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The Heads of Department's Instructional Leadership Role in Mathematics Teaching and Learning in three South African Secondary Schools in Pinetown District

Nomthandazo Charity Malloy

Student No.: 208526030

Supervisor: Ms. P. E. Mthembu

Co-Supervisor: Dr. S.D. Makhasane

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Nomthandazo Charity Malloy

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DECLARATION OF ORIGINALITY

I, Nomthandazo Malloy, declare that this research report, "The Head of Department's Instructional Leadership Role in Mathematics Teaching and Learning in Secondary Schools." Is my original work. Any further sources and external information has been acknowledged.

Researcher: _____

Date: _____

SUPERVISOR'S STATEMENT

This dissertation has been submitted with/without my approval

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Miss P. E. Mthembu

_____

Dr. S. D. Makhasane

January 2017

DEDICATION

I dedicate this to the Almighty for giving me the wisdom and strength to persevere.

“Trust in the Lord and lean not on your own understanding”

(Proverbs 3:5)

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ACRONYMS

ANA	Annual National Assessment
CAPS	Curriculum and assessment Policy Statement
DBE	Department of Basic Education
DoE	Department of Education
FET	Further Education and Training
GET	General Education and Training
HOD	Head of Department
IQMS	Integrated Quality Management System
NSC	National Senior Certificate
SASA	South African Schools Act no.84 of 1996
SMT	School Management Team

ABSTRACT

The ever-changing curriculum policies in South Africa have posed challenges in terms of teaching and management strategies to be applied by teachers to meet the standards. At the forefront of these curriculum policy changes is the need for effective leadership and management of teaching and learning. This is so because for any successful school there is successful leadership that focuses on teaching and learning in this regard, Head of Departments (HoDs) are expected to play a significant role in managing curriculum and supervision of teachers. This study sought to explore the Head of Departments' instructional leadership role in Mathematics teaching and learning in three South African secondary schools.

The study was coached into interpretive paradigm and adopted qualitative approach. Data was generated through semi structured interviews and observations. Three Mathematics HODs and seven Mathematics teachers were purposively sampled from case study schools in Mafukuzela Gandhi circuit in Pinetown district.

The findings suggest that HODs do not get enough time to perform their duties effectively as they were also engaged in teaching. Furthermore, HODs did not regard instructional leadership as their main role rather they spent most of their time doing administrative tasks. The findings also revealed that all the HODs lack relevant expertise in the subject consequently teachers were not developed effectively in these schools for positive learner performance. Support from the principal and other SMT colleagues was minimal.

Conclusions drawn from the findings reveal that HODs understanding of their role is limited to monitoring learner's and teachers work and protecting teaching time. Supporting teachers required HOD to be competent in Mathematics, teachers did not regard HODs to be useful in that they were not subject expertise. Additionally, balancing their own teaching and management was a challenge that needed attention by the HODs to fully execute their job.

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CHAPTER ONE

BACKGROUND AND ORIENTATION TO THE STUDY

1.1 Introduction

The study explored the role of Heads of Departments' (HOD) instructional leadership in Mathematics learning and teaching in secondary institutions in Mafukuzela Gandhi circuit, Pinetown district. This is an introductory chapter and it provides a background to the study. The statement of the problem follows this; then rationale and the significance of the study. Critical questions and the objectives of the study are presented next. Towards the end of the chapter, key concepts and the outline of the study are discussed; conclusion brings the chapter to the close.

1.2 Background to the study

Since 1994, many structural changes have been introduced to the education system in South Africa. Such changes also included the introduction of a plethora of new policies which were aimed at eradicating injustices of the apartheid era (Bush, 2008). The education system also had to undergo a complete overhaul to accommodate the needs all the citizens of the country equally. The new education policies that came into place include the South African Schools Act, No.84 of 1996 (SASA), Norms and Standards for Educators 2000 and the Employment of Educators Act, No.79 of 1998. These pieces of legislation clearly define the roles of the different stakeholders in the educational circle.

Within the context of structural change, the concept of decentralisation of structured and devolution of power was critical and it was reconstructed in direct opposition of the previous system which was characterised by decentralisation of power (Jansen, 2007). The notion of shared leadership and the promotion of accountability of stake holders took a centre stage in contrast to the past era. All that would be achieved within an environment of decentralised structured and devolved powers to the local levels. It is within that broad, fundamental democratic principle of stakeholder participation that new education policy environment was introduced. The introduction of Curriculum and

Assessment Policy Statement (CAPS) from Grades R to Grade 12, has emerged as a recent curriculum policy change from the New Curriculum Statement (NCS). That policy change has been introduced to ameliorate the curriculum and assessment guidelines (Molepo, 2014). Before the introduction of CAPS and NCS, the Culture of Learning and Teaching Service (COLTS) programme had been put in place and its major aim was to reinstate effectiveness of operations of schools (Lethoko, Heystek & Maree, 2001). At almost the same time as the COLTS, the policy called Integrated Quality Management System (IQMS) had emerged as a tool used for measuring the development and performance of educators. All the above-mentioned policies were implemented to redefine the education system and the effectiveness of teaching and learning within the educational institutions. At the forefront of these policies is the need for effective leadership and management of teaching and learning. This is so because for any successful school there is successful leadership that focuses on teaching and learning (Odeyemi, 2010). This study sought to understand the instructional leadership role in Mathematics teaching and learning in secondary schools. The secondary school is a bridge between the primary school and the tertiary institution, thus effective management at this level is required. The class of leadership plays a significant role for effectiveness in schools (Chan & Kaur, 2009).

Dimmock (2013) states that the quality of leadership plays a key role in the effectiveness of schools. It has been established nationally and internationally that to manage effective teaching and learning is the uttermost exercise for school heads (Ngcobo, & Tikly, 2010). When school leaders closely focus on teaching and learning in schools, there is a remarkable impact on learner's performance (Robinson, 2007). Bush and Glover (2003) contend that the principal, in conjunction with the school management team (SMT), should work in collaboration to manage effective teaching and learning in schools. Ponnusamy (2010) concludes that school leadership in collaboration with stakeholders' influences school performance.

Among other roles the middle leaders perform in New Zealand secondary schools is to lead teaching and learning (Basset, 2016). Hierarchically they fall between the senior management which comprises the principal and the deputy, and the teaching staff they lead. In New Zealand focussing on instructional leadership is crucial for the progression in the education department. Ministry of Education (2012) states that administrative

tasks and systems management are tasks performed by the middle leaders are substantial and they tend to neglect other duties in managing teachers within their department.

In Nigeria, Olibie (2010) asserts that in the Nigerian education system, the role of the School Management Team (SMT) includes to monitor the performance of the teachers and the learners in schools. In performing their duties, the HODs rely on the National Policy on Education for guidance as they implement curriculum. Besides the curriculum, the HODs form part of the SMT and are responsible for managing administration work of the departments they lead. Since 1999 the new and changed education system embraced the idea that the principal is not the absolute leader within the school responsible for management, but that the inclusion of the SMT is crucial. The SMT is made up of the principal, the vice principal and the heads of departments, and jointly, they are tasked with the responsibility of managing the school effectively.

In South Africa, the term Head of Department (HOD, is preferred whereas in other countries, they use the term 'subject leader' or 'middle manager' and sometimes 'curriculum coordinator'. These leaders serve as resource persons for the teachers in instructional development (Smith, Mestry & Bambie, 2013). Yukl (2010) avers that when there is failure in the education system, leadership at school level is always held accountable as it holds an important responsibility in educational division of the country. Bush (2003, p.37) posits that "hierarchically, the HOD is positioned on the third tier of the school management team and has the responsibility of decision making". Leadership, according to Bush (2003), is equally important in schools for effective operation towards achieving desired goals.

The Heads of Departments' responsibility is to assure effective teaching and learning within their phases or subject areas or the department. When addressing issues related to teaching and learning process, Head of Departments are essential sources and major support system for the teachers in schools. The management of curriculum change in South Africa posed several challenges. The duties of the HODs as stipulated by the DoE (2005) include the management of curriculum which includes planning, execution, observing and appraisal. The Education Labour Relations Council (ELRC) Resolution No.8 of 1998 define the aim of the work of the HODs as "to engage in class teaching, be responsible for the effective functioning of the department and to organise relevant and

related extra curricula activities so as to ensure that the subject, learning area or phase and the education of the learners is promoted in a proper manner. Drawing from the above three countries; New Zealand, Nigeria, and South Africa, it is evident that management of teaching and learning seemed to be the core function of the HODs. These duties also include managing administrative work within their departments.

1.3 Statement of the problem

School leadership is a growing task which is greatly influenced by people, setting and socio-economic factors. Taylor (1998) affirms that for educational institutions to thrive effectively they need to focus on instructional leadership. The extent to which effective learning is achieved becomes the criterion against which the quality of management is to be judged (Department of Education, 1996). Mathematics is a substantial instrument to test intellectual skill. It is also crucial for economic analysis. Much of the research done on school leadership in South Africa focuses on policies rather than practice. Bush *et al*. (2006) argue that most of leadership and management research is not good enough. Knowledge on how Head of Departments manage curriculum is thus limited; hence the skills for the HODs to master their role is challenging. When it comes to issues relates to recommendations and problems relating to instructional development, the Head of Departments play a major role. Performance in Mathematics in secondary schools in South Africa is a cause of concern. In her speech, the Minister of Basic Education, Mrs Angie Motshekga announced the 2015 NSC examinations results referring to performance in Mathematics, which is a gateway subject, has dropped in the pass percentage (Motshekga, 2016). Although negative results are commonly associated with general teaching staff, Head of Departments as stated in SASA 1996 are held accountable for the actions leading towards the final outcome. This study sought to understand the instructional leadership role in Mathematics teaching and learning in secondary schools by Heads of Departments responsible.

1.4 Rationale for the study

Mathematics is a subject that is regarded as problematic in many South African secondary schools, particularly in previously Black schools where pass rates in it has remained low (Makgato & Mji, 2006). This is evident in the quality of results in the Annual National Assessment (ANA) in Grade 8 and Grade 9, as well as in the National

Senior Certificate (NSC) of Grade 12. Under-performance suggests that there is poor effectiveness in teaching and learning and that there is a problem in managing the instruction for this subject. This study was informed by my experience as an HOD in the Mathematics and Science Department. My observations of this subject in the context of the Mafukuzela-Gandhi Circuit suggest the occurrence and persistence of poor quality performance within the province of KwaZulu-Natal.

As an experienced teacher and a specialist in Mathematics, my appointment to the position of Head of Department in Science department was coupled with being an expert in Mathematics, Physical Science and Life Sciences. I was expected to be an expert in these three very demanding subjects with minimal assistance from the school or the Department of Education**.** Teaching Mathematics in the school alone was a challenge; we as teachers had a challenge because learners had a negative attitude towards this subject and us as educators were faced with challenge of learners failing the subject and opting for other subjects instead of Mathematics. Mathematics classes in the school had very few learners from Grade 10 to Grade 12. The belief was that one should be very intelligent to do Mathematics. The SMT Handbook and other policies on managing a department in schools were available and I also attended several workshops upon appointment but the challenge remained in the issue of managing Mathematics.

The performance of learners in Mathematics is a national challenge. Out of 562 112 full time candidates in 2013 who wrote National Senior Certificate (NSC), figures from the Department of Basic Education show that 43% wrote Mathematics. Out of the 43% learners that wrote Mathematics examinations, only 15.6% achieved 60% and above (RSA, 2014). The Centre for Development and Enterprise (CDE) (2013) stated that the teaching of Mathematics was often of poor quality; teachers were not capable to answer questions in the curriculum they were teaching. The year 2014, marked the year for the completion of the implementation of CAPS cohort for the Grade 12 learners. The number of learners who wrote Mathematics declined by 16 051 nationally. There was a decline also in the percentage of learners achieving more than 60 %, as 2015 was also marked by the same trend (RSA, 2015). In highlight of all of the above, it is evident that Mathematics teaching and learning in this country is still a challenge. This is even though several programmes have been put in place to address the situation.

1.5 Significance of the study`

Several studies have been conducted on principals' instructional leadership both locally and internationally. What has been observed in many schools in South Africa is that principals are utilising most of their time doing administration work and disciplinary activities rather than supervising teaching and learning. The significance of the study is that it explores the HODS' role in Mathematics teaching and learning in secondary schools. Managing curriculum which is the foremost activity in teaching and learning has been shifted completely to the HODs. Exploring the role of the HODs, as instructional leaders, especially in secondary schools, was important because that aspect is under researched in the country. Therefore, it was critical that the data was generated from the HOD participants as the study explored their role as instructional leaders in Mathematics teaching and learning.

1.6 Objectives of the study

The following are the objectives set for this study:

- To investigate what Heads of Department, understand about their Instructional Leadership in the teaching and learning of Mathematics in three South African secondary schools.
- To examine how Heads of Department manage teaching and learning in three South African secondary schools.
- To explore the role of Heads of Department in supporting teachers in teaching of Mathematics curriculum that contributes towards learner performance.

1.7 Critical questions

- What are the Heads of Department's understanding of their role as Instructional Leaders in the teaching and learning of Mathematics?
- How do Heads of Departments manage teaching and learning in three South Africa secondary schools?
- How do Heads of Departments support teachers in teaching of Mathematics for positive learner performance?

1.8 Clarification of terms

For clarity, concepts which are commonly utilised in the study will be defined. The key concepts are Heads of Department (HOD); Instructional leadership and management. Each of these terms is briefly discussed below.

1.8.1 Head of Department (HOD)

Department of Education (1998), Employment of Educators Act no.76 of (1998) (EEA) defines HOD as a teacher (educator) who is a teacher but also responsible for a phase or learning area. In the study HODs are explored as instructional leaders in managing mathematics.

1.8.2 Leadership and Management

Leadership is directing people somewhere or to something. Bush and Glover (2003) contend that leadership is about persuading followers towards attaining a desired goal. Management is closely associated with "efficiency, planning, paperwork, procedures, regulations, control and consistency" (van Deventer & Kruger, 2003, p.141). These scholars further state that for management processes to be effective there must be strong leadership and communication. In this study, the two concepts are used interchangeable.

1.8.3 Instructional leadership

Jenkins (2009) interprets Instructional leadership as efforts intended to collaborate members of the staff into discussing issues relating to teaching and learning and taking responsibility of their duties. Mestry and Pillay (2013) refers to Instructional Leadership as leadership that harnesses teaching and learning which leads to effective curriculum management. The focal point for instructional leadership is primarily to co-ordinate, supervise and control curriculum implementation and instruction in schools (Hallinger & Murphy, 1985).

1.8.4 Delimitation of the study

The study was conducted in three secondary schools in the Pinetown district, in one circuit. The primary focus of the study was on three Mathematics HODs in different schools. The duration to conduct the study was from January to December 2016.

1.9 Outline of the study

The research study consists of five chapters. The layout for each chapter is presented.

1.9.1 Chapter One

The chapter is an orientation to the study. It begins by introducing the background, the rationale and the statement of the problem. The purpose and significance of the study then follows. It then moves on to present the significance of the study; the objectives and critical questions which are then followed by the clarification of terms which draws to the conclusion of the study.

1.9.2 Chapter Two

This chapter focuses on the review of literature on instructional leadership practices of Mathematics HODs. However, the chapter commences by analysing the core concepts underlying the study followed by the literature review. The last part of the chapter discusses the theoretical framework that underpins the study.

1.9.3 Chapter Three

The chapter provides a detailed discussion of the research design and methodology that was utilised in conducting the study. Issues of research paradigm that was adopted and the research approach used are discussed. Other critical issues such as methods of data generation; data analysis; ethical considerations, limitations and trustworthiness of the study are discussed.

1.9.4 Chapter Four

The chapter focuses on the presentation and discussion of findings generated from semi-structured interviews and observations. The discussion of findings is based on the interviews with the HODs about instructional leadership role in Mathematics teaching and learning in secondary schools.

1.9.5 Chapter Five

Chapter Five is the final chapter which presents the conclusions drawn from the findings that are presented in the previous chapter. Recommendations based on the conclusions

are made. However, before conclusions are presented, the chapter begins with the presentation of the summary of the study.

1.9.6 Chapter summary

The chapter has provided an orientation to the whole study. The background and the rationale for the study to be undertaken is presented in this chapter. Other components such as critical questions and significance of the as outlined in the sections above are presented.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

The preceding chapter introduced background, rationale, and the significance of the study. Thereafter, objectives, critical questions, and brief clarification of concepts as it applies to the study. The chapter discusses literature reviews based on the topic of the study, 'The Head of Department's instructional role in mathematics teaching and learning in secondary schools. The first part of the chapter comprises of definitions are described to examine the role of Head of Department in managing Mathematics in secondary schools. These are: Leadership, Effective school leadership, Instructional and distributed leadership within South African context because that is where the study is based on.

The second part illustrates the roles of Head of department / middle manager in secondary school within the mathematics department followed by the international and national literature within the context of managing and processes in managing curriculum. Further on, the chapter unpacks the theoretical framework guiding the study. This last fragment pays attention to the theoretical framework which involves three-pronged instructional leadership models (Hallinger and Murphy (1985), Murphy (1990) and Weber 1996).

2.2 Definition of Leadership

There is no one single definition of leadership as various researchers define it differently. Nevertheless, there seems to be a common agreement on certain elements in their definitions, and that relates to the influence that a person who is called a leader exerts on others within an organisation or institution. For instance, Leithwood and Riel (2003) maintain that leadership involves exercising influence and giving direction. Kruger (2008) asserts that leadership includes defining goals and managing curriculum while supporting teachers and observing learners progress. Obviously, Kruger's (2008) definition is limited to education whereas; other scholars present a broader view on leadership. Flores (2004) concurs with Kruger (2008) by defining leadership as influencing people positively to achieve desired organisational goals. Similarly, Louis,

Wahlstrom, Michlin, Gordon, and Thomas (2010) affirm that leadership involves working together with the people in order to improve the organisational performances in terms of them achieving their respective goals.

2.2.1 Effective school leadership

Leithwood, Day, Sammons, Harris and Hopkins (2006, p. 3) provide a list of seven claims about successful leadership. These scholars claim that; school leadership is second only to classroom teaching as an influence on pupil learning; that almost all successful leaders draw on the same repertoire of basic leadership practices; that the ways in which leaders apply these basic leadership practices not the practices themselves demonstrate responsiveness to, rather than dictation by the contexts in which they work; school leaders improve teaching and learning indirectly and most powerfully through their influence on staff motivation, commitment and working conditions; that school leadership has a greater influence on school and students when it is widely distributed; that some patterns of distribution are more effective than others and that a small handful of personal traits explain a high proportion of the variation in leadership effectiveness. Per these scholars, it is important that people, who are called leaders, particularly in the school setting, should demonstrate these characteristics.

2.2.2 Instructional Leadership

Smith and Andrews (1989), as well as, Blasé and Blasé (1999) define instructional leadership as a fusion of numerous tasks such as supervision of the development and curriculum development. Bush and Glover (2002) assert that instructional leadership is mainly

about teaching, learning and the behaviour of teachers while in class with the learners. DiPaolla and Tschannen-Moran (2003) refer to instructional leadership as a term that has become apparent in terms of defining the roles and responsibilities of the principals. “Instructional leadership typically assumes that the critical focus for attention by leaders is the behaviour of teachers as they engage in activities directly affecting the growth of students” (Leithwood, *et al*. (1999, p. 8). Echoing the views expressed by other scholars cited above in this section, Southworth (2002) maintains that instructional leadership is strongly concerned with teaching and learning involving the professional learning of teachers as well as student growth. Likewise, Bush (2011) also concurs with Southworth

(2002) that instructional leadership focuses on the core of the school activity which is teaching and learning. However, instructional leadership has been criticised for dwelling too much on the top management which is the principal with the powers and vast authority and neglecting the middle management, symbolised by the HODs in the context of South Africa. Hallinger (2003, p. 330) also argues that "an effective leader will create a podium for active learning communities for effectiveness in a school to enhance student's performance." I concur with Hallinger (2003) and other scholars who argue that the focus of instructional leadership has been directed at the school principals and has overlooked the middle management as instructional leaders in schools. By design, this study focused on middle managers as it sought to understand from the HODs' perspectives how they understood their respective roles to be as instructional leaders in secondary schools.

2.2.2.1 Instructional leadership in South Africa

South Africa refers to a 'culture of teaching and learning' as a platform where the role players' (principal, SMT and teachers) attitude is directed towards teaching and learning. According to Chisholm and Vally (1996**),** there is a collapse of attitudes towards effective teaching and learning as observed in secondary schools. As a point of departure for this study, analysing the role-players in curriculum management and instruction is crucial. Post 1994 education system was decentralised in terms of management structures which introduced polices to give guidelines on such structures. Cheun and Cheng (1996) maintain that, through decentralisation, schools have shifted from external control type of management to active self-management.

One of the policies that South Africa put in place after democratic elections was the South African Schools Act which brought clarity on the roles and functions of different stakeholders in schools. The introduction of School Based Management (SBM) enables people on site to make collective democratic decisions (Fullan & Watson 2000). Hoadley, Christie and Ward (2009) suggest that management of curriculum in the democratic era continues to be more complex and demanding. Christie, Butler and Potterton (2007) alluded that International studies PIRLS (2006) and UNESCO (2007) confirm that South Africa spends more of its budget on education but the performance of learners in literacy and numeracy are among the worst internationally. South Africa

Information (2011) maintains that in 1994, R3.8 billion was spent on education and by 2006, it had risen to R92.1billion. Despite this investment on education reform alone, South Africa continues to experience the dropin terms of quality education provision and learner academic achievement.

The principal, the SMT and the teachers are all responsible for managing teaching and learning. The Schools Act, SASA stipulates that the principal is the highest ranking official in the school responsible for curriculum co-ordination. The HODs must ensure that teachers implement the curriculum in the classroom and monitor the phase or subjects (Bush, Joubert, Kiggundu & Van Rooyen, 2010). Bush and Glover (2009) aver that managing shared ideas through the HODs enhances the effectiveness which yields positive learner outcomes. These scholars further maintain that for the principal to be effective, they should oversee curriculum implementation by observing the HODs when monitoring teachers in their departments. Despite the benefits attributed to instructional leaderhip, Hoadley, Christie and Ward (2009) argue that most principals in South African schools do not respect instructional leadership as their core task in school management and assign the responsibility to the HODs. Hoadley, *et al*. (2009) argue that school principals utilise most of their time in administrative tasks and attending discipline issues of learners. In a survey conducted by these scholars, it was found amongst other factors that poor curriculum coverage and low time on task were the shortcomings which required effective instructional leadership (Chikoko, Mthiyane, and Naicker (2013), in their study; “Instructional leadership practices in challenging school contexts”, conducted in five high schools in Umlazi district in KwaZulu-Natal, indicated that the HODs’ main role should be in ensuring that effective teaching and learning is coupled with effective supervision of the teachers in their departments.

In the context of the study conducted by Chikoko and colleagues, almost all the schools that participated in their study had minimal resources for effective teaching and learning and the classes were overcrowded. They used the NSC results as a rating standard for monitoring academic success. The findings indicated that despite the challenges encountered by these schools they became resilient. Over the past three years prior this study these schools performed exceedingly well. Principals were leading by example as instructional leaders. They also carried teaching loads. Their focus was on teaching and learning. Instructional programmes were monitored and all the stakeholders within the schools worked collaboratively for effective learner performance. Instructional

leadership was distributed among all teaching teams, learners, and parents. Conclusions of the study suggested that strong instructional and distributed leadership yielded positive leaner performance in these successful schools. The findings of Chikoko, *et al*., (2013) are in line with that of Leithwood and Jantzi (1999) that instructional leadership involves effective supervision of teaching and learning for the improvement of learner performance.

2.3 Distributed leadership

Spillane, Halverson, and Diamond (2001) aver that distributed leadership is when a group of individuals work towards achieving a common goal, have more strength than an individual's effort to achieve the goal. Distributed leadership acknowledges that there are various leaders in an organisation working together for effectiveness. In a school context, it is about distributing responsibility from the school head to the rest of the school managing team. Botha (2016) posit that distributed leadership is about giving opportunities to all members in a school to display leadership activities. Leithwood, Jantzi and Steinbach (1999) affirm that school principals alone cannot accomplish all the needs of a school for instructional leadership. Botha and Triegaart (2014) argues that principals are progressively required to lead schools within a structure that is based on shared decision making and collaboration with all staff members. Drawing from the scholars cited above, one may conclude that one cannot completely divorce distributed leadership from instructional leadership in the sense that they are interdependent for school effectiveness. As Spillane (2005) correctly put it, distributed leadership includes a selection of people with different strategies that will assist in leading the school reach its maximum achievement.

2.3.1 Distributed leadership in South African context

The South African Schools Act (SASA) advocates working collaboratively within school leadership. Botha and Triegaardt (2014) argue that for a school to be effective in teaching and learning, the principal needs to work collaboratively with teacher teams. In their study titled 'Distributed Leadership towards school improvement', Botha and Triegaardt (2014) sampled five functional primary schools in KwaZulu-Natal in the. In identifying functional schools, these scholars used the Department of Education definition which was based on the Whole School Evaluation. Unstructured interviews were conducted

with five principal participants. The focus of the study was on the principals' practices with regard to distributed leadership and how it supported change and improved their schools. Conclusions drawn from the unstructured interviews and the documentary analysis confirmed that the leaders within these schools worked collaboratively with other stakeholders in the school. They asserted that distributed leadership is about democracy, team work, shared management, and the motivation of one another in the school to enhance effectiveness. Continuous interaction among the leaders in the school and the sharing of ideas were found to be the contributing factors to these functional schools. The results of the study revealed that distributed leadership is an essential component for school improvement. Jita and Mokhele (2013) in their study of the role of lead teachers in instructional leadership, posit that instructional leadership and distribution of leadership roles occurs through teacher leaders. These two scholars affirm that subject leaders understand the convolutions and the anatomy of the subject (Jita & Mokhele, 2013). Subject leaders play a significant role in making certain that curriculum implementation is of high standard and teachers are supported in their teaching. It is for the benefit of this study that distributed leadership is incorporated in the discussion about instructional leadership as noted above. For instructional leadership to be operative, it has to be evenly distributed among the stakeholders within the schools.

2.4. The roles of Head of Departments/Middle Managers/Subject leaders/Curriculum co-ordinators in managing Mathematics in secondary schools

Norris (2012) avers that Mathematics is an important school subject as it involves critical thinking and it provides access to other fields of study such as engineering, sciences and psychology. Acknowledging the importance of the above statement, this study sought to understand instructional role of heads of departments in managing the teaching and learning of Mathematics in secondary schools in Inanda, Mafukuzela Gandhi circuit in Pinetown district.

2.4.1The roles of HODs in secondary schools

Heads of Departments as middle level managers are essential in improving the standards in education. Middle managers in the secondary schools act as pastoral heads, co-ordinators. Heaton (2016) argues that senior management relies mostly on the middle managers to control and give direction to the teachers they lead in their departments.

Bush (2003) avers that HODs are on the third level of the school management team pyramid and they hold a part in the decision construction body at school accountable to senior management. Naicker, Chikoko and Mthiyane (2013) share the similar opinion that the HODs are responsible for curriculum delivery in schools.

In addition to various roles that the HODs play in supporting the provision of good quality education as curriculum deliverers, they have to pay particular focus on the actual teaching as specialists in their respective fields (Balka, Hull & Miles 2010). For instance, Kirkham (2005, p.160) maintained that "In South Africa HODs are the specialists in their designated curriculum area". Since the beginning of the democratic era in South Africa in 1994, secondary schools performance in National Senior Certificate (NSC) has been a concern thus questioning the role that the HODs play in ensuring school effectiveness (Dean, 2002; Smith & Ngoma-Maema, 2003). The Department of Education (2008) asserts Mathematics performance in South African secondary schools is a challenge as no tangible evidence of improvement in learner achievement had been observed from 2008 up to 2012.

2.5. Mathematics performance challenges in South African secondary schools

It has been noted previously that there is an immense challenge facing South African schools in terms of Mathematics performance especially in secondary schools. Vast literature Howie (2003, 2005); Mji and Makgato (2006); Cross (2002); Van der Berg (2007); Bush, Joubert, Kiggundu and van Rooyen (2010) highlights different factors which influence performance in Mathematics. Among the studies conducted in South Africa on causes of low performance in Mathematics in secondary schools; economists in their findings highlighted the socio- economic status as one of the contributing factors (Spaull, 2013). Hallinger and Murphy (1985) concur with the view that socio-economic status influences the performance of learners generally and in Mathematics in particular. In a paper presented by Visser, Juan and Feza (2015) themed 'home and school resources as predators of Mathematics performance in South Africa', these scholars concluded that there is a necessity at school level to consider the learners' home background in whatever they are doing. These considerations include the decision about policies of the language of teaching and the learners' home language. This aspect continues to be a call for concern. Despite all that the government has done, there is still inequality in the

KwaZulu-Natal province in terms of socio- economic status. Schools are classified according to their demographic and socio-economic status. Most schools in the KZN province fall within Quintile 1 and Quintile3 meaning that they are found in the worst of the condition. Because of their dire socio-economic conditions, such schools have been declared 'no fee' schools by the Department of Education (KZN Annual Performance Plan, 2014/2015). The HODs as middle managers and also has curriculum specialists are expected to be in the forefront in fighting for better teaching and learning conditions for the learners. Because of that, this study focused on how the HODs managed and monitored teaching and learning in Mathematics and also sought to understand if the way they monitored teaching and learning yielded positive learner performance.

Table 2 1 Grade 12 Mathematics performance for 2012-2015

Year	No. who wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2012	225 874	121 970	54.0	80 716	35.7
2013	241 509	142 666	59.1	97 790	40.5
2014	225 458	120 523	53.5	79 050	35.1
2015	263 903	129 481	49.1	84 297	31.9

(DBE, 2015)

Most recognised non-governmental organisations (NGOs) and the Department of Basic Education (DBE) have paid extra-ordinary focus on the matric (Grade 12) outcomes in secondary schools more than they do with primary schools (CDE, 2013). Masifundisane FET College and the Department of Education have a joint venture to address the performance of Mathematics in schools in KwaZulu-Natal. Moses Kotane Institute (MKI) is the Kwazulu-Natal development and tourism driving youth liberation through Science, Technology, Engineering and Mathematics (STEM). Among their strategies MKI is involved in academic development and continuous professional improvement which includes Grade 12 interventions that are aimed at increasing the pass rate in Mathematics, Science, and Technology.

Table 2.2: DBE Report on Annual National Assessment (ANA) Grade 9 2014

Year	% obtained	No. obtained 50% or more
2012	13	2
2013	14	2
2014	11	3

(DBE, 2014)

The data contained in the above table point out that has consistently been poor performance in ANA in Grade 9 results nationally (DBE, 2014). For instance, from 2012 to 2014 ANA results were below the figure that the DBE had targeted.

ANA was first introduced in South African schools in the General Education and Training (GET) Phase for languages and Mathematics from Grades 1 to Grade 6 and was subsequently extended to include Grade 9 in 2011. The introduction of ANA came as a remedy for the ailing Department of Education and challenges experienced by the common tasks for assessment (CTA) that was designed as an external examination programme for the Grade 9 learners. Govender VG, (Bachelor of Education programme coordinator between 2011 and 2013 at Eastern Cape University Advisory Committee for Mathematics), (2013) in his report for the mathematics grade 9 performance, subject advisors, and teachers from 5 provinces in South Africa were sampled and among the issues discussed were the following: reaction to Grade 9 ANA Mathematics results; support for Mathematics Grade 9 teachers. The findings indicated that teachers who taught Grade 9 were under-qualified. It was also noted that the standard of ANA papers was of a higher level than what learners were used to. Mathematics teachers mentioned that they needed ongoing support in terms of workshops to equip them with content knowledge and methodology.

Tsawani, Harding, Engelbrecht and Maree (2014), in their study 'Perceptions of Teachers and Learners about Factors that facilitate Learners' Performance in Mathematics in South Africa' highlighted the following hindrances in Mathematics performance in secondary schools; the lack of sound management, teacher training workshops on the subject content; lack of teaching methods; inadequate time spent at school by the teachers and learners and disappointing manner in which the Department of Education at all levels supported schools. Earley and Wendling (2004) assert that the

HODs are responsible for day to day monitoring of teaching and learning in schools as they constantly engage with the teachers on issues pertaining improvement in curriculum delivery. Zeepeda (2007, p. 2) affirms that instructional leadership is a "daunting task". The Norms and Standard for Educators Act 27 (Republic of South Africa, 1996c) define the roles of the HODs to include instructional leadership, curriculum leadership, supervision and coordination of departments and developmental appraisal of educators. In addition, in terms of the PAM document (DoE, 1998), the HODs have to provide and co-ordinate guidance to the teachers on the latest ideas on approaches to the subject.

Bambi (2013) in his study titled, "Role of Head of Departments as Instructional leaders, and its implications on teaching and learning in South African secondary schools", highlighted that the HODs did not find enough time to deal with actual managing of curriculum as they also had full duty.

Kruger (2003) concurs that the HODs' time is split among several activities which include managing resources, allocating duty load for teachers, establishing budget and managing the curriculum. The results indicated that the HODs lacked the ability to perform their roles effectively because of inadequate training on professional development and support. Discipline was a concern since learners indulged in drugs and substance abuse, thus creating an atmosphere which is not favourable to effective teaching and learning. Principals maintain that the HODs did monitor their teachers' work but lacked the skills for the developmental programmes of teachers in their respective subjects. Some teachers also complained about skills of leadership of their HODs as they only concentrated on checking their work and lack developmental programmes and workshops. Other teachers acknowledge the support given by their HODs in maintaining discipline but complained of time lost in disciplining learners. In conclusion, Bambi (2013) maintains that there is still a need to continually nurture the HODs in their instructional leadership role and that time should be set apart for such programmes within the school.

The Department of Basic Education (DBE) provincially initiated a Programme of Action for Quality education 2014/2015. The aim was to introduce strategic goals and objectives which consist of strategic framework from 2014/5- 2018/9 for quality education in the province. The following framework for some of the strategic goals and objective

Table 2.3 Programme of Action for Quality Education 2014/2015

Strategic Goal 1	**Broaden access to education and provide resources**
Strategic Objective 1.1	To increase access to education in public ordinary schools.
Strategic Objective 1.2	To provide infrastructure, financial, human, and technological resources
Strategic Objective 1.3	To implement teaching, management, and governance support programmes at all schools.
Strategic Objective 1.4	To provide diverse curricula and skills oriented programmes across the system.

Strategic Goal 2	**Improve school's functionality and educational outcomes at all levels.**
Strategic Objective 2.1	To implement quality assurance measures, assessment policies and systems to monitor success of learners.
Strategic Objective 2.2	To develop and enhance the professional quality and academic performance of managers and teachers in all institutions.
Strategic Objective 2.3	To administer effective and efficient examination and assessment services.

Highlighted in the table above is the strategy to develop and enhance professional quality and academic performance of managers and teachers. From my own experience as a HOD such programmes may assist the HODs and equip them on how to execute their job effectively. Teachers should be in a position to trust their HODs in order to create appositive learning environment. However, it has been proven that when senior members of staff show lack of understanding and capacity to support their junior staff members, trust and confidence in them is lost.

The problem about learner academic performance in Mathematics is not just a South African problem but it is experienced as a challenge elsewhere in the world. For instance, performance in Mathematics in Kenya has been a cause for concern for educators as well as the community (Inyega & Thomson, 2002). Global Literacy Project (2008) maintains that the level at which the students at secondary schools perform in Mathematics, and the evident declining in performance poses a challenge in the education system. Mwangi (2009) alludes to the fact that the Kenyan government in collaboration with Japan

International Co-operation Agency (JICA) has given birth to the Strengthening of Mathematics and Science in Secondary Education (SMASSE) project. Such an initiative was a response to earlier research which had identified a number of weaknesses in the system. The initial study had identified a number of challenges and these included a lack of professional learning community; poor mastering of content; inadequate teaching and learning materials; negative Mathematics attitude and a lack of sound leadership and management practices. The whole range of shortcomings highlighted above was identified as the main causes of poor Mathematics in secondary schools in Kenya. Hallinger and Heck (1998) aver that there is a close relation between school leadership and learner performance.

There is another study conducted in Kenya titled "Role of school leadership in student achievement in Kenya" (Mwangi, 2009). That research was conducted at Machikos District in 12 provincial secondary schools; 6 were the successful and 6 were less successful schools according to the November 2008 Mathematics national examination. The focus of the study was on how leadership practices. Its findings suggested that in high performing schools, principals, heads of departments and Mathematics teachers worked collaboratively in leadership engagements and had direct influence on one another in terms of motivating and supporting the students and giving differentiated attention to weak students. Commitment was also demonstrated by the HODs' pedagogic behaviours. For instance, they spent extra hours assisting learners with Mathematics difficulties as compared to low performing schools where the principal was not contact with instruction and depended on heads of department to initiate instruction.

In Ontario, Canada, the Education Act (1990), makes provision for the Department Head, who is the supervisor and co-ordinator of programmes unit that the principal may have identified. Paranosic (2014) in the study titled, "Fifth Business of department heads" found that the heads of departments admitted that they did not completely understand their roles. Most heads of departments confirmed that although they believed in shared and distributed leadership, the administration did not allow them to have authority. The administration only allowed them to attend to minor issues and concerns in their departments. Participants further felt that it was important that they become subject experts that can guide teachers and promote instruction development. Administrators depended on them for the classroom management and implementation of curricula policies. Participants agreed that as union members they were not allowed to supervise

or discipline fellow members. It was noted that there was no formal training in taking up the post of head of departments. They had no power to be in dispute with the administration. More research in the department heads is recommended to further find clarity on their roles and duties.

2.6 Head of Departments' instructional leadership role in schools

The role of the HODs as instructional leaders in schools is discussed from two related angles. The first one deals with their role as supervisors of the curriculum or instructional supervisors. The second part focuses on instructional supervision system in the country as a whole.

2.6.1 Instructional/ Curriculum supervision

Instructional supervision is an essential intervention in secondary schools for all the subjects taught. It is a useful tool to intensify the learner and the teachers' development needs. Sulivan and Glanz (2013) maintain that in order for the supervision to be effective, both the supervisors and the teachers should own the supervision system. Tshabalala (2013) argues that effective supervision is when the supervisor and the teachers maintain a sound relationship and work collaboratively for the success of the system.

Glatthorn, Boschee and Whitehead (2011) assert that supervision comprises activities that are designed to effect guidance in curriculum. Lovell and Wiles (1983) define instructional supervision as the behaviour system in school operation with distinct purpose competences and activities which is employed to directly influence teaching behaviour in such a way as to facilitate student learning. Zepeda (2003) and Wanzare (2011) concur with the view that supervision is a tool to improve instruction and to promote growth. Clinical supervision's main goal is the professional development of teachers with the emphasis on improving teacher's classroom performance. Glickman (1985) mentions five tasks of supervision that impact on instructional improvement; these tasks are: direct assistance; group development; staff development; curriculum development and action research. Each of these five is briefly outlined below.

- Direct assistance: it is when supervisors observe teachers in class to identify strengths and weaknesses in order to give assistance and support on how to improve.

- Group development: teachers meet with supervisors to with issues of instructional improvement and discuss best practice. Danielson (2013, p.3) asserts that both teachers and supervisors "will be able to get involved in conversation with other educators and gain expertise as to the kind of resources they need or want".
- Staff development: comprehensive approach to improve instruction.
- Curriculum development: acknowledging changes in teaching of content and instructional resources to improve instruction.
- Action research: supervision is done to identify weaknesses and such weaknesses can be addressed through research that brings about changes to the practice.

Supervision previously was seen by teachers as a tool for controlling them and only recently that is perceived as a method for support and development. Acheson and Gall (1997) contend that teachers do not resist supervision but resistance is perceived on the styles and approaches used during supervision. Arong and Ogbadu (2010) assert that teaching and learning can be effective through supervision. Daresh, Myrna, Dunlap and Hvizdak (2000) concur with the view that when strategies of instructional leadership are in place effective teaching and learning occurs. Mahmood (1993) posits that effective curriculum leadership depends on the school leadership. Yunus and Suraya (2012) confirm that supervision in Malaysian schools is done by the school senior management team. In their study titled 'the role of the Head of Departments in improving teacher's job performance'; Ghavifekr and Ibrahim (2014), revealed that there was a correlation between the influence of the teacher's relation between the HODs' roles and responsibilities and impact on teaching performance. Data received revealed that the Head of Departments instructional supervisory role had a direct clout on the teachers' performance. The majority of the teachers maintained that the HODs motivated them for positive job performance. This study concluded that effective teaching and learning was highly motivated by the Head of departments' supervisory role.

2.6.2 Instructional supervision system in South African schools

Supervision in South Africa prior to 1994 focused mainly on control and power. The inspectors from districts would visit school to check on the teachers' work, but they had

little or no understanding of the subject areas or competency in subjects. Tyagi (2010) affirms that inspection used a top down approach. This exercise was not properly organised and lacked professionalism. After South Africa became a democracy in 1994, a number of policies were put in place as attempts to break away from the past practices and embrace new found democracy. Some of the changes that were instituted included the Integrated Quality Management System (IQMS) was an initiative by the Department of Education to enhance and monitor performance of teachers in the education system. The IQMS was introduced in 2003. The objectives of IQMS were as follows to determine educator competence; to consider the strengths and areas of development; to provide support chances for growth; to promote accountability and to monitor school overall performance (DoE, 2005).

IQMS consists of three programmes; Developmental Appraisal (DA) for individual to determine areas of weakness and strength to draw programme of development; Performance Measurement (PM) for pay progression on individuals and Whole School Evaluation (WSE) to evaluate the effectiveness of the whole school (Resolution 8 of 2003). IQMS is an ongoing process which takes place during the academic and it allows educators to monitor their growth and professional development. Department of Education (DoE) 2005 mentions that it is the duty of the HOD to lead the Developmental Support Groups (DSG) in the appraisal activity in order to give desired support and effective mentoring of teachers. Inclusive in their roles; the HODs must also assist the teachers in developing their Personal Growth Plan (PGPs) in order to identify areas of excellence and areas of concern. IQMS also informs the HODs about areas which need attention in curriculum implementation. During 2014/2015, the Department of Education assigned moderators to monitor IQMS in schools. On their report among others there were concerns in Mathematics subject (Annual report 2014/2015, vote15, DBE). Although this study is not about IQMS, I thought it important to highlight the role of the HODs in assuring quality of teaching and learning. In any case, IQMS is the most eminent policy directive that HODs can utilise to monitor the teachers' work and identify areas for development, once these have been identified.

2.6.2.1 Challenges of IQMS monitoring

The report on teacher development by the DBE and the South African Council of Educators (SACE) in their discussions resulted in a joined agreement that IQMS had not succeeded as originally anticipated. Some of the reasons for the lack of success was the lack of monitoring support and development offered by the SMT member and the irregular monitoring of Personal Growth Plan (PGP) (DBE and SACE briefing, 26 August 2014). A new and improved quality management system, Continual Professional Teacher Development (CPTD) was introduced by the SACE in 2012 which was implemented in all nine provinces. CPTD is conducted in phases with the first phase dedicated to the principals and deputy principals and the second phase will focus on the HODs and the teachers.

Parallel to CPTD programme is Jik'imfundo which is an organised pilot intervention which is aimed at improving the learning outcomes in the participating schools. It is a national project in collaboration with the KwaZulu-Natal Department of Education. Building on their slogan 'what I do matters!' this programme sought to assist the teachers and the school management in terms of providing support and strategies to curriculum delivery and effective curriculum supervision. Jik'imfundo was launched in KwaZulu-Natal DoE on September 2014 as a pilot programme targeting two districts; Pinetown and UThungulu. The intervention programme came about as a result of identified weaknesses in the education system.

2.6.3 Application of instructional supervision

Jita (2010) conducted a study 'Instructional leadership for the improvement of science and mathematics in South Africa'. One hundred and two (102) schools that specialise in Physical Science and Mathematics were sampled. School principals and school management teams were observed and interviewed over a period of two years. A multiple case study was used to gather information. The findings were that schools that seemed to be successful in terms of effectiveness were those where management and teachers worked collaboratively. Distribution of work was evident among different leaders within specific subject area. Team of leaders monitored student learning and development. Teachers work closely together to develop one another and give feedback on class observations. All the leaders within a specific subject area engaged one another

to focus on the goals of that subject and the improvement of teaching and learning. The other schools which did not seem to be successful lacked the influence of distributed leadership and were not focussed on instruction rather on administrative work of the school. The above study highlighted the importance of shared leadership within the stake holders of the school. Jita (2010) affirms the importance of curriculum management and implementation as a tool for effective instructional leadership.

2.7 Understanding professional development

Studies have shown that the HODs are not supported in fulfilling their roles (Creese, 1991; Glower, Gleeson, Gough & Johnson, 1998; Adey, 2000). Tomlison (1997) argues that there is a necessity for professional development of the HODs. Fullan (2006), Hopkins and Harris (2000) share similar sentiments and argue that continuous professional development (CPD) is essential to manage changes in education for effective teaching and learning. Guskey (1985) listed five critical levels of professional development evaluation:

- Participants reactions; whether professional development was beneficial and the person conducting it had required knowledge.
- Participants learning; whether knowledge gained and skills added to the existing knowledge.
- Organisation support and change; whether all required resources were accessed and whether challenges were identified and addressed.
- Student learning outcomes; whether it has positive influence for instilling confidence in learners.

These five critical levels are significant for the HODs in order to assist the teachers in effective teaching of Mathematics curriculum. The need for professionals to grow has been highlighted elsewhere in this report. I have also mentioned that the Department of Basic Education and the DoE before it have collaborated with SACE in providing avenues for the educators to develop professionally. I must mention at this stage that this study is not necessarily about professional development, but it is important that teachers and members of the SMT are aware of opportunities for them to develop professionally.

2.8 Theoretical Framework

This study has adopted three models of instructional leadership as a theoretical framework. The models were suggested by Hallinger and Murphy (1985), Murphy (1990) and Weber (1996). These models are discussed in detail below. These three models are used to describe school principals' leadership orientation and practices. However, the guidelines provided are equally useful in describing HODs' instructional leadership in managing the teaching of Mathematics. The first model to be discussed is known as Hallinger and Murphy's Instructional Leadership Model (1985). This Model has three major components, namely, defining the mission; managing instructional programme and promoting school climate and these components are summarised in the table below.

Table 2.4: Hallinger and Murphy 1985 instructional leadership as a theory

DEFINES THE MISSION	MANAGES INSTRUCTIONAL PROGRAM	PROMOTE SCHOOL CLIMATE
Framing school goals	Supervising and evaluating instruction.	Protecting instructional time
Communicating school goals	Co-ordinating curriculum	Promoting professional development
	Monitoring students' progress	Maintaining high visibility
		Providing incentives for teachers
		Enforcing academic standards
		Providing incentives for students

Hallinger and Murphy (1985) used the model as an appraisal tool to manage instruction. The HODs as curriculum leaders in their respective departments manage instruction as their job description for effective and quality teaching and learning. Three instructional management dimensions were developed:

2.8.1 Defining school mission

According to Hallinger and Murphy (1985), the dimension of defining school mission instructional leadership framework is made of the two functions; framing school goals and communicating school goals. Hallinger and Murphy (1985, p. 221), further claim that "Instructional Leaders are often said to have a vision of what the school is trying to

accomplish". Drawing from the views shared by the two scholars, I can argue that Mathematics HODs also need to have a vision of what needs to be accomplished for learner progression.

Framing school goals

The principal determines the aspects in the school which requires attention and focus to achieve the goals that are set (Hallinger & Murphy, 1985). The HODs need to focus their goals on the learners' positive performance or outcomes. Mathematics as a subject as discussed earlier has been a challenge and teachers need to focus on strategies that they should use in determining areas that are challenging to learners.

Communicating school goals

It is the responsibility of the instructional leaders to ensure that the school goals are achievable. The principal communicates these goals with the staff ensuring that they are clear and understood by all in order to provide appropriate support (Hallinger & Murphy, 1985). Teaching staff needs to understand these goals and have to make inputs as they are the key to the realisation of these gaols.

2.8.2 Managing instructional programmes

For effective management of instructional programme, the HODs need to work collaboratively on curriculum related issues. This dimension includes, supervising, and evaluating instruction, co-ordinating curriculum and monitoring student progress.

Supervising and evaluating instruction

An effective instructional leader regularly observes classroom lessons. They work collaboratively with the teachers to review their classroom observations and draw conclusions which would yield productive suggestions to support teachers.

Co-ordinating curriculum

This aspect relates to content delivery that would assist learners to be able to manage curricula assessments tasks for grade progression.

Monitoring student progress

Hallinger and Murphy (1985) assert that an effective instructional leader uses different tools to achieve the school's goals through continuous supervision of student's progress. This may involve checking the student's work books and analysing assessments done in class. The practice of giving frequent feedback on students' progress and accountability demands on the teachers; assisting the instructional leader to work towards realising the goals of the school is important. Teachers use the assessment activities to analyse learners' progress in their learning.

2.8.3 Promoting school climate

Teachers and learners should be in an environment where it is suitable for teaching and learning to occur, Hallinger and Murphy (1995).

Protecting instructional time

It has been highlighted elsewhere in this report that instructional leaders are extra careful in terms of time management and they do not want time wasted. HODs must be sensitive to instructional time by not allowing activities which are non-instructional such as sports and meeting s within the school that would use the time for teaching and learning, Hallinger and Murphy (1985). Effective classroom management policies that may be designed by teachers with principals assist in protecting instructional time.

Promoting professional development

According to Hallinger and Murphy (1985), instructional leaders should be proactive in professional development of staff at school. Mechanisms to promote professional growth may be made available in school by teachers and their colleagues as they observe each other in class teaching. It is the responsibility of the HODs to ensure that they acquire relevant information for the teachers that would have a positive effect on their professional growth.

Maintaining high visibility

Instructional leaders should always be visible at school to communicate constructively with teachers and learners for effective teaching and learning. Bothe the learners and the teachers have their confidence levels enhances when they know that the HODs are

monitoring what transpires during teaching and learning. This is so because they know that if there are challenges, such challenges will be attended to.

Providing incentives for teachers and students

Different systems maybe designed by the HODs and staff for rewards. Providing incentives boosts the morale of the teachers and the learners in the school. Acknowledging teachers and learners who have performed well is also a responsibility of the instructional leader. There are different incentives that the principals may use within the school context. Learners' acknowledgement may be in the form of achievement certificates or mentioning those learners in parents' meetings or any informal gathering at school. Rewarding teachers who have done well may also be done by the principal and staff. Certificates of merit may be issued to deserving teachers and colleagues may vote for the most deserving candidate.

Enforcing academic standards

Instructional leaders, according to Hallinger and Murphy (1985) should at all times uphold the standards embedded in the curriculum policies for effective teaching and learning. The school goals should highlight the importance of maintaining academic standards. Instructional leaders should promote high standards for both the teachers and the learners within the school.

Table 2 5 Murphy's Instructional Leadership Framework (1990)

Developing Mission and Goals	Managing the Educational Production Function	Promoting an academic Learning Climate	Developing a supportive Work Environment
• **Framing school goals** • **Communicating school goals**	• Promoting quality instruction • Supervising and evaluating instruction • Allocating and protecting instructional time • Co-ordinating the curriculum • Monitoring student progress	• Establishing positive expectations and standards • Maintaining high visibility • Providing incentives for teachers and students • Promoting professional development	• Creating a safe and orderly learning environment • Providing opportunities for meaningful student involvement • Developing staff collaboration and cohesion • Securing outside resources in support of school goals • Forging links between the home and the school

Murphy's model is composed of four instructional leadership components namely, developing mission and goals, managing the educational production function, promoting academic climate and developing a supportive work environment.

2.9.1 Developing Mission and Goals

Developing mission and goals is further classified into framing school goals and communicating school goals. The goals of the school should focus attention on effective achievement of all students within the school (Murphy, 1990). This author further highlights that all the stakeholders of the school (students, teachers, and parents), are important in communicating the school goals through learning academically and supportive measures.

2.9.2 Managing the Educational Production Function

The instructional leader encourages quality instruction, doing class visits and giving feedback and suggestions. Leaders are cautious of instructional time and are guided by policies in co coordinating curriculum for effective student's progress (Murphy, 1990).

2.9.3 Promoting an academic learning climate

Promoting learning academic learning climate deals strictly with effective teaching and learning process. Instructional leader's functioning should be informed by learners, teachers, and parents behaviours for effective teaching and learning (Murphy, 1990). Instructional leaders promote teacher's professional development and provide teacher and learner incentives in school effectiveness.

2.9.4 Developing supportive work environment

Instructional leaders secure the students' learning space by creating an environment that is psychologically and physical appealing. For instance, classrooms need to be clean and that forms part of an environment that is productive of effective teaching and learning (Gupton, 2003). Facilitating staff collaboration is essential for the instructional leader and keeping stakeholders informed about school processing towards achieving desired goal through school newspapers or parent teacher meetings.

Table 2.6 Weber's instructional leadership model (1990)

Defining Schools 'mission	**Managing Curriculum and Instruction**	**Promoting Positive Learning Climate**	**Observing and Improving Instruction**	**Assessing the Instructional Program**
The instructional leader collaboratively develops a vision and goals for the school with stakeholders.	The instructional leader monitors classroom practice alignment with the school's mission, provides resources and support in the use of instructional best practices, and models andprovides support in the use of data to drive instruction.	The instructional leader promotes a positive learning climate by communicating goals, establishing expectations, and establishing and orderly learning environment.	The instructional leader observes and improves instruction through the use of classroom observation and professional development opportunities.	The instructional leader contributes to the planning, designing administering and analysis of assessments that evaluate the effectiveness of the curriculum.

(Weber's Instructional Leadership Framework 1996)

Weber's (1996) categorises his instructional leadership model within five essential categories, namely, defining school mission, managing curriculum, promoting a positive

learning climate, observing, and improving instruction and assessing the instructional programme.

2.10.1 Defining school mission

According to Weber (1996), the principal is not the only leader to realise the mission of the school but involves all stakeholders to jointly discuss the school's values. Students, teachers and parents work collaboratively towards a common vision and identify their expectations of the school (Ali-Mielcarek, 2003).

2.10.2 Promoting a positive working climate

Positive working climate is an important factor in the school community. It is underpinned by values, beliefs, and attitudes that students and teachers uphold for teaching and learning. Conducive learning and teaching climate is essential for instructional leaders.

2.10.3 Observing and improving Instruction

Instructional leaders through observations, gain insight and create opportunities for interactions and professional development. Through observation, the instructional leader allows opportunities for professional growth and interactions and collaboration to improve instruction and achievement of school's goals.

2.10.4 Assessing Instructional Programme

Continuous assessment of instructional programme assists the instructional leader together with students and teachers to achieve the desired goals. It also highlights areas which need reinforcement. The instructional leader works with teachers in designing, implementing and examining the programme as incorporated in the assessment policies for learner performance. The above models of instructional leadership by Hallinger and Murphy (1985), Murphy (1990) and Weber (1996) demonstrate three similarities, and these are; communicating goals, monitoring, and providing feedback and more emphasis is set on the importance of professional development (Ali-Mielcarek 2003).

Although vast literature puts emphasis on the principal as instructional leaders, the HODs are the ones that carrying the baggage of managing the curriculum and other tasks. Managing curriculum needs sufficient time to be effective in schools. It is for this purpose that this study analysed the instructional leadership of Mathematics HODs. The emphasis on instructional leadership is gaining momentum in South African schools. Accountability in schools is placed on school management especially in Grade 12. The HODs, together with the principal, need to account for poor performance of learners in the school. du Plessis (2013) in his study titled 'The principal as Instructional Leader: guiding schools to improve instruction', avers that considering research conducted in South Africa, principals are still struggling to exercise instructional leadership in schools. Furthermore, the HODs are also striving to execute their duties as instructional leaders.

2.11 Chapter summary

The chapter has reviewed literature on instructional leadership and various aspects to leadership and supervision, particularly, from the perspectives of the HODs. Special focus was put on managing the curriculum and the role of the HODs in it, as well as exploring how their instructional leadership practices may contribute to the learners' academic performance. Three models of instructional leadership were selected to serve as an analytic tool to assist me in trying to understand the role of the HODs as instructional leaders. The next chapter discusses in detail the research design and methodology that was used in this study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

In the preceding chapter, relevant literature was reviewed of Heads of Department's role in managing Mathematics teaching and learning in secondary schools. As part of literature review chapter, a discussion of the theoretical framework was also done. To frame the analysis, I used three instructional leadership models; one was developed by Hallinger and Murphy (1985), the second by Murphy (1990) and the third by Weber (1996). This chapter presents a detailed discussion of the research design and methodology that was used in the study. The chapter first outlines the research paradigm and then moves on to discussing the approach; the design as well as the methodology that was used in the study. The methods that were used in identifying and selecting the participants to participate in the study and that of generating data are also discussed. The data analysis techniques; the methods of ensuring trustworthiness of the findings, as well as, the ethical considerations are discussed.

3.2 Research paradigm

Willis (2008, p.21) mentions that "A paradigm is a comprehensive belief system, world view, or framework that guides research and practice in afield". Paradigm is defined as "a loose collection of logically related assumptions, concepts or propositions that orient thinking and research" (Bogdan & Biklen, 1998, p. 22). Denzin and Lincoln (2008, p. 245) define a paradigm as a 'set of beliefs that guide action". Krause (2005) concurs with the scholars cited above and further highlights that as part of the discussion of a research paradigm is the issue of epistemology. Krause (2005, pp. 758-759) further argues that "epistemology addresses how we can come to know reality while methodology identifies the particular practices used to attain knowledge of it". According to Whitehead and McNiff (2009, p. 22), epistemology refers to "a theory of knowledge which involves two parts, a theory of knowledge (what is known), and a theory of knowledge acquisition (how it becomes to be known)". Therefore, every research is based on some philosophical suppositions about the nature of the world and how knowledge about the world can be acquired (Myers, 2009).

The study that is reported in this dissertation was located within interpretive paradigm. This paradigm is characterised by a concern for the individual's meaning rather than that of the researcher (Cohen, Manion & Morrison 2011). Henning, Van Rensburg and Smit (2004) aver that knowledge in the interpretive paradigm can also be observed by describing people's self-understanding, intentions, and beliefs. Interpretivism came about as a response to positivism and post-positivism in the social sciences. In the context of this study, this paradigm assisted me in understanding how the HODs made meaning through social interactions and their experiences of instructional leadership (Maree, 2007). This paradigm acknowledges that there is no one single absolute truth. In this regard, Guba and Lincoln (1994) affirm that truth is not discovered by the researcher but is created through engagement by the researcher and the participants. Cohen, Manion and Morrison (2000, p.35) among other characteristics of interpretive paradigm indicate that it, in a non-statistical manner, attempts to understands the actions or meanings rather than cause and effect. Through this paradigm, efforts are made to get inside the person and to understand him or her from within (Cohen, *et al*., 2011).

The motive of interpretive paradigm is to allow the participants to share their experiences of the phenomenon that is explored. Hennink, Hutter, and Bailey, (2011 p.15) concur with this view by saying that the "reality is social constructed as people's experiences occur within social, cultural, historical or personal contexts." In this study, the HODs discussed their experiences in managing teaching and learning in Mathematics. The paradigm is relevant fo4 the teaching of Mathematics in secondary schools. Learner academic achievement in Mathematics continues to raise eyebrows in the entire world especially in South Africa due to their failure rate in this subject among the learners. The participants were able to relate to their lived experiences and understanding of their role in managing Mathematics teaching and learning in their schools. Interpretivist scholars pursue methods that enable them to understand in-depth the connection of human beings to their environment and the part that those people play in making the social fabric of which they are part (McQueen, 2002).

3.3 Research approach

Qualitative and quantitative approaches are commonly used in educational research. The choice of the approach is influenced by what is being studied and the purpose. A quantitative approach is defined as the "one in which the investigator primarily uses post positivist claims for developing knowledge use of measurement and observation" (Creswell, 2003, p.18). Qualitative approach "is one which the inquirer often makes knowledge claims based primarily on constructivists perspectives the multiple meanings of individual experiences (Creswell, 2003, p.18). Creswell (1994) posits that a researcher chooses a qualitative approach because of the need to explore and give an informative view. In this study, I attempted to get the HODs' perceptions as leaders of learning. Qualitative approach was also chosen for this study because the generation of data occurred in the natural setting of the participants. The HODs and the teachers were interviewed at the venue of their choice, where they felt comfortable. The researcher does not pass judgement but becomes a leaner who can relate a story from the point of view of the participants. Smit (2001) alludes to the fact that qualitative approach is interested in discovering the views and meanings of the participant's world. Yin (2011, p.8) concurs with the view that a qualitative approach is suitable due to its "ability to represent the views and perspectives of participants". Strauss and Corbin (1990) posit that qualitative research is utilised in order to comprehend information such as attitudes and feelings which are difficult to quantify. In qualitative research meaning is crucial. Merriam (2002) contends that qualitative research is about the experiencing how people interact socially.

Through the use of this approach, participants had the opportunity to converse about instructional leadership in the real world. The participants and I were using words to give meaning to the content of the research and included an open- ended interviewing. Through qualitative approach to research, the study sought to enquire and elicit insights about how the HODs managed the teaching of Mathematics and achieve learning outcomes effectively.

3.4 Research methodology

Case study is a research where the researcher "explores in-depth a program or event, an activity, a process on one or more individuals" (Creswell, 2003, p.15). A case study

provides a distinctive example of real people in real situations which enable the readers to understand ideas more clearly than simply representing them with abstract theories or principles (Cohen, *et al*., 2011, p. 289). Furthermore, Rule and John (2011, p. 4) argue that a case study "is a systematic and in-depth investigation of a particular instance in its context in order to generate knowledge". The case in this study is Mathematics HODs' instructional leadership role. The purpose of this study was to investigate the way the three HODs manage learning and teaching of Mathematics in secondary schools.

According to Cohen, et al. (2000), a case study has the following characteristics. It is concerned with a rich and vivid description of events relevant to the case. It focuses on individual actors or groups of actors, and seeks to understand their perceptions of events. The HODs in this study possessed rich data as they discussed their understanding of the instructional leadership role. In the secondary schools, there is one HOD for Mathematics; therefore, the focus was on one HOD per school.

3.5 Selection of participants

The quality of a piece of research not only stands or falls by the appropriateness of methodology and instrumentation, but it also stands by the suitability of the sampling strategy that has been used (Cohen, et al. 2000). Sampling is also informed by the paradigm within which the study is located. Decisions should be made about the settings and people that should be incorporated in the study in order for the study to achieve its objectives. Cohen, *et al*. (2000) mention four key factors that determine sampling; the first is the sample size; the second is the representativeness and parameters of the sample; the third is access to the sample and the fourth and the last one is sampling strategy to be used.

3.5.1 Sample size

Depending on the approach (qualitative or quantitative) that is used in the study, the sample size will vary. It also depends on the nature of the research and the purpose. The researcher needs to decide on the unit of analysis and the data generation methods that will be used. Sandelowski (1995, p.179) say that "a common misconception about sampling in qualitative research is that numbers are unimportant in ensuring the adequacy of a sampling strategy". The interest in qualitative approach is in meaning

rather than theory (Crouch, & McKenzie, 2006). Eight participants participated in this research study, and these were three Mathematics HODs and five Mathematics teachers.

3.5.2 Access to the sample

Sampling may be a waste of time if the researcher cannot gain access to the research site. Therefore, the "researcher will need to ensure that not only that access is granted, but is in fact practicable" (Cohen, *et al*.,2011, pp. 98-99). Sample sites and or sample participants might deny access. The researcher obtained permission from the principals of schools to conduct research

3.5.3. Sample and sampling strategy

There are two main methods of sampling. The first is known as probability sampling where random sampling belongs. This sampling strategy is underpinned by the desire to generalise the findings. Because of that, it foregrounds the principle that every member within the population should have equal chances of being included in the sample. The second method is known as non-probability and purposive and convenience sampling strategies belong to this big group of samplings. In this method, the researcher selects the participants to be included in the study. Evidently, these methods are deployed in studies where the results are not to be generalised.

Eight participants in three different secondary schools in Mafukuzela Gandhi circuit were purposively sampled for this study. As discussed in Chapter One, these schools were 'non-fee paying' schools. These types of schools are declared by the DoE as non-paying because they are located in areas that are poverty-stricken and the levels of unemployment are high. The reason for this sample is that all the participants were relevant for the study which was researching about the instructional leadership HODs' role in Mathematics teaching and learning in secondary schools. All the three schools belonged in the Pinetown District as demarcated by the provincial Department of Education. Three participants from each school comprised one HOD in Mathematics and two Post-Level One educators who taught Mathematics.

Purposive sampling was used to handpick the participants. The HODs were selected because they constituted the main focus of the study which sought to understand their role as instructional leaders in Mathematics teaching, Post-Level One educators were

also selected so as to provide information about how they perceived the effectiveness of the heads of department in managing their roles as instructional leaders. Within the interpretivist paradigm the role of the researcher is to **"**understand, explain and demystify social reality through the eyes of different participants (Cohen, *et al*., 2007, p.19). The researcher targeted Mathematics teachers and (HODs) for the effectiveness of the study. These participants were selected because they are appropriate and hold relevant knowledge about the study. Purposive sampling is effective mostly in small scale research. I gained access to the schools by firstly, applying to the Department of Education in KwaZulu-Natal and secondly through the gatekeepers of the schools that were sampled.

3.6 Data generation method

Merriam (2002) posits that there are various data generating methods in qualitative research such as observations, interviews, artefacts, document analysis and others. The study focused on interviews and observations to access informative data. Qualitative interviews were semi-structured conversations between researcher and the participants. The study focused on examining, in-depth, the views of lived experiences through the sampled participants.

3.6.1 Interviews

Cohen, *et al*. (2011) aver that interviews are relevant instruments of generating data as it is salient tool for the researcher to access data from the participants. Interviews are important in that they explore the experiences, beliefs and views of individuals. The HODs and views of the Mathematics teachers were the focal point for the research Face to face interviews were conducted for the study. I developed interview schedule to be answered by the participant in order to gather information. The questions in the interview schedule were derived from the objectives of the research. During the interview participants were answering questions about instructional leadership and its impact in mathematics.

The research study employed qualitative interviews. Scott and Morrison, (2005, pp. 134-135) maintains that "the key issue for such interviews are requirements for the interviewer to define the interviewee as a person who is actively constructing his or her own world". Interviews are classified into structured, semi-structured and unstructured.

Determining teachers and HODs' in-depth views and experiences, semi-structured interviews was relevant to employ for the study. Using one on one interviews with the HODs and Mathematics teachers allowed the researcher the opportunity to probe for more clarity and to attain flexibility. Face to face interviews allowed me to capture emotions and behaviours of the participants. It is essential in that it clears ant confusions that the participants might have. The advantage of the interviews is that it alerts the researcher of any discomfort or enthusiasm that the participants might feel during the interview. Participants in the study were interviewed in their natural environment, which are their schools.

Maree (2007) assert that probing is a technique used by the researcher to prompt for more information from the participants. Probing allowed me to ask follow-up questions to produce more information. Patton (1990) mentions three types of probes; detail-oriented probes, elaboration probes and clarification probes. This study utilised all the three probes to access more and rich information from the participants. Rubin and Rubin (2005) maintain that clarity seeking questions are asked for the clarification of concepts during the interview. I used an interview schedule to conduct the interview. The interview schedule had key themes so as to guide the interview towards achieving the objectives of the research study. The interviews were tape recorded so as to keep an accurate record of all the important information gathered during the interview. Yin (2003) asserts that voice recorders provide an accurate version of any interview.

3.6.2 Observations

Observation is the second technique that I used for this study. Observations are about "looking and noting systematically people, events, behaviours, settings, artefacts, routines and so on" (Cohen, *et al.*, 2011, p. 456). Observations enable the researcher to acquire important data. Cohen et al., (2011) maintains that this method of data generation is flexible because it allows the researcher to observe the participant's in their natural setting. There are noted disadvantages of using observation method which among others are, it is time consuming and selective. Participants might also be reluctant to be effective due to the presence of the researcher among them. The study engaged in non-participatory observation. This type of observation takes place when the researcher is not part of the group activities but merely an observer. In the context of this study, I arranged with the HODs to get permission to attend their subject meeting so as to gather data that

is important for the research study. I used observation schedule to generate data during the meeting. The focus in observation was on the HODs. The HODs were important participants as the research study was focused on their instructional leadership role.

3.7 Data analysis

McMillan and Schumacher (2010) assert that qualitative data analysis involves generating data and analysing it into categories. Vithal and Jansen (2001) share similar views on this issue when they highlight that data analysis is a method of interpreting the data generated. In qualitative research data analysis depends on the case studied (Baxter & Jack, 2008). "Qualitative data analysis involves organising, accounting for and explaining the data; making sense of data in terms of the participants' definitions of the situation, noting patterns, themes, categories and regularities" (Cohen, *et al.*,2011, p.537). Yin (1994, p.102) argues that, "Data analysis consists of examining, categorising, tabulating, or otherwise recombining the evidence to address the initial propositions of the study".

The interview data in the study was transcribed. The analysis method used is content analysis. Content analysis is a tool used to examine things (Maree, 2007). I was guided by the interviews schedule and the research questions as I developed codes of meaning and subsequently, in developing the themes of the study. Yin (2009) asserts that data analysis is a method of reducing data into meaningful parts that are smaller. Cohen, et al. (2011, p.564) outline stages of content analysis, and these stages are Defining the units of analysis; paraphrasing the relevant passages of texts; defining the level of abstraction required of the paraphrasing; data reduction and deletion; data reduction by combining and integration paraphrases at the level of the abstraction required; putting together the new statements into a category system and reviewing the new category system against the original study. I followed this outline to make sense of the generated data**.** Mayring (2000) maintains that in qualitative content analysis categories are allocated in all data that has been coded. Data gathered from interviews in the study was coded according to meaningful themes. Rubin and Rubin (2005) concur that coding involves labelling of concepts and themes.

3.8 Trustworthiness

Lincoln and Guba (1985) assert that trustworthiness involves four criteria called credibility, transferability, dependability, and confirmability of the research study. Each of these criteria is discussed below.

3.8.1 Credibility

Credibility involves the truthfulness of the data gathered in the research study. One of the ways in which I enhanced credibility of the study was the use of member-checking and triangulation of both the methods of data generation and the participants. Patton (2002, p.561) describes member-checking as a technique in which the researcher presents the participants "an opportunity to provide context and alternative interpretation". To ensure that the findings were credible, I had to ensure that I do not coerce the participants and that they know what the study is all about and also that they know everything about their rights. The other technique I utilised was triangulation. Greene, Caracelli and Graham (1989) list the following purposes of triangulation:

- Triangulation seeks convergence, corroboration, correspondence of results from different methods.
- Complementary seeks elaboration, enhancement, illustration, clarification of the results from one method with the results from the other method. In this study, the data generated through semi-structured interviews were reconciled with the observations.
- Development seeks to use the results from one method, where development is broadly construed to include sampling and implementation, as well as measurement decisions.
- Expansion seeks to extend the breadth and range of inquiry by using different methods for different inquiry components.

These two methods of data generation (interviews and observations) were reconciled for credibility. Voice recorder captured the data during the interview which also enhance the credibility of the study.

3.8.2 Transferability

Transferability is used by the readers of the research study. It is a level at which the readers can utilise the current research to their contexts. Conclusions and methods used from the study can be utilised in other more similar situations. Data generation methods utilised in the study were explained and the rationale of using them. To ensure that the findings were transferable, I gave a detailed or thick description of the methods and all other steps that I took during the course of the study. Thick description is an "extensive and careful description of the time, place and culture of the interactions in a social setting" (Mertens, 2005, p.256).

3.8.3 Dependability

Bitsch (2005, p.86) defines dependability as "the stability of findings over time". It is concerned with the consistency of the research findings. The interpretation of data must be in line with the data generated in the field for consistency. In this study, I used similar interview schedule for all the participants in the study. The observations done in the three secondary schools had the same questions to ensure consistency of the findings and dependability.

3.8.4 Confirmability

Confirmability is "concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination, but clearly derived from data" (Tobin & Begley, 2004, p.392). It determines whether the researcher was biased when analysing data that had been generated. In the context of this study, I made sure that I checked with my participants whenever I had developed any interpretation about what they had said. That technique is referred to member-checking. In addition, when the transcripts had been done, I gave each participant a copy so that they could confirm if what I had written down was a true reflection of what transpired during our discussions.

3.9 Ethical considerations

Ethics is concerned with moral issues. I made sure that I adhered to the highest ethical standards of conducting qualitative research. Kumar (2005) avers that there are different ethics for different professions. Van Rensburg (2001, p.28) mentions that research ethics refers to "the moral dimensions of researching; our decisions about what is right and

wrong while engaged in research". Qualitative research involves sharing information of the participants with the researcher. The researcher needs to gain trust from the participants throughout the stages involved in the research. Creswell (2012) maintains that ethical issues involve respect of the participants, informed consent, confidentiality, voluntary participation, protection of the participants against any harm and caring. For purposes of this study, I obtained the ethical clearance from the University of KwaZulu-Natal. The provincial Department of Education granted me permission to conduct the study in the researched schools. Permission to conduct research in the three secondary schools were granted by the principals of the sampled schools. I visited the schools to discuss with the participants the procedures of the research. Participants were informed that participation was voluntary and that they had the right to withdraw from the research at any stage during the research process. After they had agreed to participate, I gave each one of them a declaration of informed consent forms to sign and they all signed. In addition, I assured them that whatever they told me would remain between us and that nobody would know the content of our conversations. Therefore, strict confidentiality and anonymity were guaranteed.

3.10 Limitations

The research focused on instructional leadership role of the Heads of Department in managing Mathematics teaching and learning in secondary schools. The participants were the Mathematics HODs and the Mathematics teachers. The main limitation can be that the study was conducted in three secondary schools only. The second relates to the lack of interest shown by some of the participants when I explained to them that there would be no remuneration for the interview conducted. Other limitations are the disturbances during the interviews due to unforeseen circumstances.

3.11 Chapter summary

The purpose of this chapter was to discuss in detail the research design and methodology that was used in the study. The research study was conducted in three secondary schools in Mafukuzela Gandhi Circuit in the Pinetown District. Participants were purposively selected in the three secondary schools to gain rich data and convenience since they were not too far from my place of work. The next chapter, which is Chapter Four will provide a detailed discussion of the analysed data.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Introduction

The previous chapter presented a detailed discussion of the research design and methodology employed in the study. This chapter focuses on presenting and discussing data generated through the use of interviews with Mathematics HODs and the teachers, as well as observations. The data is presented thematically and under each theme I start by presenting data from the HODs and then I move on to present data from the teachers. However, due to the fact that the first theme addresses issues unique to the HODs, I do not follow this pattern.

Before I present the interview data, the chapter commences with the profiles of the research sites and the participants. This is done in order to contextualise the setting and the data generated. This was done because context in qualitative research is important (Patton 1990). The data is presented under three themes and these are Heads of Department's understanding of their role as instructional leaders in the teaching and learning of mathematics in secondary schools; the Heads of Departments' management of teaching and learning in secondary schools and supporting teachers in the teaching of Mathematics for improved learner academic performance. In addition to the three main themes, there are emerging sub themes that are used from the data. *Verbatim* quotes were utilised to make certain that the voices of the participants were preserved. In addition, related literature and three theoretical frameworks were infused to strengthen data discussions. Lastly the summary brings the chapter to the end.

4.2 Profiling research sites and participants

As indicated in the previous chapter, three secondary schools participated in the current study. A total of nine participants were initially selected in the three schools as relevant in providing rich data for the study. One teacher in Mermaid Secondary School after signing the consent form withdrew from the study just before interviews could commence. I had informed all the participants of their right to participate and to withdraw

from the study at any stage during the research process. Although the withdrawal of this participant emotionally destabilised me and the research, I had to honour my commitment, and eight participants remained and were interviewed.

4.2.1 Profiling selected three secondary schools

This subsection describes the schools which were selected for this study. Below is a table which summarises the information about each school. For ethical considerations, *pseudonyms* were used for the names of all the schools involved, and I named these schools Penguin Secondary School (PSS), Dolphin Secondary School (DSS) and Mermaid Secondary School (MSS) respectively. A table is given below with the relevant information of all the schools sampled.

All three schools were situated within the same circuit, namely, Mafukuzela-Gandhi in the Pinetown District, KwaZulu-Natal. The area around the schools is characterised by free government houses for low income earning people and informal settlements. Among some of the challenges facing the schools was the shortage of classrooms since they were all secondary schools and had specialist subjects which needed special classrooms. The shortage of classroom had a ripple effect on other factors such as overcrowding of learners in the classrooms. These schools shared the same ethnic and socio-economic background. They were declared No-Fee paying schools by the Department of Basic Education. This means that parents were not liable to pay school fees for their children's education. As secondary school, these schools started from Grade 8 and the highest class was Grade 12. In Grade 8 and Grade 9 all learners were doing same subjects including Mathematics because such grades belong to the General Education and Training (GET) Band where there is no choice of subjects. Grade 10 to Grade 12 belonged to Further Education and Training (FET) Band, where the learners choose the subjects to suit their educational needs. They also share more or less the same challenges in terms of learning and teaching support materials.

T able 4.1 Information table for schools

Name of school	Enrolment	No. of learners GET Phase	No. of Maths learners in FET Phase	No. of teachers	No. of Maths teachers	No. of classrooms
Penguin SS	1460	455	90	51	3	20
Dolphin SS	980	240	70	45	3	15
Mermaid SS	1500	480	100	53	4	25

Penguin Secondary School (PSS) was an old school with an enrolment of 1460 learners which consists of 48 teaching staff and 3 non-teaching staff. There were two deputy principals and five HODs. The school was visibly vandalised and some of the classroom doors and windows were broken. There were 7 members of the SMT including the principal. There were 3 Mathematics teachers teaching from Grade 8 to Grade 12.

Dolphin Secondary School (DSS) had an enrolment of 980 learners. The school had a total of 43 teaching staff, including the principal and a deputy principal. There were also 2 non-teaching staff members. Like at PSS, the school buildings at DSS had been vandalised with doors, windows and chairs having been stolen. There were 6 SMT members including the principal. There were also 3 Mathematics educators for all the grades.

Mermaid Secondary School (MSS) was an old school consisting of 1500 learners, 53 teachers and 3 non-teaching staff. Unlike PSS and DSS, the school had 2 deputy principals. At the time of the research, the Department of Education had recently done some renovations at the school in terms of changing the roof which was leaking and building a multi-purpose playground for the learners. There were 8 SMT members including the principal. There were 4 Mathematics teachers for Grade 8 up to and including Grade 12.

4.2.2 Profile of selected participants in secondary schools.

This subsection describes the participants, which were selected for this study. The table below presents the biographical information of the participants sampled for the study. *Pseudonyms* were used for the names of all teachers and HODs selected for ethical

considerations. Teachers have been named Teacher A up to Teacher E and HODs have been named as HOD1; HOD2 and HOD3 respectively.

The HOD from Penguin Secondary School is referred to as HOD1; the HOD from Dolphin Secondary School is referred to as HOD2 and lastly the HOD from Mermaid Secondary School is referred to as HOD3.

Table 4.2 Information table of participants

Participant	Age	Highest Qualification	No. of Years Teaching	Years of Maths teaching	Years as an HOD
HOD 1	52	Advanced certificate in Education (ACE)	27	None	9
HOD 2	49	Secondary Teachers Diploma (STD)	20	None	2
HOD 3	48	Secondary Teachers Diploma (STD)	22	None	5
Teacher A	45	Advance Certificate in Education (ACE)	14	10	
Teacher B	40	Bachelor of Education (Honours)	12	5	
Teacher C	35	Post Professional Diploma in Education (NPDE)	8	3	
Teacher D	48	Bachelor of Education (Honours)	21	6	
Teacher E	43	Advanced Certificate in Education (ACE)	11	5	

The first head of department (HOD1) was a 52-year-old male at Penguin Secondary School (PSS) who had been teaching for 25 years. His professional qualifications included a Secondary Teachers Diploma (STD) in which he majored in Mathematics and Physical Science. In addition, HOD1had an Advanced Certificate in Education (ACE) specialising in Physical Science. Of his 25years teaching experience, he had taught Physical Science for only 15 years of his teaching career. Upon his appointment as an HOD he continued to teach Physical Science to Grades 11 and Grade 12 learners. He had an experience of 9 years as an HOD for Mathematics and Sciences department. This

department include managing Mathematics, Physical Science, Life Sciences, Technology and Natural Science. There are 11 teachers in his department.

The second head of department (HOD2) was a 49-year-old male at Dolphin Secondary School (DSS) with a teaching experience of 20 years. His professional qualifications included a Secondary Teachers Diploma (STD) in which he majored in Mathematics and English. In addition, he held an International Computer Driving Licence. He had been an HOD for 2 years in the Mathematics and Science department. He had been teaching Computer Applied Technology (CAT) only for 11 of his 20 years teaching experience. His department included managing Mathematics, Physical Science, Life Science, Computer Applied Technology (CAT) and Natural Science. There were 9 teachers in his department. He taught CAT in Grade 10 up to and including Grade 12.

The third head of department (HOD3) was a 48-year-old female at Mermaid Secondary School who had been teaching for 22 years. Her professional qualification included a Secondary Teachers Diploma (STD) in which she majored in Life Sciences and English. For the last 15 years, she had been teaching Life Science. She had been an HOD for 5 years in Mathematics and Science department. Her department included managing Mathematics, Physical Science, Life Science, Technology, Geography and Natural Sciences. There were 13 teachers in her department. She taught Life Sciences in Grade 11 and Grade 12.

Teacher A and Teacher D were Mathematics teachers at Penguin Secondary School. Teacher A was teaching Mathematics at GET Phase and held an Advanced Certificate in Education. He had 10 years' experience teaching in Mathematics. Teacher D was teaching at FET Phase and had an Honours degree in Education. This teacher had been teaching Mathematics for six years.

Teachers B and Teacher C were Mathematics teachers at Dolphin Secondary School. Teacher B was teaching Mathematics at GET Phase and had an Advanced Certificate in Education. He had five years in Mathematics teaching. Teacher C was teaching at FET Phase and held NPDE diploma. He had been teaching Mathematics for three years.

Teacher E was a Mathematics teacher at Mermaid Secondary School. He was teaching at FET Phase and held an Advanced Certificate in Education (ACE). He had been teaching Mathematics for five years.

4.3.1 Heads of departments' understanding of their role as Instructional Leaders in the teaching and learning of Mathematics in secondary schools

The HODs in this study regarded their roles as that of supervising and managing teaching time, teaching and assessment. This information came from the HODs only because the question about their understanding was directed at them and not to the teachers. The data revealed that the HODs understood their role as instructional leaders to focus on the management of teaching, teaching time as well as assessment of learners. This was evident in the discussion with HOD1 for example, who pointed that he managed time in the teaching of Mathematics subject. This participant had this to say:

> *This involves the issue of how to manage time in the teaching of the subject, It involves the issue of how we arrange our time in terms of submitting the question papers… this involves the time management...to motivate them [teachers] to be on class on time to be exemplary to the learners and deliver the matter [subject matter] accordingly* (HOD1, Penguin Secondary School).

I received a similar response from HOD2 from Dolphin Secondary School who stated that instructional leadership pertains to managerial work. This is what the participant said:

> *...for me instructional leadership is all about giving instruction pertaining to work only...It means that I make sure that teachers are managing their teaching time effectively, making sure that they are in class teaching and not disturbed by other things which do not involve teaching* (HOD2, Dolphin Secondary School)

The response from HOD3 from Mermaid Secondary School was not different from the other HOD participants in terms of the focus of their work. According to this HOD, instructional leadership involves managing the curriculum, time and assessment. This is the response from the participant:

> *...managing curriculum, making sure that all assessment and tasks that are supposed to be done by learners are done and they are of good quality and they are done in time. I have the records of the learners who are not doing well and I also talk to teachers maybe asking which learner do they think maybe can improve not in maths only but it the entire stream then I go to the particular*

learner and we make arrangements just talking to the learner and motivating the learner (HOD3, Mermaid Secondary School).

While there was broad agreement among the HOD participants that time for teaching should not be disturbed in any way, it was revealed that it was threatened. The HOD from DSS revealed that because of contextual factors, like teacher union meetings that were not planned for and properly organised, it was sometimes difficult for them to manage time effectively. This is what this HOD had to say:

You will find that teachers are attending meetings organized by the unions during teaching time and classes are disturbed (HOD2, Dolphin Secondary School).

It was revealed from the responses that the HODs used period registers to manage teaching and learning time. It was evident that the three HODs were passionate about using this tool to assist them in managing time that teachers go to classes for teaching and learning activities and the time they (teachers) finish off in classes. This is what they had to say about period registers:

We also have period registers which teachers sign on when getting in and out of classroom (HOD1, Penguin Secondary School).

The views expressed by the HOD from PSS above were also shared by an HOD from DSS. This is what HOD2 from Dolphin Secondary School had to say about the use of period registers;

…before I go to the classes (lessons…), then it means for the first five minutes I will go and check in every class and I will ask whose period is it and the learners will tell me and I will record in my period register… (HOD2, Dolphin Secondary School).

The HOD from MSS echoed the same sentiments as the other two HODs; this is what she had to say:

…on top of everything we have what you call a period register, yes we do have period registers (HOD3, Mermaid Secondary School).

All the three HODs showed commitment on their management of teaching time. They checked the period registers to identify teachers who did not attend to the classes during teaching time to account for their non-attendance**.** The response of HOD1 goes like this:

> *We do have some meetings sometimes in case we have some issues to advise each other that are somehow maybe on burning issues, maybe when the educators fail to observe teaching time as they are supposed to be, our periods [actual teaching time] are 55 minutes, maybe the teacher fails to go to class five or ten minutes late we talk to the particular teacher so that he/she is able to teach within the required time of the period …* (HOD1, Penguin Secondary School).

The HOD from DSS commented on what they do as a follow-up on what the data on period registers for teacher shows and this is what he had to say:

> *Okay after a week we will assess those period registers to find out how many periods were not attended and we call that teacher and listen to whatever reason that he/she is going to give then we record down* (HOD2, Dolphin Secondary School).

Similar views came through from HOD3 who said:

> *… but when I check and there are three periods they did not attend, I will have one on one talk with the teacher maybe what happened here and what was the problem* (HOD3, Mermaid Secondary School).

The HODs displayed broad knowledge of their role as instructional leaders. It was noted, through their responses, that the participants were sensitive about the time for teaching and managing curriculum as part of their roles as instructional leaders. They certainly did not like a situation where teaching time was lost to some other activities which did not enhance teaching Mathematics and other subjects. In line with these findings, vast literature (Bush & Glover, 2002; Southworth, 2009; Hoadley, Christie & Ward, 2009; Bush, 2011) suggests that most educationists and researchers maintain that instructional leadership is mainly about teaching and learning. It was apparent from the responses shared that the HODs demonstrated the importance of using time for teaching and learning earnestly.

Other scholars such as Ali and Botha (2006) propose that the HODs should spend most of their time monitoring teaching and learning in their departments. It is important that teachers use scheduled instructional time productively. Among other stakeholders that were viewed as notorious for interrupting teaching and learning in schools was the South African Democratic Teachers Union (SADTU). However, it was reported that SADTU was turning a new leaf and had declared that union meetings would no longer be held during school contact time. It was reported that Mlambo, S (2016) has said that efforts had been made to ensure that effective teaching was taking place. HOD2 showed concern about the practice of disturbing instruction time with non-teaching and learning activities. Protecting instruction time, as it emerged from the HODs' responses enjoys prominence in the literature. For instance, according to Hallinger and Murphy (1985), activities which are not included in the teaching and learning process should be eliminated from the designated time. The Department of Education (2016) stipulates in its Report 550 that Mathematics notional time per week in public secondary schools is approximately 4 hours. In view of such developments, the HODs took it upon themselves to administer a monitoring tool that assisted them in managing time for effective teaching and learning. The findings revealed that the HOD participants seemed to share the common understanding that effective teaching and learning should not be compromised in any way. Their emphasis was to ensure that the primary goal of the school, which is teaching and learning, is achieved. Stemming from the study it is apparent that there is concurrence between the literature and the findings in the responses of the HODs. Jaca, (2013) confirmed that the HODs' role is to manage the actual teaching, ensuring that teachers are teaching in their classrooms.

HOD3 from Mermaid Secondary School went even further and highlighted managing curriculum also identified by another HOD as one the activities that she was in charge of in her department. When giving clarity to managing curriculum she mentioned the assessment of learner's tasks whether they were of good quality or not. In a nutshell, the responses that emerged indicated that the HODs understood their role as instructional leaders in terms of managing time for effective teaching and learning as a crucial component of their job description**.** Their understanding was consistent with scholarship in the area of instructional leadership.

4.3.2 Heads of departments' management of teaching and learning of Mathematics

In this theme, I discuss responses from Mathematics HODs and the teachers. Four subthemes that emerged and these are monitoring of learners and teachers work in Mathematics teaching and learning; conducting classroom visits; teacher appraisal and challenges in managing teaching and learning in Mathematics. Data from the HODs and the teachers were generated through the use of interviews and observations were also incorporated to provide complement each other.

4.3.2.1 Monitoring of learners and teachers work in Mathematics teaching and learning

The data in the three researched schools unveiled the HODs' instructional leadership role included monitoring of learners and teachers' work. HODs used the DoE monitoring tool to measure the impact on teaching and learning. Checking teachers' daily lesson plans, learner's assignments and teachers' annual teaching plan are among the list of activities that the HOD participants monitor. This is what one of the HODs had to say concerning monitoring of learners and teachers work:

> *…we are to monitor what educators do, like checking assignments [given by teachers to learners], investigations, tests and so forth. (HOD1*, Penguin secondary)

HOD 2; responded by saying:

> *…when it comes to mathematics there is a monitoring tool that is provided by the department, so it is a matter of using that tool in answering those questions and then you are able to monitor mathematics using that tool* (HOD 2 Dolphin secondary)

HOD 3 shared a common understanding as HOD 1 in terms of monitoring.

> *I check lesson plan, I check CASS (continuous assessment schedule sheet) and I check the tasks even before the learners write…Oh also is to check if marking has been done and also the transfer of marks is well organised...it is monitored in two categories; it is monitored every week, there is Jik'imfundo*[an organised

programme to support teachers and management in curriculum delivery strategies and curriculum supervision] *the tracker where we are told to monitor each and every week, so for each and every day I call a teacher and they know their schedule where I ask for the tracker and also the learners books. Twice a quarter I collect files from the teachers where I check the ATP (annual teaching plan), development of ATP even though they go hand in hand with the tracker, so I make sure that they do have the ATP* (HOD 3 Mermaid secondary)

The above findings maintain that there is evidence of HODs monitoring teachers and learners work. This is in line with PAM document (1998), that HODs need to monitor learner's and teacher's work in the department for high performance. Checking learner's assignments, tests enable the HOD to assess whether they are of required standard as stipulated by the DoE. Learner's tasks are monitored to ensure high quality of instruction for realization of school's goals (Murphy 1990). The effective leader should display positive influence on both learners and teachers to achieve the desired goals. Literature confirms the findings, that principals and Hoods in schools play a vital role in improving and maintaining the quality of teaching and learning (Earley and Wendling 2004). They are responsible for the performance of learners and the accountability of teachers to perform accordingly. The principal as well as other school leaders are concerned with the performance of mathematics in schools as it known to be a challenging subject. One HOD mentioned monitoring using Jik'imfundo tracker, to ensure that it is in line with the teacher's work plan. As highlighted previously, this tool assist HODs to manage the work effectively as it keeps track of curriculum implementation. The sub theme discusses HODs in terms of the monitoring of learners and teachers work. Monitoring, according to data presented by the HODs, include checking tests given to learners and whether, or not, they are of quality standard**.**

4.3.2.2 Conducting classroom visits

The participants interviewed had much to discuss regarding the context of classroom visitations of HODs. Beginning with the responses from the HODs, the responses of teachers then followed. HOD1 had this to say:

...we do what we call class visitation schedule which we normally have some problems because of the intervention of some unions, feeling that this is not

acceptable but under normal circumstances educators do see the need to be visited in the classroom situation. (HOD 1, Penguin secondary).

To confirm the view from HOD1, this is what HOD2 had to say:

I do not like to hold class visits because there is no enough time to do it as I also have my own load, teachers don't want it and some teacher union discourage teachers to be visited by us unless it is for Integrated Quality Management System (IQMS) purposes.

HOD3 also had a similar response like that of HOD2 regarding class visit during IQMS by saying:

I only do class visits in IQMS otherwise there is no time set for such activity during a normal school day (HOD3, Mermaid Secondary School).

From the teacher's responses, it was evident that they did not regard the HODs' class visit as important, highlighting that they (HODs) did not know much about the subject content. This is what Teacher A had to say:

I think it is not fruitful; it does not help me at all. I believe in order for him [HOD] to do that he needs to have another teacher who understand what I am teaching, because when I come to your class and listen to the lesson that I can't understand what you talking about because I don't have a background of what you talking about in terms of maths, I will become bored and don't understand ... (Teacher A, Penguin Secondary School).

Teacher B shared similar response as Teacher A when he said:

Classroom visits are not important issue for him [HOD], he does not understand so many aspects of Maths, so when he comes which is very few times he will just stay for few minutes and leave in that way I am not developed by him. He does not understand the content of Mathematics (Teacher B, Dolphin Secondary School).

Nevertheless, this is what Teacher C had to say:

> *I may not going to give appositive answer on that because I have never had that experience with my HOD, he does not come to visit me in class so I won't respond positive* (Teacher C, Dolphin Secondary School).

> *The time he came to do class visit was during IQMS as my senior otherwise no other class visit that he has done pertaining mathematics* (Teacher D, Penguin Secondary School).

Teacher E responded in the same manner as Teacher C saying:

> *To this far because our HOD to be honest she took the position after the HOD that has resigned but up to now she has not done any class visit* (Teacher E, Mermaid Secondary School).

It appeared that there was no consensus among the participants regarding the value of classroom visits. While one HOD viewed classroom visits as an essential supervisory strategy, other HODs highlighted obstacles to classroom visits. Along these lines, it may be inferred that the former positioned classroom supervision of teachers as one of the instruction leadership roles of the HODs which was likely to enhance quality teaching. On the same token, it may be argued that the latter did not see much value in classroom visits and therefore, emphasised the challenges regarding such visits. From the teachers' perspectives, classroom visits were not effective due to the supposed lack of Mathematics content knowledge by the HODs. Smith, Mestry and Bambie (2013) contend that as one of their instructional leadership roles, the HODs need to be effective in coordinating the subjects they manage. In the case of this study, it was apparent that such coordination did not exist since the participants had diverse views about classroom supervision. Emphasising the importance of classroom observation or supervision, Weber (1996) posits that maintaining high visibility in the classrooms provide teachers and learners with continuous support for effective performance. However, the present study has found that the visibility of the HODs in the classrooms for supervisory purposes may not necessarily translate into effective performance when teachers lacked confidence in the ability of the HODs.

4.3.2.3 Teacher appraisal

Integrated Quality Management System (IQMS) is a tool that serves as a benchmark for measuring effective teaching for learner improvement. The HODs are supposed to lead the Developmental Support Group (DSG) as they are the seniors that have to mentor and support teachers in their respective subjects. Together with the teachers, the HODs establish the areas of concern in the teaching of subjects and the areas of excellence. When the HOD participants were asked about IQMS effectiveness in their schools, they had different views. For instance, HOD1 had the following to say:

> *The IQMS programme initiated by the DoE is good; let me put it in that way; it is a good system to monitor work; it is supposed to be implemented but it is affected by other external factors in the working atmosphere. Another thing is that the IQMS does help to a certain extent and in another way it does not help. Why I'm saying so is because Educators tend to prepare themselves thoroughly when they have to be visited during IQMS session, but when there is no IQMS to be done in the classroom situation the educators go back to the old method where no proper preparation is done. When this IQMS thing can be owned by the educators ...where it takes us to, then the developmental aspect can be good. What I can say in short is that the intention is very good and it may have good results but the issue is how it is perceived by the components playing role in facilitating the issue of IQMS* (HOD1, Penguin Secondary School).

HOD2 had a different view in response to the effectiveness of IQMS in the schools. This is how he expressed his view:

> *IQMS is not that effective in this school. You can see that teachers are doing it because they know they are getting 1% salary progression. When they are doing it [conducting IQMS] they please each other by giving high scores because they don't want to be hated by their colleagues. On the other hand, there is not much time for follow up programmes in terms of personal growth plans. I have 13 teachers to monitor in this department and it becomes a problem to attend to each and every one of them individually so I assign I trust the subject heads to help me out if time allows* (HOD2, Dolphin Secondary School).

The views expressed by HOD2 from DSS were shared by HOD3by saying that:

> *Teachers are only interested in money that they get after IQMS has been conducted; so, they will do anything to make them get high marks when scoring, most of the time they will choose their friends to be their peer making it easy to up the scores* (HOD3, Mermaid Secondary School).

The participants shared their views highlighting how teachers perceived the IQMS processes. From the HODs' perspectives, it appeared that IQMS was not effective in these schools in terms of development opportunities of the teachers. The HODs were not doing follow up programmes on teacher development to enhance effective teaching and learning. Minimal emphasis was placed on the identification of strengths and weaknesses within the context of teaching in the classroom environment. This is contrary to the IQMS objectives which focus on the provision for teacher support in curriculum delivery and opportunities for growth.

The feedback that the HODs gave on IQMS also indicated that in all the three secondary schools, IQMS was only done as a once off event rather than a process. This is when the School Development Team (SDT) has to fill in the necessary forms as a requirement from the Department of Education. Such practices run against the principles and objectives of the IQMS programme. Professional development programme is supposed to be operational throughout the academic year as it undergoes certain stages allowing teachers to monitor their individual growth. It was evident that IQMS was only done once and it was done in order to submit the required documentation to the Department of Education. Evaluating instruction through classroom visits is crucial to achieve the school's goals (Hallinger & Murphy, 1985). The involvement of the instructional leader in the classroom visitation during teaching and learning allows effective communication to improve quality instruction (Murphy, 1990). Weber (1996) confirms that it is through observations that the instructional leader finds awareness of parts in need of improvement and development to improve instruction. The responses from the HODs indicate that more classroom visits should be organised so that the HODs are hands on in teaching and learning so as to understand what transpires in the classrooms and be able to make informed decision. Teacher appraisal is silent on the HODs as leaders of instruction. It was observed that the HODs were also not determined to influence teachers on IQMS performance. It appeared to be challenge for the HODs. They did not take ownership of IQMS thus teachers in return were not motivated and convinced in

participating in teacher appraisal. Such apathy could be attributed to the perception that IQMS was largely an exercise that was done for remuneration.

4.3.2.4 Challenges in managing teaching and learning of Mathematics

This sub-theme does not respond to the key themes directly but it was noted during the interviews that the HODs' understanding of their role presented some challenges. All the HODs participants highlighted very strongly the challenges that they encountered in executing their duties as instructional leaders. The challenges were more prominent when talking about Mathematics. Although interviews were guided, important participants' input and their voices were crucial.

HOD participants highlighted several challenges that they faced in their management of Mathematics within the department. Among others, they mentioned high failure rate, teacher demotivation, slow learner attendance, teacher competency in the subject, and limited content knowledge of the HODs. Similar responses emerged from the teachers on the performance of learners in their examinations particularly in Grade 9 and Grade 12. For instance, HOD1gave a comprehensive account of the performance of learners for the past three years and had this to say:

> *Let me start with the Grade 8 and Grade 9 ANA results in Mathematics; this ANA programme pays particular focus on particularly in English and Mathematics in the schools and it was initiated by the Minister of Education, but looking at ANA results they have never been good or successful or effective in the school. We once spoke to the previous CES [Chief Education Specialist] about this issue of ANA; that ANA is not successful and it is not helping the learners mainly because the question papers that are normally set are always parallel to the annual teaching plan. In other words, they come up with questions which are based on the third term content while in the first term and the learners and educators are confused in a way that they have a negative attitude towards ANA. Grade 12 results in the last three years have not been pleasant; they have declined. This is sometimes caused by progressed learners from Grade 11 to Grade 12 and such learners do not cope with Mathematics in Grade 12* (HOD1, Penguin Secondary School).

HOD2 shared the same sentiments and said:

> *...results have declined; let me start with Grade 8 and Grade 9 GET Phase, results have been a disaster; learners have failed to answer the questions set by ANA officials. There are many reasons teachers say contribute to that. Among them is the issue of the format of the papers in terms of questions. For example, they set things which are not done in that term according to the work schedule. Learners who have been progressed without being competent fail these tests. In Grade 12 it is a national disaster learners are failing over the years* (HOD2 Dolphin Secondary School).

The pattern of the stories was the same in all three schools. Over the past two or three years, learner achievement in ANA and in Grade 12 has been dismal. The other challenge facing the HODs in the three schools relates to their content knowledge competence.

For instance, HOD2 mentioned teacher competency in Mathematics as the other challenge that was proving to be difficult for the HODs to resolve. They highlighted that good approach is essential when dealing with this issue. They had this to say:

> *Most cases because it is something that tends to be a little bit personal for an educator to be a bit challenged by a subject. I need to consider a very friendly approach but acceptable approach that will make the educator see the problem not in herself or himself but in the subject; make the educator to be in a position to accept if there is any need for change; a change not in the form of taking that particular educator out of the subject but a change in terms of putting more effort to the subject as such* (HOD1, Penguin Secondary School).

The views expressed by HOD1 in the extract above were also shared with HOD2. This is what he had to say:

> *I think as an HOD although I do not have much experience but if I discover that a teacher has a problem in terms of dealing with a subject I think the best way is to call that educator and sit down with him and try to be as friendly as possible because in some instances you might go to a person and then a person might react in a different way than that which you were expecting him or her to react; so I think it is all about sitting down and finding out* (HOD2, Dolphin Secondary School).

While the issue of teachers' subject competence dominated the discussion with the two HODs, the third one (HOD2), had views on this issue. This is what he had to say in this regard:

> *We start with the results; we check the results maybe this year. If it is something that is going on for years, then we try to scrutinise the teacher trying to find out with the help of the learners … basically we look at the results because maybe there is that failure rate for three consecutive years is very low then we scrutinise the teacher* (HOD3, Mermaid Secondary School).

The issue of content knowledge is not affecting the teacher only but the HODs are also involved. When commenting about the HODs' content knowledge, HOD1 had this to say:

> *The majors that I do have are Mathematics and Physical Science...and as far as content is concerned, yes to some extent is a challenge in Grade 11 and Grade 12 on certain aspects of the content. It is a challenging because I have not been teaching Mathematics for a long time* (HOD1, Penguin Secondary School).

The views expressed by HOD1 in the extract above were also shared by HOD2 when he said:

> *Yes, sometimes it does pose a challenge because although I have Maths as one of my major subjects but when I started teaching I was exposed mainly to Information Technology which is known as CAT in schools which I am specialising in up to this far. So, I'm not too familiar with Maths content as many aspects have been added to the curriculum which I am really not well versed with* (HOD2, Dolphin Secondary School).

The problem of what commonly known as out-of-field teaching expressed by HOD2 in the above extract was found to be affecting the Mathematics HOD in MSS. This is how he expressed his views and experiences:

> *As I said earlier on I am a life science specialist. So, at times it is a challenge to manage Maths because I am not competent in the subject as such; so it is difficult to monitor content delivery of Maths especially in class when teaching is taking place* (HOD3, Mermaid Secondary School).

Different challenges were highlighted by the HODs in their respective schools. It was evident from the HODs' responses that they had inadequate content knowledge of Mathematics; yet, they were expected to supervise its teaching. This is a huge responsibility that is put on their shoulders. Although two of the HODs had majored in Mathematics at their exit levels in their respective universities, opportunities to teach this subject were not made available. The HODs had to focus on the subjects they were teaching as well as manage the other subjects within their departments. The curriculum over the years had been revised and many of its content have been modified. It is because of these changes that the HODs found themselves incapable of managing the subject effectively. However, they utilised the Subject Heads because of their competence in the subject. Without making a recommendation, but it is clear that a situation like this is untenable. Therefore, there is an urgent need for the HODs to be equipped with requisite skills and knowledge through continuous professional development activities.

Under performance of Mathematics learners has been a challenge (DoE, 2008; Centre for Development and Enterprise, 2013; Trends in International Mathematics and Science Study, 2011). Supervision is pivotal in evaluating subject teachers. However, supervision cannot be effective if supervisors do not have appropriate knowledge of the subjects they are supervising. As noted in their responses, the HODs lacked the necessary content knowledge in mathematics. Obviously, these HODs are not in a position to positively impact on the learners' academic achievement if such a situation continues unresolved, and the gory picture reflected in the studies cited above might not change for some time.

4.3.3 Supporting teachers in teaching of Mathematics for positive learner performance

The notion of HODs supporting the teaching of Mathematics for positive learner performance formed part of their responsibilities. To elicit ideas about how this was done, the HODs and Mathematics teachers were interviewed and also observed during meetings. Four themes were identified and these included holding subject meetings; the HODs' professional development; support from the principal and the SMT and teacher support from the HODs.

4.3.3.1 Subject meetings

One of the ways in which the HODs supported the teachers was through holding subject meetings. However, the data indicated that there was divergence of views among different categories of participants. The HODs and the teacher differed, especially with regards to the frequency of subject meetings. They also differed on the whether such meetings had any positive impact on the learners' academic achievement or not. Some of the responses of the participants were as follows:

> *The subject meetings are normally held; err we normally have them once a term. We conduct such meetings after we had assessed the performance of learners in the subject during the analysis; how learners perform trying to identify the problems because in most cases in those meetings you will find that the learners who did not perform well; the performance is less than what is expected and Mathematics is one of the subjects that lead to school low pass rate. So, that is one we normally have them once a term; we call the educators to analyse, identify and analyse the problem and intervene where there is a need arises but in most cases what we have identified to be the problem is that the learners are less interested in learning in a way that we have a role to motivate them to love the subject because they like you know careers that involve Mathematics after finishing school. We have to motivate them so that they do pursue those careers so that I can say but in most cases the educators that we do have teaching these subjects which is mathematics I can say they are dedicated* (HOD1, Penguin Secondary School).

Observations were also conducted at Penguin Secondary School on 28/07/2016. This was a departmental meeting for the science department. I intended to observe the subject meeting but the HOD highlighted that most of the time subject meetings were done informally and that it was only the departmental meetings which are documented using minutes that have a formal sitting. Among the people present at the meeting were the HODs for Humanities to take minutes of the meeting; the teachers teaching the subjects within the department. The HOD chaired the meeting and the issues that were on the agenda included the analysis of June examinations results. The HOD allowed different subject heads to give report on the performance of learners in the June examinations; he then allowed inputs from educators on how to improve performance in the subjects that

did not perform well in which mathematics was one of them. It was observed that all the teachers in the meeting worked collaboratively in an attempt to identify possible factors that hindered learner's academic achievement. Teamwork was observed as the teachers and the HODs devised possible solutions to curb the failure rate in Mathematics. The duration of the meeting was 90 minutes. The meeting demonstrated that the HOD allowed the teachers to share leadership and to take ownership of their teaching. HOD2 had this to say on subject meetings:

> *What I can tell you, I don't have any minutes when it comes to that because I have just started but we do have some minutes because when we had visit from the office of the MEC, the officials noted that there were no records of the minutes but we do hold meetings but it is just a verbal conversation where we went to workshops ...we don't write minutes; I must be honest with you on that one but the only minutes that we have are the departmental meetings, that is where we write minutes, but we do sit and discuss issues* (HOD2, Dolphin Secondary School).

A departmental meeting was observed at Dolphin Secondary School on 09/08/2016 at 07h00. This meeting was held in the staff room because the HODs' office was relatively small. The HOD was addressing the meeting. The issues on the agenda was reinforcing the duties of the subject heads, checking of teacher's files, reporting on the analysis of June results and the curriculum coverage. The HOD reminded the Subject Heads that they must allocate time to have meetings with their subject teachers after teaching time. Teachers were told to submit their files to the HOD for assessment. The HOD reminded the teachers to date the annual teaching plan accordingly. The HOD dominated the entire meeting. The teachers were very passive in the meeting. There was no active participation and engagement between the teachers and the HODs. The meeting lasted about 30 minutes.

Contrary to the views expressed above regarding the frequency of the meetings, HODs painted a positive picture with regards to this matter. For instance, while other said that subject meetings were held once per term, some said that such meetings were held twice per month. This is what one of them had to say:

> *Twice a month but sometimes we have problems; we plan Mathematics to be on Mondays, and we leave it to the subject heads to organise it. We emphasise team*

> *teaching; so during meetings they develop one another; maybe where they have problems they put the problem on the table and they discuss it with the help of the subject head* (HOD3, Mermaid Secondary School).

Observation of Mathematics subject meeting was held at Mermaid Secondary School on 02/08/2016. The meeting was held at the deputy principal's office during tea break time. The subject head invited the HOD and the deputy principal together with all Mathematics teachers from Grade 8 to Grade 12. The subject head was giving feedback on June examinations results in the subject. The Deputy Principal commented on Maths results in Grade 8 and Grade 9 as being satisfactory but the concern was with the FET Phase. Teachers were engaging with one another in identifying the problem areas in the June examination papers among other issues was time management of learners in finishing the paper. Most learners did not have Mathematical instruments; therefore, they were unable to do calculations in the paper. The HOD was writing minutes during the meeting. The deputy principal was tasked to talk to the learners and motivate them while teachers tried to find strategies for learners to be able to write and finish examination papers on time.

Teacher A did acknowledge the meetings held with other Mathematics teachers; this is what he had to say about such subject meetings:

> *We meet on Mondays; we have a programme which is called 'one plus nine' which makes us meet every Monday; so we take two Mondays of a month then we meet as a cluster with other schools with the help of the facilitator, the programme is called Jik'imfundo which was designed by the Department of Education to address the issues that we have with Mathematics in everyday teaching. We don't actually get a chance to do that often because we are overloaded in the school; we have so much periods per day so we do not get times for meetings everyday so even our HOD is overloaded* (Teacher A, Penguin Secondary School).

While Teacher A expressed so eloquently how subject meetings were held, that was not the case with the other participants. For instance, Teacher B from DSS gave a short and tentative response saying "*Maybe once a term' while Teacher C also from DSS was not sure about the frequency.*

Teacher D gave a detailed response on the time frames for subject meetings when he said:

> *We meet regularly; maybe monthly or weekly it depends on the issue for instance when it comes to Grade 12; maybe a teacher has a problem with a certain section we do talk about those stuff to which is the best approach to tackle a certain topic so that the learner can grasp and be able to balance between the application of matter and trying to look at the pervious gaps occurred in learners because you find that in Grade 12 most of the learners do not pass maths because there are gaps. How we do we balance the two, covering the curriculum coverage for that grade and filling the gaps of the previous grades, so we look at the best ways of doing the two at the same time* (Teacher D, Penguin Secondary School).

Teacher E responded by saying:

> *To be honest with this regard I cannot even mention the frequency of the meetings because we usually meet at the corridors where maybe if one is having a problem then will ask that particular question then he or she will be assisted on that, that's all but we do not have a programme where we meet as teachers except that one of meetings that need to be conducted of whereby subject head is a calling a meeting but even though there is no programme that is in place for that...* (Teacher E, Mermaid Secondary School).

Subject meetings in all the three schools were scarce but instead, departmental meetings were conducted. It appears that most of the HOD participants were involved in curriculum implementation. It was observed in the meetings that the HODs used distributed leadership to harness effective teaching and learning. Subject Heads were given a leadership role in sharing ideas to refine practice. In relation to sharing views and ideas, Botha and Triegaard (2014) aver that in order for teaching and learning to be effective in schools, instructional leaders need to work collaboratively with teachers and Subject Heads. Teachers had different responses on subject meetings. For instance, Teacher A and teacher D seemed to articulate clearly the benefits of these meetings. Referring back to the information table of participants it was noted that both teachers were the most experienced out of all the teacher participants thus they have observed the benefits over the years of teaching. However, one HOD seemed to be the only one talking in the meeting and no input from the teachers were observed. This was also evident from

the teachers in the same school (Teacher B and Teacher C) who had nothing much to say about subject or departmental meetings.

Team work in teaching has a positive effect that enhances positive learner academic achievement. It also assists the teachers to find strategies from one another on how to tackle some of the problems encountered by both the teachers and the learners in the subject. Murphy (1990) shares the same sentiments with the HODs that instructional leaders need to create a supportive environment where teachers work together to achieve a common goal. The South African Schools Act stipulates that leadership within the school should share responsibility and work collaboratively for effective teaching and learning (Republic of South Africa, 1996b). Distributing responsibilities in the school improve effectiveness and gives opportunity of leadership to teachers within the school (Macbeth, *et al*., 2004). The discussion above has shown that as much subject meetings are important, it has also demonstrated that the lack of such meetings contributes negatively to the learners' academic achievement. It is evident that when such meetings are held, teachers get the opportunity to share their experiences, expertise and challenges they encounter in the classroom.

4.3.3.2 The HODs and professional development support

The issue of professional development is always important whether one is Post-Level One educator, a school principal or an HOD. In the context of this study, the HODs participants acknowledged that some efforts had been made by the DoE in terms of professional development activities but they had reservations. They had this to say:

> *... in as much as professional development is concerned we do attend the so called these workshops that are normally arranged by Jik'imfundo, we attend those workshops but there is nothing much that is different that we get from these facilitators that we get there because you find that nothing has changed so far the workshops that are normally arranged by the department are for us to monitor the subject as such so in other words they develop us on the management aspect not on the content aspect of the subject* (HODs1, Penguin Secondary School).

Contrary to what HOD1 had said, this is what HOD2 had to say:

> *I will be honest with you even last time the one official of the department was here, I think it was about two weeks, I had assumed duties, I asked him 'you take a person you promote that person into position and then from there you just say carry on working', how do you function well? So that is why it will take time for you to adapt because you are busy learning and there is nobody who is leading you* (HOD2, Dolphin Secondary School).

However, despite the negative narratives from HOD2, there is evidence that the provincial Department of Education provided some professional development workshops. This is what one of the HODs had to say:

> *Yes; there is a departmental official who is very good in that. It is the departmental official and Jik'imfundo who usually calls us and training is always welcome* (HOD3, Mermaid Secondary School).

Professional development is a pre-requisite in any position within an organisation. The data generated in the study revealed that professional development of the HODs in all three schools came from outside the school; they were invariably organised by the Department of Education. Literature affirms that the HODs are not fully supported in realising their managerial role (Adey, 2000). For instance, HOD1demonstrated concerns about the lack of workshops that focused on content knowledge. Instructional leaders should be knowledgeable about how to support teachers in the classroom for effective learner achievement (McCue, 2016). A study conducted by Wanzare (2012) on instructional supervision in public secondary schools in Kenya revealed that schools faced challenges relating to the provision of quality education.

The SMTs in secondary schools are responsible for equipping teachers with necessary skills for curriculum delivery thus; they need to be competent and be able to execute their job. Although there is evidence of professional development of the HODs by the DoE, it does not look like such development programme addressed the needs of the HODs in managing Mathematics in secondary schools. Professional Development activities instil confidence of the HODs in supporting the teachers in their day-to-day teaching of the subject in schools. From the responses of the HOD participants, there is no evidence of internal professional development programmes in place within the school. In order to reduce the challenges in curriculum implementation, instructional leaders

should have vast knowledge of curriculum to manage instructional programme (Hallinger & Murphy, 1987). There were no structures or programmes highlighted by the HODs which catered for their professional development within the school.

It is evident that the HODs did not get sufficient professional development to execute their duties. The in-service programmes to induct the newly appointed HODs were not in place. It appeared that the focus in schools was based on the teachers delivering quality subject content and the HODs were left struggling on their own to equip themselves in schools with necessary knowledge to be effective instructional leaders.

4.3.3.3 Support from the principal and the SMT members

Stakeholders need to work collaboratively to achieve the required common goals of the school. The HODs responses indicated that principals and other SMT members supported them in managing Mathematics. For instance, HOD1 mentioned that the principal made provisions for resources in Mathematics for effective teaching and learning. This is what this HOD had to say:

> *We do get support in making the teaching of the subject successful as well as to create a solid background so that educators do teach under normal conditions. On any financial year, the principal use to request by writing a circular to inform us that the budget allocation for the school has arrived so we can request text books or any learner support material that can be needed to be ordered to assist in the teaching of the subject...particularly in the case of Mathematics. Sometimes the principal does go an extra mile to bring the so-called revision material from the district offices that are brought to school by the principal or any other SMT member particularly by the HOD concerned,*

The HOD further explained that through the commitment of the principal the school also was recognised and got invitation from the Department of Education to be part of Dinaledi programmes. Membership of those programmes assisted the learners in the teaching and learning of Maths and Science. This is what the HOD had to say on the issue:

> *The other support that we used to get before is an initiative by Dinaledi which is an initiative from the Department of Education that supported schools that were*

> *performing better in Mathematics and Physical Science because we once performed better in those subjects so Dinaledi issued a cheque to the school of R 138 000 to buy Mathematics and Physical Science equipment to facilitate the effective teaching of these subjects. With that money we bought calculators; we did bought chalkboards, protractors or mathematical instruments to assist the learners in terms of delivering subject like geometry; there is a crisis of the subject Mathematics in the whole country and I do not know what the problem is but maybe it needs another view or focus particularly the subject Mathematics to see how we can alleviate the problem* (HOD1, Penguin Secondary School).

However, contrary to the positive stories from the other participants, HOD2 had a negative response and this is what he said:

> *My principal does show concern it is just that he is so busy with administration and does not have time but occasionally he does ask how it is going in Maths and encourages me to work hard. The SMT in my school is so busy with their departments and therefore no time to assist me or give support* (HOD2, Dolphin Secondary School).

Contrary to the narratives from HOD1, this is what HOD3 had to say:

> *I don't know what to say because the principal is always worried about performance in Maths and always encourages me to do wonders, and this is beyond my ability. When results come out for Grade 12, always I am not doing well in both mathematics and science. The SMT in this school is overloaded in terms of work because they are managing departments and teaching and have full loads so they do not have time to support me in terms of maths* (HOD3, Mermaid Secondary School).

The interviewed HODs mentioned that there was some form of support that they got from the principal in terms of resources, and support from their colleagues. HOD1 indicated that the principal made sure that the teaching resources were available. He mentioned that even the district office of education liaised with non-governmental (NGO) structures to supplement the teaching of Maths in schools. The other HOD was more negative and said that the principal blamed him for low performance of learners at the end of the year, especially Grade 12, without giving him support during the course

of the year. Other SMT members, because of their managerial tasks, do not have time to give support. This was also evident in Smith, *et al*., (2013) who declared that HODs carry too much workload.

The principal seemed not to have structures in place to support the SMT in their managerial activities. Teamwork is important to achieve the desired objectives of an organisation. Working collaboratively towards a common goal promotes achievable outcomes. Mathematics HODs often feel neglected by the stakeholders in schools in managing this challenging subject. The principal as an instructional leader must work co-operatively with all participants within the organisation to achieve the common goal (Murphy, 1990). Discussing issues related to teaching and learning from the HODs, the teachers had different responses. In their voices this is what Teacher A had to say:

> *In formal meetings, we do not do it, but we do it in passing maybe in the passages and everything and you will tell your HOD that these are my struggles; these are my weaknesses I have been in workshop and this is what was taught, but the room for you to sit and discuss the matters concerning Maths we do not get time* (Teacher A, Penguin Secondary School).

Similar views were expressed by Teacher B by making the following comment:

> *In those meetings, maybe if the results are not right then calls us* (Teacher B, Dolphin Secondary School).

Similar views were expressed by Teacher C. In fact, this participant had nothing positive to say about this issue; these were his words:

> *We hardly discuss those issues with our HOD; he just tells us we must not worry about those these children because they won't pass at the end of the day; they are not mathematically inclined children so they will never make it anyway, even if you have a concern with the subject* (Teacher C, Dolphin Secondary School).

While there seemed to be much negativity about the manner in which members of the SMT provided support to the Mathematics teachers as indicated in the narratives of Teacher C above, comments made by Teacher D were not too pessimistic. This is what this teacher had to say:

> *Since the beginning of this year we have met two times discussing the way forward as a department; how we are going to operate in terms of managing files and to manage the work at curriculum coverage which is very critical* (Teacher D, Penguin Secondary School).

Teacher E mentioned that the HOD was concerned about submissions of tasks and not about issues related to Mathematics teaching; this is what he said:

> *In this one, an HOD makes it a point that every term we have a meeting but this meeting includes so many issues that are discussed because it is in the departmental level so it is not actually specific because it will talk about submissions of the tasks …we don't go strictly to the issues one is encountering in terms of the subject* (Teacher E, Mermaid Secondary School).

Teaching and learning is assumed to be the principal concern for instructional leaders (Southworth (2002). They ensure that at all times, they engage teachers in matters concerning their core activity which is teaching and learning for effective learner development. Responses from teacher participants in the study indicated that though the platform for such activities was created, it was minimal and lacked proper formal scheduling. The HODs seemed to be more concerned about managing tasks assigned to learners. In the domain of managing curriculum, Weber's (1996) instructional model maintains that the instructional leader provides teaching strategies to teachers for curriculum development. One teacher mentioned that having informal corridor chats was a method used by the HODs to address issues related to teaching and learning. The HODs are expected to provide sufficient support to the teachers they lead by equipping them with relevant curriculum knowledge for effectiveness.

4.3.3.4 Support from the Heads of Department

The interviewed teacher participants had different views about getting support from their Mathematics HODs. What dominated their discourse was that the HODs were providing adequate support to them. In addition, they expressed the view that, perhaps, what weakened the support that the HODs tried to offer could be that some HODs were not teaching or understood some of the subjects that they were monitoring. These were their voices:

> *In my school, we don't get support from the HODs in terms of teaching the subject because he is more passionate with other subject which is his major subject, he spends so much time trying to perfect his subject* (Teacher A, Penguin Secondary School).

Teacher B had a similar response as Teacher A and had this to say:

> *There is not much support; I think the problem is that my HOD is not a Mathematics teacher; so what I do is that I go to my Maths subject head, and get help from him* (Teacher B, Dolphin Secondary School).

Teacher C had a different response from the other teachers; this is what he said:

> *The only thing that he does is that he gives us schedule where we have to come in with our files with our trackers because we are using Jik'imfundo* (Teacher C, Dolphin Secondary School).

Teacher D provided a detailed response about how the HODs supported him by collecting learner teacher support material (LTSM) from the district office to strengthen teaching:

> *He is supportive in a way because in terms of finding the documents that are needed he gets it for me. For instance, in GET Phase, teachers did not have the policy documents and he went to the district office to collect them and he reminds the teachers in this 'One plus 9' when they have workshops so that there is a teacher development...*

Teacher D further explained the role that he played in supporting other colleagues by saying:

> *I am the Subject Head; so I am responsible for Mathematics throughout the school. There are things that we are looking at because you know that in our country Mathematics is a problematic subject. So were looking at the best approaches of teaching learners because due to pressure that comes with specification of the policies we are concerned about curriculum coverage whilst we are leaving the learners behind so we are looking at the best ways of balancing the two. My experience is that we are living in the world of technology; learners are exposed to cell phones they like using their phones a lot; so we can*

> *try to integrate technology and Mathematics; probably we might come up with something good. My wish is that our HOD should try and empower teachers under his department so that all of us can get acquainted with technology in our lessons* (Teacher D, Penguin Secondary School).

Teacher E had this to say about the support they receive from their HODs:

> *The HOD is like a reminder of some of the things that teachers need to do, but if I need something he makes it a point that I get it. For example, some of the teaching material that one needs; she is also concerned because we use to discuss those aspects that arise like when we are discussing individual learners in class; what challenges they have and she gives us tips on how to approach those challenges. In fact, we do get support but the problem is that the HOD is also specialising in other subject yet she is managing various subjects; so I think it is challenging for her to give maximum support to a teacher who is teaching a subject she is not competent in...* (Teacher E, Mermaid Secondary School).

The responses from the teachers revealed that the HODs did not give support to the teachers in teaching the subject, especially where they lack expertise in the subject. According to the teachers this is a challenge because it has an impact on the performance of the learners. Furthermore, teachers acknowledge the fact that HODs also carry a full teaching load and do not get enough time to support them in their work. Teacher E mentioned that the HOD was making it a point that the resources to aid effective teaching and learning were made available to the teachers. To managing a subject requires an individual to be an expert in the subject. In South Africa, HODs in secondary schools manage more than one subject in a department. Teachers need to rely on their HODs for major support to execute their job. Support yields confidence and creates trust between the teachers and their HODs. Bambi (2013) also confirms teachers' responses, that HODs lack developmental techniques for the subject and resort to checking teachers work. When the HODs lack content knowledge, teachers are demotivated. The HODs have the same teaching load as the teachers thus, it is impossible for them to manage the department effectively. School leaders do not regard instructional leadership as their main responsibility in managing schools. They spend most of their time doing administration work (Hoadley, *et al*., 2009).

4.4 Chapter summary

In this chapter, I presented and discussed the data that was generated through the use semi-structured interviews with the HODs and the teachers from three secondary schools. Observations of the departmental meetings were also used in order to obtain a balanced view of about understanding the instructional role of Mathematics HODs in managing teaching and learning. The findings suggested that the leadership role of these HODs was largely focused on monitoring teaching and learning and also assessing the work of the learners and the teachers. It also emerged that their work was compromised by the lack of time in executing their job. The lack of continuous professional development of the HODs also impacted on teacher development for positive learner outcomes. The next chapter present the summary of the study, conclusions and recommendations.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In Chapter Four, presentations and discussion of findings from data were discussed. Data was constructed from the analysis of interviews and observations on how the HODs understood their role to be as instructional leaders in managing Mathematics in secondary schools in the Pinetown District. This study was guided by three critical questions:

- What is the Head of Departments 'understanding of their role as Instructional Leaders in the teaching and learning of mathematics?
- How do HODs manage teaching and learning in secondary schools?
- What is the HODs role in supporting teachers in teaching of mathematics curriculum that contributes towards learner achievement?

In presenting the conclusions, this chapter commences by providing a summary of all the chapters which constitute the study. Thereafter, a presentation of conclusions, emanating from the findings will be made. Lastly, recommendations emerging from the conclusions will be made.

5.2 Study summary

This study is about understanding instructional leadership role of Mathematics HODs. It was therefore, important that Chapter One presents a background to the study. That chapter highlighted the fact that in the Post-1994 era, the South African education system went through remarkable change which included the need to adopt leadership approaches which were drastically different from those used during apartheid era. We have seen more emphasis being put on distributed leadership approaches as well as instructional leadership, and HODs have a critical role to play in it. Since I am also an HOD, and have observed how demanding and confusing the role of instructional leadership is, I became hugely interested in understanding how other HODs understand and cope with such demands imposed by changed circumstances. Being accountable officers in schools for curriculum delivery, HODs faced a number of uncertainties and challenges in carrying

out the duties. The study then attempted to understand the role of the HODs, as instructional leaders from their own perspectives. The study took place in 3 secondary schools in Mafukuzela Gandhi circuit, in Pinetown district, KwaZulu-Natal.

The second chapter presented a detailed discussion of the literature that was reviewed. The literature focused on the HODs' instructional role in the teaching and learning of Mathematics in three secondary schools. Pertinent literature on instructional leadership of the HODs was considered from different perspectives. Both international and national literature was used with the national literature occupying the bigger space in the discussion. The literature revealed that school based management (SBM) is responsible for facilitating curriculum delivery and monitoring learners' assessment for effective performance. Curriculum supervision and professional development of teachers were viewed as having a major impact on teaching and learning. Further to this, three-pronged theoretical framework consisting of Hallinger and Murphy's (1985) Instructional Leadership Model, Murphy's (1990) Instructional Leadership Model and Weber's (1996) Instructional Leadership Model were explained and utilised to guide the study. These three instructional leadership models were selected because they describe and explain the activities that instructional leaders are expected to perform to execute their roles.

Chapter Three sought to discuss the research design and methodology utilised in the study. A qualitative approach was chosen to underpin this study as it aimed at subjective reality. The HODs' role as instructional leaders in Mathematics teaching and learning in secondary schools was the focus of the study. Thus, a case study design was chosen. The study as located in the interpretive paradigm as it served to understand the roles of the HODs as instructional leaders in influencing effective teaching of mathematics in their respective schools.

Chapter Four presented and discussed the findings generated from interviewing two categories of participants, namely the HODs and the Post-Level One educators, and also from personal observations of Mathematics meetings. The discussions of findings included the injection of literature that had been reviewed and discussed in Chapter Two.

Chapter Five, which is the final chapter, presents and discusses the conclusions that were drawn from the findings. However, the discussion commences with the summary of the

whole study. This is followed by the presentation and discussion of conclusions that emerged from the research findings. Based on the conclusions reached, recommendations are made.

5.3 Conclusions

Conclusions in this section of the study were drawn from the findings established from the previous chapter, concerning the HODs' leadership activities as instructional leaders. The aim of the study was to explore and understand the role of the HODs as instructional leaders in managing Mathematics teaching and learning in secondary schools. The study was constructed as a case study of three Mathematics HODs' in three secondary schools in the Pinetown District. Maree (2007) posits that conclusions are drawn from the main findings in a particular study emanating from the participants in their own context. The themes that were used in discussing the findings are also used to organise the discussion of conclusions. I adopted this approach because I believed that it would enable me to make an assessment about the extent to which the critical questions have been addressed. In fact, it makes more sense to adopt this approach because the discussion of finding had followed the same approach of using critical questions to do content analysis of the data. Therefore, the conclusions are discussed using the following headings: The Heads of Departments' understanding of their role as instructional leaders; the Head of Department's management of teaching and learning in secondary schools; the HODs' role in supporting teachers in teaching of Mathematics curriculum that contributes towards learner achievement. These themes are then used as headings for discussing the conclusions.

5.3.1 The Heads of Departments' understanding of their role as Instructional leaders

This study has found that the main issues that emerged from the HODs participants regarding their understanding of the role is that they had sufficient understand of what they are supposed to do as instructional leaders. For instance, all three HODs were cautious of preserving instructional time. The findings from the study suggested that the HODs understood their role to be that of monitoring teaching time, teaching and managing curriculum by amongst other things, assessing the learners' work. They strongly believed that effective teaching and learning time should not be interrupted by

any non-teaching and learning activities. For instance, teacher union meetings which took place during teaching time were a concern for them because such tendencies interrupted teaching precious time. They even took it upon themselves to monitor teaching time by using class registers which is a tool to assist them to keep track of teacher's times when going to classes and finishing teaching. They understood their role to be that of ensuring that all activities pertaining to teaching and learning are done on time. The findings from the semi-structured interviews suggested that creating appositive learning environment is crucial to achieve the school goals. Therefore, it can be concluded that the HODs in this study understood their role as instructional leaders; however, two major challenges confronted them and they need to find solutions to them as leaders. As indicated in the previous section, the twin challenge facing them was the tension between their teaching duties and their curriculum management responsibilities; finding a fine balance had thus far eluded them. The second one related to their content knowledge deficit which undermined their credibility among the teachers in their care.

5.3.2 The Head of Department's management of teaching and learning in secondary schools

The findings indicated that the HODs participants among the activities they did as part of their job description is monitor learners and teachers work. Mathematics is one of the failing subjects nationally; so, it is imperative that the HODs do something tangible that may and should turn the situation around in this subject. One way of managing teaching and learning is for the HODs to ensure that all the assessment tasks given to learners are of acceptable quality. To keep track of the curriculum delivery, the HODs also check whether the teachers' files, lesson preparations and work schedules are compatible with the annual teaching plan stipulated by the Department of Education. Furthermore, it came up that the HODs seemed to isolate class visits from the rest of their managerial duties. They highlighted that because of their own teaching load they did not get time for class visits. The HOD participants had a challenge of dividing their time between being a teacher and managing the department. It was noted for instance, that the HODs were teaching the highest class in the school, which is Grade 12; so they had to be fully committed in their teaching, which in return affected their curriculum management responsibilities. Therefore, it can be concluded that the role of the HODs in managing teaching and learning was also inadequate due to limited time at their disposal. I can conclude that there was tension between their teaching responsibilities and that of

curriculum management. Such tensions have contributed to limited capacities among the HODs to effective execute their duties of managing teaching and learning.

Teacher participants seemed to believe that a leader should be competent in the subject that he or she manages; therefore, according to the teacher participants, the value of class visit was inconsequential; it would not benefit them in any way if the HODs were not in a position to give them full report based on their teaching. Teacher participants believed that teacher appraisal activities were poorly done, as the HODs did not take ownership of the programme since they had negative attitude towards it. Therefore, the HODs allegedly ended up only highlighting the challenges in managing teaching which, from their perspectives, were high failure rate of learners in the subject, learners bunking Maths lessons and apathy among the teachers and the learners. I can therefore, conclude that besides the issue of time constraints, there was a clear content knowledge deficit among the HODs, and that is a highly controversial issue among the teachers. It is not usual that professional staff or even lay person feels safe when one is led or supervised by a person who is less competence in his or her area of operation.

5.3.3 The HODs' role in supporting teachers in teaching of Mathematics curriculum that contributes towards learner achievement

The findings have shown that there was no conclusive evidence that the HODs provided adequate support to the teachers who taught Mathematics in the three schools. A variety of reasons were advanced as reasons for this. For instance, while the HODs made a case for their own contribution to the teaching and learning of Mathematics, the teachers also made a very strong argument to the contrary. The arguments of the teachers ranged from the view that the HODs and specifically and the SMTs in general, did not devote sufficient time to supporting them teaching. They argued that SMTs generally do not have time to support them and sometimes, they even do not have adequate knowledge of the subject. There were no programmes or framework within the school identified to assist the HODs in their role as instructional leaders. District offices did provide support for the HODs though it was also limited. More details on this issue can be found in Chapter Four. However, this study, through the paradigm chosen, has a bias towards the

HODs. Therefore, it is important that I also take their case into this discussion without ignoring the views of the teachers because they too, were the participants in this study.

Drawing from the findings from both categories of the participants, I can conclude that the support from all the stakeholders involved in teaching and learning within the school was minimal. It seems to have focused on issues of accountability, monitoring and control rather than ensuring that the teachers had sufficient materials and pedagogic support. When I talk about the focus on accountability, the findings clearly showed that the HODs did classroom observations and that their worksheets were checked and the HODs tried to ensure that scheduled work was completed in terms of CAPS Curriculum requirements. Such evidence is available in Chapter Four and both the HODs and the teachers concur on this point. Teacher participants maintained that the HODs were not supporting them much in the content delivery since they were not subject specialists. Teachers had to rely on other colleagues or Subject Heads to support them on challenging aspects of the subject in terms of methods and strategies to apply. In addition, based on the empirical evidence produced in Chapter Four, it can be concluded that as much as the HODs were said to be not providing adequate support to the teachers, they too, did not receive adequate support from the district office. In this way, it would appear that, from the participants' perspectives, the cycle of inadequate support seemed to be endemic in the system.

Drawing from the observations that I made, it was noted that the HODs provided opportunities for leadership by allowing Subject Heads to take initiatives in guiding teachers to master the subject. This created a strong collaborative relationship among the teachers. Whilst it can be argued that the teachers may be right to say that they relied Subject Heads and other colleagues for support in terms of subject content, the role of distributed leadership in this very difficult situation cannot be overlooked or trivialised. Therefore, the HODs can be credited for the leadership through which they could identify their weaknesses and strategically solicit the support of other stakeholders to compensate for their own shortcomings. Drawing from the findings in chapter four and the conclusions made in this chapter, the following recommendations are being made.

5.4 Recommendations

Drawing from the conclusions presented in the previous section, recommendations are proposed, and each recommendation is directed at the conclusion made. One major conclusion made was that all three HODs had adequate understanding of their roles as instructional leaders in schools. However, the issue of the tension between their teaching and management responsibilities remained evenly balanced and thus negatively affected them carrying out their duties. It is therefore, recommended that management within the schools need to make clear arrangements for the HODs to be properly equipped with requisite knowledge and skills that will enable them to perform their duties optimally.

The second major conclusion made was that the HODs in the three schools actually performed their duties of managing teaching and learning. Evidence from the findings demonstrated that the HODs understood what it meant to be an instructional leader and their practices largely acknowledged that. The HODs used a variety of strategies to manage the curriculum and the details are provided in Chapter Four and the second part of this chapter. What I can recommend is that within the schools, management and the teachers need to work out their priorities and on the basis of those priorities; they can make adjustments on the workload of the HODs taking into account their management responsibilities. The findings have also shown that the HODs were very creative in terms of utilising the expertise of Subject Heads in supporting the teachers. It can therefore, be recommended that as a collective, the HODs and other SMT members need to engage with Master teachers within the school with a view to augmenting their efforts towards curriculum management.

Drawing from the findings about the role of HODs in supporting the teaching of Mathematics for improved learner academic achievement, it was concluded that such support from the HODs was inadequate as it limited to assuring accountability and monitoring of the teachers' work. Similarly, it was concluded that the HODs were themselves not receiving the support they required from district officials. Nevertheless, it was concluded that, through their distributed leadership skills, the HODs were able to encourage Subject Heads to support the teachers. In view of these conclusions, it is recommended that the HODs need to seriously consider their weaknesses and find ways of strengthening their capacities to support teachers in their care. This can only happen

if they engage in professional development. Secondly, they need to enhance their already acquired skill of distributing leadership roles among staff members. To enhance this area, the HODs need to encourage and be able to identify other teachers who can perform leadership within the departments in the school so that all teachers are given an opportunity to lead and be to demonstrate their expertise.

5.5 Implications for further research

It is important that the HODs understand and utilise their knowledge effectively in schools. That will enable them to play their official roles in a manner that is congruent to their positions. As highlighted in Chapter One, studies that have been conducted on instructional leadership of Mathematics HODs specifically in South African schools are minimal (Bambi, 2012; Jaca, 2013). These studies were using small sample scales to generate data just like the study reported here. Therefore, it is important that quantitative research which covers a wider scale is conducted. It is important to know widespread the issues that were reported in the conclusion of this study are. In addition, there should be further research on the effectiveness of the Subject Heads in augmenting the duties that are currently performed by the HODs. I am saying this because this study has indicated that these stakeholders can play a very important role in supporting the HODs, particularly in managing Mathematics teaching in schools.

5.6 Chapter summary

Managing teaching and learning in Mathematics can be accomplished if the policies within the education department are implemented and monitored for effectiveness. Department of Education after consultation with the HODs in schools should measure the effectiveness of policies and make informed decisions and give support where there is a gap. The **s**tudy exploited instructional leadership role of the HODs in managing Mathematics teaching and learning. This chapter has presented and discussed the conclusions and made recommendations as presented in the above sections.

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Appendix 1

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

23 June 2016

Ms Nomthandazo Charity Malloy (208526030)
School of Education
Edgewood Campus

Dear Ms Malloy,

Protocol reference number: HSS/0324/016M
Project title: The Heads of Department's instructional leadership role in mathematics teaching and learning in secondary schools

Full Approval – Expedited Application

With regards to your application received on 04 April 2016. The documents submitted have been accepted by the Humanities & Social Sciences Research Ethics Committee and **FULL APPROVAL** for the protocol has been granted.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

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

Yours faithfully

.....
Dr Shamila Naidoo (Deputy Chair)

/ms

Cc Supervisor: Ms Pinkie Mthembu
Cc Academic Leader Research: Dr SB Khoza
Cc School Administrator: Ms Tyzer Khumalo

Humanities & Social Sciences Research Ethics Committee
Dr Shenuka Singh (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private **Bag** X54001, Durban 4000
Telephone: +27 (0) 31 260 3587/8350/4557 **Facsimile:** +27 (0) 31 260 4609 **Email:** simbop@ukzn.ac.za / snymane@ukzn.ac.za / mohunp@ukzn.ac.za
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Appendix 2

education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Nomangisi Ngubane Tel: 033 392 1004 Ref.:2/4/8/723

Ms NC Malloy
20 Tugela Court
317 Avondale Road
MORNINGSIDE
4001

Dear Ms Malloy

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **"THE HEADS OF DEPARTMENT'S INSTRUCTIONAL LEADERSHIP ROLE IN MATHEMATICS TEACHING AND LEARNING IN SECONDARY SCHOOLS",** in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 22 February 2016 to 31 March 2017.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Connie Kehologile at the contact numbers below.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report / dissertation / thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

Pinetown District

Nkosinathi S.P. Sishi, PhD
Head of Department: Education
Date: 19 February 2016

KWAZULU-NATAL DEPARTMENT OF EDUCATION

POSTAL: Private Bag X 9137, Pietermaritzburg, 3200, KwaZulu-Natal, Republic of South Africa ...dedicated to service and performance
PHYSICAL: 247 Burger Street, Anton Lembede House, Pietermaritzburg, 3201. Tel. 033 392 1004**beyond the call of duty**
EMAIL ADDRESS: kehologile.connie@kzndoe.gov.za / Nomangisi.Ngubane@kzndoe.gov.za
CALL CENTRE: 0860 596 363; Fax: 033 392 1203 WEBSITE: WWW.kzneducation.gov.za

Appendix 3

20 Tugela Court

317 Avondale Road

Morningside
Durban

4001

2 January 2016

The Principal

P.O Inanda 4310

Dear Sir/Madam

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT YOUR SCHOOL

I Miss N.C Malloy, (student number 208526030), kindly request your permission to conduct research at your school. As part of my professional development, I am presently enrolled for a Master's in education degree at the University of KwaZulu Natal. This is a two-year degree which involves course work and dissertation. The dissertation would entail understanding research in the area of leadership and management.

My topic is: The Head of Department's instructional leadership role in Mathematics teaching and learning in secondary schools. My study entails interviewing Mathematics HOD and two Mathematics teachers. Semi structured interviews will be conducted after school hours so there will be no disruptions of teaching time. In addition, I will have to observe mathematics subject meetings, to get a clear picture of the HOD's practices during such meetings. I therefor humble request your permission in this regard.

Participant's identities will not be revealed under any circumstances during and after the reporting process. All responses will be treated with strict confidentiality and pseudonyms (false names) will be used where specific reference maybe made of an individual or a school. Participation in this study is voluntary, and the participants have the right to withdraw at any stage with no negative consequences to them. The interviews will be voice recorded and the participants will be given letters of informed consent which will explain the nature, purpose and objectives of the study.

I hope my request will reach your favorable consideration.

Yours sincerely

N.C Malloy

Appendix 4

INTERVIEW SCHEDULE (FOR HEAD OF DEPARTMENT)

Topic: The Head of Department's Instructional Leadership role in Mathematics teaching and learning in secondary schools.

Biographical information of the Head of Department

- Age
- Educational qualifications
- Work experience (number of years teaching, position at school)
- Subject/s currently teaching

1. What is your understanding of instructional leadership?
   - What management and leadership responsibilities do you have at your school?
   - How do you manage instruction time with teachers?
   - How do you monitor teaching and learning?

2. Managing teaching and learning in mathematics
   - How do you monitor learner and teachers work in mathematics?
   - How do you deal and monitor teachers with problems of competency in Mathematics?
   - How often do you conduct subject meetings?
   - What factors within the school affect the teaching of mathematics?
3. How do you manage teacher and learner development?
   - What form of professional development is there in place for Mathematics teachers?
   - Do you get any professional development as an instructional leader? If so, from whom and how often?
   - What strategies do you apply for learner development in mathematics?
   - Looking at IQMS, is it effective, is it helping you as an HOD in order to manage your work?
   - As s Mathematics HOD, with other specialist subject, does that have an impact on you managing Mathematics?
   - What is the status of results in your school, in grades 8&9 and in NSC for the past three years?
   - What challenges do you encounter in teacher development within the school?

4.Support in the teaching and learning of mathematics.

- Is there any support that you get from the principal and other SMT members to facilitate mathematics?

Appendix 5

INTERVIEW SCHEDULE (FOR MATHEMATICS TEACHERS)

Topic: The Head of Department's Instructional Leadership role in Mathematics teaching and learning in secondary schools.

Biographical information of the Head of Department

- Age
- Educational qualifications
- Work experience (number of years teaching, position at school)
- Subject/s currently teaching

1. How often do you meet as mathematics teachers?
2. How often do you discuss issues related to teaching and learning with your HOD?
3. What support do you get from your HOD in executing your job?
4. What is your personal view on HOD observing you in class?
5. Does your HOD keep you abreast of latest developments and initiatives in education? How is that done?

Appendix 6

OBSERVATION SCHEDULE (MATHEMATICS MEETINGS)

As a researcher I will be observing the procedures that influence relationships in meetings.

DATE: ---------- TIME: ----------

1. Where is the meeting taking place?

_____

2. What type of meeting is observed?

_____

3. What type of meeting that was observed?

_____

4.What is the composition of the people present in the meeting (e.g. PL1, HOD, Deputy, Principal)

_____

5. Is there any reflection on teacher and leadership performs?

_____

6. Are the teacher's influences in the meeting welcome and valued?

_____

7. What is the duration of the meeting?

_____

Appendix 7

School of Education
Edgewood Campus
Private Bag X03
Ashwood 3605

INFORMED CONSENT LETTER

Dear Participant,

My Name is Nomthandazo C. Malloy, a registered Master's student at the above-mentioned institution, currently conducting a research study entitled: **"The Heads of Department's Instructional Leadership Role in Mathematics Teaching and Learning in three South African Secondary Schools in Pinetown District".** I am humbly requesting you to be a participant in this study.

The study will be conducted in three phases, addressing the three research questions informing this study, as illustrated below:

Please note that:

- The research aims to explore the following objectives:
    - To investigate what Heads of Department, understand about their Instructional Leadership in the teaching and learning of Mathematics in three South African secondary schools.
    - To examine how Heads of Department manage teaching and learning in three South African secondary schools.
    - To explore the role of Heads of Department in supporting teachers in teaching of Mathematics curriculum that contributes towards learner performance.
- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a community population member's opinion.
- If you are interviewed, the interview may last for approximately an hour and may be split depending on your preference.
- If you are participating in the study as a HOD or Teacher, you may be asked questions, or asked to give your opinions, as part of a group meeting which may take up to 2 hours.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage in the Department of Science and Technology, School of Education, Edgewood campus, University of KwaZulu Natal and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.

- You may be asked to take part in a telephonic interview, or interview via online teleconferencing (e.g. Skype), if so, you will be given a copy of the questions to study in advance of the interview should you desire this.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded using the following equipment:

Recording equipment to be used in the study	**I am willing**	**I am not willing**
Audio equipment		
Photographic equipment		
Video equipment		

If you wish to discuss this further with me or wish to understand more about the research study, I can be contacted at:

Ms N.C Malloy
Cell no. 0848105727; Or

Ms P.E Mthembu (supervisor)
+27 84 581 7544
You may also contact the **Research Office** through:
P. Mohun
HSSREC Research Office,
Tel: 031 260 4557/4609
Email: HssrecHumanities@ukzn.ac.za
E-mail: mohunp@ukzn.ac.za

Thank you for your contribution to this research.

DECLARATION

I _____ (full name of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project. I understand that I am at liberty to withdraw from the project at any time, should I so desire.

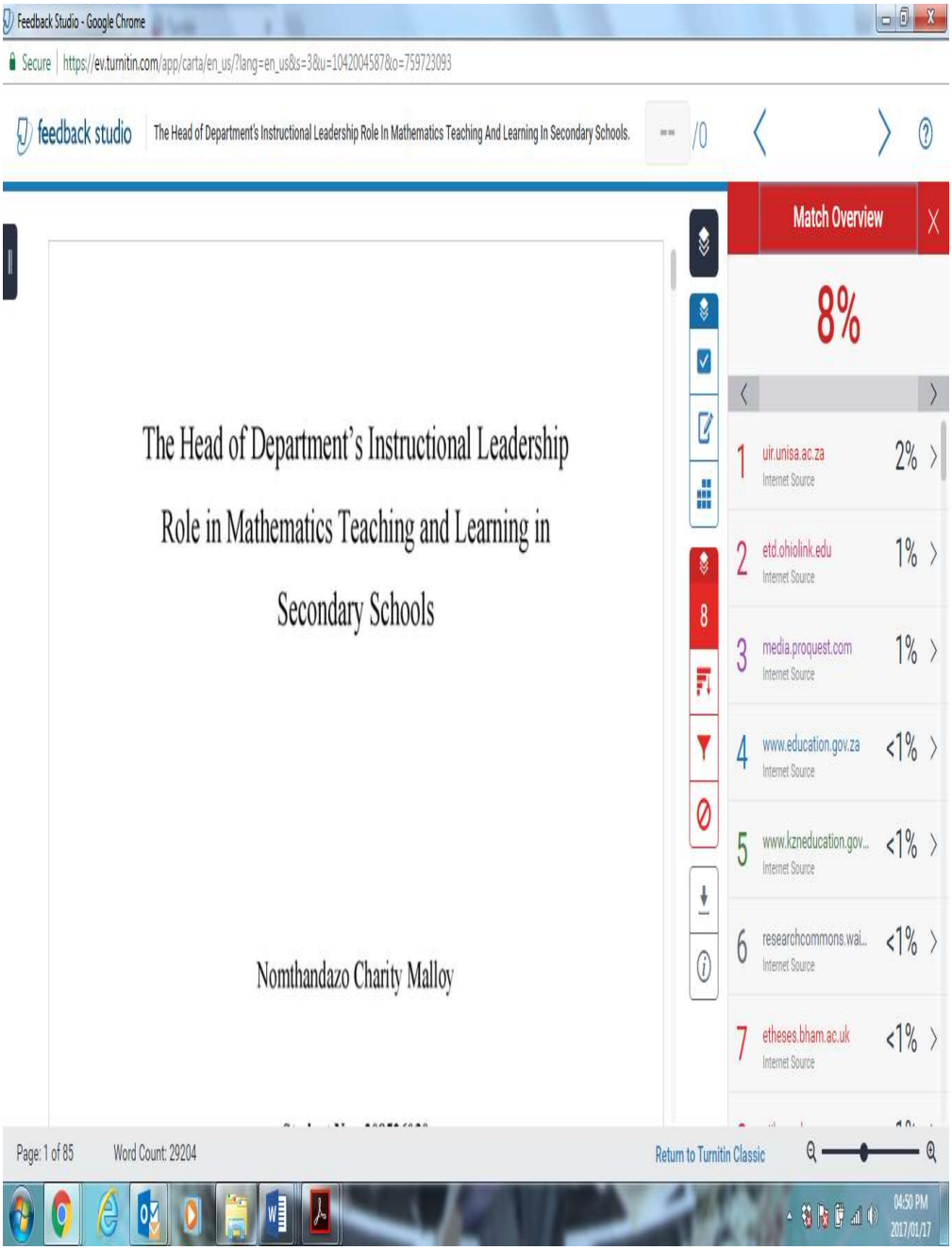
_____ _____

SIGNATURE OF PARTICIPANT **DATE**

_____

FULL NAME AND SURNAME OF PARTICIPANT (PLEASE PRINT)

Appendix 8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The Head of Department's Instructional Leadership Role In Mathematics Teaching And Learning In Secondary Schools.
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Nomthandazo Charity Malloy
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