

UNIVERSITY OF KWAZULU-NATAL

A SYSTEMS PERSPECTIVE ON PEDAGOGIC LEADERSHIP

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**A dissertation submitted in partial fulfillment of the requirements for the degree of
Master of Commerce in Project Leadership**

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DECLARATION

I Ruby Joyce Msimango declare that

- (i) The research reported in this dissertation, except where otherwise indicated, is my original research.
- (ii) This dissertation has not been submitted for any degree or examination at any other university.
- (iii) This dissertation does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
- (iv) This dissertation does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:
 - a) their words have been re-written but the general information attributed to them has been referenced:
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Signature: _____

DEDICATION

This dissertation is dedicated to my late parents, Regina Manono Mbele and Joe Mngoma Mbele.

In the depths of my concentration, I sensed your spirits hovering over me and your divine intention made this possible.

Your dreams have come true.

Yours truly,

Ruby.

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No book ever gets into a readers' hand without a team behind it.

I am eternally gratefully to God Almighty who has been my pillar of strength.

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ABSTRACT

A SYSTEMS PERSPECTIVE ON PEDAGOGIC LEADERSHIP

The purpose of this study is to explore pedagogic leadership from a systems thinking perspective. The aim is to develop an understanding that pedagogic leadership, from a systems thinking perspective, plays an integral role in improving the approach in teaching and learning and hence in students' outcomes. Semi-structured interviews were used as a tool to solicit detailed information about the presence of pedagogic leadership from a systems thinking perspective in schools. This study was undertaken in three selected high schools in the South Durban region, KwaZulu-Natal. The respondents were the principals of three schools and, focus groups of grade 12 teachers and students. The research paradigm was based on the interpretative approach enquiry.

Questions that were answered by this study were:

- What are the key dimensions of leadership in learning and teaching?
- How would these dimensions be evident in a school?
- How can these dimensions be initiated, nurtured and developed?

Findings revealed that there is: an absence of shared vision and sense of mission about students learning; a lack of commitment to mission realisation by staff and students; teachers are not empowered to manage the National Curriculum Statement (NCS); moral values are not instilled; teachers do not understand how students learn; and teachers are overburdened by administrative work which impacts negatively on their teaching. It is concluded that pedagogic leadership, from a systems thinking perspective, does not exist in the selected schools where the study was conducted. Although there is absence of shared vision, some schools are very active and perform well.

The department of education is urgently required to address these issues as they form the basis of effective teaching and learning to improve students' outcomes.

ABBREVIATIONS

CASS	Continuous Assessment
HOD	Head of Department
LRC	Learners Representative Council
NCS	National Curriculum Statement
SD	System Dynamics
SGB	School Governing Body
SMT	School Management Team
SSM	Soft Systems Methodology
VSM	Viable Systems Model

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ETHICAL CLEARANCE

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The researcher is a lecturer in the field of Management Sciences, lecturing Accounting to student teachers. They are equipped with basic applied knowledge, skills, values and attitudes that they need to be practitioners within their field. This enables them to impart knowledge effectively to meet societal expectations. At the end of their training programme, they are qualified teachers and ready to be practitioners in their field. I feel fulfilled when I realize that I have contributed to that which gives them pride and joy. They really walk tall when they leave the institution after four years, having completed their programme. They are leaders and managers of their classrooms where they interact with students and other teachers. Robinson (2007:10) advocates that 'To engage with confidence in the leadership practices that make a measurable difference to students, school leaders need high quality opportunities to update their knowledge of the curriculum and to learn how to integrate that knowledge into all their leadership activities'.

As an academic, I have to do research in order to be a competent practitioner and to be able to exhibit this competence in practice. This enables me to contribute to their development and to cope with uncertain situations (Schön 1983: 1). Robinson (2007: 11) concurs he says 'If such research is to benefit students it needs to be highly integrated with the knowledge base on effective teaching so that researchers can identify the conditions that promote and sustain the types of teaching that work for students'.

This has prompted me to be a reflective practitioner and has inspired me to do some serious self-reflection on my approaches to teaching. Schön (1983: 2) argues that 'Practitioners can serve as a corrective to over-learning. Through reflection, one can criticize the initial understanding of the phenomenal to generate both a new understanding of the new phenomenal and change of the situation'. I have since encouraged active participation to promote self-discovery on the part of students and the taking of responsibility for their learning. It thrills me when students inform me how they have applied what they have acquired from their training when they are in the world of work. In the process of self-reflection I have discovered a new me (Boyer, 1997). Reflecting continuously has transformed me. Now I am fully equipped to continue to transform my students who will in

turn transform learners in schools as practitioners. Eventually, the society could hopefully be a transformed society and teachers are seen by the society as agents of such changes.

Tremendous transformation has taken place in education which has had both a negative and positive impact on the teaching profession. These effects have contributed to the complexity of education (Moloi, 2002). The process of a transformative pedagogic approach is evident in the introduction of Outcomes-Based Education (OBE) and the National Curriculum Statement (NCS). One wonders how prepared teachers are for these changes. However, it is hoped that this might be answered as the study proceeds.

I am passionate about my profession as it gives me an opportunity to develop other people. I would like to see the present situation in education changing. At present, theory and research on educational leadership are radically disconnected from the core business of teaching and learning (Robinson, 2007:10). I have undertaken this study wanting to contribute to the transformation in the present state of the affairs in education. The problem of concern is poor student outcomes which are the result of the approach used in teaching and learning that does not promote students' understanding. Various researchers have pointed out that a lack of understanding makes students fail to apply knowledge gained in new situations and in the place of work as supported by Schön (1987). To this end pedagogic leadership from a systems thinking perspective has been identified as being the one that can make a difference. It uses an holistic approach with multi-level leadership and stresses a need to understand how students learn. Robinson (2007: 9) stresses that 'leadership in teaching and learning does make a difference in students' outcomes'. The best evidence in his research suggests that 'the more school leaders learn with their teachers about how to make a bigger difference to their students the more impact they will have on students' outcomes' The researcher is of the opinion that it is important for teachers to learn how students learn. Once they understand students' learning, they will design teaching materials suitable for individuals and all students (McNeill *et al.* 2003:2).

1.2 BACKGROUND OF THE STUDY

This study aims at establishing the presence of leadership in teaching and learning from a systems thinking perspective, since it is believed that leadership in teaching and learning

plays an integral part in improving the approach in teaching and learning; this results in better students' outcomes. Robinson (2007:2) concurs when he says 'school leaders can make a considerable difference in the achievement and well-being of students'.

An overview will be given of aspects found by the researcher to have had a negative bearing on student understanding and eventually on their outcomes.

The primary problem is that there is generally a high failure rate in schools as remarked on by the Honorable Minister of Education Naledi Pando in a radio (SAFM) interview on 05 August 2008 at 7.00hrs in the News Bulletin. This can be attributed, among other things, to the lack of understanding of how students learn and to the approach used in teaching. This affects their learning and understanding, which impacts negatively on students' outcomes.

Many researchers have expressed their concern with this failure rate. Amongst others, Moloji (2002:xv) raises her concern and reiterates that 'some of the undesirable consequences of this are the declining grade 12 results'. She further reminds us that remarkable changes in South Africa have taken place; education is not exempted from such changes. Parker (1998:6) argues that people who survive such changes are the ones who are able to receive and process information quickly. There is also the issue about the kind of knowledge that needs to be processed and adapted to in order to effect change. Ackoff (1999:3) cited in Jackson (2003: 211) maintains that 'Without changing our patterns of thought, we will not be able solve the problem we created with our current patterns of thought'. Moloji (2002: x) further warns that 'Educators have to realise that they cannot thrive without adapting their attitudes and practices to the ever-changing demands of a shifting landscape' and eloquently explains how a learning organisation maximises learning opportunities by nurturing and tapping into the collective wisdom of the entire workforce- principal, educator and non-teaching staff- through its strategic direction and shared values. Indeed, by working together, a lot can be achieved (MacGilchrist *et al.*, 2005: 8).

Poor understanding goes further into the tertiary level and this is supported by Naidoo (1996) who, in his study, found out that at the tertiary level the majority of the students study by rules, hence with no understanding. This demotivates them resulting in poor performance. He mentions that lecturers tend to teach mechanistically and do standard- type solutions to

standard-type questions. This contributes to the poor understanding of critical concepts that are essential for extended learning which could be applied to the world of work. Consequently they fail to make a distinction between process and the concepts integral to the process. To this end, MacNeill, *et al.* (2003: 2) and MacGilchrist, (2005:4) suggest that if teachers comprehend student understanding they can develop certain tasks and teaching strategies to assist the students in dealing with limitations to their understanding,

It is evident from the above discussion that institutions of learning fail to prepare students for the world of work. This results in a high rate of unemployed among graduates and diplomates as they are less prepared to put theory into practice as it is not integrated in their programmes. This is pointed out by Schön (1987) is due to lack of understanding,

The country's education system is still confronted with serious problems. In many of the public schools, the following problem is outlined by Goddan, *et al.* (1996:15) as cited in Moloji (2002: xv). This is the lack of leadership skills resulting in wide spread dysfunction in schools, which is amongst the causes. The situation is worsened by poor support from district officers who provide no development programmes. Some schools do not have enough resources so that these schools have to run under disabling environments (Chisholm, 1995:2; Johnson, 1995:132; McGregor and McGregor, 1992:17) cited in Moloji (2002: xiv). The researcher is of the opinion that understanding leadership in teaching and learning, from a systems thinking perspective, plays a vital role in effective schooling made evident in students' outcomes. Since different parts that form the whole, the school, in this context, works as a whole. Bhola (2002:185) talks of the 'emergence of qualities when parts came together to make wholes which were then not reducible to earlier states.'

Against this background, a number of issues have brought schools to the forefront of public debate in South Africa. There is increasing tendency towards low morale in teachers and ineffective practices are used by both teachers and students. This has resulted in the disappearance of the culture of work in schools, due to, amongst other things, the lack of vision, purpose and direction in some schools, (Christie, cited in Moloji, 2002:xv). Given these conditions, the schools in South Africa, are no longer the kind of learning organizations that Fullan (cited in Moloji, 2002:xv) talks about.

It is against this background that the researcher has undertaken this study to develop an understanding of pedagogic leadership from a systems perspective. It focuses on student learning, not instruction, thus it is student-centred and stresses the existence of multi-level leadership (McNeill *et al.*, 2005:1) . The starting point is to understand ‘How students learn best?’ That should concern teachers instead of using a single, teacher- preferred teaching style (Sachs cited in MacNeill *et al.*, 2005:4 and McGilchrist *et al.*, 2005:5). Bhola (2002:185) comments that ‘systems thinking provided applicable ideas regarding relationship between parts and the whole; interdependence among systems sub-systems and super-systems; configuration of systems it overlaps, intersections and hierarchies and emergence of qualities when the whole is more than the sum of its parts. Parts came together to make wholes which were then not reducible to earlier states. ‘An holistic approach (Bell, 1999) amongst others contends that systems thinking is an ideal tool to deal with human systems. As Moloji (2002:64) mentions, human systems involved in teaching and learning at institutions of learning are dynamic. Through collaborative practices opportunities for systematic and continuous learning are created’. The researcher concurs as, seen from her own teaching experience, we learn from one another when we work together; the teacher learns from the students and students from the teacher and students from other students. This results in the emergence and discovery of new competencies which leads to further transformation and change (Moloji, 2002:64; and MacGilchrist *et al.*, 2005:8). New knowledge is created and shared; learning is continuous and becomes life-long as MacGilchrist *et al.* (2005:7) claim.

1.3 PROBLEM STATEMENT

The purpose of this study is to explore pedagogic leadership from a systems thinking perspective, aiming at developing an understanding that pedagogic leadership plays an integral part in improving the approach to teaching and learning. This results in improved students’ understanding, which then improves their outcomes. This study will be undertaken in three selected high schools in the South Durban region, KwaZulu-Natal. The interpretative approach will be used in the study. Interviews will be a tool to collect the data using The Viable Systems Model (VSM). Pedagogic leadership will be defined generally as the approach to teaching and learning that improves student outcomes through an understanding of how students learn. Multi-level leadership works as a whole in bringing about improvement in the outcomes of the students, which MacNeill *et al.* (2005:2) regard as the

core business of teaching and learning and the purpose of schooling. This approach is student-centred as opposed to teacher-centered, whereby teachers have to understand ‘how students learn.’ To this end, different strategies and teaching materials are designed that will be suitable for the facilitation of individual and all students understanding thereby improving their learning and in consequence, their outcomes. This will be compared to the results produced by teachers choosing teaching strategies and methods that suit them. To this end, the principal provides all the necessary support and creates an enabling environment while all the parties involved work together as a whole to achieve the common goal of making schools effective in improving students’ outcomes.

1.4 THE RATIONALE

In times of great change, pedagogic leadership is required to respond to such change. Browne, (2005:57) and Ackoff, (1999:3) cited in Jackson, (2003:211) echoes this in saying that ‘...without changing our patterns of thought, we will not be able to solve the problem we created with our current patterns of thought’. Post modern economists are demanding new skills and different types of learner. Flexible and self-directed learners are needed to meet the fluctuating requirements of the job markets. The researcher is of the opinion that students will then be employable. Since this approach is student-centred, they will be flexible, self-directed, critical thinkers and problem-solvers; able to apply knowledge to new situations. To this end, knowledge delivery has to be reassessed as Schön (1983:3) advocates. There needs to be a mind shift of those leading academic institutions to adapt to the changing requirements of a changing world (Browne, 2005:58). Ackoff (1999:38) further emphasizes that ‘a socially-systemically conceptualized enterprise has development as its principal objective: its own development, that of its parts, and of the larger systems of which it is a part’.

Thus the importance of equipping students with appropriate skills to cope with numerous changes taking place in the turbulent environment has been a driving force to undertake this study. It is hoped this will bring about change evident in students’ outcomes as they fit well in the world of work resulting in the reduction of unemployed graduates.

1.5 AIM OF THE STUDY

The aim is to develop an understanding of leadership as the mechanism for leveraging improvement in the approach to learning and teaching. This will require developing an understanding of a systems perspective on pedagogic leadership and the context in which it is being exercised. This will inform our understanding of professional leadership development in schools.

Questions to be answered in the research:

What are the key dimensions of leadership for learning and teaching?

How would these dimensions be evident in a school?

How can these dimensions be initiated, nurtured and developed?

It is hoped that through a consideration of pedagogic leadership, from a systems thinking perspective, and by regarding schools as learning organizations (Senge, 1990:18 cited in Moloji, 2002:2), the above questions will be answered.

1.6 RESEARCH METHODOLOGY

1.6.1 METHOD OF DATA COLLECTION

An interactive approach using semi-structured interviews will be used. This will include listening to individuals, interpreting their remarks and finding meaningful relations, of critical importance for this type of inquiry. This is supported by Jackson *et al.* (2000: 211) when they state that 'people must be centrally involved in any attempt to change and improve the systems they create. Methodology should be geared to getting as close as possible to what is going on, preferably getting 'inside' people's heads to find out what influences what they are thinking.' To this end interviews seem to be appropriate to get multiple perspectives regarding the existence of leadership in teaching and learning from a systems thinking perspective. Interview questions are based on the conceptual framework for pedagogic leadership in teaching and learning proposed by McNeill, *et al.* (2003:8) to find out to what extent

leadership in teaching and learning is being realized and pursued. Why and how is this being done?

The respondents are focus groups of teaching staff and grade 12 learners. These will be ordered according to subject packages which include Natural Science, Economics and Management Sciences, Technology and Social sciences. Two learners from each package will be selected. In selecting the learners, care will be taken to get equal representations of both genders. One teacher will be selected from each subject area from each school. A one-to-one interview will be conducted with a principal from each school. The three selected high schools are from the South Durban region. One school from a semi-rural area, one from a township, and one from a suburb will be used in order to have a wide spectrum from a diverse background of learners and teachers.

The researcher will spend one day in each of the three schools selected for this research. The principals from each school will be requested to participate in individual semi-structured interviews with the researcher followed by the focus groups of the educators and the learners

Permission to conduct the interviews was requested from the Director for Research in the Department of Education. An appointment was made with schools to explain what the intent of my research was, taking into consideration time constraints and the working conditions. The interviewees will be briefed about the research prior to the interviews

1.7. RESEARCH DESIGN

1.7.1 PARADIGM AND RESEARCH APPROACH

The research paradigm is based on the interpretative approach of enquiry which supports the belief that no single reality can be determined (Browne, 2005:58) which is further supported by Burrell and Morgan(1979) as cited in Jackson (2002), states that he accepts that multiple perceptions of reality exist and he wants to work successfully in a 'pluralistic' environment.

The approach chosen in this study '... favours subjectivity as the social world is viewed as being of much softer, personal and humanly-created kind' (Cohen and Manion, 1995:7) It was determined by the need to elicit multiple perspectives regarding pedagogic leadership. In the

context of this study, the focus is on the process that gives greater focus to the life-blood of educational institutions, which is learning and teaching. This process of enquiry based on a qualitative approach, will be helpful in understanding social problems in the context of building a complex, holistic picture, as described by Creswell (1994:174).

The qualitative data would give more meaning as to how students and teachers think about the presence of pedagogic leadership from a systems thinking perspective. Jackson (2002:211) explains that 'Methodology should be geared to getting as close as possible to what is going on, preferable to getting "inside" peoples' heads to find out what influences what they are thinking.' To this end, qualitative methods are used in the study of human behaviour and behavioural changes. One sees fit to use this approach since pedagogic leadership occurs in institutions of learning where leadership of people takes place. Human systems are dynamic, uncontrollable and can be examined from a multiple of perspectives (Flood, 1998, Stacy, 2003:390, Robson, 1995:2 and Senge, 1999:6). When exploring pedagogic leadership to determine its role to improve the approach in teaching and learning, multi- perspectives are sought. This is supported by DeVos (2005:28) when she states that different people will give different interpretations regarding the presence of pedagogic leadership from a systems perspective. Since a school is a system created by people, Jackson (2002:211) urges that they must be centrally involved in an attempt to change and improve the school making it more effective in producing better student outcomes. This is the responsibility of the school community as a whole.

1.8. ANALYSIS AND INTERPRETATION OF DATA

The Viable Systems Model (VSM) will be used as a tool for the analysis and the interpretation of data. However, the focus in this study is on effectiveness versus ineffectiveness of pedagogic leadership to improve the teaching and learning approach that will be evident in high student outcomes. This should be brought about through pedagogic leadership from a systems thinking perspective that proposes a multi-level leadership and a student-centeredness approach. This will be evaluated through the application of eleven criteria for pedagogical leadership condensed into five themes (Robinson 2007:4). Data collected will also be used to determine the response patterns generated by the interviews.

1.9. OUTCOME OF THE STUDY

This study is about problem-solving research and it will be used to establish the existence of pedagogic leadership from a systems thinking perspective aiming both to acquire knowledge and to improve the situation, (Checkland & Howell 1998:9). The outcome of the study is expected not just to gain insight into the subject under investigation but also to lead to some kind of resolution of the identified problem. It will aim to outline a possible intervention for resolving the problems identified. This study will help educators to reflect on their teaching strategies to establish whether or not they have made an impact on equipping students with appropriate knowledge and skills that will enable them to cope with the demands of a turbulent environment. It must be said that the outcome of the study is not expected to be an absolute one as Checkland & Howell (1998:12) point out, social phenomena are not homogenous through time, but are created and recreated in a continuous social process. Thus it is possible that a better and more improved outcome will be achieved by a similar social enquiry in the future.

1.10. LIMITATIONS OF STUDY

There is limited information on the subject of this study, as highlighted by Browne (2005:59). Much of the writing on pedagogic leadership is new and focused on the school sector. However, it is believed that the insight derived from this study of the problem will be beneficial.

1.11 SUMMARY

The destruction of the culture of teaching and learning in schools is an alarm bell (Perkins, 1992:6) to politicians and education planners. Understanding pedagogic leadership from a systems thinking perspective seems to be the answer to make teaching and learning meaningful once more since it is learner-centred and proposes the involvement of the whole school towards the improvement of the outcomes of students through the application of multi-level leadership (McNeill *et al.* (2005:2). Such leadership should produce students that can learn with understanding and who are then equipped with appropriate skills, knowledge and values which will make them live a meaningful life in a society that is transforming rapidly.

The destruction of the culture of learning and teaching has been noted. The blame is subtly put on students because they are expected to respond to the curriculum design. The issue is: have the teachers done enough to address the situation in schools?

Students are to reflect on their schooling experience to ascertain if there has been learner-centredness in teaching and learning and to see whether there is a fit between theory and practice. To what extent has theoretical knowledge impacted on practical experience? (Harely,1999:93). It is hoped that understanding pedagogic leadership from a systems thinking perspective will play an important part in improving the approach to teaching and learning in our schools.

Previous research of relevance and related work has been explored to give more light on this study. Individuals in educational institutions interact with their environments which are unstable and complex. For this reason related aspects of complexity theory which includes holism and subjectivity have been explored (Classen, 1998). It is hoped that empirical evidence will shed more light on the challenge that is facing education.

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

One of the most important issues in education in South Africa today is the restoration of school culture that emphasizes and enables teaching and learning (Moloi,2002). Kruger (2003) maintains that such a culture involves a positive attitude among role players and the presence of quality learning and teaching processes.

The factor that must be considered at school level is how students learn. Some students appear to make connections, while others do not. Given the wide spectrum of approaches by such a diverse range of students, methods appropriate to teach some students may be inappropriate for others. In consequence, understanding pedagogic leadership from a systems thinking perspective seems to be appropriate to gain a better perspective on the teaching and learning and to this end reviews of literature pertinent to this study were undertaken.

Davis (1984:3) raises an important point that ‘if we want to know exactly what obstacles impede this person’s progress, exactly what they cannot seem to do, exactly what errors they are making and why they make them.’, then pedagogic leadership from a systems thinking approach seems advisable. This helps the teacher understand how learning takes place and what strategy should be used to promote better understanding of students, this is supported by MacGilchrist *et al.*(2005:8). In order to achieve this, learning through discovery, visualisation and experimentation is suggested. Self-discovery seems appropriate, which happens when the student is actively involved; that is where most of the learning takes place as against the teacher telling the student what to do. This latter approach can lead to rote learning which hinders understanding and makes students unable to cope with changes and it renders them inept in their application of their learning in real life situations, as they are neither critical thinkers nor creative problem solvers. To this end students need to be equipped with necessary skills to cope in any situation. MacNeill *et al.* (2003:2) stress the importance of understanding, ‘how students learn’ and MacGilchrist *et al.* (2005:8) suggests that teachers should “learn to learn how students learn”.

This chapter reviews the literature related to school leadership. The focus is on pedagogic leadership as a part of school leadership (MacNeill, 2003:4). This study explores pedagogic leadership from a systems thinking perspective. In recognition of the fact ‘... that school leaders can make considerable difference to the achievement and well-being of students’ (Robinson,2007:2) This perspective shows how individuals and groups at different levels of the social context (a school in this instance) are linked in a dynamic, interdependent, and interconnected relationship.

To develop this topic the researcher will discuss:

- Outlines of important pedagogic leadership dimensions that have a major influence on the teaching and learning which is student-centred and that has a multi-level leadership approach.
- How these dimensions can be initiated, nurtured and developed.
- How these dimensions would be evident in a school
- Systems theory with particular reference to its application in schools and classrooms, as well as relationships within them, between them, and within social contexts.
- Theoretical frameworks appropriate to this study

2.2. PEDAGOGIC LEADERSHIP EXPOUNDED

According to MacNeill *et al.* (2003:8) the importance of the relationship between teachers and students can be re-established through pedagogic leadership, as another form of school leadership in contrast to instruction-based or curriculum-based educational school leadership. It is unlikely to influence the class culture and student understanding of democratic decision making. As noted by van Manen, (1993:9) cited in MacNeill *et al.* (2003: 7) ‘it is possible to learn all the techniques of instruction but remain pedagogically unfit as a teacher’. Pedagogy covers a wider range of teaching than instruction, and looks at different ways of teaching and learning practices. Pedagogy has four interrelated clusters of meanings in educational literature but for the purpose of this study pedagogy is seen as a student-centred approach to learning and teaching (MacNeill 2003:4.). Van Manan, (1999:9) cited in MacNeill *et al.* (2003:6) argues that pedagogy aims to provide a knowledge base for professionals who deal with childhood difficulties emphasising what are appropriate ways of teaching and giving assistance to children and young people. Thus pedagogy includes moral, human interaction,

within a reflective, socio-politically educative context that facilitates the acquisition of new knowledge and skills MacNeill *et al.* (2003: 9) further explain that pedagogy is about the purpose of schooling, namely, students' outcomes and the processes that develop within the school community and the commitment towards this goal. MacNeill *et al.* (2005: 4) see it as refocusing learning and teaching whilst stressing the presence and the nature of multi-level pedagogic leadership within each school. Leadership is not seen as the sole responsibility of the principal but as a common responsibility on behalf of the whole the school. It is further argued that leadership of a school is a complex phenomenon. That is where systems thinking comes in to handle complexity. MacNeill *et al.* (2005:4) and Nixon (1996: 37) further explain that students' outcomes centre on the quality of pedagogy provided by teachers and the engagement of students in learning. As teachers improve pedagogic practices this results in better understanding as students begin to understand, their interest is aroused, they are motivated to learn more, and their outcomes improve. Molo (2002:7); MacGilchrist and Buttress (2005:1) concur that they eventually become lifelong students, thus they become better equipped to understand change and it enables them to cope with accelerated changes in a turbulent environment.

2.2.1 DIMENSIONS OF PEDAGOGIC LEADERSHIP

Pedagogic leadership has a place in consolidating skills and knowledge required for effective school leaders. A pedagogic leader leads an effective school where teachers should be involved in all aspects of teaching. School leaders can make a considerable difference to the well-being of students (Robinson 2007:2). The eleven key areas in bringing about pedagogic change are outlined by MacNeill *et al.* (2003:8). The conceptual framework of pedagogic leadership has been condensed into five themes in a published research in New Zealand and America by Robinson (2007:4). These five areas are the ones that can make a difference to students' outcomes. They provide five very clear areas for school leaders to focus on. From the literature review these five thematic dimensions have been identified as:

- 1. Establishing goals and expectations,*
- 2. Improving active participation of students,*
- 3. Planning, co-ordinating, and evaluating teaching and curriculum,*
- 4. Promoting and participating in teachers' learning and development,*
- 5. Ensuring an orderly and supportive environment and allocation of strategic resources,*

and their descriptions follow:

2.2.1.1. ESTABLISHING GOALS AND EXPECTATIONS

Development of vision and mission to be shared and honoured by all stakeholders is the objective: MacNeill *et al.* (2003:7) argue that once the vision and direction of the organization are established, the principal aligns people to them and communicates a sense of direction since without communicating a sense of direction, it becomes impossible to realize the vision. According to Robinson (2007: 5), establishing goals and expectations makes a difference to students through its emphasis on clear academic and learning goals. Leadership should establish what is important and focus staff and student attention and effort accordingly. The importance of relationships in this leadership dimension is apparent from leaders who give more emphasis to communication goals and expectations, informing the community of academic accomplishments. The goal focus is not only articulated by leaders but imbedded in the school, classroom routine and procedures. Successful leaders influence the way that teachers do their work.

2.2.1 2. IMPROVING ACTIVE PARTICIPATION OF STUDENTS

MacNeill *et al.* (2003:6 & 2005:4) further argue that pedagogic leadership must take a broader view of learning and teaching acts, taking into account the “why?”, “how?”, “when?” and not just what is taught of instructional leadership to avoid teaching becoming an occupation defined by expectation and not dialogue. Pedagogic leadership is based on dialogue with students who are essential participants where the discussion is based on their learning, as the teacher finds out how they learn best, as supported by the research undertaken by MacGilchrist *et al.* (2005:5). It is essential for students to participate in discussion about their learning (Evans, 1999:11 cited in MacNeill *et al.*, 2003: 6).

The researcher is of the opinion that the participation of all the stakeholders in education is crucial for effective teaching and learning that will be evident in students’ outcomes articulated in the South African School Act of 1996, as echoed by MacGilchrist *et al.* (2005), focus *inter alia* ‘... on the need for all stakeholders in education who can work in democratic and participative ways’ (RSA, 1996:2). Participative management requires that authority is

delegated from higher to lower levels (Mosoge and Van der Westhuizen, 1998:74 cited in Botha, 2006: 343) and entails major changes of roles; where the principal shares decision making among the stakeholders through multi level leadership (Browne, 2005; MacNeill *et al.*, 2003; and MacNeill & Silcox, 2005). The principal is not regarded as the only person to bring about improvement in student outcomes as articulated by Botha (2006: 343) when he argues that ‘the main effectiveness criteria for schools are academic achievements, namely the “excellent” academic results of students exiting the school after their final year of schooling.’

2.2.1.3. PLANNING, CO-ORDINATING, AND EVALUATING TEACHING AND CURRICULUM

According to Robinson (2007: 7) there was considerable evidence that this dimension makes a strong impact on leadership outcomes. It involves four types of leadership practice:

- Involving staff in discussions of teaching including its impact on students;
- Working with staff to co-ordinate and revise the curriculum. For example, developing a progression of objectives for the teaching of a concept across year levels;
- Providing feedback to teachers, based on classroom observations that they report as useful in improving their teaching;
- Systematic monitoring of student progress for the purpose of improvement at school department and class levels.

The above are the roles of multi-levels leadership where they work together to improve the approach in teaching and learning. All parties work together for the improvement of the whole. This can be achieved by a leader who has an understanding and working knowledge of a successful and informed pedagogic practice (MacNeill *et al.*, 2003: 4). It is for that reason that Van Rensburg, (2003) says that knowledge is power and that it fuels action, especially when it is shared. People learn from one another and new skills and knowledge can be acquired.

The researcher is of the opinion that participation of all stakeholders is crucial in the assessment of the viability of any intervention, since the curriculum is not only received but it is also interpreted by those who are involved in its implementation. It is important therefore that good teachers be in a good position to interpret different aspects of the curriculum and to

implement it effectively. It has been discovered that 'Elements such as learning environment , students' interpretation of teacher's teaching aims, colleagues' interpretation and parent's interpretations, change curriculum' (Lubisi, 1998:99).

2.2.1.4. PROMOTING AND PARTICIPATING IN TEACHERS' LEARNING AND DEVELOPMENT

This dimension is described as both promotional and participatory. Robinson (2007:7) contends that more is involved here than just supporting or sponsoring other staff in their learning. The leader participates in learning as a leader, as he/she leads. The leader learns from others through formal and informal learning (discussions about specific teaching problems which he/she may not be aware of and only learns about them from others. (MacGilchrist, 2005:5; MacNeill *et al.*, 2003: 8; and 2005) concur. It also has a strong impact on school performance as teachers report that their leaders are more active participants in teacher learning and development and thus they promote and participate in staff discussions of teaching and teaching problems. The staff see the principal as a source of advice which suggests that they are more accessible and knowledgeable. This is noticeable in effective high-performing schools.

That is where the leaders come in to give direction and support for the implementation for teaching and learning to be effective thus improving students' outcomes. This is possible through pedagogic leadership from a systems perspective where parts influence one another thus impacting on the whole.

2.2.1.5. ENSURING AN ORDERLY AND SUPPORTIVE ENVIRONMENT AND ALLOCATION OF STRATEGIC RESOURCES

This dimension describes leadership practices that teachers use to focus on teaching and which leaves students free to focus on learning. Emphasis is on success in establishing a safe and a supportive environment through clear and consistently enforced social expectations and discipline codes to protect teachers from undue pressure from education officials, parents and the entire community. The purpose is rather to allow teachers to focus on their teaching. Such an environment is the one where staff conflicts are quickly and effectively addressed. Chetty

(2003:37) and Senge (1990:18) cited in Moloi (2002:69) argue that leaders create an enabling environment to share responsibility, to orchestrate decision-making using teams of people and to work together as a whole. By strengthening relationships and by promoting team spirit amongst all parties, the leadership can be encouraged to bring about change by working together and by exerting themselves to improve teaching and learning. Securing and allocating material and staffing resources that are aligned to serve key pedagogical purposes improves student outcomes, since teaching and learning is allowed to run smoothly (Robinson, 2007: 8).

Development and the nurturing of relationships among the whole school as articulated by MacNeill *et al.* (2003: 8 and 2005: 8); MacGilchrist *et al.* (2005); and Moloi (2002:21), is fundamental to the effective functioning of the school. However Robinson's (2007: 5) research found that relationship skills are embedded in every dimension, rather than being an independent factor in its own right.

2.2.2 HOW CAN THESE DIMENSIONS BE INITIATED, NURTURED AND DEVELOPED

The guiding principles of systems thinking for leaders can be applied to initiate, nurture and develop these dimensions Hanes *et al.*,(2004) and MacGilchrist *et al.*(2005) suggest the following:

Simplify and flatten the hierarchy

MacNeill *et al.* (2005:1) suggest that '*Successful classroom pedagogy requires that teachers understand how students learn and have the autonomy to design, implement and assess educational activities that meet the needs of individuals and all students. The role of pedagogical leaders circumscribes informed teacher practice and reflection, empowering teachers to exercise professional responsibility and discretion and to demonstrate credible knowledge of learning and teaching processes*'. This is possible by using the guiding principle of systems thinking to simplify and flatten the hierarchy without imposing rigid, bureaucratic complex and artificial structures as Haines *et al.*, (2005:13) suggest that change is an individual act.

Haines *et al.* (2005: 13) articulate that institutions change when people change their behaviour. Processes and procedures will also change. As Campell, Kyriakides, Muijs and Robinson (2003:350) cited in Silcox and MacNeill (2006: 2) observed in relation to the school effectiveness, student performance is more heavily dependent on classroom factors than on school factors. School change depends heavily on teachers' willingness to adopt new teaching practices which raises the question of how teachers themselves learn. On this basis the focus in the study is on leadership in teaching and learning, as against the entire school leadership. The importance of leadership to work with other teachers (connectedness and interdependence) is because it can bring about change. Since the principal cannot do it alone it is highlighted. Interpersonal relationship between staff is a key factor in the cultural change. Individuals need to work together as a team. This is of primary importance, as well as to develop an understanding of collective vision and mission. If they work together, together they develop vision and mission that they will adhere to since they own it. Together they will see it succeeding as they have developed it together and do not want to see it failing. Haines *et al.* (2005: 11) concurs 'People have a natural desire to be and provide input into decisions that affect them before the decision is made.' Hence participatory management is essential for effective Leadership. Van Rensberg (2003:22) argues that 'Leaders touch a heart, before they ask for a hand' ...and people buy in to the leader, then the vision. They would certainly buy in since principals, in the context of this study, need to develop and nurture the capacity of the members of the school community and teachers who have direct influence in the teaching and learning of students, thus their outcomes.

Relationships in the school context are to do with teaching and learning and much of the literature emphasizes the principal's role in developing relationships with teachers, by visiting classrooms, commenting on teachers' practices and encouraging them to be innovative and to take risks. The improvement of student learning is the key aspect of school leadership (Botha, 2006:241; Moloji, 2002: 4; and MacNeill *et al.*, 2005: 8).

How teachers learn and accept changes to their practice.

In transforming the school approaches to teaching and learning, its leadership first defines what constitutes better teaching practices and learning (MacNeill, 2006). These new practices must be tried with the student first then, if they succeed with students, they implement them.

Silcox (2003:7) noted that school staff gains knowledge and experience with the changes required of them with regards to pedagogic and curriculum practices. It is incumbent upon leadership to give a sense of direction or a personal vision for teaching and learning. The leadership communication is crucial to persuading, coaching and mentoring of staff. Once they have decided to implement the change at classroom level they will seek confirmation from the leadership about their choice and feedback on their endeavors. A school leadership will identify staff as catalysts in the implementation of new pedagogic practices. They are seen as leaders of their pedagogic profession. They share insight with other teachers and take part in distributed leadership when opportunities are provided within the school context, as they are ground breakers in terms of teaching and learning practice. Since principals do not bring change on their own they use 'catalyst' teachers in establishing the critical mass for change as they can change existing staff attitudes towards learning and teaching function in a whole-of-school context. Interaction of staff with catalytic teachers is the most effective way to bring about change in a pedagogic thinking within a school. The use and active involvement of catalyst teachers is a successful strategy to employ.

Developing skills and competences

According to MacGilchrist *et al.* (2005:73) the initial focus was on pupils' learning. It was realised that the meta-learning principles and meta-perceptions applying to the children were equally applicable to us as leaders and managers of our classroom and schools. Our organizational and professional meta-learning were taking place at several levels.

First, on an individual basis, pupils and professionals were reflecting on and developing their own particular skills and competencies.

Secondly, recognition of each individual's skills was enhancing teamwork and outcomes, both in the classroom and across the whole school.

Thirdly, the quality of our organizational and strategic learning was enriching whole-school 'intelligence'. The characteristics of the 'Intelligent School' were shown (MacGilchrist *et al.*, 1997 and 2004 cited in MacGilchrist, 2005:73) when people work together. The above suggests then that learning is experienced by all parties, teachers and students.

Getting and keeping staff on board

School transformation has transformed teaching and learning, by adding value to students' learning thus boosting their confidence. This has yielded energy, motivation and enthusiasm. This becomes possible because of the collective action of all the parties. As MacGilchrist *et al.* (2005:75) argue, the principal cannot transform the school on his/her own. To this end staff has to be supported and encouraged when students give feedback on professional teaching styles to help the teachers to understand individual needs. Adapting their teaching styles to suit their learning needs to be effective and defining types of support needed match to the skills of the staff by support programs to close the gap in learning.

This is essential to plan jointly for the whole school learning, focusing on improving learning and teaching in the class room. Leadership is distributed throughout the school since it is believed that the principal is not the sole leader to bring about school improvement, thus giving other stakeholders a chance to lead is essential. Leadership is distributed and developed from a process of coaching, training and empowering staff. The deputy heads become levels of school improvement. Focus is placed on putting them in practical realities by working closely with subject leaders' curriculum and year group.

Middle management become levels of learning and learning leaders are supported by developing organisational and curriculum connections to ensure continuity and professionalism. In turn, members keep the whole staff informed of updates and changes (MacGilchrist *et al.*, 2005: 85).

2.2.3 HOW WILL THE DIMENSIONS OF PEDAGOGIC LEADERSHIP BE MADE EVIDENT?

Various changes will be evident once they have been initiated, nurtured, and developed. Learning to learn brought about changes as MacGilchrist *et al.* (2005:90) state ‘these changes led to improvements in motivation, behaviour, and engagement in learning and learning outcomes. Similarly there were changes in teacher behaviours and attitude in respect of their own learning, their understanding of students’ learning and their teaching strategies. Noticeable changes in head teachers learning about learning developed overtime’.

MacGilchrist *et al.* (1997 and 2004) cited in MacGilchrist (2005:73): eloquently describe the interconnectedness of the parts to encourage the whole school to improve in teaching and learning and eventually students’ outcomes. Through their ‘learn to learn,’ research project, described as a system involving multi levels of leadership, providing leadership for learning thus improving the approach to teaching and learning and eventually of students’ outcomes.

Leadership roles are developed amongst other members of staff; students become leaders of learning

Students as leaders of learning need to be listened to. The more staff listens, the more they learn. Learning is facilitated by leading questions rather than exclusively delivered by teaching. What we need to do for students is to:

- Stimulate them;
- Encourage self- Knowledge for experience
- Accelerate application of knowledge in real life

Thus teaching strategies will be informed by students’ leadership as they communicate to their teacher how they learn best. Then the teacher prepares, designs material and uses strategy suitable for that child instead of choosing the approach that suits him/her which MacNeill *et al.* (2003:7) and Browne (2005:6) refer to as ‘teachers reverting to their school days’ That does not improve students’ outcomes as teaching and learning is ineffective since it is following the ‘one size fits all’ model. (MacGilchrist *et al.* 2005:95).

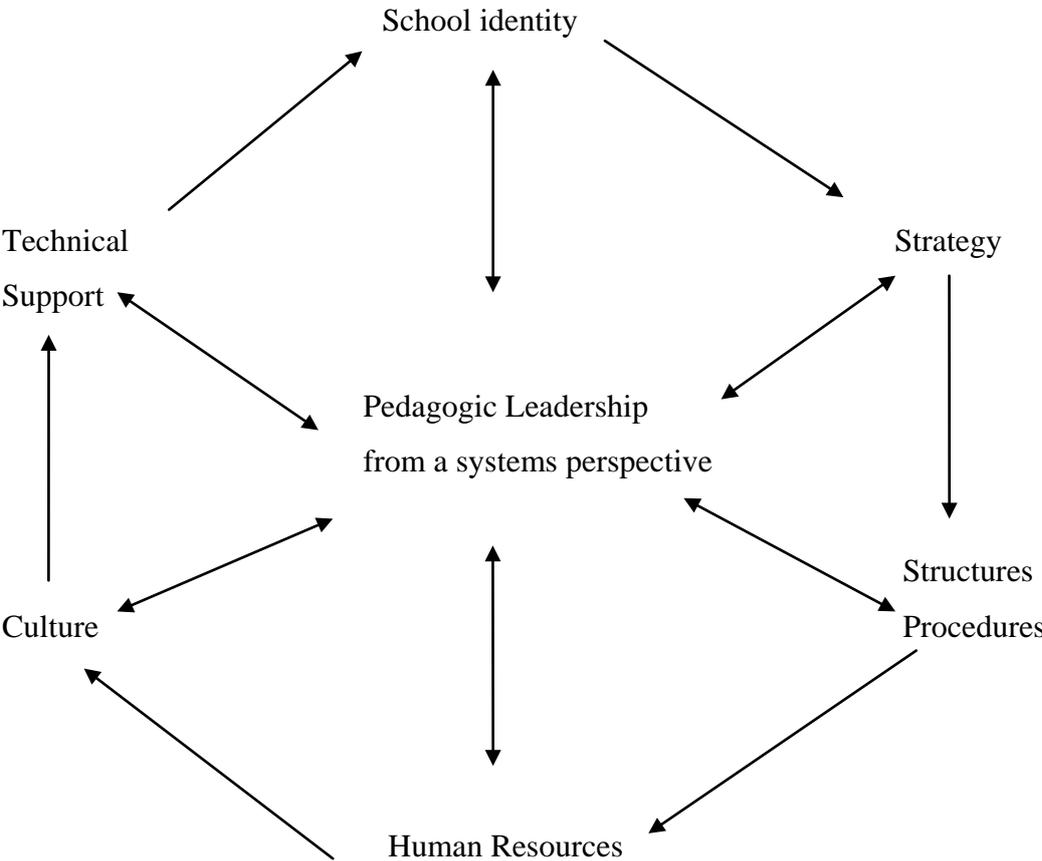
Self-assessment is important during the process of developing ownership and interdependence was also noted as they learn from each other, friends and teachers who have helped them to improve where they have problems.

Students can teach the teachers as well as others. Head teachers need to have a fundamental commitment to the creation of a learning organization.

2.2.4 MODEL FOR CONCEPTUAL FRAMEWORK FOR PEDAGOGIC LEADERSHIP FROM A SYSTEMS THINKING PERSPECTIVE

Moloi (2002:68) describes a school as a system composed of a complex network of inputs, processes, outputs and feedbacks from the public, parents and learners; with constant changes in the external and internal environment. Moloi (2002:68) warns that these challenges need an holistic approach to leadership. To this end, Davidoff & Lazarus (1997:18) use a systematic, interactive model to illustrate the different aspects of leadership functions in a school, namely school identity, strategy, structure and procedures, technical support, and human resources, as illustrated by figure 2.1 below:

Figure 2.1: The different aspects of school life



Adapted from Davidoff & Lazarus (1997:18) cited in Moloi(2002).

Pedagogic leadership from a systems thinking perspective establishes clear patterns of school organization through identity (vision, mission, purpose and direction), strategy (goal-setting, planning, evaluation, direction, and teaching and learning tasks), structures

(information flow; individual responsibilities regarding who does what to achieve the desired goals and decision-making, communication), technical support (resources control, financial management and administration), human resources management (interpersonal relations with staff and other people connected with the school) and methods of procedure. These aspects /areas of organizational life are inter-related and interdependent. In a learning organization the elements have to be balanced and linked together, in order to initiate system-wide improvements in an effort to build learning organizations.

This linking is extremely important and explains the systematic nature of organizational life. It also corroborates Senge's (1990) cited in Moloï, (2002:63) systems thinking on the links between all aspects of school life. The tremendous complexity, confusion and conflict in some of our schools and in their external environments cannot be understood and dealt with in terms of a linear worldview. It is for this reason that a systems approach is used to go about this study. As Moloï (2002:91) advocates a system dynamic or organizational approach should be followed in our efforts to transform our schools. She further warns that it is important to embark on a process of change with clear goals and a clear understanding on the part of everyone in the school, since individual actions affect the whole school. Therefore the stakeholders' support is of utmost importance. As J. N. Rakove once wrote in Potter, (2001:55) cited in Moloï (2002:92) 'We cannot make events. Our business is wisely to improve them. Mankind are governed more by their feelings than by reason'. He further argues that events that excite those feelings will produce wonderful effects. Strong leadership is therefore needed in terms of focusing people's energies on specific goals and outcomes. It is true that leaders really make things happen. It is for that reason that this study highlights the integral role of leadership in teaching and learning to improve the approach that will result in high students' outcomes.

The success of our efforts to effect change in schools will, to a large extent, depend upon how effective the principal is in managing these interdependent aspects of school life. Perhaps the most enduring effort to change comes about as a result of the commitment of teachers and the principal to make it work for positive learner outcomes. Each person in the school should make an effort to ensure that each element of school life is aligned to the vision, mission and objectives of the school. Each one of these elements has a major impact on the day-to-day activities of teachers and students in the classroom.

2.3. SYSTEMS THEORY APPLIED PARTICULARLY TO UNDERSTAND SCHOOLS AND CLASSROOMS, AS WELL AS RELATIONSHIPS WITHIN THEM, BETWEEN THEM, AND WITHIN SOCIAL CONTEXT

2.3.1. SYSTEMS THEORY EXPOUNDED

It is useful to understand a school as a system as describe by Lunenburg & Ornstein (2004:34) cited in Naidu *et al.* (2008:78), where a system is defined as a set of inter-related elements that function as a unit for a specific purpose. The understanding is based on the view that organizations such as schools interact with the broader world within which they exist.

This study looks at a basic system comprising five parts, as portrayed in the APPENDIX D: input, transformation process, output, feedback and the environment. The behaviour of organizations in terms of both internal and external circumstances is described. Internally, it explains how and why people within a school perform their tasks, while externally; it explains how other organizations have influence on the school as depicted in the influence diagram APPENDIX C. In systems theory, the school is therefore seen as one of a number of elements that act independently.

Within a school, people employ technology in performing the tasks that they are responsible for, while the structure of the organization serves as a basis for coordinating all the different activities. The systems view emphasises the interdependence of each of the elements within the school, as indicated with an arrow in APPENDIX C. If the school as a whole is to function effectively, each element will depend upon all the other elements.

The flow of inputs and outputs is the basic starting point in this model. The organisation takes resources (inputs) from the larger system (environment), processes these resources and returns them to the environment in changed form (output). Inputs in schools include the human, material (physical), financial and information resources used to ‘produce’ the learning service (Lunenburg and Ornstein, 2004:34). Through technology and administrative functions, the inputs undergo a transformation process. The interaction between students and teachers is part of the transformation, or learning process by which students become educated citizens

deemed capable of contributing to society. Outputs include the school's products and services, including the generation and distribution of knowledge.

Feedback is the information concerning the outputs or the process of an organisation that influences the selection of inputs for the following cycle. The environment surrounding the school includes social, political and economic forces (Samuel and Mestry, 2006) cited in Naidu *et al.*, (2008:78). In systems theories, the environment puts pressure on school administrators to manage and develop 'internal' operations while concurrently monitoring the environment and anticipating and responding to 'external' demands.

Viewing the above discussion a system is a whole that consists of a set of many parts. Each part affects the behaviour of the whole, depending on the part's interaction with the other parts of the system. In this context what is involved is improving the approach in teaching and learning and hence students' outcomes. This requires a specific focus on holistic thinking, relationships and influences.

Systems' thinking therefore helps us to see inter-relationships rather than a linear cause-effect chain. In helping people to better respond to change within the school which includes important aspects in the development or transformation of the school that traditionally did not form part of management thinking. To meet the challenge of complexity, future insights in our thinking paradigms are needed, the school is understood, not as parts adding to a whole, but as a system in which the interactions between its parts are of primary importance

Individuals came to be thought of as parts of a system; a group, organisation or society made up in this instance of teachers, students support staff and the external environment. It follows that any such explanation cannot encompass individual human freedom, or individual agency. Therefore, using the systems thinking approach, individual elements of a school are identified to understand how they interact collectively to keep the system sustained. The elements of a school must not be perceived as individual parts but rather as a whole. This fits well within the concept of pedagogic leadership since it encourages multi-level leadership as the principal directly interacts in a hierarchical sense with teachers and students to improve their performance (Fink and Resnick, 2001; Halliger and Murphy, 1987; McEwan, 2003; Petersen, 1999, and Supovitz and Poglinco, 2001 cited in McNeill (2003:8).

2.3.2 SYSTEMS THEORY APPLIED TO UNDERSTANDING SCHOOLS AND CLASSROOMS

Systems thinking is put into application when one talks of the learning organization that builds on individual, team and organisational capacities to transform schools. Institutions exist in a turbulent environment (Harding, 1995:1 cited in Moloi, 2002: ix), which (describes as messy to work in, such that social, economic and institutional life is unpredictable and dynamic therefore, unstable. Thus continuous development and growth in a learning organisation comes about through learning and change. This then enables it to cope with increasing pace of change that comes with massive complexity of the changes that can best be understood and managed through continuous learning and a systems thinking approach (Moloi, 2002: x and MacGilchrist *et al.* 2005:). Moloi (2002: x) further warns that ‘ Teachers have to realise that they cannot thrive without adapting their attitudes and practices to the ever changing demands of a shifting landscape’ and eloquently explains how a learning organisation maximises learning opportunities by nurturing and tapping into the collective wisdom of the entire workforce, principal, educator and non-teaching staff, through its strategic direction and shared values. That is where the interconnectedness and inter-relationship is seen that results in more than the sum of the parts (Senge, 1999). This is possible through continuous learning echoed by McNeill *et al.* (2005:4) by understanding pedagogic leadership from a systems thinking perspective where multilevel leadership is encouraged and a student-centred approach is used for them to learn with understanding, thus coping with fierce competition in a turbulent environment.

Apparently Senge’s five disciplines are necessary to build a learning organisation, namely, personal mastery, mental models, shared vision, team learning, and systems thinking. They learn and pursue and apply these disciplines simultaneously; they make schools more effective in carrying out their primary mission and vision to a fuller utilisation of the abilities and motivation of the school’s members. Viewing the school as a learning organisation is a powerful conceptual tool for principals and teachers since it enhances meaningful transformation in schools. Success results from teamwork, shared vision, focus, and partnership with parents, motivation and the belief in oneself that you have the potential to bring about change against all odds (Moloi, 2002:xi).

Accelerated and continuous change is a serious problem that makes individuals unable to cope in this turbulent environment (Moloi, 2002: x and Joyce *et al.*, 1999:2). To this end MacGilchrist (2005:8) suggests promoting, sharing, and supporting good learning and teaching practice, as it makes it possible for everyone to learn and become a lifelong student.

The systems thinking approach will be applied in going about this inquiry since systems thinking and practice emphasizes the practical application for everyone who deals with people (teachers and students in this context). An holistic approach is seen as the best way to tackle complex issues created by human activity Skills are developed as they help one understand complex situations, such that it becomes easier to tackle these as one shares ideas with other people. Over and above one's existing skills, additional tools to explore the challenges are gained. A problem is further analyzed and this helps to decide what action to take, based on the understanding of the issue (Flood, 1998, Chapman, 2000:1, Meyer, T and Boninelli, 2004:172.)

Moloi (2002:64) concurs that human systems involved in teaching and learning at institutions of learning are dynamic. She further explains that through collaborative practices opportunities for systemic and continuous learning are created. This results in the emergence and discovery of new competencies which leads to further transformation and change. Using a systems thinking approach, results in a better understanding of any social phenomenon since one studies an event as a whole. A school is seen as a system where different elements are inter-connected and influence each other. , individual elements of a school are identified to understand how they interact collectively to keep it sustained. The elements of a school must not be perceived as individual parts but rather as a whole. A systems perspective on pedagogic leadership to improve the approach in teaching and learning has been used in this study. This approach is student-centred and stresses understanding how students learn while emphasising multi-leadership in addressing teaching and learning to bring about improvement in students' understanding evident in students' outcomes (McNeill *et al.*, 2004:2 and 2005:4). In a way this will give students space to share their thoughts about how they learn best.

This then necessitate pedagogical shift. Krantz (1991) refers to the pedagogic shift on the part of the teacher from a point where only the best students make it through a course, to a new

attitude that knowledge should be available to all students, by understanding ‘how students learn’ (MacNeill *et al.*, 2002:2) to the extent of designing and implementing material suitable for all students in the class.

The characteristics of this pedagogy shift include: Cooperative work; the emphasis on ‘getting help’ rather than individualized student effort; exploratory study; the emphasis on exploration by the individual rather than chalk-board exploration; multiple representations of the subject; the graphical algebraic and numerical representations are emphasized and alternate assessments of students progress; including a review of the portfolio of students’ effort and project work (Krantz, 1991).

In a sense there is a shift from an ‘instructional’ paradigm to a ‘learning’ paradigm in which students must be given opportunities to interact with concepts in a meaningful way to ascertain that students learn with insight since concepts are contextualized and put into application in real life situations, as shown in the driving a car paradox namely learning by doing; experiential learning.

Active learning is described by Nixon (1996:38) as learning by doing experiential activities. Students want to engage in their learning when learning is interesting, motivating and rewarding as evident in improvement in student outcomes. This builds confidence to attempt more difficult problems and to apply skills in different situations which MacGilchrist *et al.* (2005:5) suggest ‘leads to life long learning’ thus able to cope with, accelerated and complex changes found in a turbulent environment. It is through this interaction that the student is able to practice techniques through “hands-on” practical experience to foster understanding which may be more difficult to realize when using the traditional approach which is teacher centred and move to student centred approach.

Taking the above issues into consideration, one is tempted to translate the same and to argue that the same is applicable to students. The challenge is whether the curriculum does serve the purpose for which it is intended. This interpretive view is concerned with the meaning that students attach to what they receive as school knowledge, and how this impacts on their outcomes. To this end pedagogic leadership with multi-level leadership has different views

and experiences are shared by team members and learning from one another takes place as they interact.

The systems thinking perspective seems appropriate to address this issue since systems uses an holistic approach where all the parts work together as a whole because they are connected. Each part affects the whole. Brewer (2005:57) further encourages principal leaders to work together to understand this aspect.

In discussing pedagogic leadership MacNeill *et al.* (2005:2) warns that ‘leadership of schools is a complex phenomenon and the outcomes of successful school leadership centres upon the quality of the pedagogic approach of teachers and upon their ability to engage students in learning.’ Moloji (2002:ix) further warns ‘the increasing pace of change and the massive complexity of the changes taking place can be best understood and managed through continuous learning’ Schools along with institutions operate in a turbulent environment. In systems thinking terms they are complex special systems functioning within a wider complex of social systems in South Africa, and which in turn, function within a wider and more complex supra-system, the global system. These multiple layers of systems are capable of producing unforeseen and unexpected results.

In systems theory different elements of committed individuals form a school as a whole as seen on the systems map and influence diagrams APPENDICES B & C

Students

Teachers

Support staff

Principal

Parents and External consultants

They all interact in the provision of a rich, broad curriculum, and in the development of young people’s confidence, self-esteem, skills and the attitude needed to become life-long students MacGilchrist and Buttress (2005:1) support this by describing how ‘the focus on learning led to significant improvements in student’s ’s motivation, behaviour, engagement in learning and learning outcomes; how, through teachers learning with (depicting interconnectedness), and from one another (depicting interdependence), the schools’ capacity for sustained

improvement was strengthened. Since 'Learning to Learn' concentrates on the development of student's understanding, skills and attitudes about themselves as students, and about the learning and thinking strategies, this emphasizes how students learn as envisaged in pedagogic leadership.

It is for this reason that the researchers have opted to use a systems thinking approach to understand Pedagogic Leadership, since it proposes that through collective efforts schools can initiate change that will sustain them and take them further (Moloi, 2002:62).

2.4. THEORETICAL FRAMEWORK

Theories that seem appropriate for this study will now be discussed:

2.4.1 COMPLEXITY THEORY

This theory rejects a linear view and accepts that there is no scientific certainty (Jansen & Lucas, cited in Classen 1998). Its argument is based on the fact that there is no solution to problems especially in a social scientific paradigm; and, the school, is composed of social beings.

In complexity theory, Classen (1998) argues that complexity lies at the boundary between order and chaos. Complexity implies the existence of self-organisation, unpredictability or random aspects in dynamic matter, as is the case in human beings found in schools where the study is conducted.

In a complex structure the individual is free to interact with the environment and make sense out of it. This implies that one can have order in a chaotic setting if there is self-organisation on the part of the individual. This paradigm emphasises connectedness and cooperation within a system, in this context a school, made up of a teacher who interacts with the students who are connected to one another. It rejects the traditional approaches such as competition and individualism and promotes collaboration and co-operative learning.

In the context of the present study, complexity theory implies that there is interaction between head (knowledge), hand (skills), and heart (values). In the process there is also interaction among students, teachers, and curriculum in the interpretation of the knowledge by students as they try to make sense of their environment. This interaction can lead to an understanding of an issue holistically. The meaning that individuals make depends largely on self-organisation as the law of self-organising systems states that complex systems like a school) organise themselves (Moloi 2002:64). Self-organisation can take place through culture, informal communication networks and operational goals to mention a few. Self- organisation is mainly caused by the relationships and interaction of components of the system, as teachers interact with students in the context of the study. Self-organisation systems produce emergencies which are properties and outcomes which most of the time are unpredictable

Students reflect on their schooling experiences in an attempt to solve the problems that confront them. Although there might be paradox in the environment, the choice lies with the subjectivity of individuals to make meaning out of the situation that confronts them. It cannot be ruled out that all the parts (head, hand, and heart)/teachers, students support staff and the parents can at all time be aligned into a coherent whole as the individual attempts to solve the problem.

According to Jackson (1991) a complex system has ‘basins’ of stability separated by ‘thresholds’ of instability. This means that some elements are stable and some are not. Schools should be stable enough in order to deliver the results that they were designed to deliver even in a turbulent environment. Hilder (1995) echoes this. Lack of purpose is usually indicative of the impending collapse of the self-organising system in order to meet the desired expectations of the society. Schools must be self- organised. Complex systems must be controlled through self-organisation. The law of self- organisation enables schools to do this by providing leadership with the knowledge of what causes stability in their school and what might threaten it. They should adapt to a new environment and deal with threats while retaining their identity. This is possible through the existence of the vision and mission statement that gives a sense of purpose and direction to the entire school community. All the schools’ activities are then aligned to them.

It needs to be noted that in the improvement of the approach to teaching and learning all components need to be integrated into a whole. This means that what we know depends on what we think and understand about an activity that is undertaken. Furthermore, individuals take action based on what they know. Knowing is information that has been contextualised within a particular effective and emotional structure. When these structures are similar to those of others we view ourselves as likeminded and where we differ, it implies that there is a lack of logic. Knowledge is therefore constructed as individuals trying to make sense of their environment.

2.4.2. CONSTRUCTIVISM

The new curriculum framework is socio-constructivist. This means that knowledge needs to be negotiated by both the teacher and students. Students on the other hand are encouraged to develop insights. This requires a lot of self-organisation on their part (Classen, 1998:34; and Berger, 2003).

It is argued that the construction of knowledge occurs within a particular value orientation or framework. Values have a bearing on performance since they determine the way people process information and act upon it. Differences in values may lead to different kinds of thinking. In the context of the study students' attitudes are influenced to a large extent by the knowledge that they possess about a concept which in turn reflects the value they attach to it in their judgement. The values that students exhibit reflect experiences of their learning environment among other things.

2.4.3. THE RELATIONSHIP BETWEEN COMPLEXITY THEORY AND CONSTRUCTIVISM

Complexity Theory implies that in the classroom there is a dual interaction between the educator and students which is characterised by giving and receiving in an intertwined way (Wielemans, 1993 cited in Classen, 1998:36). Both the educator and students learn together and students also learn from each other in a group. Teachers also learn from students as they answer questions.

Furthermore, the individual has to make sense of the situation that confronts him/ her in order to arrive at the conclusion (outcome).

Parker *et al.* (1998:6) and Nixon (1996:39) argue that in order for students to reach outcomes they need to be self-directed students, high level thinkers, collaborative contributors, innovative producers, community participants, adaptable problem solvers, physically and emotionally able individuals and knowledgeable people. From this it is evident that self-discovery plays a very important role for better understanding.

Spady, (cited in Lubisi, *et al.*, 1998:4) argues that outcomes, means focusing on what is essential for all students to be able to succeed at the end of their learning experiences. It means starting with a clear picture of what is important for students in order to reach an outcome. It is about what students are capable of doing at the end of their learning experiences. Accomplishing results is what the investigator is interested in, to ascertain if significant learning experiences have occurred in their daily learning

The researcher believes that if students cannot express what they have learnt then stakeholders have not done justice to the call of their duty. It is for this reason that a systems perspective on pedagogic leadership is proposed since it uses an holistic approach to improve the approach in teaching and learning. It also stresses the need for teachers to understand how students learn and for them to encourage student participation. To this end, various teaching strategies suitable for all students are used. This then is hoped to bring about improvement in students' performance. Teachers would have done their duty if students are able to state the 'what'

(knowledge equated with head), the 'how to' (skill equated with action) and lastly the meaning equated with the value that they might attach to the learning which they are expected to reflect upon. Finally they should be able to apply theory to practice. Students will then cope with the demands of a turbulent environment.

Complexity theory in a constructivist setting suggests that teachers should encourage students to practise rationally because human beings have an inherent capacity to create order. In the classroom context students should be given latitude to make mistakes. Students should be involved in active learning whereby learning by doing experimental activities is encouraged as they are given opportunities to interact with concepts in a meaningful way to promote learning with understanding. They learn more from their mistakes when they are actively involved and self- discovery is promoted. It is through this interaction that students are able to practise techniques through practical experience that improves their understanding, as Nixon (1996) and MacGilchrist *et al.* (2005) suggest. Flux and uncertainty are neither good nor bad but they are inevitable (Schuck cited in Classen, 1998: 40).

It is the contention of the investigator that as the individual interacts with the environment he/she makes sense out of it in order to reach the pre-stated outcomes. It is however important that the knowledge that students gained at school has to harmonise/align itself with the pre-existing knowledge which the student has perhaps received from everyday life experience. If that is not the case, knowledge will remain only school knowledge and will have no connection with the everyday life experience of students (Lubisi, *et al.*, 1998:4). The interconnectedness and the interaction and the inter-relationship observed in a systems perspective on leadership in teaching and learning fits well with these theories.

Ryle (in Parker, *et al.*, 1999:6) argues that education should focus more on 'how to' rather than simply learning 'what'. He argues that there needs to be a shift in focus from memorization of facts to carrying out of actions (teaching 'how to'). Ryle also raises the issue of the one who gets the blame for failure in the classroom context, whether it is the teacher or the student? This is worth noting because it might have a bearing on the research findings.

There is a need to widen the base of knowledge finding and sharing throughout the school, by teachers assuming responsibility for their own learning and that of colleagues (King, 2002; McEwan, 2003:8; Supovitz and Poglinco, 2001 cited in MacNeill, 2003). 'In the practical applications of systems thinking for educational practice, it was also realized that systems thinking assumes constructivist epistemology since systems are constructions and indeed the questions of constructing "boundaries" of systems was central to systems thinking' (Bhola, 2002:186) According to constructivism theory, knowledge needs to be negotiated by both the teacher and the student. Thus students take the responsibility of their learning. Self-discovery is encouraged to promote insight to be able to solve problems. This results in a better understanding because of self-discovery.

2.5. SUMMARY

Viewing the above argument from a systems thinking perspective all the different parts interact with each other to form the whole, namely the school in this context. Thus each part influences one another for the whole (school) to function effectively Stacey, R (2003:22) argues that 'the parts, however, have to be necessary for the production of the whole; otherwise they have no relevance as parts. Schools need to be committed to work together to improve students' outcomes. The parts have to serve the whole; it's just that the whole is not designed first but comes into being with the parts'. That is to say, all the stakeholders constituting the school are there to serve the school effectively by improving student outcomes as they work together for the common purpose, for the school to be sustained. According to Kant (cited in Stacey 2003:27) the parts of an organization exist to sustain the whole as an emergent property (In this context, teachers, students, parents, support staff and external consultants exist to sustain the school. Therefore there is no school without teachers, principal and others and there are no students without a school. That is where one sees the interdependence and inter-connectedness of the said parts for the school to function effectively and to produce good results when all parts are well connected.

Joyce and Hopkins (1999: 2) give their views as to how schools improve through pedagogic leadership from a systems thinking perspective and they call them evolutionary schools. It is about improving schools to enable them to meet changes of a turbulent environment created by accelerated change, demands of globalization, and being in transformation in a dynamic

turbulent environment. This calls for effective leadership that will bring about improvement in the learning of students. Improvement comes about by continuous effort made by all the parties involved in teaching and learning. In essence, their perspective is in line with a systems thinking approach.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. METHOD OF DATA COLLECTION

As the systems thinking approach is interactive it was appropriate to use semi-structured interviews that were used to elicit useful data by listening to individuals in order to interpret their remarks and to find meaningful themes. This was of critical importance for this type of inquiry and this approach is supported by Jackson, *et al.*, (2000: 211) when they state that ‘people must centrally be involved in any attempt to change and improve the systems they create. Methodology should be geared to getting as close as possible to what is going on, preferable to getting “inside” people’s heads to find out what influenced what they are thinking.’ Semi-structured interviews as a tool has been used, since it seems appropriate to get multiple perspectives regarding the existence of pedagogic leadership from a systems thinking perspective.

Interview questions were based on the conceptual framework for pedagogic leadership proposed by (McNeill, *et al.*, 2003: 8) to find out whether pedagogic leadership does exist in schools or not. The respondents were the focus groups of grade12 teachers and grade 12 students, as academic achievement (the matriculation pass rate in schools) is arguably the one effective criterion that can be quantified in the easiest manner (Botha 2006:343). The groups were ordered according to subject packages which include Natural Science, Economics and Management Sciences, Technology and General/Social sciences. Two students from each package were chosen. In selecting the students, care was taken to get equal representations of both sexes. One teacher was selected from each subject area from each school. A one-to-one interview was conducted with a principal from each school. The three selected high schools were from the South Durban region. One school from a semi-rural area, one from the township, and one from a suburb were used in order to have a wide spectrum from a diverse background of students and teachers.

The researcher spent one day in each of the three schools. The principals from each school were requested to participate in individual semi-structured interviews with the researcher followed by participation in the focus groups.

Permission to conduct the interviews was requested from the Director for research in the Department of Education. An appointment was made with schools to explain what the intent of my research was, taking into consideration time constraints and the working conditions. The interviewees were briefed about the research prior to the interviews. The conceptual framework for pedagogic leadership, as proposed by MacNeill *et al.* (2003:8), was conveyed to the participants.

3.2 DATA COLLECTION METHODS

Data was collected through interviews, as questionnaires proved to be an inappropriate data collection tool. For this study a Viable Systems Model was selected to be the one suitable in analyzing a problem area and discussing the possible changes.

3.2.1 QUESTIONNAIRES

Hall and Hall (1996) define a questionnaire as any set of questions respondents complete themselves in a research study. Questionnaires provide an easy method of presenting questions. Several questions can be asked and respondents have time to give thoughtful answers. Respondents are able to complete the questionnaire at their convenience. No researcher is present during the completion of the questionnaire, and the respondents can therefore not be identified. This gives assurance of anonymity to respondents. Bailey (1989:168) quotes Babbie (1973) as stating that the disadvantages of using questionnaires is that they yield a low response rate, sometimes as low as 10%, and 50% is considered adequate. A high response rate was necessary for this study to be successful, as it was thought to be important to establish the presence of leadership in teaching and learning from the systems perspective. The questions and the format of the questionnaire had to be kept as simple as possible so that they could be understood by respondents. Because of the nature of the problem situation and the methodology used, some questions could not be simplified, so a researcher needed to be present to clarify these to respondents. Therefore questionnaires proved to be an inappropriate data collection instrument for this study, and interviews were preferred.

3.2.2 INTERVIEWS

According to Welman and Kruger (1999:160) when an interviewer poses questions contained in a structured questionnaire to a respondent, such a previously compiled questionnaire is known as an interview schedule. Interviews generally give a high response rate. They are also good when the researcher requires co-operation. Interviews give the researcher a chance to observe non-verbal communication and probing is possible, which gives a better understanding and clarification of issues.

The disadvantage of using the interview is that a person's thinking ability is affected by factors such as fatigue, stress, illness, heat, etc. A respondent may give answers in an interview that are less than his or her best because they are affected by any of the above factors (Bailey, 1989:282). It may be necessary for the interviewer to phrase the same question differently for different respondents, or even to ask different questions of different respondents. While this flexibility can be an advantage, it can be a disadvantage if it makes it difficult for the researcher to compare respondents' answers.

3.2.3 FOCUS GROUPS

Definition

Focus groups as defined by O'Brien (undated) are semi-structured verbal discussions, moderated by a facilitator. Most discussions one has in the study or work context are 'focused' in the sense that they concentrate (zoom in) on specific issues. The primary intentions of focus groups are to help to understand the meaning an issue holds for those involved and to hear the voices of socially marginalised groups. The focus of the discussion is pre-determined and the discussion itself organised to address certain aspects of that focus; in this context to establish the presence of pedagogic leadership from a systems perspective.

Kruger (1994) cited in Litosseliti (2003:11) defines focus groups as small structured groups with selected participants, normally led by a moderator. They are set up in order to explore specific topics, and individual's views and experiences, through group interaction. Focus groups are special in terms of purpose, size, composition and procedures. It can be referred to as 'a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment' says *Study on focus groups* Litosseliti (2003).

Advantages and disadvantages of focus groups

If well planned and facilitated, focus groups have the advantage of: Producing a good deal of information on a specific issue in a relatively short period of time and of being particularly useful for planning and evaluating as is the case in this study.

However, focus groups also have disadvantages:

- Getting people together can be difficult. It is time-consuming if each group member has to be contacted individually;
- The discussion may produce a tendency to conform and to people not wanting to express opinions which are different from those put forward by the others;
- Confidentiality may be a problem. Group participants may fear that others will reveal, outside the group, what they said; and
- The facilitator has less control than in an individual interview.

How do focus groups work?

O'Brien (undated: 2) invites the reader to think of a focus group as a 'system' with the individual group members and facilitator comprising the sub-systems. Every system and sub-systems has its own 'boundary', across which interchanges must occur if each is to be sustained and grow. Focus group/s use group dynamics appropriate for the study (interchanges across boundaries – interaction between group members) to progress. Some of the types of interactions that are noticed in group discussions are:

- Dialectical processes: rationale for choosing of one theory advanced by a participant (e.g. this happens because...), which is countered by others (no, I think it happens because...), leading to an attempt to develop an appropriate theory. This is helpful in developing insight into complex issues as is the case in education;
- Exploring taboo subjects – when someone raises an issue not normally discussed in social conversation, others feel they have permission to share their experiences or thoughts on that topic and.

- Realising that they are not alone in having had a specific experience or certain opinions, group members may feel less isolated and more willing to contribute to the discussion ideal to elicit information about the issue. Participants often say that what they valued most about the group discussion was the chance to share and compare their ideas and experiences. While the individual often feels powerless, in unity, group participants feel empowered to act.

LARGE FOCUS GROUP PARTICIPANTS

Most focus groups have six to ten participants. A smaller number will reduce the number of ideas and it may be difficult to keep a discussion going. However, a discussion with more than ten members can be difficult to facilitate. In large groups some may keep quiet or separate conversations may start up amongst two or three of the larger group. Often, though, one does not have too much choice as to the exact number of participants. If you have colleagues with you who could facilitate one group, consider dividing more than twelve people into two groups.

Who will participate?

The first characteristic of those participating should be a common interest in or knowledge of the issue under discussion. In this case, a grade 12 teacher and grade 12 students, it is assumed have common interests. Another consideration is whether the group members should share similar characteristics or be very different from each other.

ARRANGEMENTS FOR THE FOCUS GROUP

Length of the session

Appointments were made with the deputy principal academic where a suitable time and day were agreed upon considering the schedule of the school. This approach conformed to that suggested by O'Brien (undated: 4). Participants need to know this in advance. The number of issues or aspects of an issue will also determine the length of time it will take for these to be considered Litoselliti, (2003:16).

Venue

O'Brien (undated: 5) advises that the place chosen to hold the group discussion should be as convenient as possible for those whom you wish to include. The venue should also be made as comfortable as possible to encourage participation.

- It is generally advisable to have group participants sit in a circle so that each can see the other; and
- If using an outside venue, ensure that there is shade and as much privacy as possible. I requested the participants to grant permission for me to use a tape recorder and for me to photograph them, but they were not comfortable with that. I had instead to take handwritten notes as I proceeded with the interviews. Their argument against my using recording devices was that their identity could not be kept anonymous if I recorded their voices and took photos.

QUESTIONS

According to Litoselliti, (2003:22) the discussion is not rigidly controlled, but participants are encouraged, through the use of broad questions, to share as much as possible their thoughts and opinions concerning various aspects of the general topic. Open questions are most suitable. A broad question can be answered in many ways, while a specific question directs the person to respond on that very specific point. 'Open questions' are those which require some explanation. 'Closed questions' only require a one-word answer. They are thus inappropriate for this study

Facilitating a focus group

In the discussion itself, O'Brien (undated:5) explains that one moves from the role of planner to that of facilitator to open up clear and direct communication lines within the group, helping participants assume responsibility for discussion.

If there is a wish to tape the discussion, the facilitator must get agreement from the group participants before switching on. A sample question asking if anyone minds if you tape the discussion so that you can give a more accurate account of it to your tutor/mentor is usually sufficient. If anyone expresses doubt about the discussion being taped, agree to leave the recorder off and remove it from sight.

Questions from the participant to the facilitator should be re-directed to the whole group – e.g. 'What have others experienced in this connection?'

3.3 INTERVIEW SCHEDULE DESIGN

The literature review provided a conceptual framework for pedagogic leadership (McNeill, *et al.* 2003:8) which I used to design semi-structured interview questions (See APPENDIX A) for the focus group of students, the focus group of teachers and for the one-on-one interviews with the principals in each of the 3 schools selected. Each had a leading question and I envisaged a lot of discussion with many probing questions. In all interviews participants were not comfortable with being recorded, I had instead to take handwritten notes as I proceeded with the interviews.

3.4 CONDUCTING OF INTERVIEWS

The purpose of this survey was to solicit information from principals, teachers and grade 12 students and teachers regarding the existence of pedagogic leadership from a systems perspective in their schools. The information they provided would go a long way in verifying and understanding the above. The interviews lasted for 20-45 minutes.

3.5 RESEARCH PARADIGM

The research paradigm is based on the interpretative approach of enquiry which supports the belief that no single reality can be determined (Browne, 2005:58) as is further supported by

Burrell and Morgan,(1979) as cited in Jackson (2002:211) states that he accepts that multiple perceptions of reality exist and he wants to work successfully in a ‘pluralistic’ environment.

The approach chosen in this study ‘... favours subjectivity as the social world is viewed as being of much softer, personal and humanly-created kind’ (Cohen and Manion, 1995:7) It was determined by the need to elicit multiple perspectives regarding pedagogic leadership. In the context of this study, the focus is on the process that gives greater focus to the life-blood of educational institutions, which is learning and teaching. This process of enquiry based on a qualitative approach, will be helpful in understanding social problems in the context of building a complex, holistic picture, as described by Creswell (1994: 174).

3.5.1 CRITICAL SYSTEMS THINKING AND PRACTICE

This approach is used in choosing an appropriate methodology for this study (Jackson, 2002). The researcher started by criticising the theoretical underpinnings, strengths and weaknesses of the available systems methodologies. Critical thinking systems are dedicated to human improvement Flood & Jackson, (1991) cited in Jackson (2002:376), where all individuals could realise their potential. Jackson (2002:390) further explains that critical systems practice requires methodology which encourages and protects paradigms diversity in order to address the complexity of a problem situation at all stages of an intervention. It should ensure that other agents and affected people with less of a managerial concern will be included as well. The settings also influence the choice of this approach.

The setting, the problem situation and what was done

The respondents were the focus groups from the teaching staff and grade 12 students selected according to subject packages; two students of both sexes, from each package and one teacher from each subject per school. One-to-one semi-structured interviews were conducted with a principal from each school. The three selected high schools were from the South Durban region. The principals were interviewed first followed by the focus groups. One school from a semi-rural area, one from a township, and one from a suburb were selected in order to have a wide spectrum from a diverse background of students and teachers.

Interview questions were based on the conceptual framework for pedagogic leadership as proposed by MacNeill, (2003:8). The following were significant areas to be addressed:

1. *Discharge of moral obligations concerning societal expectations of schooling;*
2. *Presence of shared vision and sense of mission about student learning;*
3. *Commitment to mission realization by staff and students;*
4. *Application of expert knowledge about student learning and development;*
5. *Improvement of pedagogic learning and practice;*
6. *The engagement and empowerment of staff;*
7. *Presence of multi leadership of staff;*
8. *Emphasis on pedagogic leadership rather than administrative functions by leaders;*
9. *Creation and sharing of knowledge throughout the school*
10. *Development of relationships and sense of community; and*
11. *Application of re-culturing approach towards school improvement.*

The above conceptual framework has been condensed into five thematic areas in line with Robinson's (2007:4) research. They are listed below with their sub-themes and the five systems of the Viable Systems Model (VSM) that will be explained later as the chapter proceeds.

1. Improving students' active participation (system one)

Commitment to mission realization by staff and students;

Application of expert knowledge about student learning and development

2. Planning co-ordinating and evaluating teaching and curriculum (system two)

Discharge of moral obligations concerning societal expectations of schooling;

Presence of multi leadership of staff;

Emphasis on pedagogic leadership rather than administrative functions by leaders

3. Ensuring an orderly and supportive environment and allocating strategic resources (system three)

Improvement of pedagogic learning and practice

Development of relationships and sense of community;

4. Promoting and participating in teachers learning and development (System four)

The engagement and empowerment of staff

Creation and sharing of knowledge throughout the school

Application of re-culturing approach towards school improvement

5. Establishing goals and expectations (System five)

Presence of shared vision and sense of mission about student learning

In the choice phase, various systems methods will critically be explored to come up with the most appropriate for this study. This study seeks to establish the presence of pedagogic leadership from a systems perspective in the three schools visited. Since pedagogic leadership plays an important role in improving the approach in teaching and learning. This led to the choice of cybernetics and the Viable Systems Model as the dominant methodology as it allows for seeing defects of the whole system and for coming up with possible solutions for them, As Senge (1990:18) advocates, being able to see the major inter-relationship underlying elements of the problem situation leads to new insights about what might be done. They also consider inter-relationships, communication mechanisms and recursion issues which are relevant to this study.

In the 'intervention' phase of the VSM the next step was to consider all the information and draw on the five VSM systems looking at the conceptual framework for pedagogic leadership and condense these eleven aspects into five thematic areas. They were then allocated according to the functions each system of the VSM performs as outlined above.

The reflection phase is the process of collecting data. The creativity phase used interviews from the focus group of teachers and the focus group of students and one-to-one interviews with principals of the three schools. At the choice phase, the Viable Systems Model was taken as the dominant methodology and this remained the case throughout the study.

There will be a constant critical reflection upon the relative strengths and weaknesses of different systems tools (Jackson. (2002:405) to choose the most appropriate one. They are now discussed below.

3.5.2 SYSTEM DYNAMICS (SD)

Systems Dynamics (SD) can be thought of as a problem-solving methodology, because after a problem area has been identified SD creates explanations as to what the causes of the problem might be. Caulfield, and Maj, (2002) define SD as concerned with creating models or representations of real-world systems of all kinds, and studying their dynamics or behaviour). In particular, it is concerned with improving problematic system behaviour. The purpose in applying SD is to facilitate understanding of the relationship between the behaviour of the system over time and its underlying structure and strategies/policies/decision rules. A computer model is used to try to comprehend the patterns. This information about a system can be used to recommend what kind of policies will work in addressing the problem situation (the system) and which ones may not work.

According to Caulfield, and Maj, (2002) most SD modelling packages consist of only basic elements, namely stocks, flows, converters and connectors, which can be perceived as the building blocks which form the structure or the configuration of how the modelling blocks of the modelling system are put together. Stocks represent anything that accumulates over a period of time e.g. cars, people, etc. Flows go through the pipe in the direction of the arrow and at a rate that always leaves tracks on the stock. Flows can be inflows or outflows. Converters are used to tease out the logic, which might otherwise be buried within a flow. They can also be used to represent constant values. A converter can act as a stock if one is not interested in the details of the stock. Connectors link the other three building blocks together. They represent inputs and outputs. Connectors do not take on numerical values. They merely transmit values taken by other building blocks. Although connectors link all of the constructs they cannot connect into a stock.

Although System Dynamics models are suitable for use on both quantitative and qualitative variables, SD is traditionally used for modelling quantitative variables. Qualitative variables are normally left out of modelling systems because they are hard to measure, yet they play an important part in the dynamics of the system to which they belong. System Dynamics can therefore not be applied in this study as the study focuses on qualitative variables and how they can be measured or used to determine the effectiveness of leadership in teaching and learning that takes place in the school.

The main disadvantage of SD is that it models behaviour that takes place in a structured environment, which has made it completely impossible to apply to this study. SD is difficult to apply to situations that are complex and adaptive and that interact with their environment, like a school as a system.

3.5.3 SOFT SYSTEMS METHODOLOGY (SSM)

According to Flood and Jackson (1991:251) SSM is based on four principles, which are learning, culture, participation and the two modes of thought; (the real world and the ideal world). As a process of enquiry, SSM is a system of learning, perceiving and evaluating a situation before deciding on a course of action and then taking that action, which in turn leads to changing a situation from which a new learning cycle begins. Decisions about a way forward will depend on relevance, cultural feasibility and systematic desirability.

Culture plays an important role when a systems analyst has to decide on the changes that are necessary to improve the situation. The proposed changes must be culturally feasible. That is, they must be relevant to the culture of the organization in order to be considered for implementation. At the same time they must be systematic so that they do not violate systems thinking. Culture guides the SSM user, in the sense that the SSM states clearly that there are organizational or social constraints in the 'real world' which potential changes, recommended by the intervention, must meet.

Soft systems methodology is based on the notion that one rarely comes across a problem which is clear and well defined. Instead one comes across messes, which are sets of interlinked, ill-defined problems. VSM has been designed for diagnosing problems of communication and control, and for assessing the viability and effectiveness of organizations. It uses the five categories of data to diagnose the system and then make suggestions for solutions. The VSM is more suitable for this study. Since it should be noted that one has to understand that if utilizing the original Checkland (2005:A34) SSM one is to be part of the stakeholders to facilitate better resolutions of the problem. However, this does not allow one to be part of the stakeholders. It is clear therefore that SSM is inappropriate for this study, since the principle of participation is very important, because without the participation of all

of the stakeholders in analyzing a problem area and discussing the possible changes, the chances are that the intervention will not be effective.

3.5.4 CYBERNETICS

According to Clemson (1984:19) cybernetic is concerned with general patterns, laws and principles of behaviour that characterize complex, dynamic, and open systems. The emphasis is always on finding those general laws and principles that apply to all such systems. This statement is quite enlightening. As it gets to the core of cybernetics, it clarifies that it provides laws or principles that apply to all systems and can therefore be used to understand complex situations. Multi-levels leadership can therefore use these principles to understand complex situations found in schools since cybernetics is based on the idea that it is possible to evolve a general approach to the investigation of control processes in various types of systems. It thus offers a powerful tool for the resolution of complex problems (Beer 1995:284). For an organization to function effectively Weiner (1961) cited in Clemson (1984:19) believed that it should communicate and be controlled properly. He then warns that if these two are not properly designed an organization can fail to function properly. Espejo (1996:79) maintains that the same is true for school (as organizations) in the context of this study. According to Espejo (1996:82) there are five steps to study cybernetics, amongst them is modelling the organization with the Viable System Model (VSM). He further emphasizes that cybernetics can be used in any system as long as it is an interconnected whole made up of a group of elements of any kind, as is the case with a school which is composed of teachers, students, administrative staff and the parents; and further refers to cybernetic as the science of control and communication. Whereas Beer (1995:284) defines it as the science of effective organization

This study uses cybernetic principles to ascertain the general patterns, control and communication mechanisms reflected in pedagogic leadership from a systems perspective that schools should have so as to function effectively.

3.5.4.1 THE LAW OF SELF-ORGANIZING SYSTEMS

This law refers to the ability of systems continuously to recreate themselves while staying the same. This is caused by the persistent relationship between the components and not the components themselves. The ability to maintain identity is related to the fact that these systems have purposes, which provide a framework for their maintenance of identity. Lack of purpose is usually indicative of the impending collapse of a self-organizing system (Hilder, 1995).

Complex systems organize themselves. Self-organization can take place through culture, informal communication networks and operational goals. Self-organization is caused by the relationship and the interaction the components of the system. Self-organization produces emergence, which are properties and outcomes that are unpredictable and derives from its parts and structure but cannot be reduced to them.

According to Clemson (1984:27) a complex system has ‘basins’ of stability separated by ‘thresholds’ of instability. This means that some elements are stable and some are not. Schools should be stable enough in order to deliver the results that were designed for even in a turbulent environment as Hilder (1995) echoes this. Lack of purpose is usually indicative of the impending collapse of the self-organising system in order to meet the desired expectations of the society. Schools must be self-organised. Complex systems must be controlled through self-organisation. The law of self-organisation enables schools to do this by providing leadership with the knowledge of what causes stability in their school and what might threaten it. They should adapt to a new environment and deal with threats while retaining their identity.

3.5.4.2 FEEDBACK LOOPS

A system does the work of transforming inputs into outputs. The process in the system is characterized by feedback, whereby the behaviour of one element may feedback, either directly from another element by way of their relationship, or indirectly via a series of connected elements, to influence the element that initiated the behaviour (Clemson, 1984:22). Feedback can either be negative or positive, as illustrated in appendix D (Naidu *et al.*,

2008:78). Positive feedback mechanisms are growth-promoting (Clemson, 1984:23). Like in this case where pedagogical leadership improves the approach in teaching and learning hence students' outcomes.

Negative feedback can be changed to positive feedback and vice versa by making minor changes in the system. Clemson (1984:23) argues that feedback control alone may not be enough to achieve adequate regulation of an organization. It might be necessary to use feed-forward information that attempts to predict disturbances before they actually affect the school. Schools as systems have two main results and societal expectations. The approach in teaching and learning should yield high students' outcomes emphasizing moral values. Students should be well-prepared to fit into the world of work; this results from learning with understanding that enables students to apply knowledge and skills gained to real-life situations.

3.5.4.3 THE LAW OF REQUISITE VARIETY

According to W.R. Ashby (1956) cited in Clemson (1984:25) it is impossible to create a simple control system for the effective control of a complex system. The regulator, as it is usually called, must be as complex as the complex system to be controlled (Espejo and Harnden, 1996:90).

Complexity is measured by the variety of a system (Jackson, 1991) which is defined as the number of possible states it is capable of exhibiting. Therefore according to Clemson, (1984:37) the law of requisite variety states that, given a system and some regulator of that system, the amount of regulation attainable is limited by the variety of the regulator. It has to be noted however that variety is a subjective concept depending on the observer. Clemson (1984:47) explains that in order to control a system we need to have as much variety available to us as the system itself exhibits.

Ashby's law of requisite variety states that control can be obtained only if the variety of the controller is as great, or all parts of the controller are as great, as the variety of the situation to be controlled. Beer (1959:50) cited in Clemson (1984:44) explains that output variety must

match input variety for the system as a whole, when the input and the output arrangements are considered separately. He further warns that leaders have to learn how to use variety reducers to filter the complexity of operational and environmental variety and to capture only what is relevant to them and the school.

Cybernetics is a conceptual tool that can be used for understanding organizations and supporting management of change. According to Espejo and Gill (2002) cybernetics has two modes: diagnostic and design. The first mode relates to an existing organization and the second to new organizations, or ones that have radically changed their identity. They further state that a cybernetic method to study organizations has five steps:

1. Formulation of the organization's identities
2. Construction of structural models
3. Unfolding the organization into primary activities and structural levels
4. Constructing table recursion/function
5. Modelling the organizations with the Viable System Model

The first step sets the boundaries of the investigation, while the following three steps deal with identification of the systematic parts of the organization. The last step is the diagnosis of the system, considering the cybernetic principles, using the Viable Systems Model (VSM).

3.5.5. DISCUSSION OF VSM AND THE INTERVIEW SCHEDULE

The questions were asked to provide information that would feed directly into the VSM and to help to diagnose discourses in schools as reflected in the conceptual framework for pedagogical leadership.

3.5.5.1 THE RELATIONSHIP BETWEEN CYBERNETICS AND THE VSM

Traditionally organizations have been viewed as hierarchical institutions. The Viable System Model (VSM) looks at organizations in terms of the functions that they perform using the cybernetic principles of communication and control, which is achieved through feedback. Effective use of feedback ensures that there is communication in the system and that the system is controlled effectively.

VSM is a tool that is used to diagnose whether or not a system is viable or effective. The term viable, when used in relation to organizations, refers to economic viability, a fact which gives rise to the assumption that most organizational problems are economic. VSM does not dispute this, but argues that there are laws governing the structure and dynamics of any viable system to which all successful enterprises will be found to respond (Beer, 1995:290). Cybernetics and the VSM provide the rules to reach successful organizational goals without trial and error; however this is debatable.

Management cybernetics must be seen as a diagnostic tool. By mapping the organization and development process in which it is engaged onto the VSM, it is possible to understand strengths and weaknesses in terms of the axioms of viability/effectiveness. This makes it possible also to prescribe for whatever turns out to be pathological (Beer, 1995: 292).

3.5.6 MODELING THE SCHOOL WITH THE VIABLE SYSTEM MODEL (VSM)

VSM will be used to diagnose the discourse in schools as reflected in the framework for pedagogic leadership from a systems perspective. Using this model enables one to understand strength and weaknesses in terms of the effective teaching and learning required for high students' outcomes.

This study highlights the important role that leadership in teaching and learning from a systems thinking perspective plays in improving the approach to teaching and learning, evident in high students' outcomes. This is used as a yardstick for measuring effectiveness of a school (Botha, 2006:343 and MacNeill *et al.*, 2003:4). They further refer to student outcomes as the core business of schooling. To this end cybernetics looks at the difference between what is effective and what is ineffective and what is viable and non-viable. Hence it uses the VSM as a tool. However, the focus in this study is on effectiveness versus ineffectiveness of pedagogic leadership to the improvement of the teaching and learning approach that will be evident in high student outcomes. This should be brought about through pedagogical leadership from a systems thinking perspective that proposes a multi-level leadership and a student-centeredness approach. This will be evaluated through the

application of eleven criteria for pedagogical leadership (condensed into five themes (Robinson 2007:4).

Management cybernetics provides effective mechanisms to discover problem situations and to regulate organizational tasks. The VSM is a tool for doing just that. Viable systems are those that are able to maintain a separate existence. These systems have their own problem-solving capacity. If organisations are going to survive they need to develop a capacity to respond to familiar disturbances (Espejo, 1996:77). The viability to respond to previously unknown disturbances is the corner-stone of viable systems, for they adapt to change, and it is therefore highly unlikely that major changes render them non-viable. Therefore schools should adapt to change to remain effective and viable.

Traditionally organizations have been viewed as hierarchical institutions. The VSM looks at organizations in terms of the functions that they perform, using the cybernetic principles of communication and control. Thus the structure of an organization is defined by the actual communication channels in existence and not by the parts and lines of authority formally defined by an organizational chart (Espejo, 1996:79).

The VSM has five functional systems that are interconnected through complex information and control loops. Recursion allows us to use this same model to represent, for example, a school and its departments, together with the wider education system of which it may be also a functional part.

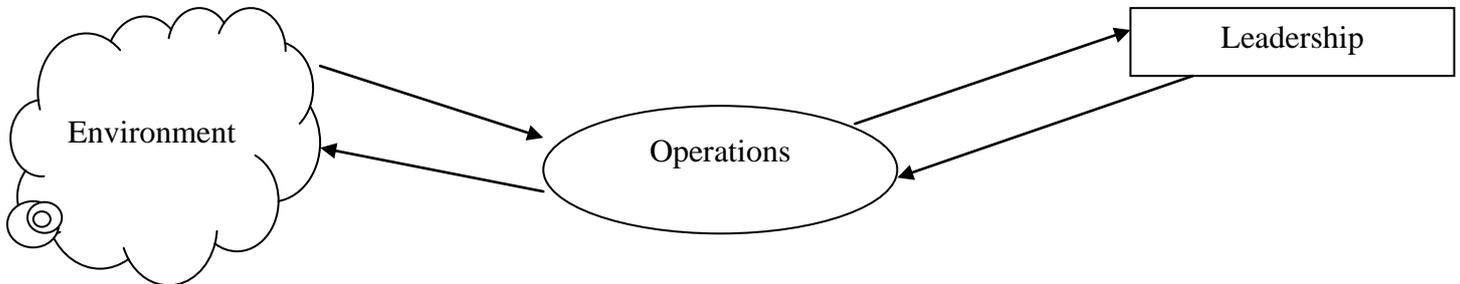
3.5.6.1 SYSTEM ONE (IMPLEMENTATION)

System one (S1) refers to the fundamental operations within teaching and learning evident in high student outcomes. It can also be referred to as implementation. S1 is made up of all the operations that do the things which justify the existence of the system. It includes the management of these operations. Without S1 there would be no reason for the school to exist (Espejo, 1996:91).

S1 consists of the parts that actually carry out the tasks that the system is intended to accomplish. They constitute the implementation of the systems' purpose. They have their own information channels for communicating with the environment about everyday issues. The

environment is very complex and the information that concerns the system must be reduced before reaching the systems.

Figure 1: system one



Adapted from Beer (1996:288)

Figure 1 is a representation of S1. It can be used to depict what is happening at the S1 level.

The operation interacts with the environment and its local leadership. The environment provides operations with the information it needs to function. If this information (variety) is too much, it is filtered. If it is too little it is amplified. Operations then provide leadership with some information about its functioning.

Leadership has a lower variety than operations because it is impossible for leadership to know everything (every little detail) about what is happening in the operating system. Operations have a lower variety than the environment. Operations cannot know all the needs and preferences of the market (environment). The opposite is also true – that the variety of the environment greatly exceeds that of the leadership that controls it (Beer, 1985).

The VSM strives for balance. It is necessary then that high variety is filtered and low variety is amplified or enhanced to the number of possible states that the receiving system needs and can actually handle in order to strike a balance.

System one (S1) is concerned with implementation. Each part or system is autonomous in its own right and therefore must exhibit all of the features of an effective system. Because all of the parts connect to their local environment they then absorb much of the overall environmental variety (Espejo *et al.*, 1996:90).

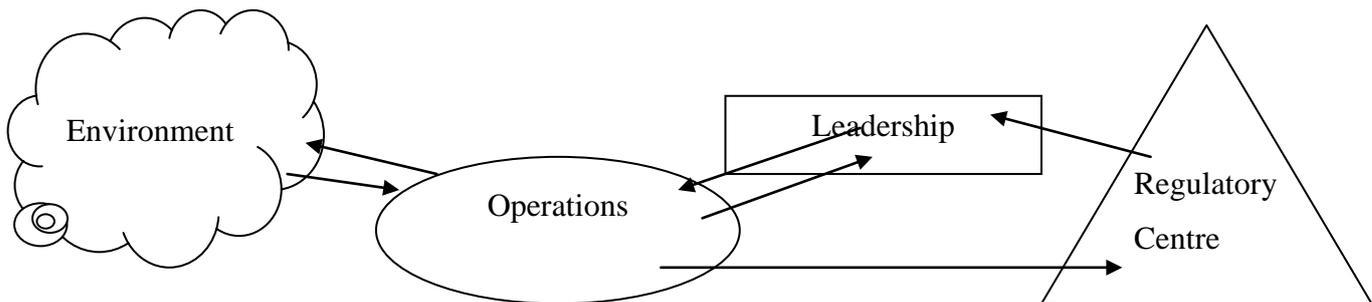
3.5.6.2 SYSTEM TWO (CO-ORDINATION)

System two (S2) is responsible for the co-ordination functions of an effective system. S2 co-ordinates the parts that make up S1 in a harmonious manner and dampens uncontrolled oscillations between the parts (Espejo *et al*, 1996:96).

S2 provides a very specific type of regulation. It exists to damp oscillations among different S1 units and to co-ordinate their activities. S2 work is focused on implementing decisions about common services and resources as smoothly as possible and therefore it concentrates on schedules and protocols. The decisions may have been made among different S1 units or by higher levels in the school (Leonard, 1999). However, Hilder (1995) argues that these decisions do not have to be imposed from senior leadership but must be arranged voluntarily between S1 elements. That is because senior leadership does not have the requisite variety to dictate to S2. He further states that S2 activities normally take place informally e.g. over tea breaks.

The S2 function is embodied in the regulatory centres, which are represented by a triangle in the diagram.

Figure 2: System two



Adapted from Beer (1996: 320)

S1 strikes a resource bargain deal with senior leadership. That is, S1 performs certain agreed-upon functions, and senior leadership will provide the requisite resources. Resources act as a variety filter. The accountability that goes with the responsibility for allocated resources is also a variety filter. This regulation also filters operational variety because operational

potentiality must be harnessed to agreed objectives. Therefore the regulatory centre's main function is to ensure stability between leadership and operations.

A transducer is used during the communication process. The transducer encodes or decodes a message whenever it crosses a system boundary and therefore needs a different mode of expression. Wherever the information carried on a channel capable of distinguishing a given variety of the transducer, must be at least equivalent to the variety of the channel (Beer, 1995).

Espejo *et al.* (1996: 96) states that S2 consists of the control of the parts of S1 linked to a regulatory centre. The regulatory centre receives information about the actions of the various operations and is able to prevent dangerous oscillations arising in the system. S2 oversees interactions and stabilizes the situation so as to obtain a balanced response from S1. It sends feedback to the localized leadership of S1 to re-establish harmony, calling if necessary upon the resources of S3.

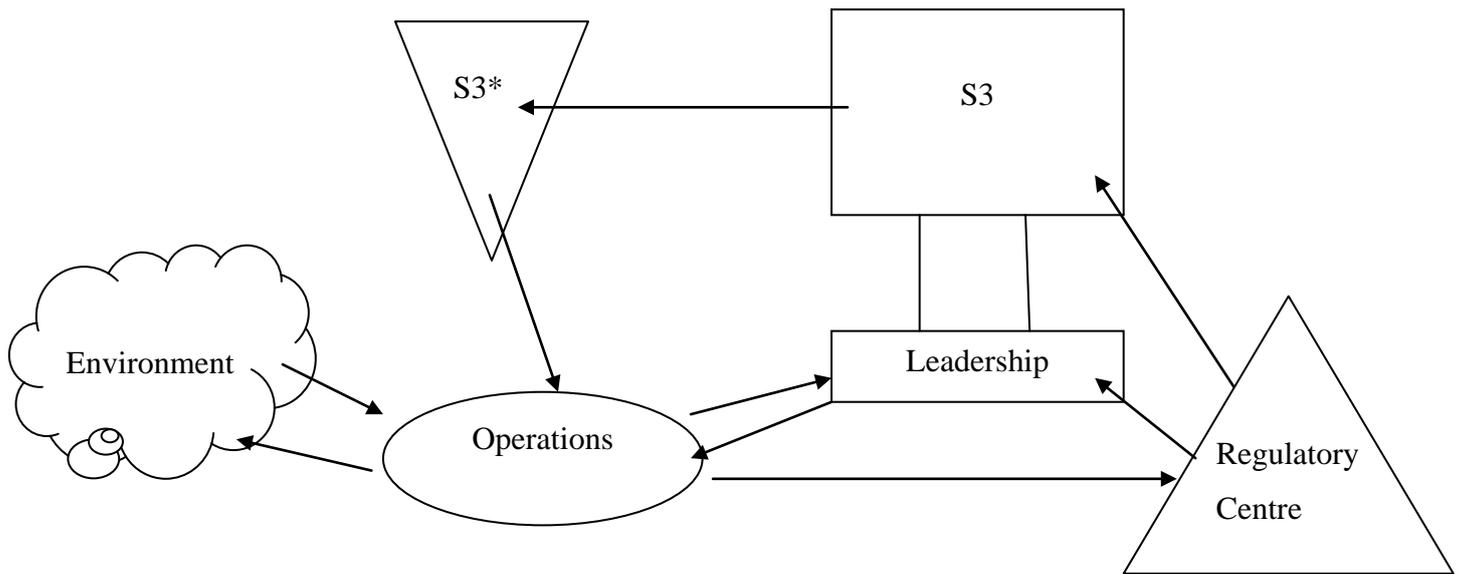
3.5.6.3 SYSTEM THREE (CONTROL)

System Three (S3) performs the control function that maintains internal stability. It interprets the policy decision of leadership and allocates resources to the parts of S1 (Espejo *et al.*, 1996:97).

S3 refers to the everyday control of S1 by senior leadership. S3 is responsible for internal and immediate control of the organization and also for supervising the co-ordination activities of S2. S3 relies on information coming directly from the localized leadership of S1 through the command axis. However, this channel might not have the requisite variety to be effective, so S3 needs directly to monitor the operations of S1 in order to ensure that it is efficient. This can be done by sending task teams into operation so as to do spot checks or audits. Beer (1995) refers to this direct monitoring of operations as System three star (S3*). Hilder, (1995) gives S3* direct access to the operations of S1 and he claims that it does not need to rely solely on information from the localized management of S1.

S3 exercises a great deal of variety filtering through the resource bargaining struck with S1. These arrangements set boundaries based on resources for results exchange. The terms of this arrangement substantially narrow the variety available to the operation. With this accountability relationship, the operation should be able to draw on its full measure of variety whilst retaining substantial autonomy (Leonard, 1999).

Figure 3: System three



Adapted from Beer (1996:320)

S3 is responsible for the internal and immediate functions of the school's everyday leadership. It is different from S1 because it surveys the system as a totality, which the components horizontal elements are not placed to do. It is different from S2 because it exerts authority on the central command channel although it does not conduct the anti-oscillatory functions of S2 (Beer, 1995:1).

An effective system has an agreed purpose based on internal information regarding the state of the operation. S3 influences S1 by direct intervention or by modifying S2. Direct intervention is done through the command axis and modification is done through resources bargaining. It might send instructions downward on the basis of this, or consult upward. Thirdly, it responds to information received from S3* advising on the state and future of the concerned operations. The surplus variety coming from the environment into the operation, then into the leadership of the operation, has to be cancelled out by the variety coming down the vertical channels of S3 and S3*.

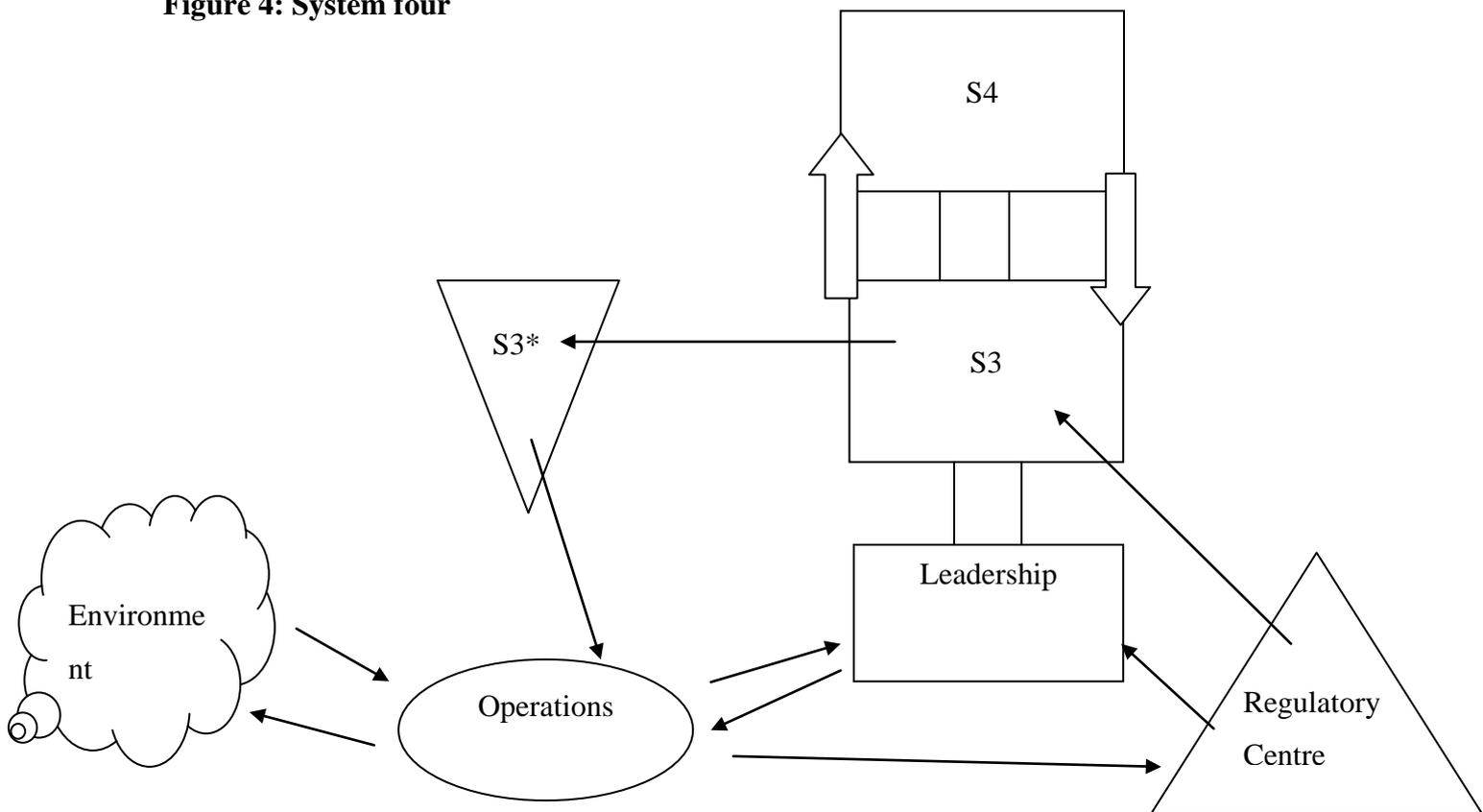
3.5.6.4 SYSTEM FOUR (INTELLIGENCE)

The school as modelled so far is capable only of dealing with immediate concerns. In a changing world, schools that fail to adapt cease to be effective, so an intelligence function is necessary.

S4 is an intelligence-gathering function that captures all relevant information about a system's total environment. It distributes this environmental information upwards or downwards according to its degree of importance. It rapidly transmits urgent information from S1, S2 and S3 to S5 (Espejo *et al.*, 1996:97).

S4 needs channel to and from S3. This is because intelligent adaptation cannot be achieved without an understanding of the school as it currently exists; information which is obtained via S3. Proposed adaptations of the school then have to be fed back through S3 in order to be implemented. The thick arrows between S3 and S4 must be in proper balance.

Figure 4: System four



Adapted from Beer (1006:317)

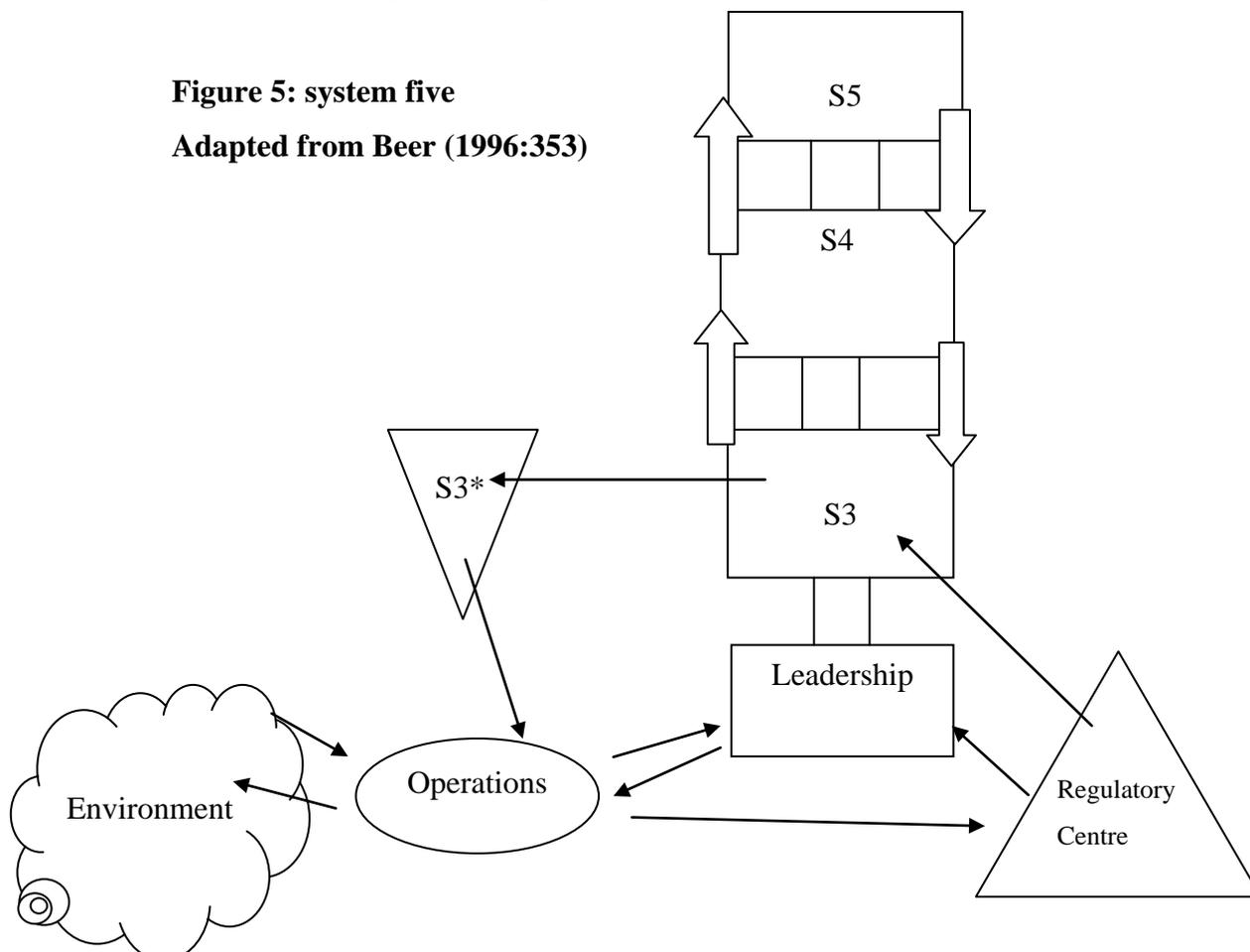
S4 is concerned with managing not only the outside and but also provides self-awareness to the school or the system. According to Jackson (1991) S4 has two main tasks. Firstly, it switches instructions down from S5 to the lower level systems and it switches upward from S1 to S3 information required by S5 to take major decisions. Secondly, it captures for the school all the relevant information about its total environment. If the school is to be viable and effective, its variety has to match the variety of the environment in which it operates.

3.5.6.5 SYSTEM FIVE (DIRECTION)

System five (S5) arbitrates between S3 and S4. It maintains a creative tension between these two systems. S5 is responsible for policy and also for representing the essential qualities of the whole system to any wider system of which it is a part (Espejo *et al.*, 1995:99).

S5 considers the school's purpose or identity and is thus responsible for the direction of the whole system. Considering information generated by S4 it creates policies that are conveyed to S3 for implementation by S1. S5 also monitors all. S5 considers a school's purpose and identity it therefore provides the organisation with its personality. S5 is normally highly distributed throughout the organization (Hilder, 1995).

Figure 5: system five
Adapted from Beer (1996:353)



This diagram is a complete VSM model with all of the functional elements of the VSM in place.

The policy and rules of the school come from S5. They are not stated firmly, although some schools can have published objectives. The rules are normally created by the personality, purpose and identity of an organization. S5 acts as a variety sponge that filters variety from S3, because it knows very well what the existing business is (Beer, 1996: 356).

S5 is responsible for the direction of the whole school. It is the think-tank of the organization, formulating policy on the basis of all the information passed on to it by S4 and communicating the policy downward to S3 for implementation by operations (Espejo, 1996:99).

3.6 SUMMARY OF THE VSM

The systems of the VSM can be summarized as follows:

- System 1 (S1) (Operation) – Performs the doing and producing function. It carries out the main tasks of the school and is the operational unit composed of people, departments that actually get the work of the school done.
- System 2 (S2) (co-ordination) – Performs the co-ordination function. This system is responsible for conflict resolution and re-establishing harmony. Its main aim is to co-ordinate divisional activities so as to avoid instability.
- System 3 (S3) (control) – Performs the internal and ‘now’ function. It interprets and implements policies. It is responsible for synergy, ensuring that there is stability.
- System 4 (S4) (intelligence) – Performs the external and ‘future’ function. It communicates the opportunities and threats of the environment to the school. It also helps in the efficient and effective running of the school.

- System 5 (S5) (direction) – Performs the ‘identify’ function. It is responsible for vision, direction, goals, and setting of the mission statement. It provides the ground-rules and the means of enforcing them to ensure that the system is complete.

3.7 RECURSION

Beer (1985:50) defines recursion as a next level that contains all of the levels below it. Clamson (1984:47)) state that recursion means that the whole system is replicated in its parts, so that the same viable system principles may be used to model a sub-system (department) in an organization, and it’s supra system.

VSM is based on the idea of recursion. Recursion refers to the fact that the structure of the whole model is replicated on each of its parts. Operations or departments of a school should be treated as effective systems in their own right and must therefore possess their own S1 to S5 (Espejo 1996:99).

Individuals within a school are themselves effective systems. They belong to departments that are effective systems. A school as a whole is an effective system. This means that VSMs are nested in each other.

3.8 CRITICISM OF THE VSM

According to Beer (1989) VSM is criticized by those who notice that people are the basic elements of a VSM and say that people have free will. This is true, but what this criticism does not consider is the fact that people also have constraints laid upon them by their upbringing and this impact on the roles they play in their organization. People cannot do as they please within an organization. They are guided by policies and procedures which they have to follow. However, in critiquing viable systems diagnosis, Flood and Jackson (1991) say that it has been criticized for its emphases on organizational structure, communication and control processes but neglects qualities brought by the human actors who make up organizations. Thus it has little to say about social processes that take place in organizations, regarding organizational culture and about politics and power struggles in enterprises. The researcher is of the opinion that both of the above points somewhat cancel each other out, for the VSM cannot have people as its basic element if it does not consider social process and

organizational culture. Cybernetics's law of self- organization on which the VSM is based takes account of culture. In addition the function of S5 is primarily concerned with the identity, purpose and personality of an organization, and there is no way in which this function can be performed effectively if it does not consider organizational culture.

Flood and Jackson (1991) quote Ulrich as criticizing the VSM model for being based on the idea that it has a predetermined goal, and that it seeks to pursue this goal as efficiently and effectively as possible by delegating control over means to the parts of the organization. These parts, however, do not participate in goal determination. They are free only to the extent that they can develop alternative means of reaching the predetermined goal. This is true. The VSM does not discuss forms of participation so as to gather various stakeholders' points of view. However, it does not reject it either. The researcher sees no reason why participation cannot be used in conjunction with the VSM.

The cybernetics model has been criticized for emphasising stability at the expense of change. S4 plays an important part in scanning the environment for possibilities which the organization might take up. The S3, 4 and 5 seek to balance the demands for stability against the demands for change. The model thus allows for continual adjustments and review (Flood and Jackson, 1991).

3.9 SUMMARY

Cybernetics and the VSM emphasise that the organisation should be willing to learn and rectify mistakes through communication and control. The VSM provides organisations with tools to diagnose their current state, enabling them to deal with whatever it is that turns out to be their problem. Hence in the next chapter it is applied in the case of the schools with the aim of diagnosing the state of these systems.

CHAPTER 4: FINDINGS FROM THE RESEARCH

4.1 INTRODUCTION

In this chapter, the results of the study undertaken in three selected schools are presented after analysis using the VSM. The application of the VSM to this study is also justified.

4.2 APPLICATION OF THE VSM TO THE STUDY

According to Bless and Higson-Smith (1995:58), diagnostic evaluations are designed to inform researchers about the present situations within communities, to highlight current trends, forces and resources. The VSM is a diagnostic tool used in this case to diagnose the discourse in school reflected in the framework for pedagogic leadership from a systems thinking perspective. The VSM helps the researcher to recommend intervention strategies to rectify the weaknesses. The cybernetic technique and rules were developed so that they could account for the effectiveness of any system that is worthy of surviving (Beer in Espejo *et al.*, 1996: 18).

The following aspects, based on the conceptual framework for pedagogic leadership from a systems perspective, were explored in more details:

4.2.1 SYSTEM ONE (IMPLEMENTATION)

System 1 (S1) (Operation) – Performs the doing and producing function. It carries out the main tasks of the school and is the operational unit composed of people and departments that actually get the work of the school done

The responses related to this system are discussed below:

4.2.1.1 IMPROVING ACTIVE PARTICIPATION OF STUDENTS

Application of expert knowledge about student learning and development

Teachers are expected to be specialists in their subjects, as stated in the Norms and Standards of teachers. So teachers and principals were asked how they addressed this. It was found that they attend workshops that are organised by the department of education and they are enrolling in various universities to further their studies. Teachers in all the schools said that they attend workshops to get information on how to prepare lesson plans, worksheets, be up to date with the new developments and bring new resource materials. They even do research in libraries. 'Teachers should know students and students should be equipped with knowledge that they need' the school principal of school A said. Teachers in school B use different methods and strategies to impart knowledge to students. However students from C expressed the view that they understand better when they teach one another. There is also team-teaching, relevant to what is taught and the school brings in experts to show its usage after the end of the school day. They even learn from their students as students are asked to conduct research and to investigate certain topics. So they come up with new knowledge that teachers were not exposed to. 'They acknowledge others for development of students. A teacher that does not have enough knowledge of a certain topic is able to ask someone who has one to do it on his/her behalf', said the principal from school B.

Commitment to mission realisation by staff and students

Commitment from students, teachers and principals to realizing the school's vision and mission was questioned too. 'Students are committed but not all of them. Some teachers are more committed than the others who say how they can be committed even when they did not take part when the vision was developed. Others in school C question how one can be committed to something that is not known, since a copy of the vision and mission of the school is kept in the principal's office and not even communicated to them. Some teachers are dedicated, but not all of them; the principal is very dedicated and striving towards achieving school goals' students in School A said. School B students felt that they are committed as students in realisation of the school's vision and mission. They are motivated by external speakers who visit them, to show how the school can be committed. They also mentioned extra classes held with various teachers from other school to help them. School C students said they work hard, have extra classes, start at 6 o'clock together with their teachers and principal.

The teachers' views on commitment reflected undeniable commitment from everyone in the school, especially from those that were willing to try to realise school goals, vision and mission. Although most teachers were not aware of the school's vision and mission, they still reached a reasonably common understanding and everyone knows their duty. That was indicated by School A and B teachers as they do not have a clear vision and mission statement. Teachers from school C questioned how they could be committed to something they do not own or know.

Teachers are committed to bridging the gap between them and students according to the principal in School A. Students are given opportunities to be the best that they can be. School B prioritises grade 12 by ensuring that they get all the support they need until the examinations. They even bring in specialists to lend a hand. School C, in catering for the needs of students, have developed a wide curriculum and students are committed as they choose subjects they like. In other words they are not limited, said the principal.

4.2.2 SYSTEM TWO (CO-ORDINATION)

Various ways are used to co-ordinate functions in schools. They rely on multi-levels leadership, especially heads of departments who co-ordinate most of the functions to ensure the smooth running of the school. For example, a replacement is called in when one teacher is away and they work hand in hand with administration. In this way, S2 provides specific type of regulation enabling unit 1 to co-ordinate their activities. For effective functioning of the school they ensure adequate flow of information between operations and leadership. S1 requests for resources required to perform necessary activities from the principal through to multi-level teams. Then the regulatory centres' function is to ensure stability between leaders and the operation. S2 then ensures that resources for the operation are provided to ensure that operations do take place according to the agreed objectives of the schools. S2's work is also to focus on implementing decisions about common services and resources so that things can run smoothly. S2 is responsible for checking the use of resources, which enables it to report to the middle level leadership about activities of S1.

The responses related to this system are discussed as follows:

4.2.2.1 PLANNING, CO-ORDINATING, AND EVALUATING TEACHING AND THE CURRICULUM

Discharge of moral obligations concerning societal expectations of schooling

When students were asked whether or not teachers meet their expectation of teaching them moral values that are expected by society they had different opinions. It is noticed that almost all respondents from school A and B agreed that teachers meet their expectation, but not all of them. A student from School B said: ‘It depends on the individual educator if he wants to pass it on to us. It is not all of them who give us life lessons or advice’. But another student from the same school opposed that opinion by saying that teachers prefer to focus on the subject content rather than raise their views on moral values. It is not all of them who opt to deliver life lessons. Students in School C said that their teachers do not teach them about morals and values or what to expect in society. One of these students said: ‘They don’t care whether you have learned what they have taught you or not It remains with you to ensure that you get it into your head or not’.

Teachers, on the other hand, when asked whether or not they meet societal expectations were very certain. School A teachers sounded very enthusiastic and one said: ‘100%. In English, students are exposed through poetry; it is an on-going process and is in every part of the subject. They are taught not to cheat, and to hand in work on time. In addition, it is done across the board with all subjects. While teachers in School B agreed too, without hesitation, that they are expected by the society to mould students in order to fit into the society. But one educator felt that society does not cooperate. ‘We respect and teach respect to our students but it is not taught in the society’. Moreover, curriculum design involves moral values but there is no co-operation from parents to regularly check up on students’ progress. They come in when the student has failed.’

The principal from School A said that teachers in her school have implemented a system of values and morals. This is to ensure that in every subject that is taught, there must be morals and values in order to assist students who are not taught them by their parents in their homes. The principal in School B felt that due to the change in the education system a great deal has changed as guidance and religious studies are no longer offered, but she complimented the

department for introducing Life Orientation as an extension to moral values in schools. In addition, community structures (School Governing Body) are involved in the transmission of these values or beliefs. The principal from school C had the same opinion as the principal from school B.

Emphasis on pedagogic leadership rather than administrative functions of leaders

When respondents were asked about administrative work they had different views. ‘There is a lot of administrative work brought about by the new education system, in such a way that it interferes with working hours thus impacts negatively on our teaching We end up doing what we are not supposed to do such as moderation at a school level which should be done by our supervisors or advisors’, One of the teachers in school A said: ‘Administration is the heart of the institution and it is part of teaching and learning that cannot be separated. Its serves as a facilitator or assistance of teaching and learning’ The principal of school B said: ‘The school focuses on teaching and learning and not that much on administration’. The principal of school A said: “100%. Administration should be up to date to prepare for next year. Everything should be planned on paper daily, quarterly and yearly in such a way that if a teacher resigns another teacher may come and pick up the file and teach’. In school C, they felt that both aspects are of primary importance as one cannot exist without the other. Teachers said that they were ‘Preparing students for the life outside school’.

Preparing students for the life outside school

Students were asked whether their teachers prepare them for life outside school in their teaching. ‘It is difficult to say but we have to go out and experience it ourselves’, said a student from School A. Another student from the same school felt that teachers do, as they treat them like adults. ‘They advise us of what to expect especially at university as they give us no extra time for overdue work, saying this is how it is done in universities’. ‘We are told that life in university is different from high school, so they equip us with tools and hope of survival’. One of the students in School B said: ‘They prepare us for university not for exams’ Their teachers teach them that at university they are on their own, with challenges to face involving time management, study skills and so on. In addition they bring ex-matriculated

students back to school to share their experiences. School C agreed with School B but emphasized that tools are given but it depends on the teacher.

Teachers absolutely agreed with this question with a teacher from School A giving the example of English. 'We teach them about hopes and dreams, relationships, planning skills to survive in the working environment'. Another educator said that they are taught life skills not work skills e.g. punctuality, dress code, financial skills, environmental skills, etc. In School B, teachers indicated that they address this by organizing motivational talks from experts, career guidance sessions (courses, entry requirements, etc.) and excursions which receive minimum cooperation from parents. They integrate theory and practice.

The principal from School A said that they remind their students that whatever they do in cultural activities, and whatever they are taught in Life Orientation, is meant to prepare them for the outside world. School B's principal mentioned that students are geared to what to expect in the future as they give out information regarding what will occur after school and how to tackle challenges. Motivational speakers are also invited to this school. In School C, career guidance is used as they take grade 11 and 12 students to an open day in universities in order to identify their talents. Experts are invited to the school to give talks.

Improvement of pedagogic learning and practice

Respondents were asked about activities that the school has to facilitate knowledge and different answers were received. But sport was one dominant activity which ensures knowledge facilitation in all three schools interviewed across all respondents. Among many things mentioned were life skills, drama, hospitality, library orientation, newspapers, magazines, commercial speeches, group teaching, integration, debate, teaching and learning, Students' Christian Organisation and peer teaching. They are even taught about historical days e.g. Youth Day, Heritage; Nature Conservation, etc.

4.2.3 SYSTEM THREE (CONTROL)

S3 is responsible for internal and immediate functioning of the school; the everyday operations. The S3 function is primarily the responsibility of multi-level leadership who

perform their functions through holding meetings, writing reports and visiting classrooms. There is a two-way flow of information from this system. S3 sends instruction downwards from senior leaders and passes on information from the operation. Meetings are held at various intervals to share information. According to the VSM, SMT needs more information to perform its functions effectively than the information provided through meetings and reports. To this end, S3 needs directly to monitor the operations of S1 to ensure that it is operating effectively. This function is performed by S3* and it can be done by sending task teams to operations to do spot check or school audits.

S3 is also responsible for transformation of detailed interpretation of policy from the School Management Team downwards to S1 (Operations) to ensure that policies are implemented in the right manner and that they serve the purpose for which they were developed.

Responses related to this system are now discussed as follows:

4.2.3.1 ENSURING AN ORDERLY AND SUPPORTIVE ENVIRONMENT AND ALLOCATION OF STRATEGIC RESOURCES

Presence of multi-levels leadership in the staff

Almost all respondents said that there are various management structures in the school. 'There is a relationship between everyone in the school and there is delegation' School A teachers said: 'Grade co-ordinators are appointed to maintain order in each grade; there are subject heads for every learning area and everyone is assigned with a role to play in different subjects in School A'. The principal continued: 'School B has formulated committees, certain structures e.g. School Management Team (SMT) (LRC), etc. as part of leadership but they all have to go via the principal when they have made decisions. Everybody is involved and performs well in their tasks'. The same governmental structures also exist in School C.

Development of relationships and a sense of community

Students in these three school included sport as one of the things that has an impact in developing relationship among them. As in School B & C, there are 'houses' where different

students from different classes are grouped to compete with one another in various sporting codes. Apart from that there is a whole school involvement in all activities. ‘We involved *Ikhwezi* to facilitate relationship-building in the school especially within (sic.) teachers’ says a teacher in School B. Organising trips or excursions is another form of a relationship-building mechanism. Students are also building strong relationships with their community, as in School A, teachers said: ‘Students are involved in community-based programmes to assist people and students in the school that are in need.’ In the same school they have adopted certain schools to assist them on how to look after one another. Community-based programmes do not end in that school but school C indicated that they have initiated campaigns such as teenage pregnancy and crime awareness where students take centre stage in teaching the community and other students about these issues. Through speech and drama that the students organise, they have built a strong relationship with the community that support those initiatives.

4.2.4 SYSTEM FOUR (INTELLIGENCE)

S4 is the intelligence-gathering function that captures all of the relevant information about a systems total environment. This environmental information is distributed upwards or downwards depending on the degree of its importance. Without S4, a school can deal only with immediate concerns and is unable to look at the future and prepare itself accordingly. S4 is in place to alert the school about changes or themes that might affect it. It is also the responsibility for this system to distribute the information it gathers to all the systems especially to S3 which is the system it is suppose to liaise closely with.

The responses related to this system are discussed as follows:

4.2.4.1 PROMOTING AND PARTICIPATING IN TEACHERS’ LEARNING AND DEVELOPMENT

The engagement and empowerment of staff

It was found that schools have initiated numerous development plans to ensure that the staff is equipped with the necessary knowledge and skills. ‘Every week, we sit together, even with

other schools for the development of teachers' one educator said in school A. Teachers are updated with valid information. Programmes are put in place in school A and teachers are sent on courses with the School Governing Body (SGB) as a helping hand to ensure that this is happening. School B has a School Development Team and has also initiated programmes such as in-service training and assessment workshops. The principal in school B said that they have created a good a relationship through talks to ensure a good working environment but they haven't reached the stage yet that they want to be at. Teachers in school C attend various workshops organised by the department and visit libraries to keep abreast of new developments. The principal in school C also mentioned that the school invites subject advisors, teachers attend workshops and feedback is given to him. However they still fail to manage the National Curriculum Statement requirements. Teachers in school B and C expressed this concern.

Application of a re-culturing approach towards school improvement

The respondents were asked whether or not teachers are able to change their teaching strategies to keep up with change. School A indicated that teachers are able to cope with the change brought about by the new curriculum statement and technology in order to be relevant. Various technological media have been substituted in place of textbooks as one learner indicated. 'We prepare PowerPoint presentations on Laptops and computers and DVDs are used. Modern technology is used to make learning experience worthwhile' said teachers in school A. The principal echoed this by saying that they use technology such as computers as their teaching aids since all teachers have laptops in this school even their reading aids are technological orientated because this evokes interest in reading in kids more than the textbooks. However teachers in school B felt that it would have been better if the National Curriculum Statement was introduced as from grade 8. Students are, however, exposed at an early stage to the things that they are taught. This new change establishes independence and is learner-centred too. 'We are coping with the NCS but there is more that we can do. In terms of performance I am not too sure' the principal in school B said and. he continued "Departmental workshops assists teachers but they are not told how to manage the National Curriculum Statement,'. Teachers in school C did admit that they attend numerous workshops organised by the department of education 'but we still fail to manage the National Curriculum

Statement (NCS), really more still needs to be done to enable us to implement it' said one teacher from school C

4.2.5 SYSTEM FIVE (DIRECTION)

S5 performs the identity function. It is responsible for vision, direction, goals and setting of the mission statement. It provides the ground-rules and the means of enforcing them to ensure that the system is complete.

S5 is also concerned with the school's identity and it provides a school with a personality based on its common image to which all staff members can subscribe and feel happy to represent. S5 provide the school with strategic direction.

Responses related to this system are as follows:

4.2.5.1 ESTABLISHING GOALS AND EXPECTATIONS

Presence of shared vision and sense of mission about student learning

Respondents were asked whether there is a vision and mission statement formulated for student learning. Students indicated minimal knowledge about the mission and vision of their schools. One student in School A said that everyone should pass; another one in the same school said that they are striving for the best. A student from School B said that: 'Vision and Mission? We assume it is available but it is not achievable due to fact that there are changes in the education system'. It depends on the individual students for the mission to be realized, said one student. 'The vision is to produce quality education, rise to the challenge and shine', said a student from School C . Students from the same school said that Vision and Mission are based on discipline.

School A teachers reflected least knowledge of the school's vision and mission and said that a copy is available from the headmaster but it has not been communicated to them. 'School vision and mission was drafted but has not been adopted by School Governing Body and

parents. So we don't have it', says a teacher from School B. Teachers from school C said it is kept in the in the principal's office. It is not even communicated to them.

The vision of School A is to make sure that they provide education that will enable their students to take their place in society, the principal said. School B's principal said that the school vision focuses on academic and sport-performing students. It is the school's goal and commitment to begin on the first day of schooling and continue to the last day of schooling. 'We have performed well without a clear vision and mission', the principal continued. The school vision of school C is the self-realization of students through intellectual and physical aspects, co-operation, and discipline among teachers, students and parents and through the development of technical skills.

When respondents asked if the school vision and mission is shared among teachers, students, administrative staff and principal, they gave positive responses. Students in School A said that motivational speeches were delivered during the assembly. While students in School B said that they are all on the same level (teachers, students, principal) and working above expectation in realizing the school's vision. According to school C students, teachers are not all supportive whereas the principal is very supportive and committed.

Vision in School A is shared through what we plan to do each day. In addition staff meetings and development programmes are orchestrated. Teachers in School B suggested that stakeholders should sit down and agree upon the vision and mission in order for it to be shared.

'We have conducted a survey done by stakeholders; it was found that teachers and students were not exposed to them until the survey was conducted', said the principal of School A. The principal also said that students and teachers do not feel ownership of this vision and mission. 'Everyone should be represented when drafting the vision and mission statement. So that everyone feels the ownership and it is not imposed on them', claimed School B's principal. . The vision and mission are shared said the principal from School C by promotion of self-reliance among students; student development programmes like Noah-Gold exist and lastly, the curriculum of the school is diverse to cater for everyone said the principal.

4.3 RECURSION

It has to be noted that the VSM is based on the idea of recursion. The theory of recursion is that the structure of the whole is replicated in each of its parts. Operations or department of a school should be treated as effective systems in their own rights and must therefore possess their own trajectory from S1 to S5 (Espejo, 1996:98).

4.4. DATA ANALYSIS AND INTERPRETATION

4.4.1 SYSTEM ONE

There is commitment among students, teachers and the principal but there is more that can be done to enhance this, one principal said. Although teachers work very hard to ensure that students receive quality education they are not well exposed to the vision and mission nor to workshops that equip them with relevant knowledge and skills to improve their teaching approach but more to administrative work. It is interesting that all these schools have adopted a student-centred approach to teaching and learning in order to ensure that students take part in their own learning. Moreover, it is imperative that students learn on their own so that they can be independent citizens of the country. However students from school C did say that they learn better from others since other students understand how they learn as they know what their problems are when they do not understand. They then use approaches that promote their understanding. This stresses the importance for teachers to learn how students learn for their teaching to be effective.

4.4.2 SYSTEM TWO

It is quite impressive that students are exposed to the outside world. From all schools it was discovered that students are told what to expect after school life and how to deal with the challenges there are in various universities. To facilitate this, schools invite motivational speakers or students matriculated from that school to equip grade 12 students with forewarning about the challenges that they might face after matric. Integration between teaching and the real world is one of the key elements that were picked up as the most

important tool to ensure that students understand the practical application of what they are taught.

Schools have developed various activities to facilitate development of knowledge but non-relevant to NCS

It is quite a good thing that the change in curriculum has contributed to the moral and values that students possess today. However it is sad that fewer teachers are committed to instilling them.

4.4.3 SYSTEM THREE

Schools have developed various activities to facilitate development of knowledge. This includes sporting activities, speech and drama activities, festivals, peer education which is an important element as a support initiative within students and campaigns such as drugs awareness, teenage pregnancy, etc. All these initiatives ensure that the school is united as a mini-community; they also involve the community at large. Relationships are built within the school, as students through these activities get to know each other very well and, communication is built up between teachers and students. Excursions also form part of the relationship-development which is imperative. This is important to students because it is where the relationship is evaluated. But parents seem to be passive when required to respond. There is more to be done though, to ensure that relationships are well constructed and nurtured and that there is no one person who is superior to any other.

In addition, devolution of power and delegation is one of the key elements that were shallowly responded to by the respondents while it forms the basis of this research. Everyone participates in all the activities that each of these three schools conduct in realising their goals. This is seen as they have developed various management structures to ensure that everyone is reached from the individual learner, learning area, class and grade perspectives. Individual students get Learners Representatives Council members to address their concerns Besides the HODs; there are class managers and grade co-ordinators to manage each grade for maintenance of order. However they do not perform according to their rank and position, it looks like they are window-dressing.

4.4.4 SYSTEM FOUR

One of the shortfalls that teachers are faced with is that of responding positively to the new curriculum statement. This is not felt by them only but students and principals too. It is highly commendable that they do attend workshops that the department of education is organizing for them to be equipped with necessary knowledge and new developments in order to meet the demands placed on them as they incorporate in their teaching. However, they are not fit enough to cope with the new curriculum as they said bluntly that it would have been better if it had been introduced in the earlier levels. It is appreciated too that they enrol in various institutions to acquire better qualifications.

4.4.5 SYSTEM FIVE

In all three schools interviewed, teachers are fully aware that the mission and vision statements do exist. However, they were not involved when they were developed, and they are not known to them, neither are they shared with nor communicated to them. Basically, they are kept in the principal's office and he/she is the only person who knows it. This simply means that the principal is the only one who directs the school because everyone in the school has to live by these statements, both teachers and students. Students are not exposed to them but they assume that what made the school exists. It is quite embarrassing that one school said that they don't have a mission statement. This raises a question of what kind of learner the school envisages if he/she is not directed by the school's vision and mission. The question then is; what does the absence of a shared vision and co-values imply? It means that there will always be conflicts resulting from the way people see things and do them differently since something that aligns their actions and activities is missing. This will impact negatively on teaching and learning and on student outcomes. The shared vision creates the centring conviction that drives people to significant actions. If people do not buy into the school's vision, what they will do will be compartmentalised instead of developing strategies to link day-to-day actions to the shared vision which keeps all the activities of the school together while fuelling peoples' actions (Moloi, 2002:50). According to Senge (1990: 206) cited in Moloi, 2002: 49) 'It needs to be developed by the whole to adhere to, to be committed to it and realise it' as they develop it, they will not want to see it fail. Van Rensburg 2003:91) confirms that it is the vision that fuels people to work willingly. It also helps to align what is

done now and what will be achieved in the future. Without a vision we are unable to measure whether or not our actions are still moving in the right direction. Where there is a vision there is a dialogue and discussion. In this way conflicts are resolved, and relationships are developed leading to a relaxed environment resulting in effective functioning of the school where everybody is content - teachers as well as students because of good performance.

There is one school that has produced magnificent results throughout the years, but what kind of students are envisaged? How do they achieve this? These are questions that need to be answered.

When comparing the conceptual model in figure 2.1 with the empirical evidence, the following became clear:

- There was no inclusion of all the stakeholders in the development of the vision, mission and goals in all the three schools interviewed. All the participants said they were not included when it was developed; if it is available, it is kept in the principal's office and not brought to their attention nor communicated to them. Basically it is not shared.
- If it is not shared and it will result in ineffective teaching and learning and thus, impact negatively on student outcomes. Since it is not shared then some teachers are not committed to its realisation.

4.5. SUMMARY

This chapter represented the findings arising from applying the VSM to schools. The information derived from this application makes it possible to draw conclusions about the presence of pedagogic leadership from a systems perspective in the schools interviewed. Conclusions and recommendations will be discussed in the next chapter.

I want to list the general impressions of the research as well as my personal learning before I get to the conclusion of my study in the next chapter.

- As some of the interviewees reflected, I also wondered if things can be other than what they are in schools. From my own past experiences as a lecturer, I learnt that I

needed paradigm-shifting experiences that sparked new visions of how things can be done differently in teaching and learning and to understand how students learn.

- I have the impression that principals would heartily have welcomed the opportunity of becoming part of a process where they can share ideas and insights about their schools, plan together and develop the vision together so that teachers and students will be committed towards its realisation.
- The way people responded enthusiastically in the interviews convinced me that personal interaction in a safe environment concerning working conditions will go a long way in creating the atmosphere of unity and community. For this to happen, trust is a prerequisite. To have an open and less regulated environment does not lead in itself to participation, but leadership is needed since vision fuels peoples' activities.
- Changes sometimes bring unexpected results due to lack of training, skills and empowerment that are needed for those changes to be effective, especially with the effective implementation of Outcomes-Based Education and the National Curriculum Statement.
- Real leaders do not wait for the principal before taking initiatives and developing successfully with their teams as learning opportunities present themselves

4.6. HOW DOES THE EMPIRICAL WORK SPEAK/RELATE TO THE CONCEPTUAL MODEL IN FIGURE 2.1?

The model shown in figure 2.1 in chapter 2 described all aspects of the school where all parts are connected and interdependent for the school to function effectively. If one part is missing, disconnected or faulty, the school does not function effectively. Therefore everyone needs to work together towards the same goals for the school to function effectively. Going through the empirical work to assess how it speaks to the model, the following came up

- In all the schools, the participants interviewed said the vision is not shared when they have not been party to its creation and only have it communicated to them as an after-thought.
- The absence of a shared vision and shared values is a serious omission and it may result in the following:

- Conflict among the stakeholders resulting from different mental models and from doing opposing things as a result of the absence of a vision.
- There is no holism which this study is about. Stakeholders' actions are compartmentalised and day-to-day activities are not linked to the shared vision since it does not exist.
- There is no alignment of what is being done since there is nothing to align with..
- There is nothing that you can use as a measure to check whether things are done according to plan, or whether we are moving in the right direction.
- Shared vision creates a context for dialogue and direction, since in these schools there is no vision it means there are no relevant discussions taking place. (Moloi, 2002: 50).
- Teachers are not developed to manage the National Curriculum Statement (NCS) which is a core document which directs teaching and learning. This means that they do not teach with confidence since they lack knowledge and skills to teach effectively. This impacts negatively on student outcomes.
- The active participation of students is not encouraged due to the approach used which points back to the lack of necessary skills from the teachers.
- Since they don't pull in the same direction, things are not done in an orderly manner. This causes conflicts because of seeing and doing things differently. This has a negative effect on relationships and eventually impacts negatively on the whole school and hence on student outcomes.

The above issues impact negatively to the functioning of the schools. If one part is not functioning effectively, it affects the whole. As these shortfalls were identified, the recommended changes were noted and these will be discussed in the next chapter.

Since there is neither connectedness nor interdependence to enable the whole to function effectively to improve student outcomes the Department of Education still needs to do something about this situation.. It needs to be highlighted that *The White Paper* (1994) included factors of active participation of students but is still not being applied because of the above issues. The existing policies and programmes need to be reinforced and monitored to achieve an holistic approach. How? By organising workshops to equip teachers with relevant knowledge, skills, values and attitudes to cope with tremendous changes in education.

4.7 CONCLUSION

The findings presented in this chapter arise from applying the VSM to the study. The information derived from this application makes it possible to draw conclusions about the study. The conclusions and the recommendations will be found in the next chapter.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the conclusions drawn from conducting the study and recommendations based on the findings will be presented. The following is concluded and recommended:

5.1. CONCLUSIONS MADE FROM THE FINDINGS

One-to-one interviews and focus groups were used to elicit information on a systemic thinking perspective concerning pedagogic leadership. This was to investigate the presence of pedagogic leadership in schools. Interviews allowed respondents to review and further to qualify a systems perspective on pedagogic leadership. The information provided in the responses to the questions of the study provided the researcher with a detailed understanding of the views regarding the presence of eleven dimensions of pedagogic leadership from a systems perspective which have been condensed to five thematic areas, as outlined in the previous chapter then correlated with systems 1 to 5 of the VSM.

This research established the existence of pedagogic leadership from a systems perspective using the VSM. This was achieved by analysing the school procedures, processes, structures, identity, and intelligence/human resources with the aim of identifying the systems that inform the effectiveness of leadership in teaching and learning to improve the approach in teaching and hence, student outcomes.

The following are the conclusions drawn from the analyses:

5.1.1 SYSTEM ONE

In one school it was revealed from the interviews that students understand themselves better than teachers, which indicates that the teaching approach does not promote students' understanding. To this end, teachers still need to learn how students learn. McNeill *et al.* (2003: 2) and MacGilchrist *et al.* (2005:8) maintain that students understand other students better than teachers do. This was attributed to better understanding of where the problem was that impedes their understanding. 'What is it that they really do not understand?' (Davis

1984:3) claims that students understand where the problem is. Students understand one another and they understand what impedes their understanding. As confirmed by numerous researchers, amongst others, Naidoo (1996) and Bezuidenhout (1990). In a way one can confirm that the approach in teaching and learning does affect student outcomes.

It is concluded that teachers are overburdened by a great deal of administrative work that impacts negatively on their teaching.

Students indicated that they had a personal commitment to learning and they made comments about the support they get from their principals to promote their learning. From teachers responses it did appear that teachers learn together, from teacher to teacher. e.g. Teachers from neighbouring schools come to teach and also to learn from each other and to share information to suite their students. In addition, they even learn from students too .However Students argue that they learn better from one another as they teach each other. The power of connectedness, interdependence and partnering is commended as people are not islands; as they interact with their environments they learn and change.

5.1.2 SYSTEM TWO

Some teachers choose to overlook the moral obligation on the basis that parents are scared of their children and leave everything to the school as it came up with in the interviews.

5.1.3 SYSTEM THREE

It was revealed that multi-level leadership structures do exist but one does not see these performing functions that they were formed for. It looks like they were formed to fulfil the requirements of the Department of Education.

5.1.4 SYSTEM FOUR

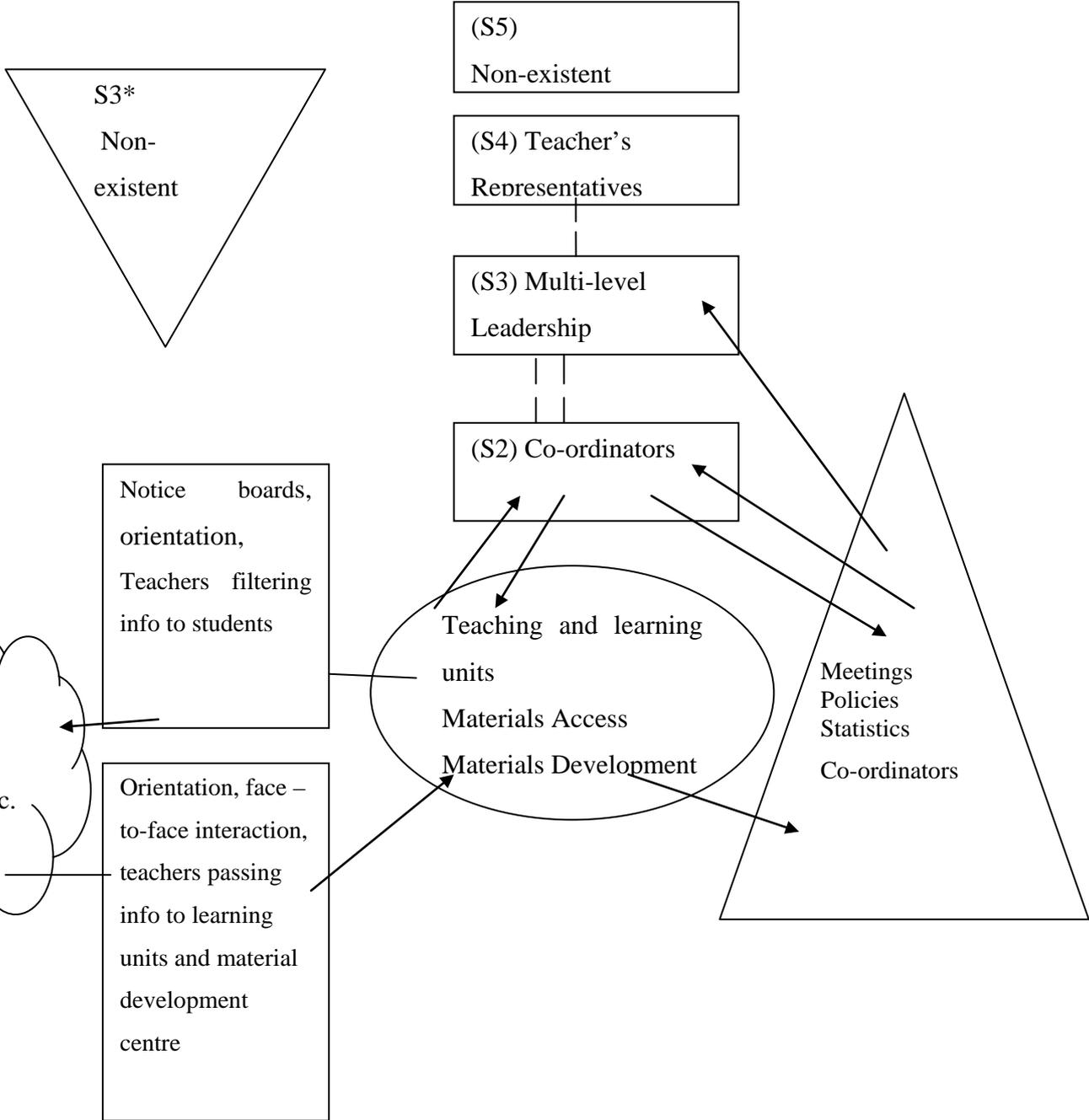
Much as teachers attend workshops to acquire new skills and knowledge they are still failing to manage the National Curriculum Statement (NCS). This was confirmed by one of the teachers during interviews as she bluntly said ‘it could have been better if NCS was

introduced as early as grade 8'. This was echoed by the principal as he said teachers are unable to implement the NCS requirements and he wished that more could be done regarding developing and equipping teachers with more knowledge, skills, values and attitudes to respond well to the curriculum statement. This is a very serious situation since this is a core document that guides teaching and learning. It seems that most schools are unable to handle the provisions of the NCS How, then, can teaching and learning be effective so as to improve student outcomes. The question posed in the introduction regarding the preparedness of teachers with regard to the National Curriculum Statement has been answered.

5.1.5 SYSTEM FIVE

In all the schools, the participants interviewed said the vision is not shared when it is developed or not communicated to them if it already exists.

Figure 6: The viable systems model of the schools



Adapted from Beer (1996:353)

The above figure depicts that S1 (operations) communicates with its environment which is the community, parents and the business world namely; suppliers, sponsors, with notice boards and teachers filtering information to students through one-to-one interaction. However this communication needs to improve to do more to initiate communication with the school users. Material development, teaching and learning units and material access seem to operate semi-independently since the school does not have goals that all the staff strive to achieve. Operation communicates with co-ordinators who are responsible for co-ordinating day-to-day activities.

Policies, meetings, co-ordinators and statistics are the tools that regulate the activities of S1. Co-ordinators take part in the regulation of S1 that is why there are arrows between the co-ordinators and the regulation centres (S2). S3 takes part in and is informed about the regulation activities of S1. That is how it keeps in touch with what is happening in operations. S3 also communicates with co-ordinators to get more information about S1, but this communication needs to be improved. There is an overlap between the functions of co-ordinators in S1 and multi-level leadership (S3). However, multi-level leadership individuals are seen as being ineffective and unable to perform their functions effectively.

S4 is active and this ensures that schools are kept in touch and up to date with what is happening in their environments. However this information is not effectively communicated to the other levels, as seen from the inability to manage the curriculum statement. That is why there is a single dotted line between S3 and S4. This represents the limited information flow between S4 and other systems.

S5 is non-functional because all the schools interviewed had no strategic direction and common image.

Figure 5 in chapter 3 demonstrated how the VSM diagram of an effective/ viable organisation looks. Comparing figure 6 above with figure 5 in chapter 3 clearly demonstrates that schools interviewed are not effective systems thus pedagogic leadership from a systems perspective does not exist.

5.2. RECOMMENDATIONS

5.2.1 SYSTEM ONE

Teachers still need to understand how students learn in order to reach out to them. This calls for the whole school culture to change that directly influences pedagogic approaches to this end. Teachers should be at the centre of the classroom activities and they should become facilitators of learning, allowing students the opportunity to take an active part in learning by implementing a student-centred approach to learning and teaching to promote understanding. This is what the teachers should do. That is, to ‘learn to learn how students learn’ (MacGilchrist *et al.*, 2005:5; McNeill *et al.*, 2003:2; and 2004:4). One can confirm that the wrong approach to teaching and learning can affect student outcomes negatively.

There is a need to improve teaching and learning through a systems thinking approach to leadership in teaching and learning. Knowledge and understanding of concepts should direct the way the learning in the classroom takes place. Teachers should ask students continuously what it is they want to know, and why they do not understand certain things, because it is through inquiry and reflection that mistakes are identified and then hopefully corrected (Harris *et al.*, 2003:115) It is true that from mistakes, people learn and grow. Teachers should be reflective practitioners since it is through reflection that mistakes are noted and from there corrections can be made (Schön, 1983:2).

Self-development and self-realization need to be promoted by having activities that will form partnerships and relationships amongst the students. Learner’s participation should be encouraged and students should be incorporated into all activities that the school engages in whilst parents should ensure that they support the initiatives that the school is planning by allowing their children to take part.

5.2.2 SYSTEM TWO

The school should play an integral role in teaching students about values and morals that the society expects them to possess. Every subject should instil these values and morals in them. It is the role of every educator to ensure that what he/she teaches contributes to the development of the values and morals of the students. Some teachers choose to overlook this moral obligation on the grounds that parents are scared of their children and leave everything to the school. Parents should work hand-in-hand with the schools in order for teaching and learning to be effective. They should be part of the child's learning by ensuring that they sign homework. It is not enough to give students the knowledge and skills but values and attitudes should be addressed and stressed too. This is even echoed by the Constitution of the Republic of South Africa in the New Curriculum Statement policy document. Much as the school should complement the home, parents still need to be supportive of the school. It is important for the parents to work together with the school to realize that synergy that comes from the sum of the parts to form the whole making it function effectively. A society with no moral and values is a dead society. If this is overlooked then what kind of nation is being built?

There should be a balance between teaching and administrative work as they are equally important and cannot be separated. If one is lacking, the school will not function effectively. This entails proper planning during the whole school year. Teachers are expected to be the designers of the learning programmes. This should be done in such a way that administration does not interfere with teaching and learning. However, as teachers are expected to affect some administrative tasks. Naidu (*et al.*, 2008: 86) warn that '*... teachers carry enormous workloads and receive no administrative support. This administrative responsibility prevents them from spending sufficient time on their primary responsibility of teaching. This, in a way affects the quality of teaching and learning*' and hence student outcomes.

To counteract this, teachers are to be given support when doing administrative work like an administrator to enter marks in the computer, work the final mark for Continuous Assessment (CASS), summative assessments and photocopying assessments and handouts to ease work of the administration for the whole school. In addition it is quite important that the school ensures that files are well-managed, students' work is properly assessed and that various forms of assessment are conducted.

One principal said that administration and teaching and learning cannot be separated, however, it is recommended that teacher assistants should be appointed in high schools as well as in primary schools. This will ease the burden. Since teachers expressed their concerns during the interviews regarding this issue. They will then have more time devoted to the core business of schooling, which is teaching and learning, which should result in high student outcomes.

It is recommended that more workshops should be relevant to the core business of teaching and learning that will better equip teachers to cope with the National Curriculum Statement (NCS) which is a core document for teaching and learning. Education officials should consider introducing it as early as grade 8. Workshops organized should be relevant to the new topics if they have to serve the purpose, because in the interviews conducted it came up that teachers have attended numerous workshops but it is surprising that they still do not cope with the new National Curriculum Statement (NCS).

5.2.3 SYSTEM THREE

An atmosphere conducive to learning is a must for effective teaching to take place. People that are assigned to do work must be monitored to check whether they are doing their work diligently or not. Most importantly this applies to teachers and Heads of Department because teachers sometimes go to classes but do not teach.

The schools should ensure that the environment is conducive for teaching and learning and that it is safe and relaxed. Therefore the distribution of strategic resources is important to avoid frustration and conflict. The facilities that the school possesses must be there to benefit the student. The schools are encouraged to promote life-long learning among students by ensuring that they provide all the resources that will enable them to increase their knowledge and attain more skills, evoke the interest in and culture of reading. Basically necessary control must be exercised for schools to function effectively.

5.2.4 SYSTEM FOUR

Although schools delegate power to ensure that everyone has a duty, responsibility or role to play it is not enough, because principals still remain at the steering wheel in schools, with a final decision on issues being their prerogative.

It is imperative that decision-making must not always come from the top level only. Even teachers who are entitled to perform duties of creating the kind of student that the school envisages should be considered. The voice of students should be listened to and adhered to. Multi-level leadership is about togetherness and collective decision-making. Numerous researchers echo the idea of collaboration to bring about effective functioning of a school. MacNeill *et al.*, (2003:7), MacGilchrist *et al.*, (2005:7), Robinson (2007), Harris *et al.*, (2003:115) and Naidu *et al.*, (2008:85) amongst others. Haines *et al.*, (2005:11) concurs 'People have a natural desire to be involved and provide input into decisions that affect them before the decision is made.' Hence participatory management is essential for effective leadership.

It is recommended that multi-level leadership should be equipped with necessary knowledge and skills to enable them to function effectively. It is possible that they do not perform well, because they do not know what to do or where to start, there should be a way of monitoring these teams to ensure that they are actually performing functions that they were created for. This may bring improvement in teaching and learning and to students' outcomes.

5.2.5 SYSTEM FIVE

When the school develops its vision and mission statement it should involve all the stakeholders so that everyone has a share in developing it. This enables them to understand the statement and to feel that they are part of it and living to realize it. Since they own it they will be committed to see it being realized as they do not want to see what they own failing. Together they will see it succeeding. Haines *et al.* (2005:11) concurs when he says 'People have a natural desire to be involved and provide input into decisions that affect them before the decision is made.' Hence participatory management is essential for effective leadership.

Van Rensberg (2003:22) argues that ‘Leaders touch a heart, before they ask for a hand and people buy in to the leader, then the vision’ They would certainly buy in since principals, in the context of this study, need to develop and nurture the capacity of the members of the school community and teachers who have direct influence in the teaching and learning of students, hence their outcomes.

It is important that the vision and mission statement be kept visible in the public eye to symbolize what the school is all about, rather than being kept in the principal’s office. These should also be communicated to all the stakeholders and they should constantly be reminded about them. Teachers should always consider them when planning their lesson to check whether or not what they are teaching is aligned to it and whether or not they are still on the right track (Moloi, 2002:50). All their activities and actions including day-to-day plans should be aligned to it. The vision should be shared by everyone within the school (Senge 1990:204) since it fuels people’s actions since these have a direction and a purpose in what they are doing. It is also recommended that a whole school approach is used to avoid conflicts and to achieve these goals; teachers should strive for the same success.

5.3. CONCLUSION

5.3.1 WHAT HAVE I LEARNT FROM THIS STUDY? – REFLECTION

I described expectations of leadership that influence the day-to-day operations and behaviour of the teachers and students on aspects such as pedagogic practice, teaching and learning and students’ outcomes. The message that people will get from leadership is that they prefer security, take only calculated risks, relate to people freely and focus on control and accountability to the stakeholders Leadership culture refers to the following basic assumptions and beliefs:

- People should feel free to innovate. Intrinsic motivation is due to the presence of vision, and people should feel valued for who they are and for what they can contribute. They are aware of the ‘bigger picture’ and are able to adapt, relatively easily, to changes. People enjoy taking initiatives that can improve the individual and can make an impact on the whole (school) since the actions of the part affect the whole.

Teachers learn from their students when students are asked to conduct research in certain topics. It is evident that students learn more when they learn on their own since the student draws on his/her search for knowledge and it is possible that the teacher might not have covered that aspect. Alternatively another writer might have expressed it better than the teacher. Therefore, self-discovery needs to be encouraged in students. They should take responsibility for their learning if they are to be well-equipped to cope with the rapid transformation taking place in a turbulent environment.

In describing the problem situation as I see it, I pointed in chapter one, to the major transformation in South African society. The complexity of challenges that face leaders and schools in this regard is definitely not a minor issue. The one aspect has to do with the people in the school, the other with the dynamic of the school in an ever-growing number of variables and relationships in the wider social milieu in which the school exists. With regard to the first set of challenges that the leadership has to face we can include emotions, thinking, beliefs, values and dreams of people that need to be fully integrated into the working environment. These needs exist over and above their technical, specialised competencies. To put it differently, people must be understood, valued, treated with respect and welcomed in the working community as unique individuals but also regarded holistically as beings with mind, spirit, body and soul. This is especially important to bear in mind in the development of vision.

The other set of challenges that I referred to can be described as the challenge of complexity. The basic change is that from simplicity to complexity. Changes such as the difference between kinds and ranges of information and knowledge that need to be integrated for sound decisions to be made and practices to be followed in coping with the National curriculum Statement are significant. After reviewing literature that is relevant in one way or another to schools and leadership, I now can make the following conclusions with regard to leadership in teaching and learning from a systems perspective in schools:

It will be difficult, if not impossible to remain aloof from the forces of change in a turbulent environment. The more aware leaders are of the postmodern worldview, the better placed they are to work with it not against it. Working against it will have the effect that the school

culture is not aligned with the worldview of our day which in the end probably will prove not to be sustainable. Institutions of learning cannot afford to operate in closed system cultures with narrow-mindedness. The more 'big picture' thinkers in the school, the better equipped it is for the future in the world of work. The researcher is of the opinion that thinking globally and acting locally is the route to take.

For sustainability and wellness in school, it is important for the principals/ leaders to value the emotional and spiritual health of their stakeholders while remaining effective in the core business of teaching and learning. This includes the powerful process of community building around a vision that communicates meaning and significance.

The research results indicated that:

No-one challenged the importance of flexibility and responsiveness. No-one indicated that they would be happy with being excluded from the thinking processes, leaving strategy to others and only left to concentrate on operational functions. The need exists for fundamental change at the level of developing vision and mission. Administration work interferes with teaching and leadership improvement.

What would the change involve? How will the change be set in motion?

A change to a leadership culture implies the development of leaders. As the number of members that demonstrate leadership skills grows and those skills improve, a new culture will take root and grow at the same time. Leadership is more intrinsic. It implies personal growth in various areas of an individual's life. The facilitation of that growth is the key to the process.

Dialogue versus self-interest and specialization

Whatever the change process might be, extensive dialogue between people in the school should be facilitated and encouraged, especially between teachers and students. Fostering this is to fight the culture of self-interest, defensive behaviour and entitlement that goes with specialization in bureaucratic environments. It is through serious dialogue that the gaps

amongst the stakeholders are bridged. It is through dialogue that understanding of differences grows and creativeness flourishes.

5.3.2 SUMMARY

The conceptual framework for pedagogic leadership proposed by MacNeill *et al.*, (2003:8) proposes that pedagogic leadership will be evident by existence of the eleven dimensions which have been condensed into five thematic areas Robinson's (2007:4) These five themes have further been used to represent five systems of the VSM applied to diagnose of the discourse in schools, reflected in the conceptual framework for pedagogic leadership from a systems perspective. From the empirical evidence, the following emerged:

5.3.2.1 SYSTEM ONE

The approach used does not encourage the understanding of how students learn. This impacts on students' active participation. Since the vision and mission is not shared, there is no full commitment to their realization.

5.3.2.2 SYSTEM TWO

The co-ordination of the everyday activities of the school is the responsibility of the level leader. Since there is no vision and mission to align the activities, there is the general assumption that teachers know their roles, so they co-ordinate themselves by doing what they are supposed to. Teachers are not coping with the management of the National Curriculum Statement (NCS) which should be the core document that regulates teaching and learning.

The huge amount of administrative work impacts negatively on teachers' work and some teachers overlook morals and values of the society in their teaching. One wonders then what kind of students they envisage when they overlook such an important aspect.

5.3.2.3 SYSTEM FOUR

Multi-level leaders exist but they are not fully empowered to perform their roles. Teachers are not coping with the management of the National Curriculum Statement (NCS).

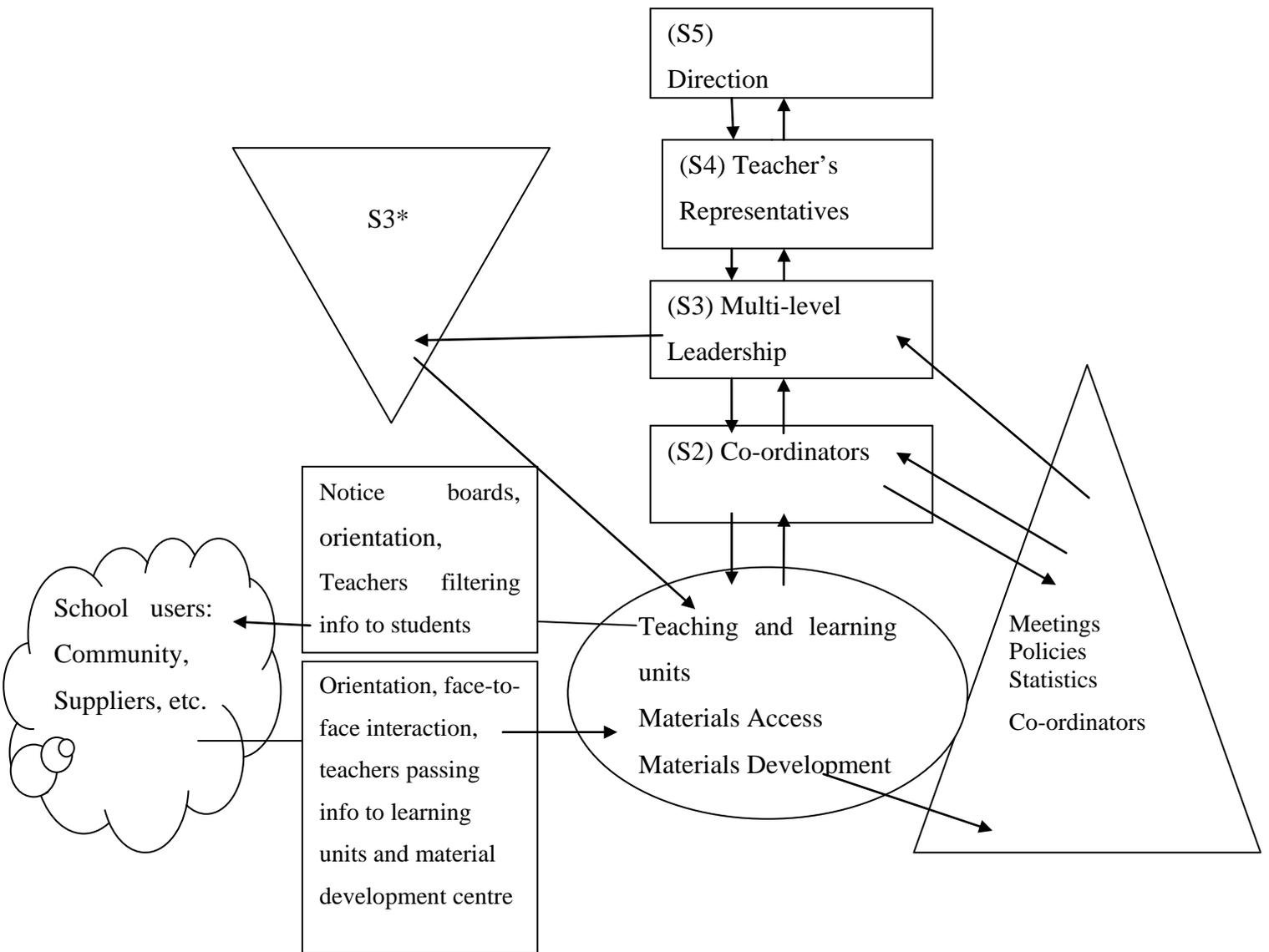
5.3.2.4 SYSTEM FIVE

It is evident that out of five systems only one seems to be effective and four are in effective. On the basis of the above findings, the researcher can conclude that much needs to be done as far as pedagogic leadership from a systems thinking perspective is concerned for the approach in teaching and learning to be improved resulting in high students' outcomes. The most crucial aspects of pedagogic leadership are not present in the three schools interviewed. All three schools involved in the study have no strategic directions or common image.

5.3.2.5 THE IMPLEMENTATION OF THESE RECOMMANDATIONS

The implementation of these recommendations will result in the schools having a viable/ effective system. Below is the redefined VSM of the schools depicting what the VSM would look like if the above recommendations were implemented.

Figure 7: The viable systems model for effective schools



Adapted from Beer (1996:353)

Figure 7 is an improved VSM for schools

There has to be increased communication between operations and co-ordinates (the regulatory centre).

Communication also needs to be strengthened (S2) and multi-level leadership (S3).

Multi-level leadership (S3) should be more visible in operations centred on monitoring activities and it must also stay informed as to what is happening at the operations level.

Teacher representatives (S4) should feedback on their activities to the higher-level leadership and operations.

The heads of the school management team should decide on the leadership style to be followed and should also drive all the necessary development of the schools to give direction.

This study is about problem-solving research. This study was used to establish the existence of pedagogic leadership from a systems thinking perspective aiming both to acquire knowledge and to improve the situation, (Checkland & Howell 1998:9). The outcome of the study is expected not just to provide insight into the subject under investigation but also to lead to some kind of resolution of the identified problem as explained above. This will assist in outlining useful interventions for resolving the problems identified. This study will help educators to reflect on their teaching strategies and to establish whether or not they have made an impact on equipping students with appropriate knowledge and skills that will enable them to cope with the demands of a turbulent environment. It must be said that the outcome of the study is not said to be an absolute one as Checkland & Howell (1998:12) highlight. Social phenomena are not homogenous through time, but are created and recreated in a continuous social process. Thus it is possible that a better and improved outcome will be achieved by a similar social enquiry in the future.

REFERENCES

- Ackoff, R. 1999. *Re-creating the Corporation: a design of organizations for 21st century*. New York: Oxford University Press.
- Badenhorst, D. C. 1995. *Implications of the "New Science" for Educational Planning*. South African Journal of Education, Vol. 15 (1), 13-15.
- Bailey, K.D. 1989. *Methods of Social Research*. 3rd ed. New York: Free Press.
- Beer, S. 1985. *Diagnosing the System for Organisation*. Glasgow: Harper Collins.
- Beer, S. 1989. *The Evolution of a Management Cybernetics Process*. Glasgow: Harper Collins.
- Beer, S. 1995. *The Managerial Cybernetics of Organization: the heart of enterprise*. Chichester: John Wiley & Sons.
- Bell, R. 1999. *Doing your Research Project: a guide for first time researchers in educational and social science*. Open University Press: England.
- Berger, K. S. 2003. *The Developing Person through Childhood and Adolescence*. New York: Worth Publishers.
- Bhola, S. 2002. *Studies in Philosophy and Education*. Netherlands: Kluwer Academic Publishers.
- Boyer, E. 1997. *Scholarship Reconsidered: Priorities of the Professoriate*. Carnegie Foundation for the Advancement of Teaching.
- Browne, E. 2005. Structural and Pedagogic Change in Further and Higher Education: a case study approach. *Journal of Further and Higher Education*. 29:1, 49-59.

Berger, K. S. 2003. *The Developing Person through Childhood and Adolescence*. New York: Worth Publishers.

Bezuidenhout, J. 1998. First-year university students' understanding of rate of change, *International Journal of Mathematical Education in Science and Technology*, 29 (3), 389-299.

Babbie, E. 1992. *The practice of social research*. California: Wadsworth.

Botha, J. 2006. A Whole School Approach. *South African Journal of Higher Education*. Vol. 6 (2). South Africa: Education Association of South Africa.

Caulfield, C.W. and Maj, S.P. 2002. A case for systems dynamics, *Global Journal of Engineering education*, Vol. 6, No. 1, 25-33.

Chapman, G.1977. *Human and Environmental Systems*. Academic Press: New York.

Checkland, P. 1990. *Systems Methodology in Action*. Chichester: Sussex. United States.

Checkland, P. 1998. *Information, Systems, and Information Systems*. Wiley: Chichester.

Checkland, P. 2005. *Systems Thinking, Systems Practice*. New Edition. Wiley: Chichester.

Chetty, P. 2003. *An Investigation into Staff Participation in the Management of three Secondary Schools in the Phoenix-Verulem District*. Durban South Africa.

Chisholm, L. 1995. *A review of the Year: Quarterly Review of Education and Training in South Africa*. Vol.2. No. 4.

Christie, P. 1998. Schools as organizations: the breakdown of the culture of learning and teaching in South African schools. *Cambridge Journal of Education*, 28 (3).

Classen, J. C. 1998. Outcomes Based Education: Some insights from complexity theory. *South African Journal of Higher Education*. Vol. 12(2) 34-39.

Clemson, B. 1984. *Cybernetics: a new management tool*. Britain: Abacus Press.

Cohen, L. 1995. *Crossroads in Mathematics: Standards for introductory college mathematics before Calculus*. American Mathematical Association of Two-Year colleges.

Cotton, J. 1995. *The Theory of Learning Strategies: an introduction*. London: Kogan.

Creswell, J. W. 1994. *Research Design: Qualitative & Quantitative Approaches*. California: Sage Publications.

Davidoff, S. & Lazarus, S. 1997. *An Organizational Development Approach*. Cape Town: Juta.

Davies, R. B. 1984. *Learning Mathematics: The Cognitive Science Approach to Learning Mathematics*. Croom Held Ltd.

DeVos, et. al. 2005. *Research at Grass Roots: For Social Sciences and Human Professions*. South Africa: Van Schaik.

Espejo, R. And Harden, R. (eds.). 1996. *The Viable System Model: Interpretations and Applications of Stafford Beer's VSM*. Chichester: John Wiley and Sons.

Espejo, R. and Gill, A. 2002. *The Viable System Model as a Framework for Understanding Organizations*. Chichester: John Wiley.

Flood, R. L. and Carson, E. R. 1998. *Dealing with Complexity: an introduction to the theory and application of systems science*. 'Fifth discipline': Review and discussion. Systemic Practice and Action Research. 2 (3).

Flood, R. L. and Jackson, M. C. 1991c. *Critical Systems Thinking: Directed Readings*. Chichester: Wiley.

French, W. L and Bell, Jr C. H. 1995. *Organization Development: Behavioural science interventions for organization improvement*. Englewood- Cliffs, NJ: Prentice- Hall International.

Godden, J., Buckland, P. Coombe, C., Dladla, N., Madisha, W., Manhanjana, N., Thurlow, M., Ngcongco, R., & McLennan, A. 1996. *Report of the Task Team on Education Management Development. Changing Management to Manage Change in Education*. Pretoria: Department of Education.

Gultig, J. Ndhlovu, T. and Bertram, C. (eds.) 1999. *Creating People-Centred Schools: school organization and change in South Africa*. Cape Town: Oxford University Press.

Hilder, T. 1995. *The Viable System Model*. Unknown: Canendish Software.

Haines, S. Aller-Stead, G. and McKinlay, J. 2005. *Enterprise-Wide Superior Results Through Systems Thinking*. United States of America: John Wiley & Sons, Inc.

Harely, K., Bertram, C. & Mattson, E. 1999. *Classroom Studies (Researching teacher roles in Policy and Practice)*, School of Education, training and Development University of Natal, Pietermaritzburg.

Hughes-Hallet, D. 1991. 'Visualisation and Calculus Reform'. In W. Zimmerman & S Cunningham (eds.), *Visualisation in Teaching and Learning Mathematics*, MAA Notes.

Jackson, M.C. 1991. *Systems Methodology for the Management Sciences*. New York: Plenum Press.

Jackson, M. C. 2000. *Systems Approaches to Management*. New York: Plenum Publishers.

Jackson, M. C. 2002. *Systems Thinking Approach to Management*. New York: Plenum Publishers.

Jackson, M. C. 2005. *Systems Thinking Approach to Management*. New York: Plenum Publishers.

Johnson, D. 1995. Introduction: the challenges of educational reconstruction and transformation in South Africa. *Comparative Education*, 31 (2), June.

Joyce, B., Calhoun, E., & Hopkins, D. 1997. *Models of Learning -tools for teaching*. Philadelphia: Open University Press.

Joyce, B., Hopkins, D. 1999. *The New Structure of School Improvement: Inquiring Schools and Achieving Students*. Philadelphia: Open University Press.

Kauffman, S. A. 1995. *At Home in the Universe*. New York: Oxford University Press.

Krantz, S. 1991. *Notices of American Mathematical Society*, 42 (10). 1116.

Leonard, A. 1999. A viable system model: consideration of knowledge management, *Journal of Knowledge Management Practice*, August 1999.

Litoselliti, L. 2003. *Using Focus Group in Research*. London: Continuum.

Lubisi, C., Parker, B., & Wedekind, V. 1998. *Understanding Outcomes- Based Education: Teaching and Assessment in South Africa*. Cape Town: Oxford University Press.

MacGilchrist, B and Buttress, M. 2005. *Transforming Learning and Teaching*. London: Paul Chapman Publishing.

McGregor, A. and McGregor, R. 1992. *McGregor's Education Alternatives*. Cape Town: Juta.

MacNeill, N. et al. 2003. *Beyond Instructional Leadership: Towards Pedagogic Leadership*. Auckland: Australian Association for Research in Education.

MacNeill, N. & Silcox, S. 2003. *Pedagogic Leadership: putting professional agency back into learning and teaching*. Auckland: Australian Association for Research in Education. Volume archive issue.

MacNeill, N. et al. 2004. *Investigating principal leadership of pedagogic renewal using Rasch and LISREL and analyses*. Auckland: Australian Association for Research in Education.

MacNeill, N., Cavanagh, R. and Silcox, S. 2005. *International Electronic Journal for Leadership in Learning*. An electronic academic for leaders in education journal vol. 9, no. 2.

MacNeill, N. & Silcox, S. 2006. Catalytic teachers' roles in pedagogic change. *An Electronic Journal for Leaders in Education*. Auckland: Australian Association for Research in Education. Vol. 4, issue 36.

MacNeill, N. & Boyd, R. 2006. Re-examining Management by Walking Around. *An Electronic Journal for Leaders in Education Academic*. vol. 4, issue 22.

Meyer, T and Boninelli, I. (ed.) 2004. *Conversations in Leadership: South African Perspectives*. South Africa: Knowledge Resources (Pty) Ltd.

Moloi, K. C. 2002. *The School as a Learning Organisation: Reconceptualising school practices in South Africa*. Pretoria: Van Schaik Publishers.

Mouton, J. 2002. *Understanding Social Research*. Pretoria: Van Schaik.

Naidoo, R, 1996 *Technikon Students' Understanding of Differentiation*. SAARMSE.96 proceedings.

Naidu, A., Joubert, R., Mestry, R., Mosoge, J. & Ngcobo, T. 2008. *Educational Management and Leadership: a South African perspective*. Cape Town: Oxford University Press.

Nixon, J., Martin, J., McKeown, P., and Ranson, S. 1996. *Encouraging Learning Towards a Theory of the Learning School*. Britain: Open University Press.

O' Brien, F. (n.d.). *Manual: Introduction to Community Development*. Unpublished. University of Natal, Durban.

Parker, B. 1998. *South Africa's New curriculum Framework: Knowledge*. Cape Town: Oxford University Press Southern Africa

Republic of South Africa: Department of Education, 2003. *National Curriculum Statement Grades 10-12 (general)*. Pretoria: Seriti Printing (Pty) Ltd.

Robson, C. 1996. *Real World Research: A Resources for Social Scientists and Practitioner Researchers*. United States of America: Blackwell Publishers Cambridge.

Robinson, V. 2007. How school leaders make a difference to their students. *Keynote address to International Confederation of principals*. New Zealand: University of Auckland.

RSA. 1996. *South African Journal of Education* Vol 26(2) 14, 342. South Africa: Education Association of South Africa.

Schön, D. A. 1983. *The reflective Practitioner*. New York: Basic Books.

Schön, D. A. 1987. *Educating the Reflective Practitioner* San Francisco: Jossey- Bass.

Senge, P. 1999. *The fifth Discipline: the art and practice of the learning organization*. New York: Doubleday.

Stacey, D. 2003. 4th Ed. *Strategic Management and Organizational Dynamics: the challenge of complexity*. Britain: Prentice Hallvan Rensburg, W. (ed.) 2003. *Education as Change*. Vol. 7, no. 2.

Stevens, M. 2003. *Selected Qualitative Methods*. Available online at http://symptomsearch.nih.gov/chapter_7/index.htm.

Taylor, P. 1996. *Sensuous Scholarship*. Pennsylvania Press: Philadelphia.

Van Rensburg, 2203. *Changing from Management to Leadership*. University of Kwa-Zulu Natal.

Welman, J.C. and Kruger, S.J. 1999. *Research Methodology for the Business and Administrative Sciences*. Johannesburg: International Thomson Publishing.

Welman, J. C. and Kruger, S. J. 2003. *Research Methodology 2nd Ed*. Cape Town: Oxford University Press Southern Africa.

Westhuizen, P. (e.d.) 2004. *South African Journal of Education* Vol 24(1). South Africa: Education Association of South Africa.

Wiener, N. 1961. *Cybernetics: control and communication in the animal and the machine*. New York: John Wiley and Sons.

APPENDIX A

Interview Schedule

The purpose of this survey is to solicit information from principals, teachers and grade 12 students regarding the existence of leadership in teaching and learning in their schools. The information you provide us will go a long way in verifying and understanding the above. The interviews should only take 20-45 minutes. In this interview, you are requested to give your sincere responses to all the questions asked.

STUDENT'S FOCUS GROUP INTERVIEW SCHEDULE

1. In the teaching of any subject, teachers are expected to teach students morals of society.

1.1 How do your teachers meet these expectations?

1.2 How does the teaching of your teachers prepare you for life outside school?

2. Each school is expected to have a vision, mission, and goals about student learning.

2.1 What do you understand to be the main goals of your school?

2.2 Tell me, how are they shared by your school community for them to be achieved?

3. In each school, students, teachers and the principal are expected to be committed to the realisation of their school mission statement and goals.

Please explain to me how are:

3.1 Students committed towards the realisation of your school's mission statement?

3.2 Teachers committed towards the realisation of your school's mission statement?

3.3 How is the Principal committed towards the realisation of your school's mission statement?

4. In each school there should be activities which create knowledge that is shared throughout the school. Tell me about the activities or programmes that you engage in where knowledge is gained and shared throughout the school.

5. Each school is expected to have activities that facilitate development of relationships and a sense of community at school

What activities exist at your school; which facilitate the development of:

5.1 Relationships and

5.2 A sense of community?

6. At each school teaching should change with the times if it has to improve and survive.

How do you cope with the tremendous changes taking place in education?

FOCUS GROUP INTERVIEW SCHEDULE FOR TEACHERS

1. In the teaching of any subject, teachers are expected to teach students morals of society.

1.1 How do you meet these expectations?

1.2 How does your teaching prepare students for life outside school?

2. Each school is expected to have a vision, mission, and goals about student learning.

2.1. What do you understand to be the main goals of your school?

2.2. Tell me, how are they shared by your school community for them to be achieved?

3. In each school there should be activities which create knowledge that is shared throughout the school.

3.1 Tell me about the activities or programmes that you engage in where knowledge is gained and shared throughout the school.

4. Each school is expected to have activities that facilitate development of relationships and a sense of community at school. What activities exist at your school that facilitate the development of:

4.1 relationships and

4.2 a sense of community?

5. At each school teaching should change with the times if it has to improve and survive.

5.1 How do you cope with tremendous changes taking place in education?

6. In the process of teaching, each educator is expected to apply expert knowledge towards students' learning and development.

6.1 How do you apply your expert knowledge towards students' learning and development?

7. In the process of teaching, each educator is expected continually to improve leadership in teaching and learning.

7.1 How do you continually improve leadership in teaching and learning to improve learning and development?

8. Teachers at each school are expected continually to engage in staff development programmes if they are to remain effective in their teaching.

8.1 How does your school engage staff in development programmes?

9. Each school is expected to show multi-leadership for teaching to be effective.

9.1 How does your school exhibit multi-leadership of staff for teaching to be effective?

10. The primary role of any school is teaching and learning while administrative functions are auxiliary.

10.1 How do you rate teaching and learning as against administrative duties in this school?

10.2 How does it impact on your teaching and learning?

PRINCIPAL'S ONE-ON-ONE INTERVIEW SCHEDULE

1. In the teaching of any subject, teachers are expected to teach students morals of society.

(i) How do your teachers meet these expectations?

(ii) How does the teaching of your teachers prepare students for life outside school?

2. Each school is expected to have a vision, mission, and goals about student learning.

- (i) What are your school vision, mission and goals about student learning?
 - (ii) How are your schools vision, mission, and goals about learning shared by the school community?
3. In each school, teachers and the principal are expected to be committed to the realisation of their schools mission and goals.
- Please explain to me how are:
- (i) Students committed towards the realisation of your school's mission statement?
 - (ii) Teachers committed towards the realisation of your school's mission statement?
 - (iii) How is the Principal committed towards the realisation of your school's mission statement?
4. In each school there should be activities which create knowledge that is shared throughout the school.
- (i) What activities or programmes are used to create knowledge that is shared throughout your school?
5. Each school is expected to have activities that facilitate development of relationships and a sense of community at school?
- What activities exist at your school; which facilitate the development of:
- (i) Relationships and
 - (ii) A sense of community?
6. At each school teaching should change with the times if it has to improve and survive.
- (i) How does teaching at your school change with times to improve and survive?
7. In the process of teaching, each educator is expected to apply expert knowledge about student learning and development.
- (i) How do teachers apply their expert knowledge towards students' learning and development?
8. In the process of teaching, each educator is expected continually to improve leadership in teaching and learning.
- (i) How do teachers continually improve leadership in teaching and learning to improve learning and development?
9. Teachers at each school are expected continually to engage in staff development programmes if they are to remain effective in their teaching.
- (i) How does your school engage staff in development programmes?
10. Each school is expected to show multi-leadership for teaching to be effective.

(i) How does your school exhibit multi-leadership of staff for teaching to be effective?

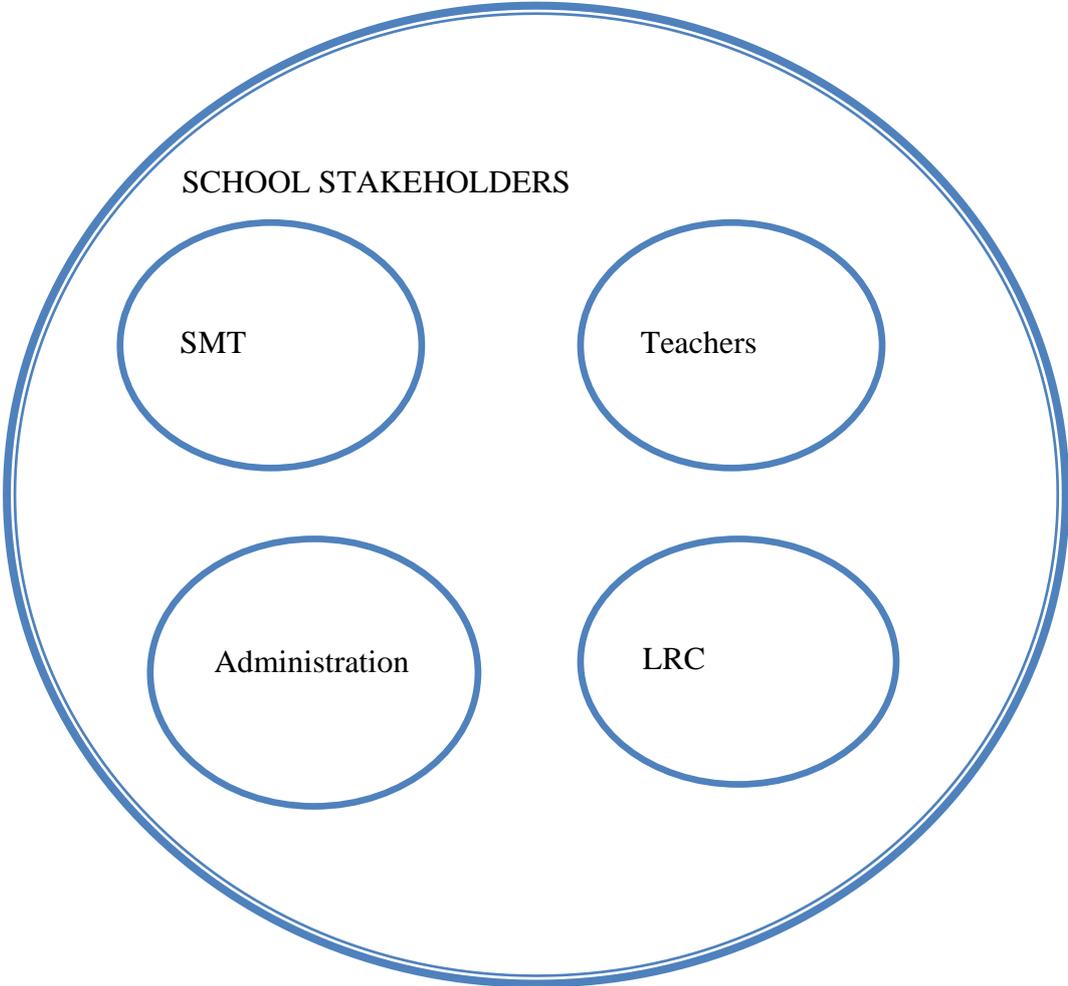
11. The primary role of any school is teaching and learning while administrative functions are auxiliary?

(i) How do you rate teaching and learning as against administrative duties in this school?

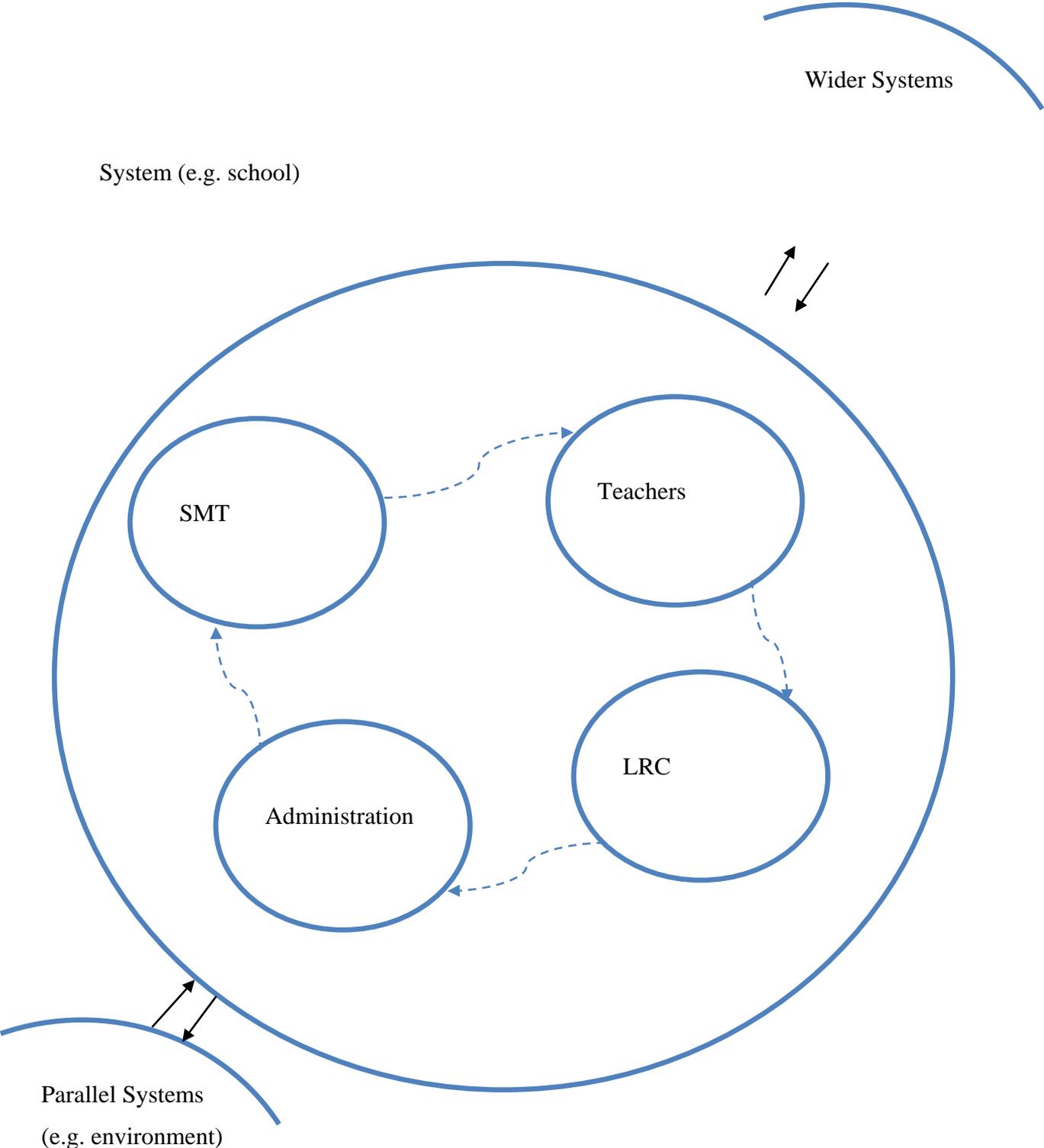
(ii) How does it impact on teaching and learning?

APPENDIX B

SYSTEMS MAPS OF A SCHOOL

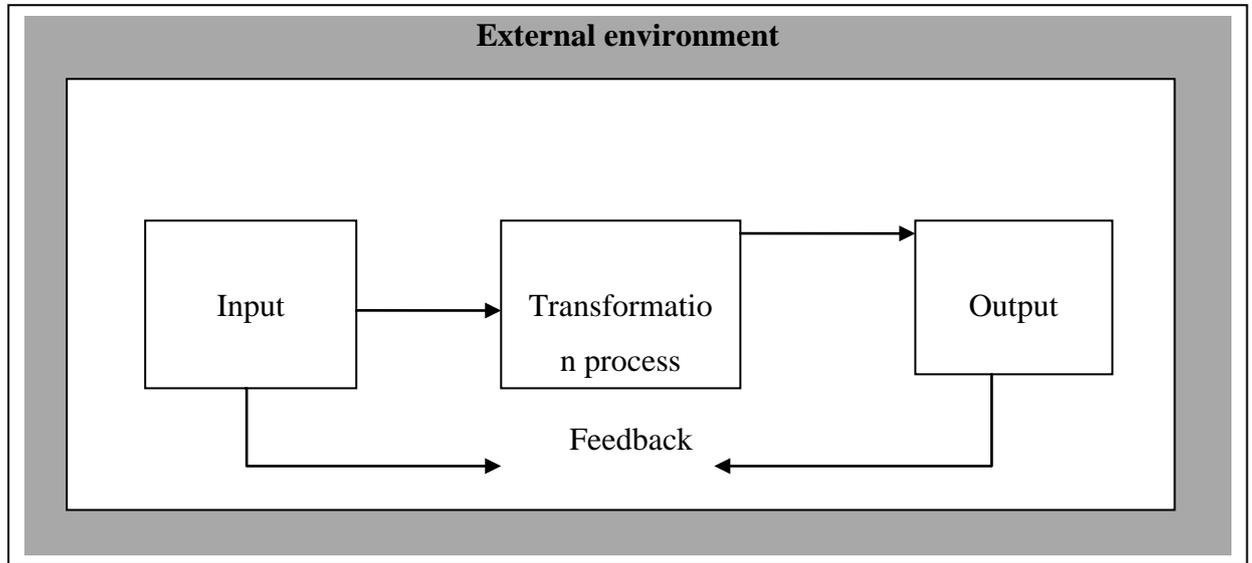


APPENDIX C
INFLUENCE DIAGRAM



APPENDIX D

Basic systems view of a school



Source: Lunenberg, F.C. and Ornstein, A.C. 2004. *Educational Administration: Concepts and Practices*, 4th Edition.