the three and some were dropped and the researcher recommends they be the starting point for further studies in leadership and infrastructure delivery context. It is also worth mentioning that the researcher is under no illusion that the list is exhaustive. The iterative enquiry process, which is SSM, and precisely stage five, enables the participants and the researcher to propose these changes:

1) In order to address the challenge of poor communication the participants discussed and agreed on the need for regular communication. The participants resolved that stakeholders should have monthly and semester standing meetings to discuss progress reports. Also, emergency meetings shall be convened as and when a need arises.

2) Employment of a relevantly qualified and experienced communications officer and policy review that legislates two way communications will aid free flow of information. In so doing direct benefits will be enhanced from both positive and negative feedback loops.

3) Increased budgetary allocation set aside for the employment of a communications officer, purchase and use of advanced ICT. Advanced ICT comes with numerous advantages because it can enable fewer employees to work faster, cheaper, efficiently and effectively if they have been suitably trained and if the equipment is appropriate and regularly serviced.

4) Open direct lines of communication between the public and Head of Directorate of Infrastructure Planning and Delivery because direct communication lines will enhance service delivery.

5) Guarantee confidentiality, safety and security to crime informants through non-disclosure of their identities, have them testify in camera and provide security. Communities will develop trust in the law enforcement apparatus and hence many will report crime.

- 6) Establish special investigative unit and a corruption court.
- 7) Compile a list of arrested, tried and convicted culprits to name and shame them. Naming and shaming the culprits is hoped to deter people from committing crime. The list shall be displayed at public places like taxi and bus ranks, museums, courts etc for the public to see.
- 8) Ensure a transparent adjudication process through ensuring that the bid adjudication and evaluation committees are legally compelled to do their work transparently.
- 9) Adopt a user-friendly policy that prescribes that the criminals who commit serious offences like murder, drug dealing and trafficking, corruption involving huge sums of money be given hefty fines like a 10 years minimum imprisonment, seizure of all their assets and a life imprisonment. Such change will display political will, conviction and expediency in uprooting crime in our society.
- 10) Employ an advanced ICT based adjudicating device that improves fairness in the adjudication and evaluation of bids. The stakeholders' involvement would also expose wrong doing, improve trust in the outcomes and hence avoid delays caused by contestations.
- 11) Introduce a compulsory skills audit to continuously indicate the production rate of critical skills to avoid either under or over supply thereof. Such information assists in the strategic planning of government.
- 12) Provide special funding for training and retraining programmes. Such endeavours will attract the youth to be trained to provide critical skills and hence address shortages. The retraining programmes would help retrenched and unemployed people to get work. The Department of Education Planners will derive direct benefits from this offer because most of them are ill-equipped to deal effectively with infrastructure provision.
- 13) Adopt free refresher courses to enable artisans to refresh their knowledge and skills

biennially to enhance performance. Attendees are to receive certificates of competency as an incentive.

14) Provide better incentives for compliant companies through having certain projects 'ring fenced' for efficient and effective companies. It is incentives like these which entice companies to strive for excellence.

15) Introduce advanced mentorship programmes that will benefit individuals and companies through skills transfer and work experience. The business and financial management skills obtained will hopefully increase the success rate of companies.

16) Improve the contractors' grading system used by CIDB in order to ensure their correct grading and thus enhance the quality of their work and reduce their high failure rate.

4.10 Taking an action to improve the problem situation.

Once the proposed changes were agreed upon by the participants the next stage was to implement them. The researcher observed the first stakeholders meeting where the implementation process was deliberated on. Within a month of implementation positive signs of improvement or change started to show. The first monthly meeting was held and was attended by top management of the district, district infrastructure planners, principals of schools and their School Governing Bodies. All these participants appreciated this opportunity and expressed their unwavering support for meetings of this nature.

Subsequent to the first stakeholders' meeting the following changes were implemented:

1. A resolution was taken to employ a communication officer and the matter was referred to Human Resource section for implementation.
2. An increase in budget allocation was approved to accommodate the employment of the communication officer and purchasing and the use of advanced ICT resources.
3. The directorate opened direct lines of communication between the Head of Infrastructure Planning and Delivery and the public. A hotline or call centre was established to attend to public grievances as well as facilitate feedback among the stakeholders.

4. The DoBE adopted a resolution to seek for improvement of the protection of state witnesses.
5. The DoBE adopted a resolution to seek for establishment of special investigative unit and corruption court.
6. The DoBE resolved on advertisement of names of convicted culprits involved in infrastructure delivery in the Sisonke district.
7. The transparent adjudication process was adopted.
8. The DoBE advanced for the adoption of hefty fines for culprits, for example, ten years minimum sentence.
9. An ICT based adjudication device was introduced.
10. Compulsory skills audit was undertaken.
11. Special funding for training and retraining was allocated.
12. Free refresher courses for artisans were introduced.
13. Incentive schemes for special projects were ring fenced for efficient and effective companies.
14. Advanced mentorship programmes were adopted
15. Improved contractors' grading system was introduced by CIDB.

However, implementing all the changes was not that easy because the environment in which organizations and human beings live is very turbulent and dynamic. This reminded me of the lessons I learnt about complexity theory as advanced by Cilliers (2000) that today's solution often becomes tomorrow's problem and that complexity theory cannot solve everything. Jackson (2000) concurs with Checkland when he maintains that problem solving in social systems is a never-ending process of learning. Therefore, the implementation of proposed changes would lead to another 'messy' problem situation and thus a new learning cycle begins. Checkland (1990, 1998, and 1999) acknowledges the flexibility within which SSM can be applied hence the four activities model and the two streams model.

Furthermore, the 'taking action stage' completes SSM cycle, but Checkland and his Lancaster team acknowledged that SSM is 'a never ending cycle.' On realizing that some proposed changes needed more time to take effect like advertising, interviewing, appointing and inducting the communications officer the researcher felt that implementing the above mentioned changes was difficult and complicated. Since more time was needed for some changes to take effect the

researcher could not report on their impact in this same study. The researcher therefore recommends that reflecting on the effectiveness of the proposed changes presents a rich opportunity for further academic research.

In the light of this assertion the researcher hopes all the proposed changes like regular communication through holding monthly and semester standing meetings would actually improve and close the communication gap among the stakeholders. The appointment of the Communications Officer in the Directorate should further enhance free flow of information either from bottom up or top down.

Furthermore, the employment of an advanced ICT based adjudicating device that improves fairness in the adjudication and evaluation of bids will definitely serve as deterrent to crime. The stakeholders' involvement would also expose wrong doing, improve trust in the outcomes and hence avoid delays caused by contestations.

Lastly, the provision of special funding for training and retraining programmes shall address unemployment and skills shortages. Definitely, the Department of Education Planners will derive direct benefits from this offer because most of them are ill-equipped to deal effectively with infrastructure provision. As former teachers most of them have ventured into infrastructure delivery which demands project management knowledge and /or at least basic construction management expertise.

As a practitioner researcher, the researcher estimated that about 99% of planners do not have the necessary expertise and the department of education does not have a programme to equip them either. The researcher is of the opinion that some of the delays in infrastructure delivery are caused by total reliance on private consultants versus having internal building administration unit that deals with most of the work.

The researcher being driven by his philosophy in life that "Education and Insight breaths Excellence" enrolled for self-funded studies towards a Master of Commerce Leadership Studies Degree. Hopefully knowledge gained from these studies will result in improved service delivery

and as a result the researcher suggests that all district and head office planners pursue these studies.

4.11 Results and implications.

It should be mentioned that through the application of SSM and specifically the interpretive approach the researcher and all the participants learnt how to work collaboratively, working as a team to address a messy problem situation.

4.11.1 Results.

The results of this research project like in many other research projects were varied. The researcher found that the implementation of proposed changes with regards communication breakdown like holding regular monthly and semester meetings started to yield positive results.

All stakeholders were kept informed and it was hoped the rate of complaints lodged directly to the MEC of Education would drop. The process of the employment of a Communications Officer for the Directorate started and it was hoped it would result in effective and efficient communication system within the district and among all relevant stakeholders. The proposed change in the culture of the organization proved to be very difficult given the fact that the culture of the organization entailed issues that are beyond the control of individuals and the organization. The submission of infrastructure needs by school principals and SGBs through the line function proved too cumbersome and time-consuming.

However, changing such internalized reporting channels was resisted. The increase in budget allocation meant to resource the directorate led to unintended consequences because some powerful officials pressurized and intimidated the adjudicating personnel to select certain service providers. The interview committee members were also dictated to as to who they should appoint.

Furthermore, the proposed policy changes especially with regards long-term imprisonment and asset forfeiture received mixed reactions as victims of crime welcomed them while criminals and their relatives challenged them through courts of law. The use of ICT-based adjudicating

technology proved successful at the beginning but soon it was engulfed with operational and technical problems that led to costly errors like the awarding of one tender to more than one service provider.

4.11.2 Implications

Despite the challenges and resistance to the implementation of the proposed changes the study was successful to some degree. The use of soft systems methodology helped the researcher and the organization to achieve a better understanding of the perceived issues impacting upon leadership and infrastructure delivery programmes in the Sisonke District.

At the outset of this research the problem situation was messy, unstructured and ill-defined. However, the application of critical systems thinking and soft systems methodology helped structure the problem domain. Numerous issues mentioned elsewhere in the study were identified but the researcher chose to concentrate on three critical ones because of the time and financial constraints. The three were the need to improve the communication system because it transcended all other systems, the need to address corruption in the system because it was one of government priorities and finally, the capacity/skills transfer system since it was the primary objective of the Department of Education.

The debate and discussion stages of SSM enabled the participants to identify and recommend changes to improve the problem situation. The interpretive approach adopted was subjective and participatory and as such improved the outcome of the study through stakeholder participation and sharing of diverse world views about the problem situation. The researcher realized that stakeholder participation ensured wide representation of stakeholders and hence it tended to promote acceptability of outcomes of the study.

The direct comparison of the two case studies: Tonjeni Primary School representing the most successful eradication of mud and inappropriate structures programme and Bhidla Primary School representing the unsuccessful emergency repairs programme enabled the researcher and stakeholders to derive some learning experience. The researcher found that the Eradication of Mud and Inappropriate Structures Programme was successful because it was well-planned,

managed and coordinated. The professional team, the contractor and the concerned stakeholders proficiently and diligently discharged their duties hence this project was successfully completed and handed over two months before the expiry of the contractual period. The interview responses by the implementing agent manager attest to this assertion (see paragraph 4.4.1.6 above).

On the other hand, poor planning, poor coordination and unprofessionalism by those in charge of the emergency repairs programme were a recipe for its failure. As already mentioned earlier that Bhidla Primary School was repeatedly hit by storms but the Department failed to rescue the school. This research project significantly contributed not only to identifying shortfalls in the emergency repairs programme and infrastructure delivery programmes generally, but also proposed new strategies like decentralization of powers and authority to districts to help expedite decision-making.

This intervention presented a good opportunity for the improvement of communication system into an efficient and effective system. It also showed that the capacity of DoBE Planners needed to be improved if they were to discharge their duties effectively.

However, the study showed no conclusive evidence on whether or not infrastructure planners' priorities are indeed addressing the most critical and basic infrastructural needs.

4.12 Conclusion.

In conclusion, this chapter presented the analysis of the challenges impacting upon leadership and infrastructure delivery programmes and maintenance of school facilities in the Sisonke district. The analysis was done through the application of SSM as the intervention process which sought to answer the research questions by unpacking the messy problem situation and by suggesting changes that could be used to improve the problem situation. Some of the suggested changes include holding regular meetings (monthly and semester standing meetings as well as emergency meetings as and when a need arises), the employment of a communications officer in the Infrastructure Planning and Delivery Directorate (which is a change in the structure of the organization) etc. Lastly, the results and implications were elaborated.

CHAPTER FIVE: RECOMMENDATIONS AND CONCLUSION

5.1 Overview

This chapter aims to provide a conclusion of the dissertation by providing an answer to the research aim and questions of the study. The limitations of the study are also identified. It further elaborates the lessons learnt and the recommendations.

5.2 Fulfillment of the aim of the study

The researcher reminds the reader that the main aim of this research project was primarily to determine the perceived impact leadership and infrastructure delivery programmes have in addressing basic infrastructure backlogs, maintenance challenges and repairs in the Sisonke District of Education. It also involved identifying means to improve the ‘messy’ problem situation. By vigorously engaging in this study the researcher aimed to create new knowledge and hopefully improve his academic research capabilities.

As already mentioned earlier the researcher applied SSM in order to learn about and improve the messy problem situation of leadership and infrastructure delivery programmes in the Sisonke district. The perceived problems were clearly presented during the rich picture formulation where seven themes were identified and were further processed until feasible and desirable changes were agreed upon. This study identified communication, corruption and lack of skills as some of the contributing factors impacting upon leadership and infrastructure delivery in the Sisonke district. In view of this information the researcher’s aim for the study was achieved.

5.3 Answers to the research questions

As already mentioned in chapter one this study attempted to answer the following questions:

Main question

What are the perceived problems impacting upon leadership and infrastructure delivery programmes in the Sisonke District?

Sub-questions

Is there an effective communication system within the Sisonke District?

How does the capacity of planners impact on the service delivery?

Are the planners' priorities right?

The first question was answered because the perceived issues impacting upon the problem situation were identified at rich picture formulation stage. Seven themes were identified as: communication, centralized authority, lack of team work, corruption, lack of capacity or skill, business & financial mismanagement and politics. These themes were processed further and feasible and desirable changes were agreed upon. The researcher and stakeholders discovered factors hindering reduction of backlogs and proper maintenance of infrastructure.

The second question was answered because one of the root definitions and feasible and desirable changes are based on improvement of broken communication systems. Several stakeholders revealed that there was communication breakdown in the Sisonke district and hopefully the employment of a communication officer and opening of direct lines (hotline and call centres) for the benefit of the public will hopefully solve this problem. The policy changes to legislate top-down and bottom-up channels of communication will further enhance feedback loop.

The third question was also answered because one of the root definitions and feasible and desirable changes suggests capacity or skills training of all stakeholders. As mentioned before the planners' plight would be directly addressed by the proposed training and retraining in this study.

However, the fourth question was not adequately addressed as there is no conclusive evidence to suggest that the planners' priorities address critical infrastructure backlogs and maintenance.

5.4 Limitations of the study.

This study was conducted in schools in the Sisonke District of Education which is one of the twelve districts in KwaZulu-Natal. Its findings are clearly limited in terms of their ability to be generalized to the other eleven districts in the province and nationally because the study sample was limited to Sisonke District with very few professional team members (construction sector) and a Head Office Deputy Manager (infrastructure delivery directorate) coming from outside of our boundaries. But, the insight accrued from this study will hopefully be critical in the provision

of progressive leadership in the context of the delivery of basic infrastructure to the Sisonke District schools.

5.5 Lessons learnt (researcher, key participants and organization)

Since this study extended over a long period numerous lessons were learnt by all the stakeholders however, the researcher, using a practitioner research approach explained in chapter one, decided to concentrate on the bellow-mentioned lessons because they are the most relevant for this study.

Firstly, the researcher learnt remarkable lessons through attending coursework modules which form part of this research dissertation. Without attending modules on Leading in Turbulent Environments and Systems Thinking and Practice which introduced the researcher into complexity theory and systems thinking he would not have managed to prepare this dissertation. The researcher continues to contribute towards improvement of leadership and infrastructure delivery programmes within the Sisonke District. The project management knowledge gained from the Leadership Centre will hopefully improve the performance of the researcher. The researcher became the first official in the Sisonke District Planning Directorate to be equipped with Project Management knowledge in a directorate whose core business is to initiate, plan, execute, control and close projects.

Secondly, the researcher acknowledged the significance of exploring the views and opinions of all the stakeholders. The use of SSM enabled the researcher to see the value of attempting to capture the different perceptions of all participants in the problem situation. The researcher realized that some of his perceptions about leadership and infrastructure delivery programmes differed quite significantly with those of learners, teachers, principals and school governing body members who participated as interviewees or in the group discussion. The researcher learnt how to remain neutral and understood the significance of the participants' perceptions of the problem domain. However, it was worth acknowledging that the researcher's neutrality could not be guaranteed hundred percent and hence he might have influenced the outcomes of the study whether consciously or unconsciously.

Also, learning took place when participants engaged in debates and discussions during the comparison stage of SSM. The participants expressed their divergent viewpoints exposing each other to how they thought about the problem domain. This presented a good opportunity for the different views to be appreciated fully by them and thus they found it possible to accommodate each other's views.

The researcher also learnt that although it was possible to persuade participants from their strongly held perceptions about issues this was difficult to do. The critics of SSM, mentioned earlier in chapter three, insisted that rather than consensus seeking it should seek accommodation of different perceptions. The use of the traditional seven stages of SSM presented an opportunity for the key participants, organization and researcher to work together and cooperate towards achievement of one goal (improvement of leadership and successful delivery of infrastructure) thus fulfilling Senge's (1990) disciplines of a learning organization specifically shared vision and team learning. The key participants learnt human relations skills like treating each other with respect and dignity.

They also learnt how to communicate effectively with each other. The researcher, participants and the organization realized that SSM is cyclical in nature and hence a never-ending process of learning where their perceptions and attitudes are continuously tested and changed (Checkland, 1981). The implementation of proposed changes at 'taking action stage' resulted in yet another messy problem situation. SSM is therefore criticized for being a temporary intervention. Further to this was the realization that each key participant has a critical role to contribute towards the success of the organization. Anderson (1999), Jackson (2006) and Maxfield (2008) shared similar sentiments when they maintained that in complex adaptive systems there is no agent that can stand out and claim knowledge of the organization.

Therefore, all agents interact with each other at an equal level. The researcher's leadership skills were honed through interacting with participants who occupied different leadership and management roles. The researcher negotiated, motivated and influenced the stakeholders to work together towards improvement of infrastructure backlogs, maintenance and repairs. The facilitation role played by the researcher enabled him to internalize and sharpen his leadership

abilities. By performing the above mentioned roles the researcher was indeed exercising leadership as described by McLeod and Smith (1996:322) who contended that leadership was “that quality of an individual that motivates others to willingly participate to achieve goals which they come to share with the leader.”

Furthermore, the researcher learnt that contractors, consultants, project managers and implementing agents were equally concerned about high failure rate of construction projects.

Lastly, a very hard lesson was learnt halfway through the research dissertation that the use of the traditional seven stages SSM was time consuming and hence it was not possible to complete this project as initially intended.

5.6 Recommendations.

These recommendations sought to better the situation affecting both the public and private sector organizations and/or the organizational leaders who were confronted with ill-defined and unstructured problem situations. The researcher categorized the recommendations into: those based on the actual change process implemented through the use of SSM/CSP and those based on further research by any one confronted by similar ill-defined and complex problem situations.

5.6.1 Recommendations based on the actual change process.

The interactive engagement as a result of active participation of the stakeholders enabled the researcher to make some recommendations. The researcher asserted that the management of learning or skills warranted the use of critical systems thinking as a meta-methodology and soft systems methodology as a problem structuring methodology. The interpretive approach that informed the application of the above methodology led the researcher to recommend a need for paradigm shift in the disbursement of infrastructure delivery programmes.

The researcher thus recommends the shift from centralized to decentralized decision-making, planning and budgeting (from Head Office to different districts). This would enable self-reliance. The lead time in decision making would be significantly shortened and hence the district would be efficient and effective in managing and running its infrastructure delivery programmes. The devolution of responsibility, authority and power to districts could facilitate expeditious approval and appointment of Implementing Agents and contractors to sort out storm damage repairs at

schools. This would save the Department the huge embarrassment it must have felt with the delay in storm damage repairs at Bhidla Primary, where the Department failed to help the school when it was repeatedly damaged by storm for three years in succession until a Good Samaritan came to the rescue of the school. The priorities of the district would not be circumvented by those of other districts. Our success in the discharge of Infrastructure Management Services depended on the commitment and active participation of all the stakeholders. As referenced earlier soft systems methodology as a participatory method was adopted to inform this research study. It was also recommended that the Sisonke District of Education and specifically Infrastructure Planning and Delivery directorate became a learning and self-reliant organization.

According to Senge (1990) an organization becomes a learning organization if it adopts the five disciplines namely: personal mastery, mental models, shared vision, team learning and systems thinking. The application of SSM facilitated group learning by all the stakeholders. The Sisonke District, participants and the researcher through interactive engagement and cooperation adopted a shared vision (improvement of infrastructure delivery programmes) and learnt together the changes necessary to improve the problem situation of the study. Systems thinking and its main features of holism, interconnectedness and cognition/'embeddedness' played a pivotal role in the learning process of stakeholders and the successful attainment of research objectives.

Furthermore, the researcher recommended that the district adopt Morgan's (1986) metaphors of the organization specifically the cultural and political metaphors.

5.6.2 Recommendations based on the further research.

Although numerous recommendations could have been made the researcher decided to highlight those he felt were the most significant for this study.

Firstly, the researcher recommended that further research be undertaken to evaluate and reflect on the impact (positive and negative) of the implementation of proposed changes to leadership and infrastructure delivery programmes within the district. Such reflective engagement should be done within the first year of implementation. The researcher perceived the first year of implementation as the most critical time hence it would be enough to reflect on. Short-term

planning was recommended rather than long-term planning because of the complexity, non-linearity and unpredictability of the environment within which the organization and people live.

Secondly, the researcher recommended that the review of the results and implications of this study be done to validate them. This was warranted by the fact that Checkland (1981) acknowledged that with the use of SSM it was highly possible that similar results using either the same or different participants were not guaranteed. The application of systems thinking to leadership and infrastructure delivery programmes in the Sisonke District of Education presented a rich opportunity to use Soft Systems Methodology and Critical Systems Thinking (a meta-methodology framework).

The researcher also acknowledged the benefits of using a multi-methodology approach like critical systems thinking /soft systems methodology and more precisely the interpretive approach. The advantage of using critical systems thinking was premised on its ability to use the strengths of different methodologies in pursuance of improvement of a problem area. However, by using different methodologies critical systems thinking lacked specific information on what methodology improved a problem situation and hence it was very difficult if not impossible to recommend any specific methodology. As a result, further research is recommended for this study to find out the appropriate methodology for my situation.

Furthermore, the popular views held by many academics suggest that SSM is suitable for unpacking the ill-defined problem situation and for proposing changes to improve the problem situation. However, Sewchurran et al (2007) criticized SSM for its lack of techniques required to initiate taking action. For further studies the researcher recommends the use of the hard systems methodology like Beer's (1989) Viable Systems Methodology (VSM). Lastly, the researcher recommends that further studies in the same or similar topics be held using partnerships as the central focus of the study.

5.7 Conclusion

In conclusion, this chapter restated the main aim and sub-aims of the research study already mentioned in the previous chapters. The research project was designed to primarily determine the

perceived impact leadership and infrastructure delivery programmes have in addressing basic infrastructure backlogs, maintenance challenges and repairs at Sisonke District of Education. By vigorously engaging in this study the researcher secondarily aimed to create new knowledge and improve his academic research capabilities. In order to address the above-mentioned broad aims the study provided direct answers to the four research questions mentioned earlier. The main question was what are the issues impacting upon infrastructure delivery programmes? Ultimately the researcher learnt about and endeavoured to improve the messy problem situation.

Next, the researcher identified the problem situation under investigation as a ‘messy’ problem situation. The problem situation was dubbed ‘messy’ because, as already explained in the first and second chapters it involved human activities characterized with some level of ambiguity about what was the problem, what could its solution be, who were involved in causing the problem situation etc. The researcher alluded to the methodology suitable to address this messy and ill-defined problem situation.

The researcher wishes to conclude this research dissertation by quoting a popular African writer in Chenua Achebe when he says, “When the centre cannot hold, Things Fall Apart.” Project Leadership and Management is the heart of any organization – Therefore, if the heart stops doing its function the whole organization disintegrates. This is how significant Project Leadership and Management Studies are to me. Hopefully there are others who will share such a view.

5.8References

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5.9 APPENDICES

APPENDIX A SCHEDULE OF QUESTIONS FOR UNSTRUCTURED INTERVIEWS

1) Background information of interviewees, roles, tasks and relationship with KZN DoE Sisonke District and Infrastructure Management Services.

Question: What is your background information, what are your roles, what tasks you do and what is your relationship with the KZN Department of Education and Infrastructure Management Services?

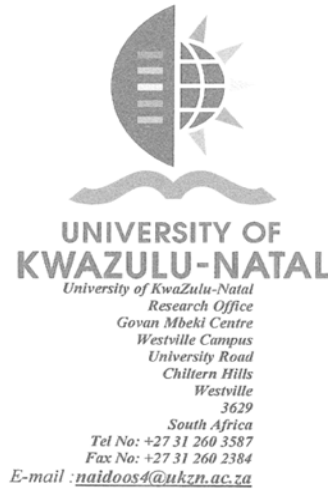
2) Perceptions i.e your views about this infrastructure delivery programme (Either Eradication of Mud and Inappropriate Structures or Emergency Repairs Programme also known as Storm Damage Repairs Programme). Question: What are your perceptions about this programme and why do you think of it in that way?

3) Problems. Question: What problems have you experienced about infrastructure delivery programmes and specifically this one?

(The Eradication of Mud and Inappropriate Structures or Emergency Repairs Programme/Storm Damage Repairs Programme).

4) Ideas and comments. Question: What ideas would you like to share with me pertaining to Leadership and Infrastructure Delivery programmes? Furthermore, what comments would you make about infrastructure at school and about this interview? Lastly, how do you think we can best improve leadership and infrastructure delivery within the Sisonke District? Each of these questions was accompanied by several follow up probing questions. Therefore, the general understanding of the problem situation was derived and is precisely explained in the next step.

APPENDIX B: ETHICAL CLEARANCE LETTER



13 October 2010

Mr L Z Xoko
School of Leadership Centre
WESTVILLE CAMPUS

Dear Mr Xoko

PROTOCOL: Leadership and Infrastructure Delivery Programmes at Sisonke District of Education in KwaZulu-Natal


ETHICAL APPROVAL NUMBER: HSS/1146/2010 M: Faculty of Management Studies

In response to your application dated 01 October 2010, Student Number: **208523514** the Humanities & Social Sciences Ethics Committee has considered the abovementioned application and the protocol has been given **FULL APPROVAL**.

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully



.....
Professor Steve Collings (Chair)
HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

SC/sn

cc: Mr. S Hardman (Supervisor)
cc: Ms C Haddon

APPENDIX C: PERMISSION TO CONDUCT RESEARCH



kzn education

Department:
Education
KWAZULU-NATAL

**LULEKO Z. XOKO
UNIVERSITY OF KWAZULU NATAL
WESTVILLE CAMPUS
DURBAN
3630**

Enquiries: Sibusiso Alwar

Date: 11/06/2010

Reference: 0047/2010

RESEARCH PROPOSAL: AN INVESTIGATION INTO INFRASTRUCTURE DELIVERY PROGRAMMES AT SISONKE DISTRICT OF EDUCATION IN KWAZULU NATAL USING SOFT SYSTEMS METHODOLOGY

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

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, 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. Educator programmes are not to be interrupted.
5. The investigation is to be conducted from 11 June 2010 to 11 June 2011.
6. Should you wish to extend the period of your survey at the school(s) please contact Mr Sibusiso Alwar at the contact numbers above.
7. A photocopy of this letter is submitted to the principal of the school where the intended research is to be conducted.
8. Your research will be limited to the schools submitted.
9. A brief summary of the content, findings and recommendations is provided to the Director: Resource Planning.

...dedicated to service and performance
beyond the call of duty.

KWAZULU-NATAL DEPARTMENT OF EDUCATION

CONTACT: Freesia Begg x9147, Durbanville, 3200, KwaZulu-Natal, Republic of South Africa
POSTAL: P.O. Box 6275, 188 Pietermaritzburg Road, Maropeng, Pretoria, 001
TEL: +27 33 941 8610/8611, Fax: +27 33 941 8612/11, mail:



kzn education

Department:
Education
KWAZULU-NATAL

10. The Department receives a copy of the completed report/dissertation/thesis addressed to:

The Director: Resource Planning
Private Bag X9137
Pietermaritzburg
3200

We wish you success in your research.

Kind regards

R. Cassius Lubisi (PhD)
Superintendent-General

...dedicated to service and performance
beyond the call of duty.

KWAZULU-NATAL DEPARTMENT OF EDUCATION

POSTAL Private Bag X9137, Pietermaritzburg, 3200, KwaZulu-Natal, Republic of South Africa
PHYSICAL Office C25, 188 Pietermaritzburg Street, Metropolitan Building, PIETERMARITZBURG 3201
TEL Tel: +27 33 341 8611 | Fax: +27 33 341 8612 | E-mail



kzn education

Department:
Education
KWAZULU-NATAL

LULEKO Z. XOKO
UNIVERSITY OF KWAZULU NATAL
WESTVILLE CAMPUS
DURBAN
3630

Enquiries: Sibusiso Alwar

Date: 11/06/2010

Reference: 0047/2010

PERMISSION TO INTERVIEW LEARNERS AND EDUCATORS

The above matter refers.

Permission is hereby granted to interview Departmental Officials, learners and educators in selected schools of the Province of KwaZulu-Natal subject to the following conditions:

1. You make all the arrangements concerning your interviews.
2. Educators' programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, educators and schools are not identifiable in any way from the results of the interviews.
5. Your interviews are limited only to targeted schools.
6. A brief summary of the interview content, findings and recommendations is provided to my office.
7. A copy of this letter is submitted to District Managers and principals of schools where the intended interviews are to be conducted.

The KZN Department of education fully supports your commitment to research: **An Investigation into infrastructure delivery programmes at Sisonke district of education in KwaZulu natal using soft systems methodology**

It is hoped that you will find the above in order.

Best Wishes

R Cassius Lubisi, (PhD)
Superintendent-General

...dedicated to service and performance
beyond the call of duty.

KWAZULU-NATAL DEPARTMENT OF EDUCATION

PRETORIA Private Bag 80147, Pretoria 2000, KwaZulu-Natal, Republic of South Africa

PIETERMARITZBURG Office 429, 168 Pretorius Street, Metropolitan Building, PIETERMARITZBURG 3201

TEL: 031 27 33 3311/031 27 33 3112 (11 lines)



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LIST OF SCHOOLS

1. Tonjeni Primary School
2. Bhidla Primary School

Kind regards

R Cassius Lubisi, (PhD)
Superintendent-General

...dedicated to service and performance
beyond the call of duty.

KWAZULU-NATAL DEPARTMENT OF EDUCATION

POSTAL Private Bag 93147, Pietermaritzburg, 3209, Kwazulu-Natal, Republic of South Africa

PHYSICAL Office 029, 118B Putnambe 47 59-nd, Makhosini 45000 sq. FT. UMSINZI BUILDING 3201

TEL Tel: +27 33 341 8611/8612 Fax: +27 33 341 8612 E-mail

APPENDIX D: LETTER OF REQUEST TO RESPONDENTS AND ACCEPTANCE

UNIVERSITY OF KWAZULU-NATAL
LEADERSHIP CENTRE
Westville Campus, Durban, 3630

Dear Mr Rimensberger .H

Mcom: Project Leadership and Management Research Project
Researcher: Luleko Zangoxolo Xoko (0839501670)
Supervisor: Stanley Hardman (031-260 1614)
Research Office: Ms P Ximba 031-2603587

I, Luleko Zangoxolo Xoko an MCOM: PROJECT LEADERSHIP AND MANAGEMENT student, at the Centre for Leadership of the University of KwaZulu-Natal and KZN Department of Education Sisonke District Physical Planner, invite you to participate in a research project entitled An Investigation into Infrastructure Delivery Programmes at Sisonke District of Education in KwaZulu-Natal using Soft Systems Methodology.

The aim of this study is to investigate the impact of infrastructure delivery programmes in addressing basic infrastructure backlogs (classrooms, water and sanitation, electricity, administration blocks, libraries, science laboratories etc), maintenance and repairs.

Through your participation I hope to understand the real problems impacting infrastructure delivery programmes at Sisonke, to learn from the experience of the two case studies (Tonjeni Primary and Bhidla Primary schools) to be used and to contribute to theoretical knowledge of infrastructure delivery programmes and strategies.

The results of the study are intended to contribute to unpacking the real issues impacting infrastructure delivery programmes at Sisonke, to determine if there is an effective communication system, how does capacity of planners impact service delivery and whether our priorities as planners are right.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this interview. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Leadership Centre, UKZN, for five years and thereafter will be disposed off following procedures approved by the university's ethical clearance committee. If you have any questions or concerns about completing the interview or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The unstructured interview should take you about 50 minutes to complete. An unstructured interview means I will not come to the interview with ready-made questions that have one right answer. Please be assured that there is no right or wrong answer. It will be a one-on-one conversation that will be as follows: background information of interviewee, role, task and relationship they have with KZN DOE Sisonke District and Infrastructure Management Services; perception i.e your views about this infrastructure delivery programme; problems; ideas and comments. Follow-up interviews will be arranged with affected respondents should a need arise. I would like to alert you that interviews will be taped or videotaped to enable rerun to ensure correct understanding of contents of the interview. I will also take notes during interview process to serve as back up to videotape record and to ensure easy transcription immediately after interviews.

NB: The letter of consent template is attached.

I hope you will take the time to participate.

Sincerely,

Luleko Zangoxolo Xoko

E-mail: lulekoxoko@gmail.com

Investigator's signature



Date : 14 June 2010

UNIVERSITY OF KWAZULU-NATAL
Leadership Centre

Mcom:Project Leadership and Management Research Project

Researcher:Luleko Zangoxolo Xoko(0839501670)

Supervisor:Stanely Hardman(031-260 1614)

Research Office: Ms P Ximba 031-2603587

CONSENT

I, Mrs Qasha I.N. the Principal of Tonjeni Primary School at Sisonke District of Education, hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I acknowledge that anonymity will be ensured where appropriate (e.g. coded/ disguised names of participants/ respondents/ institutions)

I understand that I am at liberty to withdraw from the project at any time, should I so desire and that I will receive no benefits as a result of my participation in this research.

SIGNATURE OF PARTICIPANT: *Qasha*

DATE: *09/09/10*

University Of KwaZulu-Natal
School of Information Systems & Technology

PARENTAL CONSENT TO PARTICIPATE IN RESEARCH

Dear Mrs Monica Hlatshwayo,

M COM Research Project
Researcher: Luleko Zangoxolo Xoko (083 950 1670)
Supervisor: Stanley Hardman (031- 260 1614)
Research Office: Ms P Ximba 031-2603587:

You are being asked to allow your child to participate in a research study. Before you give your permission, it is important that you read the following information and feel free to contact either me (the researcher), or my supervisor if you are unclear about anything, to ensure you understand what your child will be asked to do. It is your choice whether or not your child will participate.

Your decision of whether or not to allow your child to participate will have no effect on benefits or services to which you are otherwise entitled, the *quality of your care, job status etc.* Please ask questions if there is anything you do not understand.

The study involves an investigation into impact of infrastructure delivery programmes in addressing basic infrastructure backlogs, maintenance and repairs using Soft Systems Methodology (SSM). The study makes use of unstructured interviews, observation and existing documents to collect qualitative data.

There will be no benefits to you should you decide to allow your child participate in this study. *Your child's participation will help us get an insight about what he/ she perceives as real problems impacting infrastructure delivery programmes at Sisonke, to determine if there is an effective communication system, how does capacity of planners impact service delivery and whether our priorities as planners are right.*

You will not receive any compensation if the results of this research are used towards *improvement of infrastructure delivery programmes in South Africa.*

There are no costs for participating in this study other than the time your child will spend responding to the interview.

It is unlikely that participation in this project will result in harm to participants.

Your child's privacy will be protected?

Other than responding to the interview, there will be no additional information required from your child. Data collected for this study will be maintained for a period of about five years. Efforts will be made to protect the identities of the participants and the confidentiality of the research data used in this study, participants are not expected to give their names, ID numbers or any information that is confidential. All records will be kept in a locked file until the study ends and will be destroyed at the stipulated time. Access to all data will be limited to the researcher and supervisor.

The information collected for this study will be used only for the purposes of conducting this study. What we find from this study may be presented at meetings or published in papers but your child's name will not ever be used in these presentations or papers

- **Withdrawal from the study:** If you decide to allow your child to participate, you are free to withdraw your consent and to discontinue his/her participation at any time and without any penalty. Your decision to stop your child's participation will have no adverse effect on the outcomes of this study.

- **Funding:** "There is no outside funding for this research project."

Questions about this study *if applicable: or concerns about a research related injury* may be directed to the researcher in charge of this study: or the research administrator.

NB: The letter of consent template is attached.

I hope you will permit your child to participate in this study.

Sincerely

Luleko Zangoxolo Xoko

Email: lulekoxoko@gmail.com

Investigator's signature  21 September 2010

APPENDIX E DATA COLLECTION METHODS

Data gathering.

As outlined earlier, the data was gathered by the following means:

(i) Unstructured interviews and strategies. The unstructured and open-ended interviews were conducted with the following:

- End users of school facilities namely: 2 learners, 2 parents/SGB chairpersons, 1 teacher and 2 principals.
- Officials from client department: 1 Deputy Manager Infrastructure Delivery from Head Office.
- Implementing Agent: 1 Programme Manager from IDT.
- Politicians: 1 Ward Councillor from local municipality of Umzimkhulu
- Project Manager and Professional Team: 1 Project Manager from Delca Systems

(ii) Observations and informal conversation. Field notes were gathered as follows:

- Observation was done in progress meetings attended in the rebuilt school. The professional team and the contractor were observed and field notes were taken. The reaction of the deputy principal was also observed and notes were taken.
- Colleagues in the Sisonke Infrastructure Planning and Delivery office were also observed, that is, 1 Chief Education Specialist, 1 Deputy Chief Education Specialist and 1 Senior Education Specialist.
- Colleague in the Head Office Infrastructure Planning and Delivery office was also observed, that is, 1 deputy manager.
- Informal conversation was held with colleagues from other districts and head office.

(iii) Existing documents. Data was collected from journal articles, reports, academic papers, minutes and newspaper articles.

(iv) Focus group discussion. A focus group discussion of 10 participants was held to debate the issues in an attempt to improve the problem situation under study.

5.10 STUDENT REPORT TO CONFIRM ERROR CORRECTIONS.

Student name : Luleko Zangoxolo Xoko

Student No. : 208523514

Dissertation title: Leadership and infrastructure delivery programmes in the Sisonke district, KwaZulu-Natal Education department.

Supervisor : Mr Stanley Hardman

Qualification : MCLS

School : Graduate School of Business and Leadership (GSB & L)

Date : December 2013

Student Signature:.....

Preamble: Firstly, my special thanks and appreciation go to the internal examiner for taking time to re-assess my dissertation. The comments and guidance by the internal examiner have afforded me an opportunity to improve my dissertation. Sharing the internal examiner’s perspective about the topic will hopefully enrich my study. In the main the report focuses on the rectification of minor errors as identified by the internal examiner.

Page	Error	Corrections
	Internal examiner	
x	No space	Spacing provided
5	try , emerge	tries, emerges
9	No brackets in the reference	Brackets provided. Tenderpreneuers’ (Nzimande in Mabilu 9 December 2012 City Press newspaper article).
10	The examples of development mandates it has delivered on are housing, electrification, water supply, education, health and job creation for instance. (No reference)	Reference provided. Chikulo (2013)

	<p>.....</p> <p>.....</p> <p>The people's patience has run out and they have started venting their anger and frustration through violent service delivery protests happening throughout the country. (No reference)</p>	<p>Reference provided. (Magubane, Khulekani in Business Day of 30 September 2013) cited the case of the residents of Mooiplaas informal settlement, near Centurion, who staged a violent service delivery protest on Monday morning, during which they demanded housing, water and electricity.</p>
16	<p>chapter</p> <p>No comma. This description is basic Waring (1996)</p>	<p>Section</p> <p>Comma provided. This description is basic, Waring (1996)</p>
19	<p>unnecessary space left</p>	<p>Close space by moving the sentence up</p>
20	<p>No paragraph</p>	<p>Paragraph provided</p>
21	<p>unnecessary space left</p>	<p>Close space by moving the sentence up</p>
23	<p>Missing brackets on year of publication, no chronological order of dates and use of etcetera</p>	<p>Brackets provided, re-arrangement of dates in ascending order and replacement of etcetera with for instance.</p>
25	<p>wrong heading 'Literature review'</p>	<p>Changed to Infrastructure provision</p>
27	<p>No date on reference</p>	<p>Date provided Anwar (2010)</p>
29	<p>No comma and use of explores</p>	<p>Comma provided and explores changed to explore</p>
31	<p>unnecessary space left, no date for citation</p>	<p>Close space by moving the sentence up, provided dates for citation. Hassen's (2000) paper and Hassen (2000)</p>
33	<p>unnecessary space left</p>	<p>Close space by moving the sentence up. See p 32.</p>
34	<p>Missing brackets and comma</p>	<p>Missing bracket and comma provided (Ahmed et al, 2007)</p>
50	<p>table above, not specific</p>	<p>Specified table above (table 3). See p 49.</p>
54	<p>Missing brackets on reference</p>	<p>Brackets provided (see figure 2 above). See p 53.</p>
56	<p>Missing 'be'</p>	<p>'be' provided. See p55.</p>

58	Missing date on reference	Date provided Yin (2003)
61	Secondary data	Primary data. See p 60.
64	Wrongly ordered references	Re-ordered as per error p 67. See p 63.
65	Small and wrong font size	Corrected to font size 12. See p 64.
67	Wrongly ordered references to appendices – E,C,B.A & D	Re-ordered references as follows: A, B, C, D & E. See p 66.
71	Unnecessary space left, no paragraphing and use of wrong word –paragraph 3.6.	Space closed (stages 4 and 2), paragraph left and the word paragraph changed to section 3.6. See p 70.
73	No paragraphing	Provide a paragraph before the next sub-heading. See p 72.
75	No paragraphing	Leave blank space.
76	No paragraphing	Leave blank space.
81	See chapter 2 above	Omit 'above' See p 80.
96	A communications system. (Table: 5)	Table 5: A communications system. See p 95.
97	A system of corruption (Table:6) Unnecessary space left	Table 6: A system of corruption. See p 96. Close space by moving up the sentences in each affected column.
98	No response	Provide the response – No. See p 97
99	A system of capacity / skills transfer (Table:7)	Table 7: A system of capacity / skills transfer. See p 98.
100	Unnecessary space left between full stop and new sentence	Close space. See p 99.
119	Unnecessary space left between two authors	Close space. See p 118.
121	Incomplete reference details	Outstanding reference details provided. See p 120.
122	Incomplete reference details	Outstanding reference details provided. See p 121.
124-134	Appendices wrongly ordered and numbered	Re-ordered and numbered E-A, C-B, B-C, A-D and D-E
134	Unnecessary space left	Close space to form one paragraph