

**The role of departmental heads in the professional development of  
Mathematics teachers**

by

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at the

**UNIVERSITY OF PRETORIA**

**Supervisor: Prof RN Marishane**

**AUGUST 2022**

## DECLARATION

I declare that the dissertation entitled “*The role of departmental heads in the professional development of Mathematics teachers*”, which I hereby submit for the degree Magister Education in Educational Leadership at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.



30 June 2022

.....  
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Date

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## ETHICS STATEMENT

I declare that I obtained the applicable research ethics approval for this dissertation. I have observed the ethical standards required in terms of the University of Pretoria's *Code of Ethics and the Policy Guidelines for Responsible Research*.

## DEDICATION

I dedicate this research to my beautiful daughter *Keamogetswe*, the mother of my daughter *Hlologelo Letwala*, my father *Vincent Tibane*, my mother *Maureen Molamodi* and my siblings *Kgothatso*, *Comfort* and *Tshegofatso*. I can never thank you enough for the unwavering support and motivation you gave me throughout the process of conducting the research.

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## ABSTRACT

### **The role of departmental heads in the professional development of Mathematics teachers**

Professional development has proven to be a key aspect in upholding the teaching and learning standards, where it assists in addressing change and development in the education system. However, this study addresses certain oversights regarding the need for professional development in the education system. Learners attain poor results in subjects like Mathematics and Language. Thus, this study sought to investigate the departmental heads' role in the mathematics teachers' professional development. Effective teacher professional development activities have proved to maintain and enhance the standards of teaching and learning. In order to achieve the purpose of the study, mathematics departmental heads and mathematics educators in two primary and secondary schools were targeted in order to share their experiences regarding the professional development of teachers. A total of four departmental leaders and eight teachers were purposively sampled in the Nkangala District based on their experiences in Mathematics and their practices in their professional development. The study was guided by the principles of the instructional leadership theory, wherein departmental heads manage the curriculum and teachers in their departments. In terms of methodology, the qualitative research approach was adopted based on a case study design. Data collection methods included semi-structured interviews and document analysis. The study's findings indicate that poor learner performance is attributed to poor instructional skills. The reason for poor instructional skills stems from ineffective professional development initiatives. This study recommends a thorough training of departmental heads so that effective professional development may be implemented in schools to improve learner achievement.

**Keywords:** Professional development; departmental heads; learner performance; effective teaching; mathematics teaching

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## LIST OF ABBREVIATIONS

ANA	Annual National Assessment
CPD	Continuing Professional Development
CPTD	Continuing Professional Teacher Development
DAS	Development Appraisal System
DBE	Department of Basic Education
DoE	Department of Education
ELRC	Education Labour Relations Council
HRM	Human Resource Management
IQMS	The Integrated Quality Management System
NNSSF	National Norms and Standards of School Funding
NPFTED	National Policy Framework for Teachers Education and Development
PAM	Personnel Administrative Measures
PGP	Professional Growth Plan
PM	Performance Measurement
RSA	Republic of South Africa
SACE	South African Council for Educators
SACMEQ	Southern and Eastern Consortium for Monitoring Educational Quality
SASA	South African Schools Act
SDT	School Development Team
SIP	School Improvement Plan
SMT	School Management Team
TIMSS	Trends in International Mathematics and Science Study
WSE	Whole School Education

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## CHAPTER 1

### GENERAL ORIENTATION AND BACKGROUND

#### 1.1 INTRODUCTION AND BACKGROUND

Many educational systems are making significant changes in order to adapt to the rapid changes taking place around the world (More, 2016), where post-apartheid education in South Africa has undergone meaningful changes in the last several years, and is seen to pave the way for significant reforms and social transformation. Even though there are many government policies aimed at enhancing both teaching and learning, the area of teacher professional development continues to present a challenge (Koonce, 2018). For the improvement of the overall performance in the education system to be realised, it is vital to improve the quality of teacher performance through sound teacher development programmes (Pillay, 2016). According to More (2016), the post-apartheid South African government has put in place curriculum reform policies to address historical inequalities by endorsing social justice, equality, and other democratic values.

The importance of teacher development has been recognised as an important factor contributing to educational change and school improvement (Gaikhorst, 2019). Research by Nel and Luneta (2017) has consistently demonstrated that teacher professional development leads to meaningful improvement in self-efficacy, job-related motivation, and teacher competency. Despite these benefits, the latest study by Gaikhorst (2019) indicates that the transmission of professional development in the workplace has shown limited success in improving teachers' practices, particularly in the long term. For this reason, Kagoda (2014) suggests that teachers need to constantly receive professional development programmes, due to changes in the education system including those to assessments, curriculum, social trends, methodologies, and the introduction of new languages. Compen, De Witte and Schelfhout (2019) state that teacher professional development aims to enhance the quality of education.

Level of achievement in Mathematics is considered to be the most reliable indicator for measuring a country's social, economic, geographical, and political development (Olorufemi, Olawumi and Adu, 2018). Countries around the globe recognise that

there is a need for learners to be skilled, and to be able to do better in Mathematics (Olorunfemi, Olawumi, & Adu, 2018). A study by Kagoda (2014) further states that a teacher's expertise may amount to up to 40 percent of a learner's reading ability and improved levels in Mathematics. It is clear that the aims of teacher professional development is to enhance teacher effectiveness and improve thereof quality education (Glen, 2017).

Research by Eather and McCombie (2017) suggests that the neoliberal political agenda has increased the responsibility of school leaders and teachers to enhance their instructional practice and improve learner performance through state regulations. Teachers' professional development programmes are essential for attaining and achieving educational reforms and meeting the State's expectations (Acton, 2015). Research by Glen (2017) suggests that countries around the world have embraced the global neo-liberal philosophy of continual school development through reforms and innovations.

The literature above suggests that teacher professional development is a global phenomenon, solely undertaken to improve learner performance. I believe countries that attain the best results in Mathematics invest more in their education. This is especially possible in developed countries, because they have the financial ability to provide teachers with sound professional development, which will ultimately improve learner performance.

## **1.2. RESEARCH PROBLEM**

The low performance of learners in Mathematics presents a challenge for the Department of Basic Education (Mokgwathi, Graham and Fraser, 2019). The South African pass rate in Mathematics and languages is well below the pass rate of other African countries (Nswizwana, Ige and Tshabalala, 2017). By the South African government's assessment, since democracy, there has been a lack of meaningful improvements in educational outcomes, even though major policy changes are in place (Nswizwana et al., 2017).

Learner assessment scores in international and national studies like the Annual National Assessment (ANA) and the Trends in International Mathematics and Science Study (TIMSS) show that learners from South Africa attain poor results (Arends, 2017). The South African government cannot reach the desired standards

due to language barriers (Mulaudzi, 2018). Learners in rural areas are taught Mathematics in African languages, then from Grade Four onwards, they are taught in English, with which some learners find it difficult to cope. I support the view of George and Adu (2015) that when Mathematics is taught in English, which is often the second language, as a result, it presents an unfair burden to learners who cannot read and write English. George and Adu (2015) argue that this challenge negatively affects learner performance, because the imposition of English makes it difficult for them to both understand and express their Mathematical knowledge.

From the literature above, it is clear that teachers do not produce the desired results in Mathematics. Hence, departmental heads are responsible for advocating and promoting professional development initiatives for Mathematics educators so that teachers may have the desired results in their respective departments.

### **1.3 STATEMENT OF PURPOSE**

The purpose of this research is to investigate Mathematics departmental heads' role in the professional development of Mathematics teachers. This study aims to get an insight into the processes involved in teachers' professional development. Lastly, I hope my findings contribute to the literature on teacher professional development.

### **1.4 RATIONALE FOR THE STUDY**

I intended to investigate the role of the departmental heads in the professional development of Mathematics teachers. This subject is concerning because in the district in which I teach, there is a lack of subject advisors in other subjects. I have observed that Mathematics and Science subjects receive special treatment regarding teaching materials and professional development programmes. It makes me wonder how learners could attain poor Mathematics results after all the efforts made by the Department on their behalf. For this reason, I decided to carry out this study in order to better understand the challenges associated with poor performance in Mathematics.

In South Africa, the teaching profession is faced with a lack of qualified Mathematics and Science teachers. This shortage raises a concern, bearing in mind the importance of these subjects for the growth of the economy (Badasie and Schulze, 2018). Research by Nel and Luneta (2017) states that in South Africa, only a small

percentage of teacher professional development programmes include Mathematics instruction and pedagogy. According to Nel and Luneta (2017), the lack of focus on Mathematical content and teaching challenges that teachers experience in classrooms constitutes the reason South African learners do not attain the desired results on the international stage.

More (2016) argues that schools aim to improve their performance internationally, which has deepened debates concerning the roles that school leaders play in improving learner performance. All efforts taken by school leaders to enhance school teaching and learning must be consolidated and directed toward meaningful teacher professional development (Maass, Swan and Aldorf, 2017). For this reason, educators must be included in planning professional development programmes to increase their effectiveness.

## **1.5 RESEARCH QUESTION**

### **1.5.1 Primary research question**

How do Mathematics departmental heads professionally develop teachers in their departments?

### **1.5.1 Secondary questions**

- a) What challenges do Mathematics teachers face in terms of their professional development?
- b) How do Mathematics departmental heads support the professional development challenges experienced by the teachers in their departments?
- c) What possible strategies can Mathematics departmental heads apply to improve the professional development of teachers in their departments?

## **1.6 PRELIMINARY LITERATURE REVIEW**

Certain concepts were used frequently in this study. These concepts include *distributed leadership*, *teacher pedagogical knowledge*, *teacher self-efficacy*, *professional development*, and *teacher effectiveness*.

Hallinger (2010) defines *distributed leadership* as collaborative leadership carried out by the principal, vice-principal, departmental heads, teacher leaders, and other members of the school's improvement team. In this study, *distributed leadership*

means that the roles and responsibilities are shared among staff members in order to achieve the organisational objectives collectively. *Teacher pedagogical knowledge* refers to the abilities of a teacher to effectively impart knowledge to the learners, so that learners can achieve the desired results (Engelbrecht & Ankiewicz, 2015). For this study, *teacher pedagogical knowledge* refers to the teacher's ability to effectively impart knowledge to all learners. *Teacher self-efficacy* refers to the belief that teachers can do better (Yoo, 2016). In this study, *teacher self-efficacy* refers to a teacher's belief that they can make a positive impact to guide learners to improve. *Professional development* is a continuous process, involving both formal and informal learning practices to improve teacher competency (More, 2016). In this study, *professional development* refers to all programmes teachers undertake to enhance their skills and learner performance. *Teacher effectiveness* refers to the teacher's ability to use strategies, approaches, connection to learners and a particular set of attitudes that results in improved learner performance (Ko, 2013). Lastly, *teacher effectiveness* refers to a teacher's ability to use appropriate teaching approaches to improve learning.

### **1.6.1 Effective Mathematics teaching in the international context**

In Sweden, it is believed that teachers ought to be flexible, and shape their teaching on the individual needs of the learners (Hemmi and Ryve, 2015). Sullivan (2010) states that Chinese teachers are convinced that teachers are only effective when they have solid mathematical knowledge. In Finland, teachers structure their lessons so as to support learners who are not gifted, meanwhile offering challenges to gifted learners, while keeping the group within the same mathematical area (Hemmi and Ryve, 2015). In Brunei, effective Mathematics teaching is linked to teachers' subject knowledge, their ability to optimise learning, and the use of appropriate instructional practices (Ismail, Shahrill and Mundia, 2017). It is clear from the findings above that learner's performance in Mathematics is a consequence of teachers' lack of subject knowledge. This may be linked to the way in which universities around the country prepare teachers to teach this subject. Nonetheless, the South African government is determined to equip educators with the essential skills to produce the desired results through professional development.

### **1.6.2 Effective Mathematics teaching in the African context**

Mokgadi (2014) argues that a well-designed and effectively imparted teacher development programme leads to the development of teachers who are sufficiently prepared to teach more effectively. Mokgadi (2014) further indicates that effective Mathematics teaching is a function of pedagogical knowledge, pedagogical content knowledge, and teacher content knowledge. In Zimbabwean private schools, for instance, learners attain better results in Mathematics than in public schools, where low morale amongst teachers can be linked to poor working conditions and low salaries (Ncube, 2013). Setoromo and Hadebe (2020) state that experienced teachers encounter challenges when teaching Mathematics, due to their lack of knowledge in the field's professional knowledge, such as curriculum knowledge, subject matter content knowledge, and knowledge of the learners. The findings suggest that both intrinsic and extrinsic factors have a role to play in teacher's ability to effectively impart knowledge to learners. They also indicate that effective teacher professional development initiatives help teachers to be better prepared and equip them with the necessary skills to be better teachers.

### **1.6.3 The roles of the departmental heads in the international context**

A study by Leithwood (2016) indicates a lack of accountability on the part of the departmental heads in organising staff deliberations about curriculum development, improvement activities for staff development and partnering with other members of the School Management Team (SMT) on school-wide change issues. Mercer and Ri (2006) Chinese departmental heads have fewer responsibilities than those in a country like England. Mercer and Ri (2006) highlight the roles not carried out by the departmental heads in China. These roles include the following:

- a) budgeting for departmental development;
- b) managing and organising accommodation;
- c) monitoring and evaluating learner progress;
- d) managing and developing relationships between the head teacher and senior management team; and,
- e) responding to challenges related to learner progress.



A study by Bassett (2016) reports that departmental heads in New Zealand play the following roles:

- a) monitor curriculum, appraisals and improvement rate;
- b) control curriculum and guarantee that learners are performing at their highest level;
- c) develop diverse strategies that will lead to improved learner outcomes; and
- d) review and reflect on learner performance and strategy for enhancing learners' performance outcomes.

The above findings indicate that departmental heads from other countries may have fewer responsibilities. As a result, the departmental heads have enough time to monitor the performance of their departments and identify areas in need of development.

#### **1.6.4 The roles of departmental heads the in the African context**

Findings from a study by Jaca (2013) indicate that departmental heads must provide professional development to teachers, as well as that some teachers do not receive subject-specific support from departmental heads, prompting the teachers to support one another. Mashapa's (2019) research findings indicate that some departmental heads are ill-prepared for their new roles, as they are not trained. Bipath and Nkabinde (2018) meanwhile note that departmental heads acknowledge that they are responsible for motivating learners, but insist that parents are likewise responsible for motivating learners. The findings indicate that teachers are sometimes under the leadership of individuals who are not ready to carry out their duties. As a result, Mathematics teachers, like other teachers, do not get the guidance and assistance they need from their leaders to carry out their responsibilities in the best possible way.

- a) the responsibilities of departmental heads, as outlined in the Personnel Administration Measures (RSA 2016, A27-36), include the following:
- b) to provide and co-ordinate guidance;
- c) providing educators with the latest ideas to improve learners' performance;
- d) assisting inexperienced educators; and

- e) assessing the effectiveness of professional practice to improve teaching, learning, and management.

The above responsibilities are directly linked to the professional development of educators. It is becoming clear that departmental heads constitute a link between teacher effectiveness and professional development. The duties of departmental heads are clearly outlined in the (PAM, 2016), but there is a lack of training to assist departmental heads in effectively performing their duties.

#### ***1.6.5 Departmental heads as leaders in teaching and learning (instructional leadership)***

There are several types of leadership such as distributed, instructional, positional, functional, transformational, and transactional leadership. However, instructional and distributed leadership are closely related to the leadership role of departmental heads (Jaca, 2013). I focused on the departmental heads' role as instructional leaders, considering their focus on teaching and learning, which receives special attention in teacher professional development.

School leaders who exercise instructional leadership are more likely to improve learner performance (Bendikson, Robinson and Hattie, 2012). Nisha (2017) states that when departmental heads practise instructional leadership, they must provide the necessary support to make Mathematics teaching and learning effective, thereby improving learner performance. Nisha (2017) further suggests that departmental heads are valued resources in their department, because they directly reflect on the results by encouraging educators to engage in professional development programmes. It is also stipulated in the PAM (RSA 2016, A27) that departmental heads ought to provide and coordinate guidance in their departments. Departmental heads can identify challenges that perpetuate poor performance in their departments. In so doing, departmental heads can identify challenges, and guide teachers to produce the desired results through professional development.

Jaca (2013) states that instructional leadership is often linked with principalship. Jaca (2013) further adds that principals are not the only instructional leaders in their schools. When departmental heads practice instructional leadership, they run their

department by monitoring the attendance of both the teacher and learners and tracking the progress made in the curriculum to identify areas in need of development (Tsakeni, 2020). These findings indicate that departmental heads are responsible for monitoring curriculum progress and improving learner performance. Departmental heads must be able to help teachers identify challenges in their respective departments, and then to try to address those challenges through teacher professional development.

## **1.7 Theoretical framework**

This study utilises instructional leadership theory, which is discussed in detail in Chapter 2. According to Sahin (2011), instructional leadership is unique to the teaching field; it is different from other forms of leaderships because it relates to teachers, learners, and learning-teaching processes. Sundi (2013) states that school leadership is a critical factor, because it can influence the success and failure of an organisation. Sundi (2013) further suggests that leadership constitutes the ability to motivate and mobilise staff members to work together to achieve a particular goal. Learners perform poorly because, for various reasons, teachers struggle to carry out quality teaching and learning (Seobi and Wood, 2016). Seobi and Wood (2016) state that the struggles of working in socio-economically challenged societies, lack of professional development, poor school infrastructure, and poor initial teacher preparation lead to poor teacher performance. Spaul (2013) adds that such a struggle further fuels teachers' need for ongoing support and development through effective instructional leadership. Principals are the primary instructional leaders, but because they are too occupied with the daily struggles of running a school, they often delegate their tasks to departmental heads. Thus, departmental heads should be instructional leaders.

## **1.8 RESEARCH DESIGN AND METHODOLOGY**

### **1.8.1 Research methodology**

This study follows a qualitative research approach. Mashapa (2019) defines the qualitative approach as gaining a deep understanding of phenomena through collaboration with research participants. Qualitative research is carried out when a researcher wants to gain an in-depth understanding of motivations, thoughts, and reasons (Maree, 2018). Jaca (2013) adds that qualitative research allows a researcher to gain a deeper understanding of a phenomena by interacting with

participants in a natural setting. I visited their schools to collect data from the participants and asked them open-ended questions related to my study. Qualitative research involves collecting and analysing data to understand opinions, concepts, and experiences. As put by Creswell (2009), qualitative research allows the researcher to uncover trends in thoughts and opinions, and to go deeper into the problem. This research approach assisted me in fully understanding how professional development in schools is conducted in the Mathematics departments.

### **1.8.2 Research design**

For this study, I used a case study design. Tetnowski (2015) explains that a case study is used when conducting qualitative research, where the researcher investigates a phenomenon within its real-life context. A case study allows a researcher to understand a real-life phenomenon in its natural conditions that are related to the occurrence of the study (Gaya and Smith, 2016). According to Gordon (2019), a case study involves several data collection methods and data sources like surveys, historical data collection, and interviews, to provide diverse perceptions and understanding of few cases. Mhlongo (2017) asserts that a case study allows the investigator to logically explore organisations or individuals, complex or straightforward phenomena and relationships or programmes to gather detailed data for analysis. Dladla (2018) describes a case study as involving an object as a fundamental part of its context. A case study was suitable for this research because it explores the roles of departmental heads in teacher professional development in Mathematics.

Bertram and Christiansen (2014) believe that a case study is a research design that a researcher often chooses in the interpretive paradigm, and may use both qualitative and quantitative data. For this study, I used qualitative data, because a qualitative approach helped me to gain an in-depth understanding of the roles of departmental heads in the professional development of Mathematics teachers. An instrumental case study is defined as a study of a case to provide insight into a specific issue (Bertram and Christiansen, 2014). Bertram and Christiansen (2014) both assert that an instrumental case study allows a researcher to explore something of more general concern. For this study, an instrumental case study was appropriate, as I intended to examine the roles of departmental heads in the professional development of teachers.

A case study helps the researcher to collect detailed data, and to deduce meaning through data. Maree (2018) asserts that a case study allows for close collaboration between the participants and the researcher, allowing participants to share their experiences. This method was suitable for this research, because I collected data through interaction with the participants, and evaluated it using the interpretive paradigm, so as to extract meaning from the data.

A case study allowed for close interaction with Mathematics departmental heads for the purposes of data collection on how they conduct professional development in Mathematics.

The study focuses on poor learner performance in Mathematics. Therefore, I needed to visit schools to gather data from departmental heads and teachers face-to-face in order to gain insight into how professional development programmes are conducted so as to improve learners' performance in Mathematics.

A case study also allowed for close interaction with participants. I visited schools where I collected data from teachers and departmental heads.

Instructional leaders are involved in managing curriculum and instructional issues that affect learners' performance (Sebastian, Allensworth and Wiedemann, 2018). As put by Leithwood (2016), heads of department are responsible for organising curricula, initiating staff development programmes, and working closely with other SMT members on school-wide issues. A case study connected best with instructional leadership theory (Maree, 2016), where I interviewed departmental heads of Mathematics who are responsible for managing curriculum and professionally developing teachers.

### **1.8.3 Data collection method**

For this study, I used interviews in order to collect data from the sampled participants. Maree (2012) defines an interview as a data collection method where the researcher asks open-ended questions to determine participant views, opinions, ideas, and beliefs. Denscombe (2010) adds that interviews allow the investigator to gain a deep understanding of participants' feelings, experiences, emotions and opinions. Such information can be obtained through in-depth and detailed exploration. I built a trusting relationship with participants to facilitate the exchange of detailed information that is only obtainable through a case study.

For this study, I used semi-structured interviews to ask departmental heads and teachers open-ended questions while seeking clarity where their responses lacked clarity. According to Maree (2016), qualitative research involves both structured and semi-structured interviews. In the words of Bertram and Christiansen (2014), structured interviews refer to an interview schedule in which the researcher asks questions in a predetermined order. Bertram and Christiansen (2014) further assert that a researcher uses an unstructured interview when introducing a topic, and then lets the respondents answer as they wish. Semi-structured interviews are used by a researcher seeking to corroborate data from other data sources (Gordon, 2019). Maree (2016) further states that semi-structured interviews allow the researcher to ask open-ended questions, while also providing the opportunity for probing and clarification. Participants were given predetermined questions days before the interviews to give them time to reflect on the questions.

#### **1.8.4 Sampling of participants**

Etikan, Musa and Alkassin (2015) define a sample as a portion of a universe or population. In the words of Sharma (2017), purposive is also known as subjective, selective or judgemental sampling, which allows the researcher to select organisations, events, and people to be studied. For this study, I employed purposive sampling techniques, focusing on professional development in Mathematics, which helped me answer my research questions. Palinkas, Horwitz, Green et al. (2015) confirm that purposive sampling allows the researcher to focus on a particular population characteristic to answer their research question. The study was carried out in two primary and two high schools in KwaMhlanga North East Circuit, Mpumalanga Province. In each school, I interviewed one head of department and two Mathematics teachers, which amounted to 12 participants.

#### **1.8.5 Data analysis procedure**

Mashapa (2019) defines data analysis as a continuous and recurring process in all stages of qualitative research. As put by More (2016), data analysis allows a researcher to make sense of collected data. More (2016) further states that data analysis involves consolidating, reducing, and interpreting the data collected from people to make meaning. According to Jansen (2016), the principle of data analysis is associated with obtaining a complete understanding of the collected data. As the gathered data cannot explain itself, the researcher needs to understand and make

meaning of it. According to Jaca (2013), data analysis refers to making sense of participants' data, while considering the themes, patterns, categories, context, and regularities.

Braun and Clarke (2012) define thematic analyses as a method for consistently identifying, organising, and presenting insight into patterns of meaning beyond the data set. Thematic analysis is a method that helps the researcher to describe data, which also includes interpretation, in the process of choosing codes and constructing themes (Michelle, Varpio and Varpio, 2020). Sharp and Sanders (2018) add that thematic analysis is a powerful and appropriate method to use when looking to comprehend a set of thoughts, experiences, and behaviours across a data set. The thematic analysis starts with the data that needs to be written, and seeks to organise meaning from data collected into patterns and themes (Sundler, Lindberg and Nilsson, 2019). Jason and Glenwick (2016) suggest six basic steps in undertaking thematic analysis:

*Stage 1: Immersing oneself in the data:* At this stage, I transcribed interviews and read the transcripts constantly. Although transcription took time, I did it because it helped me familiarise myself with data and determine possible codes. I also transcribed and re-read the data.

*Stage 2: Generating initial codes:* As I had already familiarised myself with the data, I started to identify a list of codes. I used highlighters and coloured pens to take notes on the data I was analysing. This process helped me to organise data into meaningful units.

*Stage 3: Searching for themes:* I sorted different codes into possible themes at this stage. I used a table to sort codes appearing from the data set. At the end of this stage, I had a collection of themes and sub-themes.

*Stage 4: Reviewing themes:* This stage involves the refinement of themes. I read the data extracts that fit into each theme to guarantee that all data forms had a coherent pattern.

*Stage 5: Defining and naming themes:* At this stage, I wrote a detailed analysis of each theme and how it fits into the data set. This helped me to identify themes from the data.



*Stage 6: Producing report:* After themes and their interrelationship were identified, a research report was drafted to optimise trustworthiness. I also provided sufficient evidence of each theme by using clear examples from the collected data to write a final report.

## **1.9 ETHICAL CONSIDERATIONS**

As Ritchie, Lewis, and Nicholls (2013) explain, ethical considerations are the norms and standards for carrying out research. Maxwell (2013) explains that research ethics aim to protect the participants from being harmed or exploited by the researchers. Gordon (2019) notes in this regard that the researcher has to respect the participants' views and guarantee their privacy. In this study, I intended to attain valid results from the participants to find solutions to the research problem. The following ethical considerations were applied in this study: informed consent, harm and risk, honesty and trust, privacy, confidentiality, anonymity, and voluntary participation.

### **1.9.1 Informed consent**

According to More (2016), informed consent involves participant assent to engage in research after being fully informed about all the details. I gave the participants consent forms that included details about the study's parameters after explaining the study's goal to them.

### **1.9.2 Harm and risk**

During the study, participants were not subjected to sensitive, embarrassing or psychologically harmful discussions. I also sought to build a trusting relationship with the participants.

### **1.9.3 Honesty and Trust**

So as to encourage reliability and honesty, the ethical considerations of this study were firmly adhered to. When analysing data, honesty prevailed, and the interpretations of the findings were truthful.

### **1.9.4 Privacy, confidentiality and anonymity**

To safeguard the participants' privacy, I did not mention the location of the study. All participants and schools were given code names in the form of numbers and letters not to disclose their identities.



### **1.9.5 Voluntary participation**

Participants were assured that their participation in this study was voluntary and that there would be no remuneration. Participants were not obliged to participate in the study, meaning they could choose not to continue with the study at any time.

## **1.10. TRUSTWORTHINESS OF THE STUDY**

According to Maree (2016), four criteria must be considered when conducting a qualitative study in pursuit of its trustworthiness. These criteria include credibility, transferability, dependability, and confirmability.

### **1.10.1 Credibility**

The credibility of qualitative research depends on the researcher's effort in their study (Fletcher, 2016). Throughout the course of the study, I worked tirelessly to gather and interpret data so that these findings may contribute to teacher professional development.

### **1.10.2 Transferability**

A researcher establishes transferability by providing evidence to readers that the findings of a study can apply to other situations, times, contexts, and populations (Maree, 2016). Interview transcripts, summaries, and audiotapes were preserved to allow researchers to refer to the study in future.

### **1.10.3 Dependability**

According to Creswell (2009), dependability refers to the reliability and consistency of the research findings. Research procedures are documented to allow other researchers to audit, follow, and critique the research process. Throughout the study, I reviewed and examined the data analysis and the research process so as to verify that the findings were consistent.

### **1.10.4 Conformability**

Maree (2018) describes conformability to be the degree to which other researchers corroborate or agree with the research findings. To establish conformability, I gave details of the data collection, analysis and interpretation of data.

## **1.11. DELIMITATIONS OF THE STUDY**

According to Theofanidis and Fountouki (2018), the delimitations of a study refer to the boundaries the researcher sets in order to achieve the study's objectives. I

decided to not have an extended interview schedule. This study was limited to two schools in the circuit of KwaMhlanga in Mpumalanga Province. I was collecting data from Mathematics departmental heads and Mathematics teachers in primary schools in which the findings were not generalisable.

## **1.12 Overview of the chapters**

The research consists of five chapters which are distributed as follows:

### **1.12.1 Chapter 1**

This chapter introduces the study by presenting an orientation of the research topic, problem statement, rationale, the statement of purpose, research questions, and the study's theoretical framework. The research methodology, design, and data collection method were also discussed. The ethical issues that affect the study were explained.

### **1.12.2 Chapter 2**

This chapter discusses the African and international literature on the professional development of teachers. Related policies that affect the implementation of teacher professional development in South Africa are also discussed.

### **1.12.3 Chapter 3**

This chapter describes the research approach, design and methodology used in this study. The interpretive research paradigm is explained, and the ontological and epistemological assumptions are presented. The purposive sampling strategy was used, and data were collected using semi-structured interviews. Thematic analysis was used to analyse and interpret data. The ethical considerations observed during the data collection process are explained.

### **1.12.4 Chapter 4**

This chapter presents the findings of the study. Data is analysed and discussed in relation to extant literature.

### **1.12.5 Chapter 5**

This chapter provides a summary of the research findings. Conclusions are made, and recommendations forwarded from the research findings.

## CHAPTER 2

### A REVIEW OF THE LITERATURE ON THE PROFESSIONAL DEVELOPMENT OF MATHEMATICS TEACHERS

#### 2.1 Introduction

Chapter 1 provided a background of the study and presented the research problem, purpose, rationale, research questions, theoretical framework, and the study's significance. This chapter explored the conceptualisation of professional development and policies relating to ongoing teacher professional development, and relevant theoretical framework and literature. The roles of departmental heads were explored in order to illustrate their effectiveness, and the teachers' perspective regarding professional development initiatives.

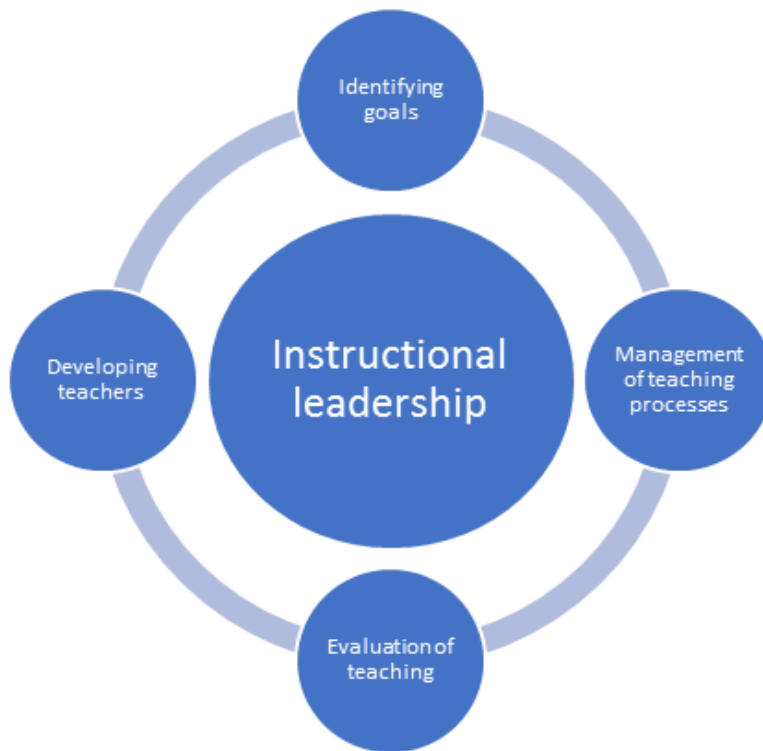
#### 2.2 Theoretical framework of the study

According to Lederman and Lederman (2015), the theoretical framework defines the main concepts in research, proposes connections between them, and discusses applicable theories founded on the literature review. Lederman and Lederman (2015) further state that a solid theoretical framework offers a research direction and allows you to understand, explain, and extend your findings convincingly. The theoretical framework helps the researcher to introduce and describe the research problem.

The instructional leadership theory was used as the theoretical framework of the study. Instructional leadership theory was developed in the 1950s and 1960s in the United States when academics began to enquire about how they could assist school leaders in improving teaching and learning (Lee, Hallinger, & Walker, 2012). Lee, Hallinger and Walker (2012) state that instructional leadership concerns school effectiveness and improvement. Akinsola and Olowojaiye (2008) argue that instructional leadership involves the management of curriculum and instruction. Malinga (2016) states that instructional leadership is a form of school leadership in which school managers collaborate with educators in order to provide guidance and support to improve learner achievement. The instructional leadership theory was appropriate for the current study, because departmental heads are school managers. For this reason, they are responsible for leading their departments to improve learner performance. Departmental heads conduct department meetings,

where they collaborate with teachers to communicate possible challenges contributing to ineffective teaching practices and poor learner achievement. For this reason, departmental heads can advocate professional development activities that may address potential challenges teachers and learners may experience.

Influential instructional leaders are deeply involved in curricular and instructional concerns directly impacting student performance (Akinsola & Olowojaiye, 2008). Malinga (2016) states that the goal of instructional leaders is to improve learner performance. Sisman (2016) mentions four principles associated with instructional leadership, namely: identifying goals, managing teaching processes, and evaluating teaching and developing teachers.



**Figure 1: Principles of instructional leadership**

### ***2.2.1 Discussion of the principles of instructional leadership***

Sisman (2016) discusses four principles associated with instructional leadership that helped in answering the research questions. These principles are discussed in what follows.

### *2.2.2.1 Identifying and sharing school goals*

Ahmed (2016) state that departmental heads are responsible for identifying and sharing school goals by determining school vision and mission. This principle assisted in investigating the research problem as stated in the PAM (RSA 2016, A-27), namely that departmental heads should provide and coordinate guidance. Departmental heads are navigators in their departments; they lead the teacher in the desired direction. As I was interviewing departmental heads, I hoped to attain good data on the problems related to mathematics teachers' teaching and professional development. Teachers were also able to voice the challenges regarding the attainment of the set goals, which helped me answer my secondary questions, as I was also interviewing teachers.

### *2.2.2.2 Managing instructional programmes and teaching process*

In successful schools, departmental heads have a crucial role in the planning, implementation and coordination of professional developmental programmes (Ahmed, 2016). One of the core duties of the departmental heads is to suggest new approaches to the subject, techniques, methods, and evaluation so as to improve teaching and learning PAM (RSA 2016, A-27). This principle helped me to answer my research question, because departmental heads are responsible for planning, implementing and coordinating teaching in their respective departments. I was convinced that participating departmental heads could share with me how they plan for professional development, how they carry out professional development, and how they evaluate the effectiveness of professional development initiatives.

### *2.2.2.3 Evaluation of teaching process and students*

Du Plessis and Eberlein (2017) note that the Integrated Quality Management System (IQMS) is an integrated system intended at improving and monitoring teaching performance. Du Plessis and Eberlein (2017) further state that the development appraisal is a system used to determine individual teachers' strengths and weaknesses. The PAM (RSA 2016, A-28) notes that departmental heads ought to constantly participate in the educator appraisal processes so as to review their professional practice to enhance teaching and learning. As departmental heads implement the IQMS, they can observe lessons in their department. When the

departmental heads are involved in this process, they can identify areas in need of development that will reflect learner performance.

#### *2.2.2.4 Supporting and developing teachers*

The primary roles of school leaders are to assist and guide teachers in developing their professional qualifications and allow the use of the new knowledge and capabilities in the school. Through the implementation of IQMS, departmental heads can identify an individual's specific needs for support and development. This principle helped me to answer my primary question. This principle was essential for this study, where it sought to understand the processes of mathematics teacher professional development.

#### **2.2.3 Strengths and limitations of instructional leadership**

According to Ismail, Shahrill and Mundia (2014), instructional leadership positively affects the relationship with teachers and is essential for teachers' functionality. Instructional leadership allows teachers to participate in educational events and peer management to achieve professional development (Mashapa, 2019). Instructional leaders strive for effective teaching by providing clarity and support for educators and also procuring necessary resources to optimise instruction effectiveness (Mestry, 2017). Mestry (2017) further states that when school leaders employ instructional leadership, they can empower and inspire teachers, identify a school vision, and innovate school classroom-based strategies to enhance teaching and learning for teachers and learners. This theory assisted in facilitating a better understanding of how professional development initiatives are carried out as I collected data from departmental heads who happen to be closely working with teachers.

Ahmed (2016) identifies five challenges that may hinder effective instructional leadership practice. These are: a lack of teacher cooperation, time, skill, and training, support from district officials, school governing bodies and the community, and a lack of vision. These challenges are instigated by the fact that there is a lack of a universal definition of instructional leadership, which results in school leaders not being able to effectively carry out instructional leadership in their schools (Costello, 2015).

The above statement by Costello (2015) indicates that school leaders who carry out this type of leadership are likely to not achieve the same results as those leaders who are unsure of how to carry out instructional leadership. This may be attributed to leaders lacking the requisite skills to effectively carry out this type of leadership. Costello (2015) further states that lack of clarity related to instructional leadership leads to subpar instructional performance. Hence, learners continue to underperform in mathematics.

#### **2.2.4 Relevance of the theory**

Jaca (2013) argues that instructional leadership is closely related to the leadership role of departmental heads. As the workload of principals has increased, departmental heads also take on the role of instructional leaders (Costello, 2015). Seobi and Wood (2016) highlight departmental heads' roles as instructional leaders, including helping teachers set and achieve personal and professional objectives for improving school instruction. Secondly, their role includes constantly undertaking informal and formal classroom observations. Thirdly, they give feedback to teachers based on classroom observations, focusing on improving instruction. Lastly, they provide critical but constructive evaluations, making recommendations for professional and personal development for individual teachers. The instructional leadership theory connected well with my primary research question when collecting data from Mathematics departmental heads. This connection was evident when attempting to establish how they carry out the professional development of Mathematics teachers, since they are the ones who closely work with the teachers. Malinga (2016) states that instructional leadership entails sharing a vision with subordinates, monitoring the assessment standards, assigning resources and reflecting on the results. This theory is also linked with the secondary questions posed here, as departmental heads are responsible for the professional development of teachers. Departmental heads can identify challenges when carrying out professional development initiatives, while exploring strategies to overcome these challenges.

The instructional leadership theory is helpful for this study, as it allows departmental heads to supervise the quality of teaching and learning and to ensure the effective use of instructional time to foster the achievement of educational goals and objectives (Onyali and Akinfolarin, 2017). Ahmed (2016) believes that instructional

leadership practices include: communicating school goals, framing plans, monitoring of learner performance, protection of instructional time, coordination of the curriculum, promoting professionalism, and providing incentives for learners. Learners' performance in Mathematics is attributed to the school's inability to employ instructional leadership (Seobi and Wood, 2016). Thus, when school leaders enact instructional leadership, the school will have a clear vision and will communicate the vision with teachers. Seobi and Wood (2016) further state that departmental heads are best positioned to carry out instructional leadership, but note that this is not done in many schools. I believe this theory's principles helped me gather rich data, as departmental heads are responsible for framing objectives, as well as diverse ways to achieve them in their respective departments. The principles of the theory further convinced me that it was helpful, as departmental heads are expected to encourage teachers to engage in professional development initiatives to improve learner performance.

### ***2.2.5 Departmental heads as instructional leaders***

Marishane (2016) asserts that the primary work of school leaders is to develop staff members attached to their schools. Leadership involves managing instruction and curriculum, supervising, and supporting educators, and monitoring learner progress (Jaca, 2013). Mashapa (2019) observes that departmental heads practice instructional leadership as one among many leadership styles. This leadership is practised when departmental heads monitor teachers' curriculum coverage, checking lesson plans and teachers' files and learners' books. The leadership of school management is pivotal in motivating educators and creating a culture of learning in the school. According to More (2016), the school management's instructional leadership is paramount in teacher professional development. More (2016) further states that instructional leaders focus on the school curriculum design, development, and delivery. A departmental head's ability to practice instructional leadership is essential in the professional development of teachers. Departmental heads as instructional leaders are responsible for ensuring that educators are equipped with the essential skills to deliver the curriculum to learners effectively.

It has been found that some departmental heads cannot perform their duties as instructional leaders with diligence as they experience daily disruptions, enormous



workload and a lack of support from parents and subject specialists (Taole, 2013). Departmental heads suggest they can only be effective as instructional leaders if they delegate certain managerial tasks to other management team members (Taole, 2013). Departmental heads appear to be of the view that they can better manage their departments as instructional leaders if they get the necessary support from all stakeholders.

Instructional leadership theory is appropriate for this study, where the research focus is the professional development of educators. The above findings indicate that departmental heads are instructional leaders when it comes to their responsibilities. As stated (PAM, 2016), the primary responsibility of departmental heads is to manage their departments. My focus is on the Mathematics department, as it is evident that learners do not attain good results. The departmental heads and teachers helped me understand how professional development initiatives are carried out.

### **2.3 Teacher professional development**

South African learner performance in Mathematics is generally poor compared to that of other countries (Jojo, 2018). The Third International Maths and Sciences Study (TIMSS), the Southern and Eastern Consortium for Monitoring Educational Quality (SACMEQ), the Annual National Assessment (ANA), and matriculation results all showed inadequate learner performance in mathematics (Bergman, Bergman, & Gravett, 2011). Deep subject knowledge and quality qualifications, according to Mogari, Kriek, Stols, and Iheanachor (2009), are necessary for teachers to be effective. When these qualities are insufficient, effective professional development may close the gap. In schools where professional development programmes for teachers are poorly managed, teachers may not acquire the requisite knowledge and skills necessary for teaching mathematics, which may have an impact on how well learners perform in the subject.

Activities for professional development ought to be encouraged for teachers so that their skills can be enhanced to provide high-quality mathematics teaching and learning (Avalos, 2011). It is clear that the education policies related to the professional development of teachers needs to be reformed to enable school goals and standards to be met. To help learners attain the objectives, departmental heads

should have incentives and structures to attract, develop, and retain expert mathematics teachers (Mary & Imenda, 2019).

According to Rieckhoff and Larsen (2012), effective professional development of teachers is one-way for schools to can develop educators to mitigate challenges in the successful operation of schools. Bates and Morgan (2018) add that a professional development system should comprise the following elements: educators who are the learners in the system; departmental heads/facilitators who support educators as they construct new knowledge; and the context in which professional development is managed. Teacher professional development programmes should add to teacher knowledge and practice to improve learner achievement.

Teacher professional development is crucial in improving the quality of teaching and learning (Desimone, 2011). Pitsoe and Maila (2012) add that teacher professional development is critical for improving the teachers' instructional practices and assisting teachers to be innovative. Kedzior (2004) states that there can be no one-size-fits-all approach to effective teacher professional development. Kedzior (2004) further notes that teacher professional development initiatives must be designed, implemented, and evaluated to address the needs of individual teachers in particular settings. Hammond, Gardner and Hyler (2017) state that teacher professional development is essential to support the increasingly complex skills students need to learn to prepare them for further education and work in the 21<sup>st</sup> century. Effective professional development initiatives lead to improved learners' performance. Thus, teachers should engage in these initiatives as they will likely perform their duties effectively.

Governments invest insignificant amounts of money in professional development programmes such as workshops, seminars, and conferences (Bautista & Ortega, 2015). Bautista and Ortega (2015) argue that these programmes are woefully inadequate, because they are likely to be fragmented and intellectually superficial, disconnected from teachers' real needs and interests, as well as from classroom practices. Some studies about professional development have yielded disappointing results about its effectiveness (Bautista & Ortega, 2015). The significance of

professional development is limited, because leaders are automatically promoted to the next grade without meeting the required results. As a result, teachers are not able effectively impart knowledge to pupils because they lack the foundation of specific topics related to the content.

Professional development provides teachers with the opportunity to develop new teaching techniques, explore new roles, refine their practice, and broaden themselves (Desimone, 2011). Teacher professional development should be focused on deepening teachers' understanding of teaching and learning processes and the pupils they teach. Gardner and Hyler (2017) state that effective professional development involves teachers as both learners and teachers.

Research by Ozer and Beycioglu (2010) indicates that professional development and emotional burnout differ considerably by gender. It has been discovered that female educators have a more positive attitude towards professional development than do male educators, where female teachers are more likely to experience emotional burnout than male teachers. Opfer and Pedder (2011) have found that teachers with more than 20 years of professional experience have more negative attitudes regarding professional development (Opfer & Pedder, 2011). Teachers meanwhile believe sustained, and intensive professional growth will positively impact on their practices (Opfer & Pedder, 2011).

The above literature indicates that teachers' professional development should continuously enhance their teaching competencies. Professional development equips educators with the necessary skills to keep up with the global changes. Hence, the above scholars suggest that continuing professional development (CPD) is of utmost importance.

According to Prestridge and Tondeur (2015), inadequate professional development by the departmental head is documented as the cause of poor learner performance. Successful teachers and experienced teachers share their teaching strategies with their colleagues in order to improve teaching and learning. Through collaboration, teachers develop improved teaching skills that assist in simplifying the teaching of complex Mathematical concepts (Bolt, 2012). Recording subject advisors in workshops may be beneficial to mathematics teachers. Teachers may use such recordings as a reminder of what teaching strategies they may use to improve their

setting of formal assessment tasks and their teaching skills. Several elements contribute to the effectiveness of professional development. Bates and Morgan (2018) discuss the seven elements of effective professional development.

### **2.3.1 Element of effective professional development**

#### *2.3.1.1 Element 1: Focus on content*

Content focuses on what is taught. This element allows teachers to connect theory to practice. The incorporation of and focus on particular content-teaching strategies while working with specific student populations is a crucial principle of effective professional development (Bates & Morgan, 2018). Departmental heads must read the latest literature and continue to engage and teach learners as a way of entering deeper into the literacy of teaching and learning. Teachers need to be involved in designing professional development programmes to ensure that the content of the programmes reflects the latest praxis and research.

#### *2.3.1.2 Element 2: Active learning*

This element focuses on the active learning of teachers within the professional development programmes. The effectiveness of professional development programmes encourages teachers to actively participate in the programmes. Since traditional lecture models are generally not as interesting, more interactive experiences ought to be used. Examining learners' work, using resources that teachers can later use in their classrooms, participating in lessons that teachers can utilise with students, and leading model lessons are a few examples of these experiences (Bates & Morgan, 2018). Active engagement is emphasised throughout these experiences, giving teachers the chance to discuss, debate, and reflect on practical issues. Lesson analysis and recording helps teachers learn more actively, while also advancing their conceptual understanding and pedagogical knowledge.

#### *2.3.1.3 Element 3: Support for collaboration*

This element supports the collaboration that facilitates professional learning. Collaboration can take place one-on-one, in a small group, or across the entire school. Collaboration fosters a spirit of togetherness and creates a body of collective knowledge that goes beyond isolated individual experiences in the classroom (Bates

& Morgan, 2018). Departmental heads need to create a working environment where teachers feel free to address instructional issues with one another. The collaboration of teachers will help decrease the added responsibilities of departmental heads, which may lead to departmental heads having more time to plan for professional programmes that will improve their departments.

#### *2.3.1.4 Element 4: Models of effective practice*

This element advocates for the use of modelling for effective practice. Professional development programmes are to be effective when teachers see the instructional practices in action. The combination of professional development and the use of new curriculum material is necessary in order to support teachers to be able to use such materials. Having a vision helps teachers understand what they are trying to accomplish in their classrooms, and enables them to set goals to help them realise their vision (Bates & Morgan, 2018). Teachers' level of instruction competence is demonstrated by using a range of models, which also enables teachers to identify the best teaching strategies to use in order to improve learner performance.

#### *2.3.1.5 Element 5: Coaching and expert support*

Expert support is vital in creating and implementing effective professional development. Principals, deputy principals, departmental heads, and subject advisors may act as experts (Bates & Morgan, 2018). Individuals who act as an expert ought to provide constructive individualised feedback to teachers. Lesson observations will help experts to provide specific feedback on teachers' weaknesses and strengths. Lesson observation further assists departmental heads to suggest teaching approaches to teachers on the implementation of new curriculum and resources.

#### *2.3.1.6 Element 6: Feedback and reflection*

This element emphasises the importance of providing professional development activities that regularly give teachers time to reflect, get feedback, and make changes to their practice. Reflection and feedback are two separate but related activities that are both essential to effective professional development (Bates & Morgan, 2018). In order to increase knowledge and comprehension, it is essential

to reflect and receive feedback. Departmental heads must ensure that their feedback on teachers is not viewed as critical, but rather, as constructive. Providing constructive feedback that is directly linked to teachers' weaknesses increases the possibility of teachers participating in development programmes that will address their weaknesses.

#### 2.3.1.6 *Element 7: Sustained duration*

The last element considers the duration of effective professional development. No matter how dynamic, a one-shot, sit-and-get approach to professional learning is insufficient. The continuing sustained support required for meaningful professional development cannot be provided by one-time training. Effective professional growth is characterised by long-term engagement, which should be measured in terms of weeks, months, and years (Bates & Morgan, 2018). Unfortunately, due to financial constraints determined at state level, professional development for many teachers lacks the time needed to make meaningful changes to the improvement of teaching and learning (Bates & Morgan, 2018). This contrasts with the effective models that include time for meetings and content discussions, time for ideas to be implemented in the classroom, and time for teachers to return to share and reflect on their classroom experiences. Hence, departmental heads need to ensure that continuous professional development is conducted in their departments. This can be done by having monthly departmental meetings, regular lesson observations, and monitoring curriculum content and teacher files.

## **2.4 Teacher perspectives on professional development activities**

According to Bayar (2014), teachers consider any professional development activity to be effective if it is designed to meet the needs of individual teachers and is offered continuously. According to a study by Steyn (2009), there is a significant mismatch between the Department of Education (DoE) and schools when it comes to the experiences and perspectives of many teachers about professional development concerns. According to some educators, existing professional development initiatives do not take into account their demands in the classroom. The structure of certain professional development is proving to be difficult, and the one-size-fits-all approach fails to take into account the unique needs of educators and other desired

results (Pedder, 2011). It would appear that professional development initiatives become closely related to the requirements of specific educators.

Bayar (2014) states that professional development initiatives should entail the following components: a match to existing educator needs; a match to existing school needs; educator involvement in the planning of professional development programmes; opportunities for active participation; long-term engagement, and high-quality instructors.

#### ***2.4.1 A match to existing educator needs***

Teachers believe that professional development initiatives ought to be offered based on existing needs. Teachers feel that professional development should address real-life situations in the classroom. Teachers are convinced that if professional development activities can be linked to individual teacher needs, that this will lead to improving classroom instruction, and ultimately improve learner performance.

#### ***2.4.2 A match to existing school needs***

Teachers believe professional development programmes ought to be conducted according to individual school-classroom needs, because needs differ from school to school. Professional development programmes are thought to be effective when aligned with each school's reality. Professional development activities seem not to produce the expected results as teachers feel their challenges are not addressed.

#### ***2.4.3 Educator involvement in the planning of professional development programmes***

Teachers believe that professional development activities do not produce the desired outcomes because they are not involved in planning them. They believe that if they were involved in planning the activities, the results would improve as the activities would be carried out according to the needs of each school. While effective teacher professional development enhances teaching and learning, there is no denying that most schools in poor communities are under-resourced and understaffed. In some cases, teachers cannot deliver their lessons as planned, due to the disruptive behaviour of learners in the classroom. When the disciplinary committee in the school is dysfunctional, learners become aware that their undesirable behaviour will not be punished. As a result, learner performance does not improve.



#### **2.4.4 Long-term engagement**

Teachers complain that the professional development programmes offered are generally short-term, and often lack the depth needed to have a lasting effect on instructional skills. Professional development activities ought to be a continual process. This will assist the departmental heads, and teachers monitor the skills learned during professional development and making necessary improvements.

#### **2.4.5 High-quality instructors**

Some teachers are not satisfied with the preparedness of the instructor who conducts the workshops. Thus, teachers may lose interest and not actively participate in the activities. Professional development activities are ineffective in equipping educators with the essential skills to improve teaching and learning.

### **2.5 Mentoring novice teachers**

Ibrahim (2012) states that mentoring has become a strategy in an educational setting to support teachers, learners, and managers in their roles and their development in their organisation. Hence, inexperienced teachers require mentors so they can be supported and guided during their early years in teaching. Mentoring is an intense interpersonal relationship and a process that brings together a senior individual (mentor) and a younger, less experienced person (mentee) by sharing experiences and assisting the latter in achieving a specific goal in a new occupation effectively (Fantilli & Douglas, 2009). Mentors who have experience in assisting novice teachers are likely to contribute to the professional development of mentees. Novice teachers who work closely with expert mentors possess a more progressive teaching ability than those who do not have mentors (Oppenheimer, 2016). Mentors are helpful because departmental heads may not have sufficient time to carry out their teaching and management duties. Hence, mentors who share the subject with novice teachers can suggest ways to create an environment that will foster effective teaching and learning.

O'Hara et al. (2020) note that mentoring is based on interpersonal connections, including professional and emotional support in an atmosphere of receptivity and trust. Experienced teachers must be approachable, because new teachers may be challenged in classroom management and teaching strategies. Openness encourages novice teachers to ask for experienced teachers' suggestions that may



improve their teaching and classroom management skills. The mentoring process involves one-on-one individual support provided by mentors, who are experienced teachers (O'Hara et al. 2020). Mentors are responsible for creating an atmosphere of trust that enables less experienced teachers to develop, accept professional authority from mentors and learn from the mentoring process (Oppenheimer, 2016). Trust fosters teachers to open up to their mentors, supervisors and colleagues. As some departmental heads cannot support teachers professionally, more experienced teachers often guide and support novice teachers, mainly when teaching the same subject. The guidance and support that novice teachers receive from experienced teachers may improve teaching skills, enhancing learner performance.

### **2.5.1 Roles of mentors**

Haddad and Oplatka (2009) state that mentors ought to provide inexperienced teachers with guidance in order to perform their tasks effectively. In a school setting, mentors are experienced educators, who guide and support less experienced teachers to achieve organisational goals. Ingersoll and Strong (2011) suggest three roles for mentors, namely: the role of a colleague – a teacher who advocates for mentees and the profession; the role model – a teacher who facilitates and able novice teachers to be independent, professional and mature; and the role of a helper – a teacher who is a giver of time and resourceful. In the teaching profession, mentors should provide sound assistance to mentees by advising them to overcome the daily challenges in the classroom.

Mentors become role models for their mentees, giving them the support and encouragement, they need to succeed in their chosen careers (Haddad & Oplatka, 2009). Mentors can act as role models for mentees by encouraging them to participate in professional development programmes. Mentors need to undergo the process of reflection in order to enhance their abilities (Spanorriga, Tsiotakis, & Jimoyiannis, 2018). Mentors spend more time with novice teachers than departmental heads. For this reason, mentors are in a position to influence the professional development of inexperienced teachers.

Ingersoll and Strong (2011) argue that mentors should be involved in professional development initiatives, such as studying mentoring practices, noting what should be done before the mentoring process begins. Mentors should give positive

feedback to their mentees and ought to determine how reflective teaching assists mentees in assessing their professional growth. Fantilli and Douglas (2009) state mentors are leaders, who identify the readiness for the developmental stages for growth. The development process may include providing complex activities and encouraging development in new educators.

There are specific characteristics that mentors ought to possess. According to Ingersoll and Strong (2011), mentorship is a crucial professional development strategy that requires mentors to possess particular characteristics. An ideal mentor should exhibit generosity, enthusiasm, selflessness, honesty and wisdom (Arthur et al., 2015). Straus, Johnson and Marquez (2013) note that successful mentorship is essential to career growth and improvement for both mentors and mentees. Straus, Johnson and Marquez (2013) further state that successful mentoring relationships are characterised by personal connection, clear expectation, mutual respect, and reciprocity. Mentors must be active listeners and be focused on issues identified by the mentee, and prompt the mentee for clarity if there is misunderstanding. The mentor assists the mentee in goal-setting through active listening. Influential mentors also display crucial traits, such as being approachable, and able to recognise and encourage the growth of their mentees' prospective qualities and abilities (Straus, Johnson, & Marquez, 2013). A good mentor should be able to recognise their mentees' strengths and areas for improvement and support career development.

## **2.6 The roles and duties of departmental heads**

Departmental heads have a prominent role to play in teaching and learning leadership (Jaca, 2013). The school management team (SMT) is responsible for managing and leading public schools in South Africa, and the departmental heads are therefore part of the SMT (Jaca, 2013). The Personnel Administrative Measures (PAM, 2016) define the departmental head as a person appointed to a department, who has specialised knowledge in a subject field and is responsible for contributing to the organisation in terms of coordinating, curriculum implementation, managing teaching and learning, supervision, evaluating and administration of the department, mentoring, guiding, and supporting staff under their leadership. In some instances, nepotism or union affiliation is prioritised over an individual's academic qualifications or experience.

According to the PAM (2016), the departmental head's main duties include classroom instruction; departmental administration; and the development of suitable extracurricular activities to ensure that the subject, learning phase, and learners' education are successfully enhanced. Jaca (2013) adds that subject leaders are responsible for creating a supportive environment for novice teachers. Such responsibilities become challenging for the departmental heads to execute because some lack the necessary skills to carry out their duties effectively. The lack of consistency with professional development activities and delayed induction often add to the issue of departmental heads being ineffective in managing their departments.

Departmental heads must acquire critical skills that will help them be more successful and efficient in their management and administrative responsibilities (Maingi 2015; Nemaston 2020). The management of the departmental head can be divided into the following components: planning, organising, leading, and controlling.

### **2.6.1 Planning**

Planning is considered an essential and vital manager's responsibility (Nemaston 2020). Planning is a strategy for establishing direction within a department by identifying and committing to achieving desired goals. Departmental heads use assessment data to analyse learner performance. In so doing, subject leaders can formulate the ways in which they can help teachers and learners to enhance learner achievement.

### **2.6.2 Organising**

Organising is a managerial role is defined as bringing order to a department by organising activities and responsibilities and determining relationships within the department (Nemaston, 2020). Organising also includes allocating resources and converting departmental plans into actions. Departmental heads can identify areas in need of development after they shall have analysed the assessment data. Professional development activities are administered to individual teachers to improve learner performance.

### **2.6.3 Leading**

Leadership involves communicating with and encouraging individuals to complete activities essential to meet departmental objectives (Nemaston, 2020). Leadership also consists of providing direction and modelling desired behaviour. A leader must communicate how their department can achieve its goals. Departmental heads must lead by example, setting realistic and clear objectives to be achieved, while motivating and developing teachers in their departments.

### **2.6.4 Controlling**

Controlling is a continuous and methodical process that includes defining performance standards based on departmental goals (Nemaston, 2020). Controlling enables the identification of challenges and areas in a department that can be improved. Departmental heads control teachers' files and learners' books to monitor the curriculum coverage and ensure that the departments reach their objectives. In so doing, subject leaders can identify topics and possible weaknesses of individual teachers on instructional skills.

## **2.7 Challenges departmental heads face in leading teaching and learning**

Jaca (2013) states that school managers find it difficult to implement their new managerial expectations effectively. According to Nwangwa and Ometere (2013), the added responsibilities of a teacher who is promoted to departmental head position increases their workload. Time constraints are a primary influence in this regard. As their workloads increase, they struggle effectively perform their teaching and management duties. This implies that departmental heads struggle to manage and lead their departments to improve learner achievement effectively.

Newly-appointed subject leaders often struggle to manage older teachers in their departments. A study by Jaca (2021) reveals that internally promoted departmental heads often struggle to change their relationships with their teaching colleagues. Novice departmental heads often feel that teachers question their background, qualifications, and leadership ability. This may be influenced by the fact that some departmental heads lack the subject matter knowledge, pedagogical content knowledge, or credibility to lead subjects under their supervision (Malinga, 2016). This implies that some subject leaders are not effectively managing their

departments, where there is a strong need for intervention to improve the competency of subject leaders.

Jaca (2013) indicates that the lack of managerial and leadership skills contributes to ineffective departmental heads. Maingi (2015) adds that unqualified departmental heads are not well-suited for instructional supervision. As a result, departmental heads cannot influence the continuous professional development of teachers (Maingi, 2015). Shun-wing and Tsan-ming (2014) reveal that there is lack of training opportunities for departmental heads in primary schools, and high demand for interpersonal skills and crisis and resource management training. This indicates the need for subject leaders to develop, manage, and lead their departments professionally, in order to achieve the desired goals.

Jaca (2020) states that departmental heads who are promoted internally are affected by the negative attitudes of former teachers, who often question their credibility. Teachers are likely to have a negative attitude toward departmental heads that they believe are incapable of managing their departments. Nepotism and bribery may influence such negative attitudes toward achieving promotional positions. Jaca (2020) further states that novice leaders experience difficulties navigating their relationships with students, parents, and colleagues. This suggests that lack of experience in school management negatively affects effective communication in an organisation. Kosgei (2015) adds that departmental heads are ineffective in assuming their responsibilities as they lack continuous professional development.

Consequently, departmental heads cannot enhance the quality of education and influence teachers to participate in professional development programmes. Some departmental heads lack the subject knowledge to assess learners' formal tasks and suggest teaching strategies to overcome challenging topics. This may be perpetuated by the fact that certain departmental heads lead subjects, the knowledge of which is limited.

Departmental heads need to ensure that effective teaching and learning take place. However, several challenges hinder the effective management of their departments. Tapala, Van Niekerk, & Mentz (2021) mention the aspects of work, school climate

and environment, lack of resources and facilities, poor learner discipline, performance and attitude and change in the curriculum in this regard.

### **2.7.1 Workload**

Departmental heads have indicated that the unmanageable workload and increased responsibilities impede their ability to supervise teaching and learning (Kosgei, 2015). Due to work overload, teachers and departmental heads lack the requisite time to plan for lessons and time to reflect on lessons to make necessary adjustments to improve learner performance. Departmental heads add that although they analyse learner performance, they do not have enough time to develop interventions to support teachers to enhance learner performance (Jaca, 2020). The issue of work overload affects the departmental head's ability to analyse teachers' and learners' performance so that appropriate interventions can be put in place. Efforts must be made to ensure that the teacher-learner ratio is realised so that teachers and departmental heads can have enough time to analyse their performances and diverse strategies to improve.

### **2.7.2 School culture and environment**

Schools that do not accept cultural changes create a barrier to development (Tapala, Van Niekerk & Mentz, 2021). It is challenging for schools to develop when staff members show little interest in their professional development. Departmental heads with a positive attitude and self-belief may be discouraged if their working environment is not conducive. Some colleagues may negatively approach teaching and learning, creating a hostile working environment. Toxic relationships among colleagues compel departmental heads to spend time resolving conflicts instead of looking for ways to improve teaching and learning. Where there is insubordination, departmental heads cannot make proper decisions fearing lack of implementation.

### **2.7.3 Lack of resources and facilities**

Departmental heads cannot carry out their duties due to a lack of resources (Tapala, Van Niekerk, & Mentz, 2021). The lack of textbooks makes it difficult for learners to work independently, leading to poor learner performance. Departmental heads strive to have the necessary resources to ensure quality teaching and learning. However, when there are insufficient of resources, the quality of teaching and learning becomes compromised and leads to learner underachievement.

#### **2.7.4 Poor learner discipline, performance and attitude**

In communities with high unemployment levels, learners tend to neglect their academic responsibilities (Tapala, Van Niekerk & Mentz, 2021). As a result, departmental heads and teachers cannot obtain their performance targets as learners fail to complete their activities and are ill prepared for examinations. Due to a lack of disciplinary measures in some schools, learners use drugs on the premises and do not respond positively to teachers' instructions. While departmental heads are responsible for the professional development of teachers, it is clear that they need more support in ensuring that teachers are professionally developed to enhance learner performance.

#### **2.7.5 Change in the curriculum**

Departmental heads must keep up with the curriculum changes and implementation (Tapala, Van Niekerk, & Mentz, 2021). Teachers rely on departmental heads for guidance on curriculum-related challenges. However, some departmental heads cannot have the desired impact in supporting teachers to adjust to curriculum changes. The departmental head's inability to effectively support teachers is influenced by a lack of continuous professional development programmes. Delayed induction of departmental heads and lack of professional development negatively affect departmental heads' ability to guide teachers to achieve educational goals.

### **2.8 Effective mathematics teaching**

Akbas, Cancan, and Kilic (2019) note that effective mathematics teaching is possible when the teacher is enthusiastic about the subject, and is ready and prepared to adapt their instructional practices and apply different strategies to teaching mathematics so that all learners may benefit. Sa'ad, Adamu and Sadiq (2014) state that strategies to improve learners' performance include the creation of a positive attitude towards mathematics, motivation, using a variety of teaching methods, administering more examinations and quizzes, and monitoring of lessons by departmental heads. Teachers realise that they need professional development to enhance pedagogical skills (Ismail, Shahrill, & Mundia, 2015). Teachers believe that collaboration with other mathematics teachers assists in gaining better teaching skills in Mathematics, while limiting errors (Acharya, 2017).



According to Moschkovich (2013), effective Mathematics teachers execute specific tactics, such as good instructional skills, when providing mathematics lessons, and structure their lessons to be inclusive to all learners. Moschkovic (2013) presents four ways in which teachers can effectively teach Mathematics. These include: balancing conceptual understanding and procedural fluency, maintaining high cognitive demand, developing beliefs, and engaging learners in Mathematics practice.

### ***2.8.1 Balancing conceptual understanding and procedural fluency***

Teaching ought to be aligned with learners' activities that address essential procedural and conceptual knowledge and connect the two types of knowledge (Moschkovic, 2013). Conceptual knowledge involves understanding mathematical relationships, while procedural knowledge refers to a sequence of steps that must be followed in order to overcome mathematical problems. To ensure conceptual knowledge, teachers must teach properties of 3D shapes to learners. To provide procedural knowledge, teachers can give instructions on making a cube using paper.

### ***2.8.2 Maintaining high cognitive demand***

Teachers' ought to employ high-demand mathematical tasks and maintain rigour throughout the lessons (Moschkovic, 2013). The teacher can give learners more complex mathematical activities related to real-life problems. For example, in Geometry, learners study the shapes, angles, and dimensions of things that are a part of everyday life. We see everything in three dimensions in this world, where for example, our houses are constructed using angles, shapes and sizes. Learners can be asked to measure their classroom's length and width.

### ***2.8.3 Developing beliefs***

Teaching practices should support learners in developing the view that mathematics is worthwhile, feasible, and sensible (Moschkovic, 2013). Teachers can achieve this by making learners comfortable, and building positive relationships with individual learners; paste motivational posters and quotes in the classroom to remind learners that they can attain good results; and use positive reinforcement when a learner completes a complex task.



#### **2.8.4 Engaging learners in mathematics practices**

Instruction ought to enable learners to engage in mathematical approaches such as making connections, communicating their thinking, problem-solving, critiquing arguments, and justifying their reasoning (Moschkovic, 2013). Teachers can incorporate storytelling in their lessons to stimulate learners' interest in connecting to real-world scenarios.

### **2.9 Factors affecting Mathematics teaching and learning**

#### **2.9.1 Neighbourhood effects**

Research by Tsawani, Harding, Engelbrech and Maree (2014) indicates a link between a disadvantaged school environment and poor learner performance in Mathematics. For example, pupils from the province of Western and Northern Cape in South Africa, which have primarily white populations and modern towns and schools, consistently outperform those in Limpopo Province, which has a predominantly African population (Alami, 2016). This is an indication that there is inequality in the provision of quality education in this country. This will result in learners from poor communities lacking the capacity to compete with learners from affluent communities and will likely widen the gap between the poor and the rich, structured by apartheid legacy to intersect with race.

Economic hardship in the neighbourhood has been identified as a significant predictor of poor learner achievement in Mathematics (Baberjee, 2016). Alami (2016) adds that the lack of role models in areas facing economic hardship also contributes to learner underachievement. Furthermore, the teaching and learning resources available in high-poverty schools are not comparable to those in urban neighbourhoods. Similarly, high-risk behaviours, including marijuana use, stealing, and gangsterism, have been associated with learner underachievement in underprivileged areas. One justification for such behaviour could be a desire to blend in with the other children in the neighbourhood. As there is a high percentage of unemployment, people are prone to be involved in criminality. Schools that are well-resourced in poor communities are targeted by acts of crime, hindering their ability to deliver quality teaching and learning.

### **2.9.2 *Familial factors – lack of parental academic involvement, low-income family background***

Encouragement from family members is critical to a child's educational progress (Alami, 2016). Families in high-poverty, high-unemployment, and low-education neighbourhoods are known to use fewer education-focused approaches with their children (Muhammad, 2010). Poor parental academic involvement strongly affects learner performance in disadvantaged localities. When parents are uneducated, they have little understanding of the value of education and are unconcerned with their children's performance, causing learners to lose academic concentration. Furthermore, overworked parents lack sufficient interest in their children's academic achievement.

Spaull (2013) adds that the daily distractions of life, such as family obligations and work demands, are the significant contributors to poor academic performance and must be carefully managed. Living in a large household with many siblings makes it challenging for children to get the assistance needed to complete their academic duties. Children sometimes have obligations such as caring for younger siblings without their parents, transporting them to school, and assisting them with homework. If problems divert a learner's attention at home or with friends, they may be unable to commit the time and effort required to complete her work.

### **2.9.3 *Teacher-related factors***

Some pupils blame their teachers for their poor performance, because they teach and deliver the subject (Alami, 2016). Baberjee (2016) adds that teachers are accused of not fully explaining the lesson, not assisting learners when they require assistance, not giving pupils homework to practice the taught material, and not emphasising critical aspects of the lesson. According to Mata, Monteiro, and Peixoto (2012), experience and passion are two characteristics that contribute to a teacher's competency in the classroom. This suggests that a teacher who lacks enthusiasm for teaching may be unable to assist pupils in fully understanding the subject matter.

The ability of a teacher to convey content, engage pupils in classroom discussions and encourage pupils to complete assignments all contribute to a thorough understanding of the subject (Alami, 2016). A teacher's professional qualifications are crucial in providing quality teaching and learning. The teacher's professional

skills create a positive classroom environment through solid organisation and carefully planned lessons. Due to overcrowding in some schools, productive classroom discussions and interactions are limited, due to the teacher's inability to move around the class and assist learners struggling with the lesson.

#### **2.9.4 Learner-related factors**

The poor learner achievement in mathematics is a concern for the whole country (Tsanwani, Harding, Engelbrecht, & Maree, 2014). According to Amali (2016), the leading cause of poor learners' achievement is their failure to fulfil their academic responsibility. A learner's attitude toward a subject is believed to impact their ability to succeed in it (Akinsola & Olowojaiye, 2008). A positive mindset leads to good results in a subject. A learner's constant failure in Mathematics can lead to a negative mindset about the subject, while their achievement may influence their positive attitude towards it. This shows that improved teaching skills may improve students' attitudes toward mathematics.

Learners believe mathematics is complex by nature, highly structured and abstract, and requires particular intellectual abilities (Etuk, Afangideh, & Uya, 2013). Another issue that affects pupils' performance is boredom. There could be various reasons for students' boredom, including new topics to read or write about and a mismatch between learners' current knowledge and the material delivered in the classroom.

#### **2.10 Inequalities in the South African education system**

The existing inequalities in the South African education system affect learner achievement negatively. It is stated in the literature that even though racial segregation has been abolished for 18 years, schools that served mainly white students during apartheid remain functional (Sa'ad, Adamu and Sadiq, 2014). In contrast, schools that serve black students remain dysfunctional and unable to impart the requisite numeracy and reading skills (Sa'ad, Adamu and Sadiq, 2014). This inequality has led to the slow pace of development of the surrounding communities because schools cannot equip learners with the necessary skills to make a difference in society. The relationship between prosperity and educational quality can partially explain this result, as the poor receives much lower quality of education than their more affluent counterparts (Spaull, 2013). The quality and duration of education that individuals obtain are now well-established in the literature, as directly informing their chances in the labour-market. This explains the

high crime rate in rural areas, as many people lack the skills to secure sustained employment. This situation is also likely to increase the chances of a high learner-drop-out rate, where many learners join in breadwinning for their families in order to survive.

According to Spaul (2013), the South African education system continues to highlight the inequalities in terms of quality education. Graven (2013) adds that historically, disadvantaged schools remain dysfunctional and unable to produce improved learner performance, whereas historically, advantaged schools remain functional and able to impart cognitive skills. Black children are more likely to reside far from good schools, making them geographically inaccessible, and paying higher school fees, making them financially inaccessible. The poor state of the South African government and the looting of state funds also perpetuates the poor state of quality education in poor communities. Many people from poor communities rely on the State to improve their livelihoods through quality education. However, as a result of corruption, the development of poor communities continues to be slow.

### **2.11 The impact of COVID-19 on teaching and learning**

The COVID-19 pandemic has disrupted the world's education systems, affecting approximately 1.6 billion pupils in over 200 countries (Chauke & Chinyakata, 2020). Social distancing and policies limiting movement have considerably disrupted traditional educational strategies. There were two options for continuing learning activities during the Level 5 lockdown in March 2020, namely, online learning or self-learning with parental and sibling support (Mhlanga & Moloji, 2021). Several factors influenced the success of online learning, even for advantaged schools and pupils who could afford it. Due to the urgency to respond to the pandemic, there were no comprehensive plans to develop an online education system for teachers and learners. Consequently, teachers and learners were forced to adopt new educational models that few had experienced. This will undoubtedly worsen the challenge of poor learner performance.

The pandemic limits the content that learners are to be taught. This pandemic also highlights the need for the Department of Education to invest in technology because this pandemic and its aftermath may persist, affecting traditional ways of teaching.

More advantaged households and schools are better equipped to sustain learning using online learning platforms (Chauke & Chinyakata, 2020). Mhlanga and Moloji (2021) add that in such schools, learning continued through online lessons, either uploaded recorded classes or live online teaching, while disadvantaged schools lack the necessary resources for digital teaching and learning. Many learners from poor households lack parental assistance, a quiet workspace, internet connectivity, and computers. While it is the case that all learners suffered learning losses during this time, many children from low-income families learned nothing, because they lacked access to educational resources (Reimers, 2021). Consequently, learners lack the foundation of key concepts from their previous grades in order to complete their academic duties effectively. The lost teaching time will have lasting effects on the development of the country, because one of the most effective tools to develop a country is through quality education. Regrettably, this is not possible because of the pandemic and the current restriction to control the pandemic.

## **2.12 Policies affecting learner performance in South Africa**

### ***2.12.1 Continuing Professional Teacher Development policy***

Continuing Professional Teacher Development is a system that motivates teachers to grow professionally (Du Plessis & Eberlein, 2017). According to Gomba (2019), the Continuous Professional Teacher Development (CPTD) is a formal structure that the South African Council for Educators (SACE) introduced under the National Policy Framework for Teachers Education and Development. SACE is a professional council and statutory body assigned to register teachers and guarantees professional conduct (Van der Merwe, 2020). Coe, Carl, and Frick (2010) assert that the National Policy Framework for Teachers Education and Development (RSA, 2007) highlights the need for educators to enhance their content knowledge and instructional expertise to guarantee effective teaching and learning.

As highlighted by the National Policy, the CPTD aims to improve teachers' pedagogical skills by preparing them to effectively perform their crucial and demanding tasks and continuously enhance their professional skills and performance in providing quality education.

Due to educational reforms, many educators have difficulty carrying out their new roles and tasks related to competency-based education programmes (Engelbrecht

& Ankiewicz, 2015). Thus, the Department of Education (DoE) realises the need to develop and support teachers continually (Engelbrecht & Ankiewicz, 2015). The department and teacher unions have welcomed the CPTD as a system for managing and monitoring teacher professional development (Gomba, 2019). However, Gomba (2019) discusses the following challenges regarding the CPTD implementation.

#### *2.12.1.1 Poor or non-participation of teachers in CPTD activities*

It is observed that there is poor participation of teachers in the system due to inaccessibility of resources, mainly in communities where network connectivity is poor.

#### *2.12.1.2 Lack of interest by some educators*

Teachers who are ageing or those near retirement are not eager to participate. Teachers in their final stages of teaching tend to reduce their career ambition and commitment.

#### *2.12.1.3 Poor planning by SACE*

The CPTD Portal's volume disadvantages the teachers' reporting processes. The electronic submission system of SACE requires upgrading, where teachers have difficulty accessing and operating the CPTD system. As a result, teachers submit hard copies which create a backlog for the SACE to capture.

#### *2.12.1.4 Lack of support by the school management*

School management does not regularly monitor teachers reporting progress. Schools lack the necessary planning to carry out CPTD activities and programmes effectively. School management does not allocate such activities time, and principals do not ensure that teachers participate in the CPTD programmes.

The effectiveness of the CPTD is limited because teachers are already experiencing work overload. The SMT does not stress the need for teachers to participate in this system because it is largely technologically based. Some teachers are reluctant to use their technological devices, and others are not sufficiently technologically literate to participate in the programme.

### ***2.12.2 The Integrated Quality Management System in South Africa***

The Integrated Quality Management System (IQMS) was introduced by two Education Labour Relations Council (ELRC) in 2003 to improve and monitor the performance of the teachers and schools (De Clerco, 2008). The IQMS has a summative and formative evaluation (Keshav, 2012). The formative evaluation is connected to the development appraisal and aims to assist educators in identifying areas needing professional development (Carlson, 2009). It leads to a professional growth plan (PGP), which indicates to the school and district where they need support and development (Carlson, 2009). The district and the school development team (SDT) are expected to take the lead in providing educators with the essential training (De Clerco, 2008). Following this procedure, educators go through a summative evaluation that, based on their advancement since their formative evaluation, may qualify them for wage advancement (Mahlaela, 2011). These two evaluations are meant to inspire and motivate educators to advance their professional practice, and be recognised for their accomplishments. The Development Appraisal System (DAS), Performance Measurement (PM), and Whole School Education (WSE) policies are all included into the IQMS, with the first two making up the teacher component (De Clerco, 2008).

#### *2.12.2.1 Performance appraisal and performance management*

According to Mahlaela (2011), performance appraisal systematically evaluates performance and provides feedback on performance adjustments. Millington (2018) defines performance appraisal as a process in which employees can determine their job performance and establish an improvement plan. Performance Appraisals indicate the employees' performance level and influence and give a direction for future tasks.

Keshav (2012) states that performance management involves the day-to-day management of personnel regarding the organisation's objectives. Performance management is a systematic process that entails the goals of each employee, with a built-in review process (Keshav, 2012). Effective performance management allows employees to have goals and measures related to the organisation's strategy.

According to Keshav (2012), performance management is a critical Human Resource Management (HRM) to ensure that:



- poor performance is identified and improved;
- employees know what is expected of them;
- managers monitor the personnel's performance in attaining the required objectives; and
- good performance is recognised and rewarded.

The document indicates that performance management is integral to an effective HRM and Development strategy. This performance management is directly related to departmental heads' roles as they communicate their departments' performance targets, identify individual teachers' shortcomings, and award certificates to teachers to produce good results.

#### *2.12.2.2 The Development Appraisals System*

The development appraisal (DAS) aims to facilitate teachers' personal and professional development, so as to enhance the quality of instructional practices and education management (Malimela, 2008). This development system is vital for both departmental heads and teachers. The DAS appraisal seeks to improve departmental heads' management skills and enhance teachers' instructional skills. The DAS is based on the principle of life-long learning and management. In other words, individual teachers ought to prioritise career growth and development areas. Kashev (2012) asserts that the DAS is a system that measures the employees' past and present performances qualitatively and quantitatively against the background of the individual's expected role performance. Carlson (2009) states that the DAS is a system that allows employees to identify their developmental needs, and subsequently, training and development will be provided to enhance their professional practices (Millington, 2018). Departmental heads can identify challenges when assessing teachers' performances. To address these challenges, departmental heads must design appropriate professional development programmes to address individual teachers' weaknesses. De Clerco (2008) asserts that DAS is vital in assisting educators to develop by helping them see their weaknesses, and develop a sense of commitment to enhancing their shortcomings. The DAS is concerned with the teachers' needs and the training necessary to improve their professional development (Keshav, 2012).



Despite the best effort of the State, it is notable that the professional development initiatives in place are not producing good results. The professional development initiatives indicate their aims in developing teachers, but do not produce the desired results. As such, the State needs to ensure that departmental heads are continuously supported to improve the performance standard of learners.

### *2.12.2.3 Whole School Evaluation*

The Whole School Evaluation (WSE) is defined in the policy framework document as a system that monitors and evaluates the quality of education on a permanent and continuous basis (Mathaba, 2014). The purpose of the Whole School Evaluation (WSE) is to evaluate the general efficacy and standard of teaching and learning (Carlson, 2009). The WSE refers to the foundation of the quality assurance system in schools (Mathaba, 2014). It enables the school and external supervisors to give a report on the school's current performance and to highlight the degree to which it satisfies public demands and national objectives.

The WSE policy allows schools to constantly self-evaluate and develop School Improvement Plan (SIP) (Madikida, 2016). Malimela (2008) asserts that WSE is the most effective means of achieving educational change, as schools can encourage employees through school improvement and professional growth plans. As a result of enormous work overload, school management cannot use the WSE policy effectively. The WSE provides officials with evidence that it was done, which may lead to the school not achieving the performance standard as determined by the State.

### **2.12.3 The National Norms and Standards for Schooling Funding**

The South African government introduced the National Norms and Standards for School Funding (NNSSF) policy in order to ensure equity in school funding (Mestry & Ndhlovu, 2014). According to Mestry and Ndhlovu (2014), Section 34 of the South African Schools Act requires the government to assist public schools using public monies in an equitable manner to ensure that learners' rights to education are properly exercised and to address historical inequalities. Despite State efforts, schools in rural areas still lack the necessary infrastructure and resources to provide quality education. As a result, learners from disadvantaged communities may fail to

meet the minimum requirements to further their studies like those from privileged communities.

Although the State has policies to create equity in the education system, its policies are proving ineffective. Kapp (2012) notes in this regard that the State's ambitions to address equality and social justice are commendable, however, that there is still a long way to go in providing high-quality education, particularly for the marginalised and disadvantaged schools. Large classes, poor infrastructure and a lack of learning materials still affect teaching and learning in poor rural schools. Despite these challenges, the State expects the same teaching and learning standards in poor and wealthy communities (Mestry, 2014). Such expectations are unjust, because some schools in poor communities face many teaching disruptions. Learners are sent back home in rainy weather, because their classrooms are not well-structured enough to protect against extreme weather. This leads to a significant loss of teaching time, because such scenarios may last for days.

Although schools from poor communities are allocated more funds than advantaged schools, parents cannot financially assist schools if there are budget cuts from the State (Van Dyk & White, 2019). This results in the schools not being able to fundraise for the needs. Consequently, there is overcrowding in the classroom, a shortage of study materials, and poor classroom infrastructure.

### **2.13 Summary of the chapter**

This chapter examined the relevant available literature on the professional development of teachers. It includes detailed policies for effective continuous professional development, as well as a conceptualisation of professional development in great detail. It was also discussed how to effectively teach mathematics and how to inspire learners to excel in the subject. Also mentioned were the number of factors contributing to the effective teaching of Mathematics.

## CHAPTER 3

### RESEARCH PARADIGM, APPROACH, DESIGN AND DATA COLLECTION METHODS

#### 3.1 Introduction

The previous chapter gave a comprehensive review of the literature on the professional development of mathematics teachers. This chapter discusses the research paradigm, approach, design and data collection methods. The processes and methodology used to conduct the study receive thorough scrutiny, and are accompanied by motivations for their use.

#### 3.2 Research paradigm

In educational research, a paradigm describes a researcher's perspective (Kivunja & Kuyini, 2017). The researcher's perspective informs the interpretation or meaning of research data. A research paradigm fundamentally reflects the researcher's views on the world in which they live, as well as that they wish to live in (Sefotho, 2018). It comprises abstract beliefs and concepts that influence how a researcher perceives the world, as well as how they interpret and act in it. Thus, paradigms are significant, because they provide beliefs and demands that determine what ought to be examined, how it should be studied, and how researchers in a particular subject should interpret the study's results. Kivunja and Kuyini (2017) say that a paradigm consists of four elements, namely: epistemology, ontology, methodology, and axiology.

According to Maree (2016), ontology concerns the nature of reality. It addresses several issues of critical importance to research. Firstly, ontology assists the researcher in recognising how sure they can be about the nature and existence of the phenomenon they are studying. Secondly, ontology determines whether the social reality exists independently of human conceptions and interpretations. Lastly, it determines whether social behaviour is governed by laws that can be considered generalisable or immutable. According to Ansari et al. (2016), ontology refers to the viewpoint of individuals concerning the existence of humans, society and the world, as well as the relationship between them. I aimed to gather multiple realities about this research topic and interpret the collected data in this study. The paradigm for this research was interpretivism, and the research approach is inductive reasoning,

which favours multiple realities of observed phenomena by people through interaction with their environment in their daily lives (Sefotho, 2018). Interpretivism involves the study of multiple realities (Bertram & Christiansen, 2014). Participants' experiences of teacher professional development may be different, which prepares the researcher to anticipate different responses from the collected data.

Sefotho (2018) refers to epistemology as the science of the ways in which knowledge about reality can be attained. Sefotho (2018) further states that epistemology is considered a method of knowledge acquisition focusing on the source of knowledge. Interpretivist epistemology stands for multiple subjective realities, while positivist epistemology stands for one objective reality (Soltanifar & Ansari, 2016). I would define epistemology as the study of knowledge, and the way in which it might come to understand reality. In this research, interpretivist epistemology enabled me to understand the ways in which each school and participants go about professionally developing their resident teachers.

According to Soltanifar and Ansari (2016), a methodology is a genetic approach that involves data collection and data analysis methods to carry out a study. According to Sefotho (2018), a methodology is a design, plan, or strategy that connects the choice of methods and techniques that will enable the researcher to answer the research questions. I followed a qualitative research approach for this study, and used an interview as a qualitative data collection strategy to gather data from participants.

Sefotho (2018) states that a researcher is guided by axiology, or a set of values or ethics. Hart (2010) adds that axiology focuses on that which you value. This view is significant, because axiology influences how the researcher conducts their research and what is vital in the research findings. The researchers asked for permission from the Department of Education in Nkangala District after permission to conduct the research had been granted by the University of Pretoria (UP). All participants signed consent forms before taking part in the study. The findings of the study were not manipulated.

### **3.3 Research approach**

This study followed a qualitative approach to examine departmental heads' roles in the professional development of Mathematics teachers. Qualitative research aims

to understand human behaviour, experience, and motivation (Parahoo, 2014). Singh (2015) asserts that a qualitative approach can generate a large amount of data, which the researcher can then analyse, summarise, and interpret to respond to the research questions. According to Dladla (2018), the qualitative approach connects to the subjective dimension of social reality. It provides insights from the participants' point of view, allowing the researcher to perceive events through their eyes. As a result, a qualitative approach is based on the assumption that people are best suited to explain situations and perceptions in their own words (Shakouri, 2014). The qualitative approach was appropriate for this study, because departmental heads and mathematics teachers were better placed to answer my research questions. The participants gave in-depth responses to my research questions to able me to analyse, summarise and interpret the collected data.

The qualitative approach was appropriate for this study because it allowed me to understand the experiences of heads of mathematics departments and mathematics teachers regarding teachers' professional development. This approach was suitable for the research because I constructed reality as interpreted from the participants' perspective.

A qualitative approach allows the researcher to gather rich, in-depth data from the participants (Bertram & Christiansen, 2014). The researcher can use a qualitative technique to enable participants to be more flexible in their responses to questions, sharing their personal feelings, opinions, and views with the researcher (Creswell & Creswell, 2017). The researcher had an opportunity to explore participants' experiences in different schools to understand how teacher professional development initiatives were carried out in their schools.

The disadvantage of a qualitative research approach is that it takes time and necessitates the researcher to be physically present and engaged with the participants (Maree, 2012). There is also the possibility of bias resulting from the emotional interpretation of data rather than that of a neutral observer (Bertram & Christiansen, 2014). Additionally, qualitative research typically employs a small sample size, rather than a large one. As a result, the research findings are less likely

to be generalised. The researcher could not make generalisations when interpreting the collected data.

To address the disadvantages of the qualitative approach, I collected data using online meeting platforms due to the global pandemic. The collected data was then analysed and interpreted without bias. The academic supervisor was involved in the study process as a critical reviewer and advisor so as to guarantee that the researcher was not imposing bias on the findings. The study's conclusions cannot not be applied to other situations.

### **3.4 Research design**

A case study research design was used for this study. A research design is an action plan for moving from a collection of initial questions to a set of answers or conclusions (Yin, 2017). A case study is a method of investigation in which a researcher studies a programme, activity, event or process, of one or more people in-depth. When the borders between the phenomenal context are not obvious, a case study is sometimes referred to as an empirical inquiry, that analyses an actual occurrence in its real-life setting, using many data sources (Maree, 2012). A case study can also be used to investigate a phenomenon within its real-life context.

There are three different kinds of case studies, according to Bertram and Christiansen (2014). Specifically, the collective, the intrinsic, and instrumental. The intrinsic case study is excellent for assessing research that strives to make sense of particular experiences since it aims to comprehend the instances being investigated. This case study usually focuses on participants participating in a study, and the findings are not generalisable. According to Bertram and Christiansen (2014), the instrumental case study is used to gain insight into a particular issue, while the collective case study is used when the investigation involves more than one case. For this study, I used the instrumental case study because the study aimed to explore the roles of the departmental heads in the development of Mathematics teachers.

A study design, according to Bertram and Christiansen (2014), is a set of guidelines with a plan, structure, and strategy that directs data collection and analysis. I used a case study, because it aligned with the study's aim and objectives, namely: to

understand the participants' lived experiences, which was accomplished through investigating cases.

A case study can be utilised to gain an In-depth understanding of a real-life phenomenon. However, such understanding must include critical contextual factors highly relevant to the phenomenon under investigation (Yin & Davis, 2007). A case study is a type of research design that enables the researcher to study a phenomenon in its context, using various data sources. A case study is an approach that allows a researcher to explore a phenomenon within its context using multiple data sources.

According to Sharan (2009), a case study allows participants to be researched in their environment and on their own terms. Due to each school's prevailing setting and conditions, the researcher visited the schools when participants were free and had free time for the study. The researcher used the collected information from each school to generate data that depicted the participants' holistic experiences regarding the role of departmental heads in teacher professional development. The benefit of case study research is that it gives the researcher the opportunity to be innovative in examining and comprehending a topic in depth (Maree, 2016). I interacted with the participants in this study, asking them questions to understand their lived experiences. Case studies allow the researcher to present detailed findings and provide new meaning and understanding of a study (Queiros, Faria, & Almedia, 2017). According to Gustafsson (2017), a case study enables the researcher to develop high-quality theories and investigate theoretical connections.

A disadvantage of the case study is that it may be perceived as researcher-biased in data interpretation, making this technique neither scientific, nor reliable (Maree, 2016). A case study necessitates deductive reasoning, and it is hard for the researcher to remain emotionally disconnected from the findings. Instead, the researcher ought to consider the whole picture, rather than focusing solely on the information sought (Cousins, 2005). Sharan (2009) notes another disadvantage of a case study to be that it cannot generalise beyond the content. Case study findings cannot be extended to other situations. Case studies in research could be unfavourable, since the locations in which it is conducted are limited. This limits the researcher's the number of participants, accessibility, and the time the researcher has to spend on site.



### **3.5 Research process**

#### **3.5.1 Research sites**

The study was conducted in the Nkangala District, KwaMhloga South West circuit situated in the Mpumalanga Province. Data were collected in two public primary and secondary schools. The schools in this circuit are mostly Quintile 1, and their performance is considered average. According to Van Dyk and White (2019), the National Norms and Standards for School Funding (NNSF) is a policy that aims to improve the equality of funding in schools by ranking schools into one of five quintiles. For the purpose of reducing inequality in the South African educational system, Quintile 1 and 2 schools receive additional financing. The schools in this district are surrounded by communities facing high unemployment and crime levels. This situation hinders the school's development as some members of the community steal from the schools. Some learners are from child-headed homes, meaning they lack the parents' necessary supervision and motivation to improve their academic performance.

#### **3.5.2 Sampling**

For this study, I used purpose sampling of Mathematics departmental heads and Mathematics teachers in primary and secondary schools. Cohen, Manion and Morrison (2011) define sampling as the use of a small group of individuals to be studied. According to Sharma (2017), a researcher uses sampling to select a small number of individuals from a pre-defined population to serve as data sources for observation or experimentation following the study's objectives. The predetermined population of this study was the Mathematics departmental heads and Mathematics teachers, because they are better placed to give in-depth responses to the issue of poor learner performance in Mathematics.

Purposive sampling, according to Creswell & Creswell (2017), is a non-random sampling approach used to generate data relevant to answering the research questions. Purposive sampling can allow the researcher to select people with various qualities to acquire rich data (Maree, 2016). This study focused specifically on the professional development support that Mathematics teachers receive from their departmental heads concerning their professional development. Departmental heads and Mathematics teachers were better placed to answer the research



questions because it is documented that learners experience difficulty improving their academic performance.

Purposive sampling is prone to bias since the researcher may have pre-judged the participants and may have some information about the sample and the participant's suitability (Maree, 2012). According to Bertram and Christiansen (2014), the findings of purposive sampling cannot be generalised, transferable, or representative due to the sample size. The findings of this study were limited to and only applied to the sampled schools and participants. Thus, findings were not generalised to other contexts.

Sharma (2017) states that the benefit of using purposive sampling is that it allows the researcher to make generalisations from the sample that is investigated. Sharma (2017) further states that purposive sampling helps the researcher to collect qualitative data, which leads to more precise study results and better insights. Hence, the researcher used purposive sampling of Mathematics departmental heads and Mathematics teachers, because these participants were better placed to answer the research questions. I was able to make generalisations from the sampled schools

### **3.6 Data collection**

Data from the participants was gathered through interviews. A dialogue between the researcher and participants generated information about a certain phenomena is described as an interview by Maree (2016). According to Jaca (2013), an interview involves a two-way interaction between the interviewer and the participants in order to acquire insight into the participant's emotions, thoughts, sentiments, and experiences, which demand in-depth and extensive exploration. Interviews were appropriate for this study where it sought to examine teachers' support from their departmental heads due to poor learner performance. The interviews helped me understand teacher professional development's processes, strategies, and challenges.

An interview has its limitations, as valuable as it is for gaining insights into a given phenomenon. According to Maree (2016), the use of interviews is limited to a small-scale investigation. As a result, interviews cannot be used to obtain data for more extensive research. In an interview, there is also considerable risk of unconscious

bias and inconsistencies, which could compromise the quality of the study (Bertram & Christiansen, 2014). Interviews require a significant amount of time, and if time is a limitation, they may be made ineffective. Data collection could have been hindered by poor availability of participants, the school's location, the pandemic's restrictions and participants who were too busy to make time for the interviews. In order to address these limitations, I contacted the participants for a convenient date for the interview sessions. Due to social distancing, I used online meeting platforms to interview the participants. I also established a relationship of trust with my participants by explaining to them the importance of the study and how I would appreciate them responding to my research questions regarding their experiences with teacher professional development.

Semi-structured interviews were held with departmental heads and Mathematics teachers. These interviews were conducted after school at a convenient site for participants. The researcher conducted interviews using technological devices for the safety of both the researcher and the participants due to the prevailing Covid-19 conditions. The interviews took 25-30 minutes. The participants were given the interview schedule before the interviews so as to prepare them to be able to provide detailed responses to the interview questions. These interviews were used to uncover how departmental heads professionally support mathematics teachers.

Data collected were grouped into themes according to the research questions. Each school and participants were given codes to protect their identities. The researcher visited two primary and two secondary schools and interviewed four departmental heads and eight Mathematics teachers. Departmental heads, teachers and their schools were identified with letters. This form of identification applied to primary schools, forming part of the study. Numbers were used to identify secondary schools, departmental heads and teachers for Mathematics. Below is a table reflecting codes used to identify schools, departmental heads, and teachers.

**Table 1: Schools and participant's codes**

Schools	Departmental heads	Teachers in primary schools	Teachers in secondary schools
School A	Departmental Head A	Teacher A	Teacher 1
School B	Departmental Head B	Teacher B	Teacher 2
School 1	Departmental Head 1	Teacher C	Teacher 3
School 2	Departmental Head 2	Teacher D	Teacher 4

### 3.7 Data analysis

The study adopted thematic analysis as a suitable strategy for data analysis. Thematic analysis is a simple, adaptable, and increasingly common method for analysing qualitative data (Maree, 2012). Perfecting the use of thematic analysis gives a qualitative researcher a solid basis in the essential abilities needed to engage in various qualitative data analysis methodologies (Braun & Clarke, 2012). Jaca (2013), states that data analysis is a process of reducing and interpreting data. In a qualitative study, data analysis refers to making sense of data from the participant's perspectives while considering the context, themes, pattern, regularities, and categories (Maguire & Delahunt, 2017). Maguire and Delahunt (2017) further outline the steps used in analysing data. These include:

The first step involves familiarising oneself with data, and transcribing it. This step implies that the researcher ought to thoroughly understand the collected data. The researcher must actively read the data in order to accomplish this. The researcher was able to transcribe the collected data. Data collected through verbal methods such as interviews were transcribed into a written format for thematic analysis. Interview audios were stored to preserve the authenticity of the collected data.

The second step involves generating and using codes. Data collected may have obscured meaning. The researcher's responsibility is to understand the main ideas

from the data set. The researcher assigned codes to the list of significant concepts once the ideas had been identified and understood.

The third step involves the allocation of themes to the coded data. This step begins immediately after the data has been coded and compiled. The researcher organised data into themes, where tables were used to organise themes. Themes that did not fall into primary themes were categorised under in various other ways. The various themes can be helpful to the researcher to identify the data if needed in the future.

The fourth step involves the allocation of themes of the coded data. I analysed, adjusted, and developed the preliminary themes identified in Step 3 during this phase. At this stage, codes were sorted according to potential themes, decided how different codes may be mixed, and checked whether themes could be turned into sub-themes.

The fifth step involves defining and naming themes. This is the final step in the theme refinement process, where the goal is to determine the essence of each theme. I ensured that each topic has sufficient data to support it and is distinct. I grouped related topics and deleted those that did not have enough data to support them.

The last step involves producing the final report. Once all the themes have been thoroughly studied, a final report will be written. This step was based on the information gathered within and across the themes. The report was presented in a concise, well-organised, logical, and engaging manner.

The best data analysis is generated when the thematic analysis is embedded in themes. All data generated must fit into a specific topic (Arifin, 2018). Otherwise, it should be discarded. However, because thematic analysis is highly flexible, material that is thought to be a mismatch should not be deleted early in the analytical process because such information may be required at some point during the process (Braun & Clarke, 2012). The following ethical considerations were followed in this study.

### **3.8 Ethical considerations**

The researcher is committed to respecting the participants by adhering to the code of ethics. Research ethics guarantees that the participants, researcher and the organisations involved are protected. Ritchie, Nicholls, and Ormston (2013) claim

that the norms and standards for conducting research are ethical considerations. The rights, privacy, and dignity of study participants must be upheld during the data collection, processing, and presentation of research findings (More, 2016).

Before conducting the study, I sought permission from the Mpumalanga Department of Education. As a result, I had access to every school that I needed for the research. I also sought permission from school principals before accessing each school. School principals and participants were given consent letters before data collection process.

### **3.8.1 Permission to conduct research**

The study was carried out once approval from the University of Pretoria and the other institutions involved had been given. The letters of request to conduct the study were submitted to the University of Pretoria's Ethics Committee, the Department of Education in the District of Nkangala, as well as selected schools, and participants.

### **3.8.2 Informed consent**

Participants were issued consent letters that indicated the desire to explore the departmental heads' roles in a Mathematics teacher'' professional development. During the interview, the participants were asked to consent to the use of a tape recorder. Participants signed letters of consent to indicate that they were willing to participate. Participants signed consent letters whenever satisfied with the study's goals, purpose, potential consequences, and benefits.

### **3.8.3 Privacy, confidentiality and anonymity**

The identity of the participants and schools were treated as confidential. During the data collection stage, the researcher did not mention participant'' names or the schools at which they worked. Participants were given code names in the form of numbers and letters in order to safeguard their identities. Audiotapes from the interviews were not shared with other participants.

### **3.8.4 Honesty and trust**

The study strictly complied with ethical principles so as to ensure honesty and trust. Analysis of data and interpretation of data was done truthfully. The researcher did not influence participants' responses to their responses to research questions.

Interview transcripts were transcribed verbatim. There was no manipulation of findings.

### **3.8.5 Voluntary participation**

Before data collection, participants were given a consent letter that clearly stated that there would be no remuneration in the study. The researcher realised that participants could withdraw their participation since this study is not obligatory.

## **3.9 Trustworthiness of the study**

The reliability or rigour of a study is defined as the level of confidence in the data interpretation, and methods used to verify its quality (Jannetti, 2016). For a study to be considered worthy by its readers, the researcher must ensure the establishment of research protocols and procedures. Several strategies can be applied to qualitative research to improve the quality of the study findings. These strategies include credibility, dependability, conformability, and transferability (Olatunji, 2017).

### **3.9.1 Credibility**

The ability of the research to be convincing and trustworthy is referred to as its credibility (Maree, 2016). Credibility supports the research's internal validity in that the findings must reflect an accurate representation mirror of reality. The research findings in a qualitative study are subjective. This means that the research's credibility depends on the readers' understanding of the research findings.

Following the same thought, the perception will be different, and different interpretations can be made. Participants verified all interview transcripts so as to ensure that their perceptions and intentions were correctly reflected, thereby enhancing the reliability of the research through validation.

### **3.9.2 Dependability**

In qualitative research, dependability refers to the way in which inequalities can be explained or monitored (Maree, 2016). An audit trail can be used to achieve dependability. I saved all transcripts, audiotapes, and notes in this study to refer to them in the future if necessary. I presented all points of view fairly and allowed readers to make informed conclusions. By addressing participants as partners, I avoided power interactions and ensured that my interview questions corresponded to the research questions.

### **3.9.3 Transferability**

The degree to which specific study results can be spread or used to different contexts or settings is referred to as transferability (Maree, 2016). Transferability refers primarily to the researcher's duty from a qualitative perspective. Qualitative researchers can improve transferability by describing the research background and core hypotheses (Arifin, 2018). Readers who wish to transfer the results to other context are responsible for judging the rationality of the transfer.

The transferability of this study was challenging, because qualitative research uses case studies, which contain a small sample of participants. This means that the research findings cannot be generalised to another context. The results of this study must be tested in another context to establish a generalisation. The transferability of qualitative research is challenging. However, this research had been strengthened by specifying the research methods, background, and fundamental assumptions.

### **3.9.4 Conformability**

Qualitative researchers must establish conformity as the last trustworthiness criterion (Maree, 2016). This criterion is based on the confidence of the research findings are based on participants words and not on the potential of researcher bias. Confirmability verifies that the study results are shaped by the participants, not the qualitative researchers. The researcher gave details about the data collection, analysis, and interpretation processes to ensure the study's conformability.

### **3.10 Delimitations and limitations of the study**

According to Simon and Goes (2013), limitations are issues that influence the research results, which the researcher cannot control. The sample size of this study imposes restrictions on its ability to generalise its findings to other contexts. Depending on lockdown levels, schools would be closed, making it a challenge to visit schools to obtain potential participants in the study. Participant's lack of interest in taking part after originally agreeing to do so was another obstacle encountered during the research procedure. As I used the interviews to gather data, there was the chance that the participant's answers would be biased or dishonest.

Delimitation refers to boundaries set by the researcher (Simon and Goes, 2013). The researcher set the boundaries of this study by only selecting two primary schools

and two high schools in the Nkangala District, excluding schools from other districts. The data was collected using interviews because the researcher sought to gain an in-depth understanding of participant" lived experiences. The participants of the study were limited Mathematics departmental heads and Mathematics teachers.

### **3.11 Summary**

In this chapter, the research methodology sought to investigate the roles of the departmental heads in the professional development of Mathematics teachers. The district of Nkangala in the KwaMhlanga North West circuit in the province of Mpumalanga served as the site of this study. Data collection methods for this study assisted me in answering the research questions of this study. I used the interpretive paradigm as participant" experiences may differ from teacher to teacher.



## CHAPTER 4

### RESEARCH FINDINGS AND DISCUSSIONS

#### 4.1 Introduction

The researcher discussed the research paradigm, research design, approach, sample, and research site in Chapter 3. The researcher also discussed data collecting, data analysis, ethical issues for the study, and improving the study's quality. This chapter provides research findings and literature reviews, following research problems and themes from the collected data. Guided by thematic analysis, data were grouped into themes. The findings and subsequent data analysis emanate from the following research questions:

##### **4.1.1 Primary research question**

How do Mathematics departmental heads professionally develop teachers in their departments?

##### **4.1.2 Secondary research questions**

- a) What challenges do Mathematics teachers face in terms of their professional development?
- b) How do Mathematics departmental heads support the professional development challenges experienced by the teachers in their departments?
- c) What possible strategies can Mathematics departmental heads apply to improve the professional development of teachers in their departments?

The collected data were analysed and interpreted using the reviewed literature as a reference point. The codes representing participants shall be utilised when referring to cited extracts from the interviews, as shown in Table 4.1. Secondary schools, departmental heads, and teachers are identified using numbers. Primary schools, departmental heads in primary schools and teachers are identified with letters.

<b>Schools</b>	<b>Departmental heads</b>	<b>Teachers in primary schools</b>	<b>Teachers in secondary schools</b>
School A	Departmental head A	Teacher A	Teacher 1

School B	Departmental head B	Teacher B	Teacher 2
School 1	Departmental head 1	Teacher C	Teacher 3
School 2	Departmental head 2	Teacher D	Teacher 4

## 4.2 BIOGRAPHICAL INFORMATION OF THE PARTICIPANTS

**Table 2: Characteristics of departmental heads**

Characteristics	Departmental head A	Departmental head B	Departmental head 1	Departmental head 2
<b>Gender</b>	Female	Female	Male	Female
<b>Age</b>	32	29	35	31
<b>Qualifications</b>	B.Ed. Honour's	B.Ed. degree	B.Ed. degree	M.Ed. degree
<b>Years of experience as teachers</b>	6	5	5	4
<b>Years of experience as an HoD</b>	4	2	1	3
<b>Further study</b>	-	-	0	M.Ed. degree
<b>Number of lessons taught per week</b>	18	43	36	24
<b>Subjects led</b>	Department of Sciences	Department of Sciences	Department of Sciences	Department of Sciences

**Table 3: Characteristics of primary school teachers**

Characteristics of Teachers	Teacher A	Teacher B	Teacher C	Teacher D
<b>Gender</b>	Female	Female	Female	Female
<b>Age</b>	39	32	36	28

<b>Qualification</b>	B.Ed.	B.Ed.	B.Ed.	B.Ed.
<b>Years of experience</b>	14	7	12	4
<b>Further study</b>	B.Ed. Honour's	0	0	0
<b>Number of lessons per week</b>	36	42	36	43
<b>Subject taught</b>	Mathematics	Mathematics and Social Sciences	Mathematics	Mathematics and NS and Tech
<b>Grades teaching</b>	Grade 5	Grade 6 and 7	Grade 4	Grade 5 and 7

**Table 4: Characteristics of secondary school teachers**

<b>Characteristics of Teachers</b>	Teacher 1	Teacher 2	Teacher 3	Teacher 4
<b>Gender</b>	Male	Female	Female	Female
<b>Age</b>	33	30	48	26
<b>Qualification</b>	B.Ed. Honour's	B.Ed.	B.Ed.	B.Ed.
<b>Years of experience</b>	9	7	23	2
<b>Further study</b>	M.Ed. degree	B.Ed. Honours	0	0
<b>Number of lessons per week</b>	41	42	38	43
<b>Subject taught</b>	Mathematics and Life Orientation	Mathematics and Tourism	Mathematics	Mathematics and EMS

<b>Grades teaching</b>	Grade 10 and 11	Grade 11	Grade 10	Grade 9
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**Table 5: Demographics of the participating schools**

<b>Characteristics of schools</b>	School A	School B	School 1	School 2
<b>Province</b>	Mpumalanga	Mpumalanga	Mpumalanga	Mpumalanga
<b>District</b>	Nkangala	Nkangala	Nkangala	Nkangala
<b>Circuit</b>	kwaMhlanga N/E	kwaMhlanga N/E	kwaMhlanga N/E	kwaMhlanga N/E
<b>Type of school</b>	Public school	Public school	Public school	Public school
<b>Grading</b>	Post level 4	Post level 4	Post level 3	Post level 4
<b>Section</b>	21	21	21	21
<b>Quintile</b>	1	1	1	1
<b>Date of visit</b>	24.09.2021	15.10.2021	28.10.2021	03.11.2021
<b>Enrolment</b>	1159	1204	1189	1098

The characteristics of the schools are similar, except for the staff enrolment and grading. The schools are located in Mpumalanga, in Nkangala, KwaMhlanga North East. The schools are all classified under Quintile 1, depending on government funding for the operation.

**Table 6: Results obtained from participating schools from 2016 to 2020**

<b>Years</b>	School A	School B	School 1	School 2
<b>2016</b>	62%	68%	54%	52%
<b>2017</b>	59%	65%	52%	53%
<b>2018</b>	64%	58%	51%	58%
<b>2019</b>	68%	67%	55%	60%
<b>2020</b>	49%	58%	48%	45%

The results indicate a concerning trend in learners' performance in secondary schools. Primary schools had reasonably met the performance target of more than 60%, except in 2020, during the pandemic.

### 4.3 ANALYSIS AND INTERPRETATION OF COLLECTED DATA

The data was analysed using thematic analysis. Themes are derived from the collected data. The following themes derive from the collected data: Factors affecting effective teaching and learning of Mathematics; departmental heads' role in teacher professional development; identification of areas needing professional development; teacher perspective on professional development; challenges affecting professional development implementation; and strategies to improve professional development programmes.

### 4.4 Theme 1: Factors affecting effective teaching and learning in Mathematics

#### 4.4.1 Data presentation

**Departmental heads' responses:** It is evident from the collected data that several factors influence effective Mathematics teaching and learning. The following responses are from departmental heads A and B.

*In my opinion, the first reason for learners attaining poor results in Mathematics is that there are no relevant resources. Especially in public schools that lack teaching and learning material, it makes it difficult for a teacher to present or deliver a presentation to their learners successfully. You can say the learners may have a poor foundation in mathematics. For example, learners find it difficult to distinguish between the four operations of mathematics: addition, subtraction, multiplication, and division. So yeah, sometimes you may find their mathematics foundation is poor. (Departmental Head A)*

*I believe that learners attain poor results in Mathematics, because I think these learners lack the foundation, a good foundation for doing better in Mathematics. Part of it may be that these learners automatically progress to high school, even though they should have repeated their grades. Teachers work in demoralising conditions. The lack of textbooks contributes to poor learner performance. Learners do not write their scholarly activities. Learners believe Mathematics is difficult. So, they put little effort into improving their performance. Because of this pandemic, learners do not attend school five*

*days a week. It affects their ability to do better in this subject because we have limited time for teaching and learning. (Departmental Head 1)*

The responses from the departmental heads were similar because they mentioned that poor learner performance is influenced by a lack of teaching and learning material and poor mathematical knowledge. Teachers also mentioned factors that they consider to affect good learner performance. The following responses are from mathematics teachers:

*The reason learners are attaining poor Mathematics results is because most of them lack a foundation and do not get exposed to mathematical concepts daily. What they do in classrooms is that whenever the teacher is teaching, they tend just to cram what is said to them and not acquire or absorb a full knowledge of what they are taught. (Teacher A)*

*Well, there some various reasons why learners attain poor results in Mathematics. The first reason is the phobia of mathematics. We know very well that when learners face mathematics difficulties, they quickly conclude that mathematics has its people and are not willing to try. Secondly, it is a lack of mathematics basics, because that is what makes it hard to understand the concepts of the problem. Thirdly, it is the wrong subject approach and uses inadequate study practices, because Mathematics is consistent and practised daily. It is very crucial to attain good results in the end. Another is the inability of the teacher to deliver the content correctly in a way that learners can understand. So, we teachers need to prepare the lesson beforehand to benefit learners. We know very well that most of the learners' bunk classes which they miss most of the lessons that will benefit them and attain good results. (Teacher B)*

The teachers' responses corroborated with the departmental heads' responses by stating that learners lack the necessary mathematical foundation to improve their performance. Further, lack of resources negatively impacts the teaching and learning process.

#### **4.4.2 Support from literature**

Davadas and Lay (2020) have found that poor teaching standards and lack of basic content knowledge negatively impact learner performance. They further state that

many unqualified teachers who teach in overcrowded and under-equipped classrooms have exacerbated poor teaching standards. These reasons have resulted in a new generation of instructors continuing the cycle of mediocrity. Bosman and Schulze (2018) state that poor student performance in Mathematics is perpetuated by teachers' lack of skills and knowledge to explain concepts and an apparent shortage of Mathematics learning material. Poor Mathematics performance is also linked to the teacher's teaching style, as prolonged mismatches between the teaching style and the learning styles of most learners can lead to poor academic progress, and a negative attitude toward the subject (Mzomwe, 2019). Mabena, Mokgosi, and Ramapela (2021) add that language of teaching and learning also influences learner achievement. Teachers frequently instruct in learners' native tongues, which prevents them from understanding the official language used in exam questions. As a result, learners fail to answer correctly when it comes time to be tested.

#### **4.4.3 Data analysis and interpretation of findings**

The findings indicate that a teaching and learning material shortage negatively affects teaching and learning. Learners underachieve in Mathematics due to a lack of teaching and learning material. Consequently, teachers may be reluctant to give learners home activities, as learners lack the primary sources for information. Departmental Head A said: "*...In my opinion, the first reason for learners attaining poor results in Mathematics is that there are no relevant resources...*". The government's failure to provide equal education further fuels with the issue of learner underachievement. While Mathematics is a challenging subject, a lack of resources negatively affects learners' ability to improve their performance. Hence, learners develop a negative attitude toward it. Teacher (A) may have supported my view by saying, "*... the first reason is a phobia of Mathematics...*". Poor learner foundation in Mathematics is also considered to contribute to poor learner performance. The negative attitude is likely to persist, due to the poor learning environment, and the lack of study materials that some public schools are subjected to. While the policy of learner automatic promotion assists in reducing overcrowding, learners continue to be promoted to the following grades without the necessary knowledge to comprehend the improved content. Teacher (A) said: "*...the reason why learners are attaining poor results in Mathematics is that most of them lack foundation and*

*do not get exposed to the mathematical concept daily...*". Poor learner foundations may be influenced by a lack of resources in schools for meaningful teaching and learning. Learners must have a good learning foundation to achieve good results. Parental involvement is crucial in assisting teachers to recover the lost teaching time due to the rotational systems that schools were forced to adopt. Failure of parental participation in learner academics is likely to further contribute to poor learner performance. As a result, learners fail to be competent in international studies, such as the TIMSS. The Covid-19 pandemic has negatively impacted the already fragile education system of South Africa. Departmental heads (1) state that "... *because of this pandemic, learners do not come to school five days a week...*". The pandemic has exposed the inequalities in the South African education system. Learners in developed neighbourhoods could do online schooling, and, in some cases, learners were able to return to daily attendance. Many learners in public schools were losing learning time. Due to a shortage of learning materials, learners could not engage in self-study to cover the content that teachers may lack time to teach. Inappropriate teaching skills and poor lesson preparations also contribute to poor learner performance. Teacher (1) states that "... *another is an inability of the teacher to deliver the content properly in a way that learners can understand...*" The work overload may influence the poor lesson preparation to which teachers are subjected. Many public schools face overcrowding. This may affect teachers' ability to control learners' books and give timeous feedback on learner assessments.

## **4.5 Theme 2: Departmental heads' role in teacher professional development**

### **4.5.1 Data presentation**

Departmental heads' responses: It is clear from the collected data that one of the departmental head's roles is to develop teachers professionally. The following responses are from departmental heads (B) and (1):

*The roles of departmental heads in schools are to conduct departmental meetings, assess learners' books and teachers' files, and supervise teachers. They help teachers to improve professionally. (Departmental head B)*



*My role is to guide and develop teachers. It guides them to overcome challenges in the teaching of Mathematics. My role is to assist teachers in overcoming challenges in the classroom. (Departmental head 1).*

The responses from the departmental heads indicate that departmental heads are responsible for the professional development of teachers. Teachers also indicated the roles that departmental heads have in their professional development. The following responses are from mathematics teachers:

*The role of the departmental heads is to assist and guide teachers in overcoming challenges. They ensure that teachers attend workshops and conduct quarterly departmental meetings, where teachers converge and voice the challenges they face in the classroom. They must equip teachers with the necessary skills for meaningful teaching and learning. (Teacher 4)*

*The role of the departmental heads in teacher professional development is to guide the teachers. To provide the teacher with the necessary information to improve his or her subject. So, the departmental heads' main role is to guide teachers. (Teacher D)*

The responses from the teachers corroborated the departmental heads by stating that departmental heads have to provide guidance and support to educators in order to develop their teaching skills. The participants further highlight the need for departmental heads to conduct departmental meetings to able teachers to communicate the challenges in the classroom.

#### **4.5.2 Literature support**

The departmental heads are responsible for leading curriculum implementation and the subject under their supervision, and are responsible for overseeing the implementation of the curriculum and the subject under their supervision. Du Plessis and Eberlein (2018) state that departmental heads are responsible for providing and coordinating guidance to teachers on the latest teaching strategies. The departmental head's role is to ensure that the quality of education meets international and national standards (Tapala, Fuller, & Mentz, 2021). Mpisane (2015) adds that departmental heads must raise the standards of the curriculum performance and achievement of teachers and learners. Departmental heads must be equipped with the latest knowledge and skills of trends in education to assist

teachers professionally, like the implementation of the new curriculum. Jaca (2013) adds that departmental heads monitor teaching and teachers' work. This is usually done during classroom visits, where departmental heads can decide on individual teachers' weaknesses and implement strategies to address the teacher's shortcomings. Zulu (2011) states that departmental heads must promote staff development and performance appraisals and report to top management. The participation of teachers in professional development ought to be rewarded with awards and certificates to demonstrate the efforts that teachers put in improving their teaching skills.

#### **4.5.3 Data analysis and interpretation**

The findings indicate that the departmental heads are responsible for leading and managing their departments to achieve their educational goals. Departmental heads realise they need to support teachers in order to enhance teaching and learning professionally. Departmental heads are aware of the challenges that teachers face daily. Departmental head (1) states that: "... *their role is to guide them to overcome challenges in the teaching of Mathematics*". This implies that teachers are likely to overcome challenges with support from the departmental heads. At times, this becomes challenging, because some departmental heads do not have the necessary skills to support teachers. Departmental heads conduct departmental meetings quarterly to communicate their departments' goals and how they can be achieved. Departmental Head B stated that: "*The roles of departmental heads in schools is to conduct departmental meetings, assessing learners' books, teachers' files, and supervising teachers.*" Monitoring content coverage allows the departmental heads to track the progress of the set goals. In cases where a teacher struggles to achieve the set educational goals, departmental heads step up and support teachers. The departmental head explained that "...*it guides them to overcome challenges in teaching mathematics*". Even though some departmental heads are not adequately trained to occupy their position, they are still expected to support and guide teachers. The constant development of teachers and departmental heads is likely to assist in making the educational goals more achievable. Teachers added that the departmental head is responsible for professional development. While teachers can take responsibility for their professional development, they believe that departmental heads must be informed

with the latest educational trends to assist teachers in adjusting to the daily challenges. Teacher (D) stated that: “...to provide the teacher with the necessary information to improve in his or her subject.” This suggests that departmental heads' knowledge about current educational trends and subject knowledge could be advantageous in guiding and supporting teachers to improve their teaching skills. Teachers rely on departmental heads for their professional growth. Hence, departmental heads participating in formal and informal professional development programmes increase their capacity to lead and support teachers effectively.

#### **4.6 Theme 3: Teacher perspective on professional development**

##### **4.6.1 Data presentation**

The collected data highlights the different attitudes that teachers have towards professional development. The following responses from departmental heads (1) and (2) corroborate each other:

*Most teachers, especially the young teachers I see this one's, are enthusiastic and want to help because there have been challenges with more failure rates in Mathematics in my department. I would say the attitude of teachers towards professional development is positive. I would say they are welcoming, and teachers are more welcoming to the initiatives we have in the school; even if it is just not me mentoring them, I would say if I have challenges with one certain teach-out, I will take them to the other HoD. They help me with the challenges they have. So, it is very effective to provide these teachers with professional development. So, I can see that there is high learner performance. Learners are now performing better than before. Learners are performing better than before because of the development we have in the class; even though we have had high failure rates, they are now performing much better. (Departmental Head 1)*

*Some teachers, especially the elderly, are not on board with this professional development. They believe that they cannot be developed in any way. Most of them are struggling to achieve our set target, even though sometimes they do, but most of the time, they do not meet our target. Some of the reasons may be that they are always late to teach these learners in their classroom. Some of the reasons may be that they are always late to teach these learners*

*in their classroom. So, I would say that these teachers do not make room for improvement, but these newly appointed teachers take professional development positively. Some elderly teachers tend to negatively influence younger teachers to not participate in professional development programmes. (Departmental Head 1)*

*Regarding professional development, I would say some have a positive attitude while others have a negative one. As a result, learners fail to attain good results in the subject. (Departmental Head 2)*

The responses by both departmental heads showed that young teachers are enthusiastic about their professional development. At the same time, elderly teachers lack the will to participate in their professional growth. Teachers also mention the attitude that teachers have towards professional development. The following responses were from the departmental heads:

*Yes, I would like to say professional development is a lifelong thing. Things are changing every day. So, as we are teachers, we need to change, we need to learn new things, and we need to adapt to change. So, professional development is critical to us as teachers and to learners for our learners to perform well and then understand the current world we are in; even if for us to understand the current world we are in that the world we had yesterday is not the world we have today and it's not the world we are going to have tomorrow. We need to change every day. We need to grow to develop ourselves. (Teacher 2)*

*I would like to stress the importance of developing teachers... you know, like professionally developing teachers because when teachers are professionally developed, the learners will have better learning outcomes. Teachers can learn better ways to teach and accommodate all learners' abilities and needs in the classroom. (Teacher B)*

These teachers supported the departmental head's views by indicating that young teachers show more desire to be professionally developed. One teacher suggested that teachers' experience, age, and gender influenced their participation in professional development programmes.

#### **4.6.2 Support from literature**

A good attitude is linked to professional development, since it encourages people to build confidence and develop toward becoming more qualified professionals (Belmekki, 2018). A study by Bayram and Bikmaz (2021) indicated that teacher participation in continuous professional development is concerning. Belmekki (2018) suggests that most teachers lack interest in professional development and reflective teaching. The ineffectiveness of professional development may result in teachers' lack of interest in participating in the programmes. In terms of gender, Bayram (2021) states that female teachers are more interested in professional development than male teachers. Belmekki (2018) further explains that the effectiveness of professional development depends mainly on teacher beliefs and attitudes. Rholeen (2014) noted that other teachers believe professional development helps them improve their instructional skills. Hence, many teachers participate in programmes that improve their instructional competencies. Professional development should be understood as a process by which educators evaluate, renew, and expand their commitment as change agents to the moral purposes of teaching in order to acquire and enhance their abilities, attitudes, and knowledge (Mestry, Hendricks, and Bisschoff, 2009). In so doing, teachers will be able to refine and improve their teaching skills to assist learners in improving their performance.

#### **4.6.3 Data analysis and interpretation**

The findings indicate that younger educators are more likely to participate in professional development initiatives than older teachers. The newly appointed educators seem more interested in participating in professional development programmes, while the ageing teachers seem to lack the desire to participate. Departmental head (2) said: " *...I would say that these teachers do not make room for improvement, but these newly appointed teachers, do take personal development positively...*". Such negative attitude by teachers who should be mentoring new teachers is concerning. Younger teachers are at risk of being negatively influenced by their mentors to discredit the efforts that are in place for the development of the school. As a result, departmental heads cannot guide and support all teachers in their departments to reach their educational goals. Although learners continue to underperform in Mathematics, teachers have noticed an

improvement in their performance. Some teachers have noted the effects of appropriate professional development on learner performance. Teachers realise the effectiveness of professional development programmes through improving learner performance. Departmental head (1) said: "*...learners are performing better than before because of the development that we have in the class, even though we have had high failure rates, but now they are performing much better*". Teachers who have negative opinions about professional development may be motivated to participate in the programmes when the improved performance of learners is sustained. Professional development is considered a mechanism that can assist teachers and learners in reaching their educational goals. Teacher (B) said: "*... when teachers are professionally developed, the learners will have better learning outcomes and teachers can learn better ways to teach and accommodate all learners...*". Although working conditions are not preferable for improving teaching and learning, some teachers believe that they can have the desired impact on learner performance.

#### **4.7 Theme 4: Identification of areas needing professional development**

##### **4.7.1 Data presentation**

The collected data indicates that there are several methods of conducting teacher professional development programmes. The following responses from the departmental head (1) and (B) corroborate each other:

*By doing classroom visits. We can identify some of the weaknesses that individual teachers may have. It may be that a certain teacher lacks the skill to control the learners in the classroom, because our classrooms are big. Some teachers experience challenges in creating an environment that can foster effective teaching and learning. So, as the departmental head, I always suggest ways in which teachers can manage learners in the classroom. Sometimes you may find that when I'm doing these classroom visits, a certain teacher doesn't involve learners in the classroom. You find that he or she involves learners, but they mostly focus on learners who are gifted those learners who are slow learners do not get attention. Sometimes they are the ones who are very disruptive in the classroom. It is a matter of lesson presentation. Maybe you find that the voice of the teacher is low, such things.*



*That's how we identify areas in need of personal development. Also, by just checking the scripts of the learners, we can identify which topics learners performed badly on. That's when we will be able to identify appropriate strategies to teach that topic in a way learners will understand. (Departmental head 1)*

*To check learner performance, we use item analysis where a teacher is going to analyse the results that the learners have obtained for that term. So, a teacher will select about nine learners, three learners that have performed above 80 percent, three that have performed above 50 percent, and those that have performed below 30 percent, and analyse which questions were difficult to answer and which ones were answered well. From there, we can identify areas that need more attention. Teacher professional development is done through classroom visits and the implementation of IQMS. We do peer teaching; through which we can identify areas that need more development. Another thing that we do is to check the educator file to see that everything is up-to-date and that there is evidence of lesson preparation. (Departmental head B)*

Both departmental heads seem to use classroom visits as a strategy that they use to identify potential weaknesses of teachers. It is the responsibility of departmental heads to do classroom visits, particularly during the implementation of IQMS. Teachers add that there are several strategies that departmental heads use to identify areas in need of professional development. The following responses were from the teacher (D) and (4).

*To check for areas that need development, my HoD goes through each teacher's file to check if the index is correctly followed, check if all the documents that need to be in a teacher's file are there, and also look at learners' workbooks to see if the teacher work in accordance to the Annual Teaching Plan. If the HoD identifies any teaching developmental gaps, then a professional developmental meeting will be scheduled with that particular teacher. (Teacher D)*

*After submitting our item analysis and subject improvement plans, we state the content that learners performed poorly on and the HoD makes a judgment*

*on where improvement needs to be made. At times, teachers that performed well in the subject assist those who are struggling. We engage struggling teachers so that they can observe the teaching process and the interaction with learners. (Teacher 4)*

It seems like departmental heads use monitoring and controlling teachers' files and learners' workbooks as a strategy to identify challenges. Furthermore, the analysis of learners' results also assists departmental heads to identify areas that need professional intervention.

#### **4.7.2 Literature support**

Conducting effective professional development initiatives is not an easy task. Kamaruddin and Ibrahim (2010) state that the design of professional development programmes needs to address the individual challenges of teachers. Gene, Tobin and Ayers (2011) state that departmental heads ought to encourage collaboration among teachers and ensure that teachers' work is uniformly applied. Departmental heads use the management process of monitoring and control to ensure that effective teaching and learning take place. This is done so as to ensure learners' activities are in line with the curriculum policy and that instructions are being followed. Bambi (2013) states that departmental heads must be familiar with the following formal methods of monitoring and controlling their departments.

##### *4.7.2.1 Preparation*

Teachers should motivate educators to prepare their lessons in writing so that they can reflect on their subject knowledge; provide evidence for lesson preparation will assist the teacher to get to class prepared and improve file records; and create a thorough plan for lessons able teachers to use different teaching strategies to make lessons for engaging all learners, which may improve learner performance.

##### *4.7.2.2 Presentation*

Lesson observations are used to monitor teachers' ability to present a lesson in a way that will be interesting and engaging to all learners. This method allows departmental heads to identify individual teachers' shortcomings during the lesson presentation. Consequently, departmental heads can design appropriate developmental programmes that will improve teachers' weaknesses.



#### 4.7.2.3 Evaluation

To ensure that teacher's evaluation is up to standard, examinations, memorandums, question papers, and assignments papers need to be presented to the departmental heads for moderation. This method assists departmental heads to ensure that learners' assessments are up to standard and that the assessments cover the content that was taught during the term.

#### 4.7.2.4 Formal meetings

Departmental heads conduct a departmental meeting to measure teachers' knowledge and skill. During the meetings, teachers can communicate the challenges that they face when setting assessment tasks, administering formal assessments, and undertaking lesson presentations. As departmental heads observe teacher lesson presentations and evaluate their learner assessments, recommendations are made to assist teachers to improve their lesson presentations and administer learner assessments that will lead to the growth of learners.

#### 4.7.3 Data analysis and interpretation

The findings indicate that departmental heads strive to ensure that they identify professional challenges that contribute to poor performance. Poor learner performance may be influenced by departmental heads' inability to identify challenges that hinder teachers' ability to effectively impart knowledge to learners. To be able to identify potential barriers that hinder the improvement of learner performance, departmental heads use lesson observation as a strategy to identify challenges that contribute to poor learner achievement. The departmental head (1) said: "... *By doing classroom visits*". Although some teachers are not comfortable with being observed while they teach, departmental heads must ensure lesson observations are carried out. Lesson observations are crucial for departmental heads to understand how novice teachers are coping with the challenges that arise from lesson presentations. An analysis of learner results helps both departmental heads and teachers to identify potential weaknesses in their teaching strategies. Departmental heads (B) said: "... *we use item analysis where a teacher is going to analyse the results that the learners have obtained for that term.*" Poor teaching skills or inappropriate teaching methods often lead to learners losing interest in the lesson. Hence, learners attain poor results in that particular subject. Improvement

of teaching expertise is likely to simulate learners' interest in the lesson, which will lead to the improvement of learner achievement. Teachers' inability to guide learners to improve their performance is linked to poor planning. Teacher (D) "*...my departmental head, go through each teacher's file to check if the index is correctly followed, check if all the documents that need to be in a teacher's file are there, and also look at learners' workbooks to see if the teacher work is in accordance to the Annual Teaching Plan.*" By monitoring and controlling teachers' files and learners' books, departmental heads can make conclusions about teachers' preparedness and planning for lessons. Teachers need to teach content as per their Annual Teaching Plans so that learners are equipped with knowledge that will contribute to their academic growth. Teamwork also contributes to school development. Teacher (4) said: "*...We engage struggling teachers so that they can observe the teaching process and the interaction with learners*". As departmental heads may not have enough time to assist teachers to identify their challenges, experienced teachers may act as mentors to assist novice teachers or struggling teachers to overcome challenges which will lead to their professional development.

#### **4.8 Theme 5: Challenges affecting professional development implementation**

##### **4.8.1 Data presentation**

Departmental heads (1) and (B) mentioned similar challenges that influence teacher participation in professional. The following responses are from departmental heads (1) and (B):

*One of the challenges that I would say I face is that teachers are not being open about their challenges. You know, when you need to help someone, they are not being open about the challenges. As an HoD, I cannot go into the classroom and say you can't do this. You can't do this. You come to me and say I can't do 1,2, and 3. When I come to your classroom, I monitor and note down things. I can see you are not doing this correctly. When we sit down and start speaking, but you don't come out and say yes, I have this challenge. It is one of those problems that I have. Another one, I would say it's when learners start to fail, teachers get demotivated, and they do not take this subject seriously because of the performance of these learners. Those*

*are the challenges that I have when it comes to professional development. So, they don't see they need to be developed if the subject is not improving. (Departmental head 1)*

*Many educators are yet to participate. We have departmental meetings, and some educators leave the meetings without saying anything. Even if you probe them to say something, they would just leave without saying anything. Secondly, teachers want to be reminded all the time about meetings. Thirdly, teachers do not attend all developmental meetings. Most of them are due to forgetting, and some are just not motivated to attend these meetings. Fourthly, we have a problem with ageism. Many educators, especially those older than you, tend to be disrespectful in terms of you being younger than them, and they think that a young person cannot lead them. Number 5, teachers not participating during departmental meetings. So, these are the few challenges that are mainly a problem in my case. Thank you. (Departmental Head B)*

Both departmental heads seem to hold a view that teachers are not cooperating on the issue of compliance within their departments. Teachers were also asked about the factors that influenced their participation in professional development initiatives. The following responses were from teachers (3) and (C):

*Well, the departmental heads face challenges in developing teachers, especially when it comes to the IQMS thing, where they identify areas for professional development. The departmental heads don't know how to carry out the professional development plan or activities to help the teachers in the school. They don't know how to implement professional development in the school as the heads of departments and teachers again don't want to participate, especially in the informal professional development. (Teacher 3)*

*I believe there are countless challenges that departmental heads face when professionally developing teachers, but I will only focus on two of them. The first one is that some teachers are stereotyped and reject help from their HoDs or seniors, and secondly, some old teachers fail to listen to their HoDs due to their age restrictions. (Teacher C)*

Departmental heads and teachers agree that the lack of compliance affects teacher professional development. Teachers further indicated that some departmental heads lack the expertise to develop teachers professionally.

#### **4.7.2 Support from literature**

There is generally poor participation in professional development activities in schools that lack resources (Nzarirwehi & Atuhumuze, 2019). Ageing teachers, particularly the majority, tend to be reluctant to participate in professional development (Belmekki, 2018). Belmekki (2018) explains that the lack of time allocation for professional development leads to teachers not improving their instructional skills. Nzarirwehi and Atuhumuze (2019) state that teachers are demotivated and frustrated by how professional development is implemented and decry the fact that they are not treated as professionals. Teachers argue that they do not perceive the significance of professional development. Hence, they have developed a negative attitude and lack the motivation to participate in professional development activities (John & Sosibo, 2019). Makubung (2017) adds that some forms of professional development programmes have been ineffective and unrelated to the teachers' daily classroom activities. The ineffectiveness of professional development initiatives may be influenced by the fact that some departmental heads are not trained to provide and coordinate professional development to evaluate their professional practice to enhance teaching, learning, and management (Du Plessis & Eberlein, 2018). Untrained school managers may lack the management skills to support and guide subordinates to carry out their duties effectively. Teachers state that they need to be trained regularly on the effective implementation of IQMS processes and decry that training is not a continuous process (Ngema & Lekhetho, 2019). It is a challenge for professional development to be carried out continuously, as some subjects receive limited attention regarding supporting teachers to improve their instructional practices to improve learner achievement.

#### **4.7.3 Data analysis and interpretation**

The findings indicate that there is a lack of compliance from teachers in terms of effectively participating in professional development programmes. Teachers seem to lack the motivation to participate. Departmental Head B said: "*...teachers do not attend all professional developments meetings, most of them due to forgetting, and*

*then some it's just not being motivated to attend these departmental meetings...".* Teachers' reluctance to accept support from departmental heads directly undermines the efforts to improve teaching and learning. The challenge of older teachers not participating in professional development programmes further hinders improving their instructional skills. Teachers' lack of compliance is influenced by the failure of the school management to enforce consequence management. Bergeron (2015) describes consequence management as those steps taken by managers to guide subordinates through the processes required when inappropriate behaviour in a workplace is reported. Departmental Head B said: *"... A lot of educators, especially if they are older than you, they tend to be disrespecting in terms of you have been younger than them, and they are thinking that a young person cannot lead them..."*. Such behaviour reveals that some teachers do not practice professionalism in their workplaces. As a result, departmental heads cannot effectively lead and manage their respective departments. Poor management skills may influence the departmental heads' lack of collaboration with teachers. Although teachers participate in professional development programmes, their participation is declining due to the initiatives' ineffectiveness for improving learner performance. Departmental head (1) said: *"...when learners start to fail, teachers get demotivated. They do not take this subject seriously because of the performance of these learners..."*. The conducted professional development initiatives are not effective in some schools. A one-size-fits-all approach is likely the contributing factor. Failure to address each school's challenges is bound to affect teachers' professional development perspectives negatively. Teachers believe that some departmental heads lack the necessary skills to support and develop teachers. Teacher (3) said: *"...the departmental heads themselves don't know how to carry out the professional development activities to help teachers in the school..."*. It is clear that it is not only teachers that need support; departmental heads need to be developed to impact teaching and learning positively. Due to poor learner performance, some teachers no longer perceive professional development as a tool that can be used to improve learner performance, because the programmes are irrelevant, and do not address the daily challenges faced in the classrooms. Departmental head (1) said: *"...when learners start to fail, teachers get demotivated..."*. The professional development activities may be ineffective, due to the poor working environment and lack of

teaching and learning material. Hence, learners continue to perform below the set standard.

## 4.8 Theme 6: Strategies to improve professional development programmes

### 4.8.1 Data analysis and interpretation of findings

Departmental heads mentioned strategies that can be implemented to address the challenges faced when professional development activities are carried out. The following responses are from the departmental head (B) and (2):

*The Department of Education can um enhance uh the initiatives by making sure that the people that develop other educators are also developed, firstly. Number 2 is that every activity done during educators' professional development is unrealistic. Sometimes these developments are not inclusive of schools that we find mainly in rural areas. Yes, they only accommodate for Model C schools, and going up and located in places where there's access to the internet, access whiteboards, access to, you know, these equipment's that makes teaching and learning much simpler. So, it should be inclusive of every teaching environment, because most of them only cover and cater to advanced schools. So, the most important thing is that those that develop others are also developed before they can want to develop others. Thank you. (Head of Department B)*

*I think that the Department of Basic Education can improve professional development initiatives by having subject advisers in every subject, not just in Mathematics, but in every subject. Some teachers a year can go by without attending workshops, not because they do not want to attend workshops, but because workshops are not conducted because there are no subject advisers. For example, in our district, there is no subject advisor of Sepedi. So, our teachers are struggling, particularly now in this time of the pandemic. Because the Annual Teaching Plans have been trimmed and formal assessments have changed. Teachers did not have a clue what they were supposed to assess learners on. (Departmental Heads 2)*

It is clear from the departmental heads' responses that there are measures that the Department of Education can put in place to enhance teacher professional



development. Teachers also indicated the strategies that could improve teacher competence. The following responses were from teacher (D) and (4):

*I think the introduction of certificates is not just a workshop. Maybe it is a two-week short course where a teacher would get a certificate. It would be good to get those certificates. It should be continuous learning. They need to observe you in class, where you practice things learned in professional development programmes. More money would encourage professional development. More consideration should be placed on qualifications for promotions because the experience tends to count more to getting a promotion. (Teacher D)*

*For the Department of Education to make professional development more effective, they have to explain professional development to teachers and the benefits of professional development. I believe that they should be funds if they are not there for teacher development programmes. For example, if a teacher has a problem with a particular, let's say, classroom management, the teacher must be given funds or bursaries to study a short course in classroom management. So, the department can provide resources and funds and also human resources. Like, Uhm ... inviting experts in the field of education. (Teacher 4)*

Teachers believe that increment in salaries would encourage teachers to participate in professional development activities. Providing sufficient teaching and learning material may improve the effectiveness of professional development initiatives.

#### **4.8.2 Literature support**

Mestry, Hendricks, and Bisschoff (2009) state that in-service training ought to be viewed as a continuous professional development process. Teachers are inspired when they recognise the value of what they do or when the information has a beneficial impact on others (Du Plessis & Eberlein, 2018). The involvement of teachers would assist in developing appropriate professional development programmes that address the needs of individual teachers and schools, rather than a size fit system. Du Plessis and Eberlein (2018) state that teachers ought to be encouraged to receive suggestions during the goal-setting process. Professional development programmes should address the challenges of the staff members

(Borko, Jacobs, & Koellner, 2010). School leaders should set clear goals and have mechanisms to assist teachers in reaching the set goals through professional development (Darling-Hammond, Hylar, & Gardner, 2017). Professional development programmes should be based on evidence-based research to establish the best practice and ensure positive outcomes are achieved (Pitsoe & Maila, 2012). Pitsoe and Maila (2012) state that teachers should be involved in designing their learning activities. Departmental heads and teachers are better placed to develop and design professional activities, enhance instructional skills and improve learner performance.

#### **4.8.3 Data interpretation and analysis**

The findings indicate that the support that the Department of Education provides to departmental heads is insufficient to lead and manage their departments effectively. This is supported by the fact that some departmental heads are not trained before taking up their positions. Departmental Head B said: “...*The Department of Education can enhance the initiatives by making sure that the people that develop other educators are also developed...*”. This statement confirms that departmental heads do not receive the necessary support to support teachers to achieve educational goals successfully. By providing sufficient support to departmental heads, departmental heads may have a positive impact on the improvement of teachers’ instructional skills and learner performance. Departmental heads seem convinced that allocating subject advisors in all subjects would assist in making professional development more effective. Departmental Head 2 said: “... *I think the Department of Basic Education needs to have subject advisors for every subject, not just in Mathematics...*” It seems like participants are convinced that the allocation of subject advisors in all subjects would assist in enhancing professional development initiatives. This logic may be supported by the fact that subject advisors are mainly the ones who conduct workshops. This implies that professional development will be continuous in all subjects as professional development activities are conducted nearly every term with subject advisors. Teachers have suggested that they may be motivated to participate in professional development programmes if the criteria for promotional posts were equally based on qualifications and experience. Teacher (D) said: “...*more consideration should be placed on qualifications for promotions because the experience tends to count more to get a*



*promotion*". While qualifications are essential in attaining promotional posts, experience serves as an advantage as individuals with more experience are believed to be able to address challenges that may be encountered in their positions. Emphasising the importance and advantages of professional development in teaching and learning may encourage teachers to develop a positive attitude towards professional development. Teacher (D) said: "...*To make professional development more effective, The Department of Education needs to explain the importance of teacher professional development and the benefits of professional development...*". The Department of Education must ensure that all school staff receive appropriate professional development. In so doing, teachers will be able to use the knowledge imparted to them to enhance their instructional skills to improve learner performance.

#### **4.9 Summary of the chapter**

The findings from the literature review, data analysis, and interpretation were all provided in this chapter together with the results of the interviews. The findings indicated that poor learner performance is influenced by poor learner foundation in mathematics, lack of resources, and poor teaching methods. The study revealed that aging teachers are not interested in participating in professional development. This study has discovered that certain departmental heads lack the capacity to professionally support teachers to improve learner performance. The findings further reveal that teachers are convinced that their involvement in designing professional development programmes would assist in addressing the challenge of poor learner performance.

## CHAPTER 5

### SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS

#### 5.1 Introduction

The outcomes of the study, evidence from the literature that supported them, and an analysis and interpretation of the findings were all reported in the previous chapter. This chapter focuses on the summary of findings, recommendations, and conclusions. The interpretation of the findings is based on the participants' experience regarding the professional development of Mathematics teachers. The chapter will also cover the study's limitations and significance relating to how departmental heads professionally support Mathematics teachers to improve teaching and learning. The findings were from the departmental heads and Mathematics teachers, which aligned with the primary and secondary research questions.

##### 5.1.1 *Primary research question*

How do Mathematics departmental heads professionally develop teachers in their departments?

##### 5.1.2 *Secondary research questions*

- a) What challenges do Mathematics teachers face in terms of their professional development?
- b) How do Mathematics departmental heads support the professional development challenges experienced by the teachers in their departments?
- c) What possible strategies can Mathematics departmental heads apply to improve the professional development of teachers in their departments?

#### 5.2 Summaries of the chapters

Each chapter is summarised to highlight the most critical issues discussed in this study. This is done so as to improve the understanding of the research's rationale and articulate the steps and processes that led to the results.

##### 5.2.1 *Chapter 1*

The problem statement on the subpar learner performance in Mathematics was introduced in this chapter. The rationale was based on the persistent trend of poor learner performance. The purpose of the study was to investigate the roles of the

departmental heads in the professional development of Mathematics teachers. The research questions were framed to examine how departmental heads conduct professional development in their departments, the challenges encountered when professionally developing teachers, and the possible strategies to address the challenges. The instructional leadership theory, which advocates for departmental heads to provide and guide teachers to establish the best teaching practices, was used in the study. The research methodology and research design this study applied were introduced. The selection criteria for the population were discussed. There was discussion of data gathering methods, sampling designs, and sample sizes. In addition to discussing difficulties with the study's validity and credibility, the data analysis strategy was described. The boundaries and restrictions of this research were stated, along with certain ethical and political considerations. The significance of the study was proposed, followed by a chapter summary.

### **5.2.2 Chapter 2**

This chapter discussed the local and international literature on the roles of the departmental heads in teacher professional development. The literature focused on teacher professional development, mentoring of novice teachers, teacher perspectives on professional development, challenges in leading teaching and learning; effective teaching of Mathematics and factors affecting teaching and learning. The literature further discussed policies affecting learner performance. The policies include Continuing Professional Teacher Development Policy, the Integrated Quality Management System in South Africa and the National Norms and Standards for Schooling Funding. The study adopted the instructional leadership theory.

### **5.2.3 Chapter 3**

The research methodology and data gathering methods employed in this study were explained in this chapter. The case study was used as a method of inquiry. The study used a qualitative research methodology. The ontological and epistemological presumptions were explored, and the interpretive paradigm was applied. The research sites were purposely selected for Mathematics departmental heads and teachers in two secondary and two primary schools. Semi-structured interviews were used to get participants' responses to allow participants to give detailed replies to the research questions. The findings were presented, analysed, and documented

using themes that were developed from the coding of participants and research sites. Semi-structured interviews strengths and weaknesses were discussed, and the credibility and authenticity of the data were established. Thematic analysis was employed to analyse and interpret data. The collected data was stored in audio tapes and interview transcripts. Ethical considerations were strictly adhered to during the data collection processes.

#### **5.2.4 Chapter 4**

This chapter discussed the findings obtained from the participants' responses. These findings were grouped into themes in line with participants' responses to the interview questions. The following themes were generated from the collected data:

- Theme 1: Factors affecting effective teaching and learning in Mathematics
- Theme 2: Departmental heads' role in teacher professional development
- Theme 3: Teacher perspective on professional development
- Theme 4: Identification of areas needing professional development
- Theme 5: Challenges affecting professional development implementation
- Theme 6: Strategies to improve professional development programmes

Collected data from participants were recorded in themes. The findings were supported by existing literature. Participants' responses and literature were analysed. Lastly, the findings of the study were presented.

#### **5.2.5 Chapter 5**

This chapter presents the discussions of the results obtained from the findings. Furthermore, the significance of the study, restrictions and recommendation for additional research are discussed.

### **5.3 Summary of the findings**

#### **5.3.1 Theme 1: Factors affecting effective teaching and learning in Mathematics**

The participants revealed that poor learners' performance is linked to the teacher's level of knowledge in the subject. Despite the best effort of the State to improve learner performance through professional development, learners continue to underperform. One of the reasons professional development programmes do not

achieve the intended results is that some programmes are not appropriate in many public schools, due to a shortage of teaching and learning materials. Lack of resources has been shown to affect learner achievement negatively. As a result, pupils develop a negative attitude toward Mathematics due to the lack of learning material directly affects learners' ability to participate in self-study. Although some schools have sufficient learning materials, learners fail to complete their academic activities because of poor knowledge. Automatic promotion of learners undoubtedly affects learners' ability to comprehend and complete academic tasks effectively. Parental involvement in learners' academics may assist learners in understanding basic mathematical concepts. Poor teaching skills and lack of lesson preparation negatively perpetuate poor learner achievement. Due to a lack of qualified Mathematics teachers, schools are forced to allocate unqualified teachers to teach Mathematics. Some Mathematics departmental heads are not seeing the desired outcomes in supporting teachers to improve learner performance. Teachers are therefore unable to assist learners in improving their performance. The Coronavirus pandemic has had a devastating impact on the South African education system. The rotational models' schools adopted due to the pandemic have resulted in an enormous loss of teaching time. The return to daily attendance of learners and extra classes may recover the lost teaching time.

### ***5.3.2 Theme 2: Departmental heads' role in teacher professional development***

This study reveals that departmental heads play a significant role in the professional development of teachers. It is the responsibility of departmental heads to guarantee that teachers have the necessary training to accomplish the set goals. Teachers overcome the daily challenges through the support they receive from the departmental heads. Although some departmental heads cannot lead and develop teachers professionally, departmental meetings are held quarterly to communicate the challenges encountered in the classrooms. Monitoring content coverage, teachers' files, learners' workbooks, formal learner assessments, and classroom visits assist departmental heads in identifying the weaknesses of individual teachers. Departmental heads conduct relevant programmes that will develop individual teachers' to effectively carry out their duties, effectively. Teachers need guidance and support from the departmental heads so as to enhance their

instructional skills. Therefore, departmental heads are expected to equip themselves with the latest trends in education to make necessary improvements in their departments.

### **5.3.3 Theme 3: Teacher perspectives on professional development**

Participants noted that not all teachers have a positive attitude towards professional development. Younger teachers are more interested in their professional growth than ageing teachers. Their negative attitude is sometimes fuelled by being led and managed by younger departmental heads. Hence, departmental heads cannot influence the improvement of instructional skills and learner performance. Participants believe that some professional development initiatives are inappropriate and do not address the daily challenges experienced in schools. At times, the subject advisors who conduct workshops seem to have limited knowledge about the subject. This prompts teachers to consider the programmes as ineffective. As a result, teachers' engagement in professional development programmes becomes limited. Some teachers believe that professional development assists in identifying their weaknesses and improving upon their shortcomings. Some provinces have the financial resources to conduct continuous professional development programmes, while others lack the finances. While some teachers have a negative attitude about professional development, most teachers believe it can be more effective if they are involved in planning the programmes.

### **5.3.4 Theme: Identification of areas needing professional development**

Departmental heads strive to assist teachers to identify challenges that contribute to their inability to improve learner performance. Departmental heads use lesson observation as a strategy to identify the challenges of individual teachers during the teaching process. Every term, teachers and departmental heads analyses learner performance in order to determine topics that were challenging. Learners' results will indicate areas that need development. At times it may be the case that some teachers use inappropriate teaching strategies or lack lesson preparation. For example, some teachers during their lesson presentations only engage learners who are gifted, while slow learners get little attention. Such situations lead some learners to feel detached from the lesson, which leads to poor performance. During lesson observation, departmental heads can suggest ways that will assist teachers to make their lessons more engaging for all learners. As departmental heads have

increased responsibilities of teaching and management, senior teachers act as mentors to novice teachers to assist them to overcome challenges that they face in the classroom. Team teaching is also used to help teachers to overcome potential challenges that may be presented during the lesson.

### ***5.3.5 Theme 5: Challenges affecting professional development implementation***

The delivery of professional development programmes is hampered by some teachers' unfavourable attitudes towards it. It is alarming that elderly teachers do not take part in professional development programmes. Professional development is not facilitated in instances where some teachers believe that younger teachers cannot develop them. As teaching is evolving, there is a concern that elderly teachers will be unable to use technology to enhance teaching and learning. Due to the poor attendance of professional development initiatives, teachers are prone to employ inappropriate teaching methodologies, resulting in learners' underachievement. Poor communication between departmental heads and subject advisors leads to some professional development workshops not being attended. Lack of finances often results in schools not being able to purchase the necessary teaching aids suggested in the workshops to enhance teaching and learning. The lack of training for the departmental head position leads to teachers not receiving the support needed to improve their instructional skills. Hence, teachers' confidence in their departmental head's ability to support and guide them to become better teachers. Departmental heads cannot professionally support some teachers, because they refuse to be monitored during lesson presentations.

### ***5.3.6 Theme 6: Strategies to improve professional development programmes***

The continuous professional development of departmental heads and teachers may lead to the improvement of teaching and learning. Departmental heads should be adequately trained to support and guide teachers to achieve goals. Subject advisors should maintain constant communication with the departmental heads so that information can reach schools in time. In order for the professional development activities to address the scenarios that teachers experience on a daily basis, teachers should be involved in the planning process. Providing equitable educational resources across all the provinces might encourage teachers to take part in professional development programmes. Introducing certificates for workshop



attendance may encourage teachers to participate in their professional development actively. More consideration should be placed on qualifications than on experience for promotions. It would motivate teachers to participate in self-initiated professional development activities. Subject specialists should visit schools to observe teaching and assess learners' books to assist individual teachers in identifying their weaknesses and suggesting ways to improve their teaching skills. The importance of professional development initiatives should be emphasised so as to encourage teachers to participate in the programmes.

#### **5.4 Conclusions**

This study aimed to answer the primary research question on how departmental heads professionally develop Mathematics teachers. The answer is that departmental heads work closely with the subject advisor to communicate the dates of professional development programmes. Departmental meetings are held every term in order to communicate challenges faced in the previous term. Strategies are then implemented to assist teachers in overcoming the challenges. The findings revealed that some departmental heads do not receive the necessary training before occupying their positions. Hence, teachers are not adequately trained to improve their instructional skills and learner performance. Although departmental heads do their utmost to develop teachers, some teachers lack interest in participating in professional development. Therefore, hindering departmental heads' ability to run relevant programmes that will support teachers in overcoming challenges and enhancing their teaching expertise.

Teachers cannot improve learner performance because some subjects do not have advisors. The continuous professional development programmes may lead to the improvement of teaching and learning for teachers as professionals. Teachers strive to improve their qualifications, knowledge, and skills to provide quality education. However, teachers believe that the Department of Basic Education is not doing enough to ensure that educators are professionally developed. The lack of training for the departmental heads, as well as shortage of subject advisors and study materials negatively affect teachers' motivation to participate in professional development programmes.



### **5.5 Significance of the study**

This study shows that departmental heads are responsible for ensuring that teachers are professionally supported to achieve educational goals. The professional development programmes organised by schools and the Department of Basic Education has limited effect. Failure by the Department of Basic Education to train departmental heads limits the departmental heads' ability to provide support and guidance to teachers, negatively affecting teaching and learning. For this reason, teachers do not receive the support they need to improve their teaching skills and learner performance. This research shows that some departmental heads cannot lead or manage their departments, because they lack training for their positions. This study intended to uncover the roles and processes of the departmental heads on teacher professional development. Hence, it will contribute to the literature on teacher professional development, as research conducted in a rural neighbourhood in which research studies are rarely undertaken. The results show that the inequalities in the South African education system still prevail. Some provinces have the financial resources to provide continuous professional development, teaching and learning resources, and a conducive learning environment. This study will allow other researchers and readers to understand the persistent issue of poor learner performance in Mathematics.

### **5.6 Delimitations of the study**

This study was conducted in two primary and two secondary schools in the Mpumalanga Province. The study sought to explore the roles of the departmental heads in the professional development of Mathematics teachers. The selection of participants was limited to Mathematics departmental heads and Mathematics teachers. Departmental heads and teachers who are not involved in teaching mathematics did not participate in the study.

### **5.7 Limitations of the study**

The limitations of this study are discussed in the following subsections. These limitations relate to access to schools, participants and exclusion of other circuits.

### **5.7.1 Limited access to school**

Due to the coronavirus pandemic, access to school premises was restricted. Therefore, getting permission from the principals was a challenge. At times schools were closed due to positive coronavirus tests.

### **5.7.2 Limited number of participants**

Some participants were reluctant to participate in the study, due to fear of being infected with covid-19. Many participants preferred to use online meeting sites to conduct the interviews.

### **5.7.3 Exclusion of schools in other circuits**

As other schools were closed due to positive coronavirus cases, I was forced to wait for the re-opening of the schools. I was restricted from approaching other schools from other circuits.

## **5.8 Recommendations**

Poor learner performance is a challenge many countries are facing internationally. Although research is conducted nationally and internationally on this subject, more needs to be done to assist teachers in overcoming poor learner performance. The following subsections discuss the recommendations that emanate from this study.

### **5.8.1. Reduction of departmental head's roles and responsibilities**

As departmental heads take on the role of managers and teachers, their teaching responsibilities should be reduced to allow more time to manage their departments. Teaching responsibilities should be reduced to give departmental heads time to monitor teaching, assess learners' books, and plan for the professional development of teachers in their departments. Departmental heads should not only rely on the Department of Basic Education for their professional development, but rather engage in self-initiated programmes to ensure that their departments can improve and achieve the set goals.

### **5.8.2 Extensive training of departmental heads to effectively lead teaching and learning**

As departmental heads are expected to monitor teaching and learning, their departments should provide training to enhance their management skills. The professional development of Mathematics departmental heads would equip them with the knowledge and skills to support teachers in their department. The

Department of Basic Education needs to develop programmes that would assist departmental heads in acquiring knowledge and skills for meaningful professional development in their schools. Such programmes are likely to assist departmental heads in identifying teachers needing professional development.

### ***5.8.3 Implementation of consequence management for insubordination***

Lack of compliance from teachers deviates from the aim of the South African Schools Act 27 (SASA, 1996) to provide quality education. Reluctance of some teachers to partake in professional development programmes is influenced by the fact that there are no consequences for their decisions. To encourage teachers not to deviate from the aims of SASA (1996), teachers be penalised for failing to participate in professional development programmes to improve the instructional skills needed to provide quality teaching in Mathematics.

### ***5.8.4 Make professional development programmes more specific***

Every educator encounters unique challenges in the classroom. Therefore, professional development initiatives should be designed to address individual teachers' daily challenges. Teachers should be allowed to be involved in planning professional development programmes to allow accuracy in the programmes that are conducted. Subject advisors and departmental heads should create a platform where teachers give feedback on the shortcomings and strengths of every professional programme. This enables departmental heads to identify strategies to improve upon those weaknesses.

### ***5.8.5 Equitable funding allocation targeting disadvantaged schools***

Lack of teaching and learning material continues to hinder improving learner performance. The Department of Basic Education needs to increase funding to disadvantaged schools so there could be equality in the education system. Increased funding would assist in providing adequate classroom furniture, building classrooms, and acquiring teaching and learning material so that effective teaching and learning can occur.

## **5.9 Recommendations for further research**

This study has revealed that some departmental heads cannot develop their teachers professionally, mainly because they are not supported to carry out their duties effectively. Professional development of the teaching staff and managers in

schools remains the best option to ensure organisational goals are achieved. Future studies should be conducted with more participants, and ought to include subject advisors, so as to understand how departmental heads are trained and supported to lead and manage their departments. Studies need to be conducted, focusing on departmental heads' support to improve their management skills and lead teaching and learning.

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## ANNEXURES

### ANNEXURE A: REQUEST FOR PERMISSION TO CONDUCT RESEARCH FROM THE MPUMALANGA DEPARTMENT OF EDUCATION



Faculty of Education

Nkangala District Office  
Building 5  
Government Complex  
Private Bag X4021  
KwaMhlanga  
1022

Dear Sir/Madam

#### **Request for permission to conduct a research study**

I hereby apply for permission to conduct research in your schools. I am a Master's student at the University of Pretoria, Department of Education Management, Law and Policy. The research project will involve the mathematics departmental head and Mathematics teachers. My research topic is "The role of departmental heads in the professional development of Mathematics teachers", supervised by Prof RN Marishane.

The purpose of this study is to explore the roles of the mathematics departmental heads in the professional development of Mathematics teachers. The study aims to get an in-depth understanding of the challenges faced when teachers are professionally developed, the support that Mathematics teachers receive from the departmental heads and the possible strategies that departmental heads use to address challenges.

The study will be conducted in 2 primary and 2 secondary schools in the circuit of KwaMhlanga North East. The information will be collected using interviews conducted normally after school hours. Each interview will last for 15 to 25 minutes. Before conducting the interviews, I will ask for permission from the principals. The data collected for this study will be strictly confidential. No name of a school or participants will be mentioned in the study. Participants can choose to withdraw their participation from the study anytime. Each participant will be provided with a consent form before the interviews.

If you need further clarification about this research, please feel free to contact the researcher at 063 461 6114 or my supervisor Prof RN Marishane at 061 523 3871.

Your approval and support to conduct this study will be highly appreciated.

Sincerely,

T Mohamadi



## ANNEXURE B: MPUMALANGA DEPARTMENT OF EDUCATION APPROVAL LETTER



**education**  
**MPUMALANGA PROVINCE**  
**REPUBLIC OF SOUTH AFRICA**

Ikhamanga Building, Government Boulevard, Riverside Park, Mpumalanga Province  
Private Bag X11341, Mbombela, 1200.  
Tel: 013 766 5552/5115, Toll Free Line: 0800 203 116

Litiko le Temfundvo, Umnyango we Fundo

Departement van Onderwys

Ndzawulo ya D

**Enquiries : DM Maja**

**Tel : 013 947 1701/1710**

**Email : [D.Maja@mpuedu.gov.za](mailto:D.Maja@mpuedu.gov.za)**

Mr. Thabo Mohamadi

232 Sun City A

KwaMhlanga 1022

**[u14251257@tuks.co.za](mailto:u14251257@tuks.co.za)**

Dear Sir.

**RE: ACADEMIC RESEARCH PERMISSION: THABO MOHAMADI, UNIVERSITY  
OF PRETORIA.**

The above matter refers.

The above-mentioned student is currently enrolled at the University of Pretoria for a Master's in Education Management, Law and Policy under the Supervision of Prof Nylon Marishane.

**Thabo Mohamadi is granted permission to conduct research on his study,  
titled:**

**“The role of departmental heads in professional development of Mathematics  
teachers”.**

Kindly note that permission is granted for access to and interaction with the primary & secondary schools in KwaMhlanga North East Circuit under Nkangala District as per your request taking into consideration the following:

- That you first arrange with the schools before the actual visit.
- That teaching & learning is not disrupted.



We wish you well in your academic endeavours and encourage that you share your final research output with the Department as a contribution towards improving teaching and learning.



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**MR. DM MAJA**

**DISTRICT DIRECTOR: NKANGALA**

**DATE: 30 AUGUST 2021**



## ANNEXURE C: REQUEST TO SCHOOL PRINCIPALS



Faculty of Education

Dear Principal

### Request for permission to conduct a research study

My name is Thabo Mohamadi, and I am currently enrolled at the University of Pretoria for a Master's in Education Management, Law and Policy under the supervision of Prof Nylon Marishane. My approved research study title is *The role of departmental heads in the professional development of Mathematics teachers*. The purpose of this study is to examine the roles of the mathematics departmental heads in the professional development of Mathematics teachers. The study seeks to gain an in-depth understanding of the challenges faced when Mathematics teachers are professionally developed. The support Mathematics teachers get from their departmental heads and possible improvement strategies that departmental heads can apply to improve teacher professional development initiatives.

As part of my study, I have to collect data by interviewing Mathematic heads of departments and teachers in primary schools. For this reason, I would like to request your permission to interview Mathematics teachers and their head of department. The interviews will focus on their experiences, convictions, skills, and knowledge of being a Mathematics departmental heads or teachers. The interview will be held at your school and will last for approximately 15-25 minutes. This interview will be held outside normal school hours to prevent interference with teachers' daily duties.

The information will be collected utilizing interviews conducted normally after school hours. Each interview will last for 15 to 25 minutes. The data collected for this study will be strictly confidential. No name of a school or participants will be mentioned in the study. Participants can choose to withdraw their participation from the study anytime. Each participant will be provided with a consent form before the interviews.

If you need further clarification about this research, please feel free to contact the researcher at 063 461 6114 or my supervisor Prof RN Marishane at 061 523 3871.

Your approval and support in conducting this study will be highly appreciated.

Sincerely,

T. Mohamadi

## ANNEXURE D: REQUEST TO MATHEMATICS DEPARTMENTAL HEADS



Faculty of Education

Dear Head of Department

### REQUEST FOR PARTICIPATION IN AN INTERVIEW FOR A RESEARCH PROJECT

My name is Thabo Mohamadi, and I am currently enrolled at the University of Pretoria for a Master's in Education Management, Law and Policy under the supervision of Prof Nylon Marishane. The title of my approved research study is *The role of departmental heads in the professional development of Mathematics teachers*. The purpose of this study is to examine the roles of the mathematics departmental heads in the professional development of Mathematics teachers. The study seeks to gain an in-depth understanding of the challenges faced when Mathematics teachers are professionally developed, the support Mathematics teachers get from their Heads of Department, and possible improvement strategies that departmental heads can apply to improve teacher professional development initiatives.

As part of my study, I have to collect data by interviewing Mathematic departmental heads and teachers in primary and secondary schools. For this reason, I would like to request your participation in an interview session, focusing on your experiences, convictions, skills, and knowledge of being a Mathematics head of department. The interview will be held at your school and will last for approximately 15-25 minutes. In order not to interfere with your normal daily duties, this interview will be held outside formal school hours.

Participation in this study is completely voluntary. You are free to withdraw anytime during the interview without fear or providing any reason for doing so. To avoid any possible harm and ensure privacy, your identity and that of your school will be protected by using pseudonyms in the place of real names. This will ensure that any information you give, including your views on the issue of engaging parents, will not be linked to your name or your school. As part of the data collection, I will be using an audio recorder to capture the interview for subsequent transcription and data analysis. All information obtained during the interview will be treated confidentially.

For this reason, only my supervisor and I will have access to the data recorded during the interview. The findings and recommendations from this study will be made available to your school in the form of a thesis on completion of this study. We also request your permission to use your data, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria and, where relevant, project funders. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Please sign the attached form if you are willing to participate in this study.

Regards

Thabo Mohamadi

Signature .....

Date .....

Researcher`s Contact Details

Name: Thabo Mohamadi

Cell: 063 461 6114

E-mail: u14251257@tuks.co.za

Supervisor`s Details

Name: Prof. Nylon Marishane

Cell: 061 523 3871

E-mail: nylon.marishane@up.ac.za

INFORMED CONSENT FORM  
VOLUNTARY PARTICIPATION IN A RESEARCH PROJECT

I, -----, (full name) understand the information given to me, and I am willing to participate in the study with the title: *The role of departmental heads in the professional development of Mathematics teachers*. I understand that my participation in this study is voluntary and that my identity will be protected and remain confidential.

-----  
Participant`s Signature

-----  
Date

## ANNEXURE E: INVITATION AND CONSENT FORM FOR MATHEMATICS TEACHERS



Faculty of Education

Dear Colleague

### REQUEST FOR PARTICIPATION IN AN INTERVIEW FOR A RESEARCH PROJECT

My name is Thabo Mohamadi, and I am currently enrolled at the University of Pretoria for a Master's in Education Management, Law and Policy under the supervision of Prof Nylon Marishane. The title of my approved research study is *The role of departmental heads in the professional development of Mathematics teachers*. The purpose of this study is to examine the roles of the mathematics departmental heads in the professional development of Mathematics teachers. The study seeks to gain an in-depth understanding of the challenges faced when Mathematics teachers are professionally developed, and the support Mathematics teachers get from their departmental heads and possible improvement strategies that departmental heads can apply to improve teacher professional development initiatives.

As part of my study, I have to collect data by interviewing Mathematic departmental heads and teachers in primary and secondary schools. For this reason, I would like to request your participation in an interview session, focusing on your experiences, convictions, skills, and knowledge of being a Mathematics teacher. The interview will be held at your school and will last for approximately 15-25 minutes. In order not to interfere with your normal daily duties, this interview will be held outside formal school hours.

Participation in this study is completely voluntary. You are free to withdraw anytime during the interview without fear or providing any reason for doing so. To avoid any possible harm and ensure privacy, your identity and that of your school will be protected by using pseudonyms in the place of real names. This will ensure that any information you give, including your views on the issue of engaging parents, will not be linked to your name or your school. As part of the data collection, I will be using an audio recorder to capture the interview for subsequent transcription and data analysis. All information obtained during the interview will be treated confidentially. For this reason, only my supervisor and I will have access to the data recorded during the interview. The findings and recommendations of this

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Faculty of Education  
Fakulteit Opvoedkunde  
Lefapha la Thuto

study will be made available to your school in the form of a thesis on completion of this study. We also request your permission to use your data, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria and, where relevant, project funders. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Please sign the attached form if you are willing to participate in this study.

Regards  
Thabo Mohamadi

Date: 13 -10- 2021  
Researcher`s Contact Details  
Name: Thabo Mohamadi  
Cell: 063 461 6114

Supervisor`s Details  
Name: Prof. Nylon Marishane  
Cell: 061 523 3871

E-mail: [u14251257@tuks.co.za](mailto:u14251257@tuks.co.za)

Signature:



E-mail: [nylon.marishane@up.ac.za](mailto:nylon.marishane@up.ac.za)

Signature:



## INFORMED CONSENT FORM

### VOLUNTARY PARTICIPATION IN A RESEARCH PROJECT

I, -----, (full name) understand the information given to me, and I am willing to participate in the study with the title: *The role of departmental heads in the professional development of Mathematics teachers*. I understand that my participation in this study is voluntary and that my identity will be protected and remain confidential.

-----  
Participant's Signature

-----  
Date

## ANNEXURE F: INTERVIEW SCHEDULE FOR MATHEMATICS DEPARTMENTAL HEADS AND TEACHERS



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

### Research questions

#### Main research question

How do Mathematics departmental heads professionally develop teachers in their departments?

#### Secondary research questions

- What challenges do Mathematics teachers face in terms of their professional development?
- How do Mathematics departmental heads support the professional development challenges experienced by the teachers in their departments?
- What possible strategies can Mathematics departmental heads apply to improve the professional development of teachers in their departments?

### Interview schedule

**Below is an interview schedule of 10 questions based on the above research questions as the main themes.**

Question 1: Why are learners attaining poor results in Mathematics?

Question 2: Based on your personal experience, what is the departmental heads' role in teacher professional development?

Question 3: How do departmental heads carry out professional development programmes in your department?

Question 4: How do departmental heads identify areas needing development on individual teachers?

Question 5: How do you measure the effectiveness of professional development initiatives on teaching and learning?

Question 6: What is the attitude of teachers regarding professional development?

Question 7: How do departmental heads ensure that teachers are professionally developed?

Question 8: What challenges do departmental heads face when professionally developing teachers?

Question 9: How do departmental heads address these challenges?

Question 10: How can the Department of Basic education assist in making teacher professional development initiatives more effective?

Is there anything else you would like to tell me regarding teacher professional development?



## ANNEXURE G: INTERVIEW TRANSCRIPT

**Question 1:** Why are learners attaining poor results in Mathematics?

Uhm learners are performing bad on the subject of Mathematics due to the inefficient of qualified teachers in our public schools or in our schools. Uhm especially in the primary schools there are unqualified teachers teaching subject of mathematics. Unqualified teachers are teaching the subject that they didn't do at tertiary level. So, I feel like that is the reason why learners are performing bad in the subject of Mathematics. This thing starts at primary and ends at secondary level. So, the cause of the poor results or poor performance of the learners I believe are the teachers. Teachers are not well trained or don't have qualified or specialized teachers in the subject.

**Question 2:** Based on your personal experience, what is the departmental heads' role in teacher professional development?

The role of the heads of the departmental for professional development is to help teachers to (eeh) to have that knowledge, to help teachers with pedagogy content and knowledge of the subject. I believe that the heads of the department are like the mentors in the schools where like a new teacher or teacher can go and run to the heads of department for some advice for a particular problem especially in the subject area.

**Question 3:** How do departmental heads carry out professional development programmes in your department?

Well, nothing much has been done for professional development of teachers by the heads of departmental or school development programmes. I don't see or we don't have school based professional development in our school. Our schools are not taking professional development seriously (uhm) we wait for district or provincial to provide us with professional development workshops where in our schools we don't receive any professional development services or programmes to help teachers from our heads of department.

**Question 4:** How do departmental heads identify areas needing development on individual teachers?

Well, uhm, most of the time they use the Quality Integrated Management System which was called the IQMS to find out where do the teachers lack professional development. They use the IQMS to identify those problems.

**Question 5:** How do you measure the effectiveness of professional development initiatives on teaching and learning?

To measure the effectiveness of the professional development is when a teacher changes the he teaches in the classroom his methodology and learner performance. So, I believe that if the professional development has been effective there will be a change in a classroom environment, a teacher will be will have confidence in that particular subject, a teacher will be help to go to school every day and learners will enjoy the subject and learners will perform well in that subject. I believe that a professional development is not only for teachers but for the entire school, even the school will be good.

**Question 6:** What is the attitude of teachers regarding professional development?

The attitude of teachers towards professional development is very negative. I believe that the professional development workshops are not well organised or well prepared for teachers. You will find in a workshop, let's say for example, you go to a workshop and they say subject advisor or curriculum advisor where in that workshop the curriculum advisor doesn't even understand the topic that he or she is delivering into the teachers.

**Question 7:** How do departmental heads ensure that teachers are professionally developed?

Nothing is done yet by the departmental heads. Teachers are not provided with opportunities to improve or to develop themselves. Uhm, departmental heads or the school doesn't give teachers much time or time to do some professional development activities, workshops can be formal or informal workshop. So, we usually don't get any support or anything from the departmental heads or the school management team.

**Question 8:** What challenges do departmental heads face when professionally developing teachers?

The departmental heads most of the time they face challenges or want to address the professional development of the teachers, they usually come for an external help. Like calling for the subject advisor to come and help the particular teacher and the department or in the school.

**Question 9:** How do departmental heads address these challenges?

Well, uhm, the challenges that the departmental heads face in developing teachers especially when it comes to the IQMS thing where they identify areas for professional development, the departmental heads themselves they don't know how to carry out the professional development plan or activities to help the teachers in the school. They don't know how to implement professional development to the school as the heads of department and teachers again they don't want to participate especially in the informal professional development.

**Question 10:** How can the Department of Basic education assist in making teacher professional development initiatives more effective?

For the Department of Basic Education to make professional development more effective, they have to explain what is professional development to teachers, what are the benefits the professional development and I believe that they should be funds if they are not there for teacher development programmes. like for example, if a teacher has a problem with a particular, let's say classroom management, the teacher must be given funds or bursaries to and study a short course in classroom management. So, the Department can provide with resources and funds and also human resource. Like, uhm inviting experts in the field of education.

Is there anything else you would like to tell me regarding teacher professional development?

Yes, umh, I would like to say professional development is a lifelong thing. Things are change every day. So, as we are teachers we need to change, we need to learn new things, we need to go with time. So professional development is very important to us as teachers and to learners in order for our learners to perform well and then to understand the current world we are in even us to understand the current world

we are in that the world we had yesterday is not the world we have to today and it's not the world we are gonna have tomorrow. We need to change every day, we need to grow develop ourselves.