

## EXPERIENCES OF MATHEMATICS PRIMARY SCHOOL DEPARTMENTAL HEADS: PERTINENT CHALLENGES AND LESSONS LEARNT

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### Abstract

*There has been a shift in the professional management of schools which is gradually inclining towards performance-based management. This shift has put emphasis on managing schools to achieve higher learner performance and has put pressure on Departmental Heads (DHs) and teachers to improve outcomes especially in the mathematics subject. The main aim of the study is to explore a myriad of pertinent challenges experienced by DHs in managing mathematics in primary schools. In examining the phenomenon, we deployed an exploratory qualitative research approach. In collecting data, the researchers used the semi-structured interviews to interview [teachers, DHs, the curriculum advisor, principals]. The study was underpinned by the Deming quality management theory. The study provided insights in the myriad challenges and impediments in managing mathematics in primary schools by the heads of departments. The study results include the following: Problems with interpersonal stakeholder relations, lack of disciplinary expertise and specialization, teacher absenteeism and implications, work overload of mathematics heads of department, insufficient support from the educational and local school authority and insubordination, dereliction, and non-cooperation of teachers. This paper is significant because it adds novel insights in the epistemology of the management of mathematics in primary schools.*

**Keywords:** Departmental heads; teachers; principals; curriculum advisor; mathematics performance; quality management theory

### 1. Introduction

This study explores pertinent challenges DHs experience in mathematics departments in primary schools. Dingaan Baloyi Mathematics is a very critical subject in schools, and yet performance indicators paint a bleak picture in most nations of the world. There is an outcry around the world and specifically in South Africa regarding the poor performance

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of learners in mathematics (Milthorpe, 2015; Banerjee, 2016; Jojo, 2019; Makofone & Maile, 2019). Several reasons related to poor performance in this subject have been advanced by researchers. In their studies, these scholars identified several factors which contribute towards lower mathematics performance in primary schools (Milthorpe, 2015; Garcia & Serra, 2019 and Namkung, Peng & Lin, 2019). Management and leadership scholars apportion responsibility of the performance outcome in mathematics subject on the shoulders of the departmental heads (DHs) at the school level. Darling-Hammond et. al (2019) argue that DHs at the school level are better positioned to ensure that mathematics performance improves. Similarly, Harris, Jones, Ismail, and Nguyen (2019) conducted a study on the leadership and management roles of DHs in primary schools and their findings reflect a bleak picture of performance outcomes. It is of fundamental importance to provide the understanding of the construct departmental heads. According to the Department of Basic Education (2016), DH is a senior teacher who leads and manages a division of specialty subject areas and in this case mathematics. Adler (2017) argues that a DH serves as a link between teachers in a particular department and the school's top administration. Whereas Motala (2020) is of the view that DH's area of competence is in the management of a certain subject or group of subjects. To Adler (2017), DHs provide strategic and significant roles to specific curriculum and instruction such as mathematics. In the South African context, a DH is a senior teacher who is appointed as a member of the School Management Team (SMT) following recruitment processes (Shaked & Schechter, 2017). The DH must possess subject-matter expertise to effectively lead his or her department. Ogina (2017) recommends that a DH should also have teaching experience, as well as mastery of the subject content and instructional skills.

They are directly accountable to the deputy principal, who reports to the principal. DHs constitute middle management in the schooling context, that is why their description as middle management is significant in the literature on teacher leadership (Marishane, 2016; PAM, 2016; Ogina, 2017; Saul, 2019 and Nkabinde, 2020). Nkabinde (2020) notes that DHs oversee the teaching of specific subjects, as well as the coordination and supervision of all educational programs in compliance with established norms and standards. Mokoena (2017) defines DHs as curriculum managers who inspire departmental commitment. The author emphasizes their commitment to improving the quality of work in their department in schools. Saavedra (2017) acknowledges that effective DHs who manage mathematics as a subject should have pedagogical topic understanding to improve teaching and learning and to acquire the respect and loyalty of teachers involved in such progress initiatives. As managers, DH management functions include, planning, coordination, leading and the organization of the department (Suleman (2015). Glewwe and Muralidharan (2017) maintain that managers may get disoriented without the management duties of planning, organizing, leading, and controlling. The forthcoming paragraphs will discuss these four roles of DHs.

## **2.Related literature**

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### ***2.1. Problems, intricacies, and impediments of managing mathematics departments.***

Leading people in any institution is not always stress-free. While carrying out their duties, DHs face obstacles that impede their productivity. The hurdles manifest themselves in several ways. A myriad of studies identified challenges faced by DHs in primary and secondary schools, particularly in mathematics (Banerjee, 2018; Tapala, Van Niekerk, & Mentz, 2020; Banerjee, 2018; Zide, 2020, and Onasanya, 2020). Amongst the many issues is ill-discipline in schools. Suleman (2015) and Banerjee (2018) discovered that DHs have difficulties because of a lack of discipline, which is demonstrated by both teachers and learners in schools. These scholars characterize several forms of ill-discipline such as arriving late at school, bunking classes by both teachers and learners, teaching poorly prepared lessons, and failing to prepare necessary teaching and learning materials. Mashapa (2019) adds that DHs also face challenges that include teachers failing to complete tasks assigned to them by their supervisors. Other challenges identified by Mashapa (2019) include learner performance, teacher absenteeism, insufficient teaching, and learning resources.

Overcrowded classes, drug usage, excessive exposure to disruptive video materials, parental threats are also additional challenges identified by Govender (2018). Threatening DHs is also another concern which needs attention. This bullying behaviour by parents often has a destructive effect on the teacher-parent relationship. Govender (2018) and Mashapa (2019) complain that parents in rural and urban regions alike do not communicate effectively with schools, but instead use aggressive behaviour when they believe their expectations are not being considered. Parents also bully teachers when their children perform poorly or fail the subject. Govender (2018) and Mashapa (2019) argue that extreme threatening behaviour include threats to beat teachers and hurling insults at them. Banerjee (2018) contends that these kinds of behaviours merely serve to demotivate DHs and may lead to low mathematics performance. According to Leithwood (2016), a DH's performance may be harmed by a lack of support from teachers, parents, school leadership, and district administrators. Further, Ogina (2017) argues that DHs who lack leadership support are unlikely to be innovative.

Finance is vital in the running of schools and departments. Without adequate financial support and contributions from the parents, the quality of teaching will be compromised. Nkambule and Amsterdam (2018) note that DHs are further confronted with issues related to parent non-payment of school fees, which frequently results in the mathematics department operating on a shoestring budget. Not only are the issues raised above complete the list of problems. Reasonable workloads contribute towards efficient and effective teaching and management. Zide (2020) notes that workload and too little time appear to be additional issues for DHs when operating their department in schools. Tapala, Van Niekerk, and Mentz (2020) postulate that DHs perceive their workload as unmanageable, resulting in instabilities between home and work. Heavy or unbalanced workload render both teachers and DHs ineffective and only leads to mediocrity.

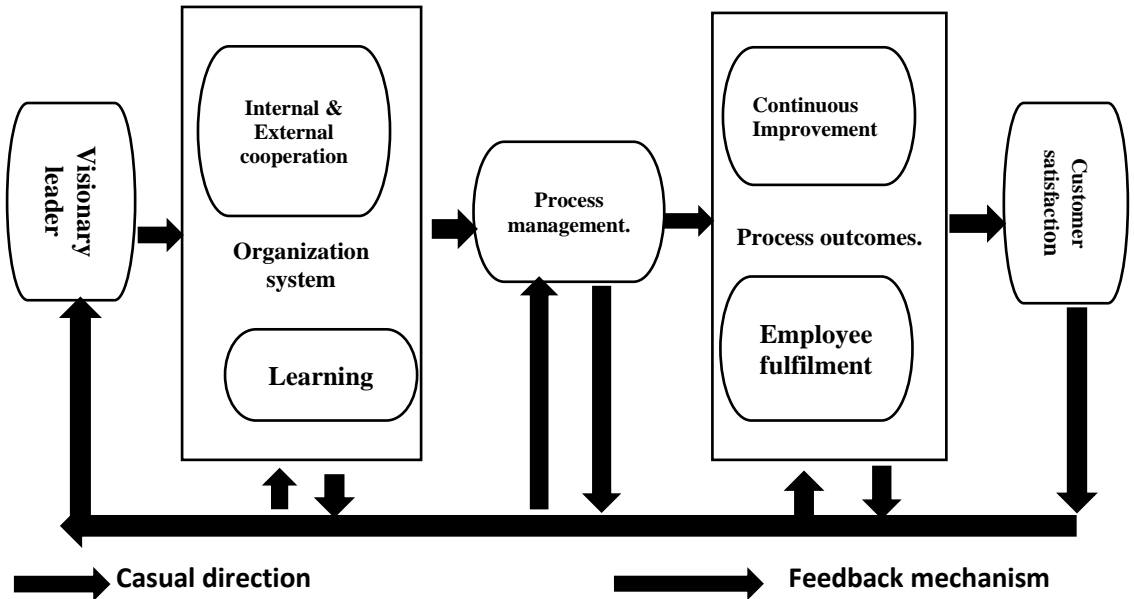
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Much as teacher trade union and politics are important in ensuring that there is justice in the running of schools, research also indicates the existence of negative effect of labour movement interferences. These politics create complexities which affect DHs' performance. Numerous authors such as Benerjee (2018), Govender (2018), Onasanya (2020), and Tapala, Van Niekerk, and Mentz (2020), indicate that teacher unions play a significant role in the role of DHs and that differences in union procedures account for significant variation in the level to which DHs can exercise noteworthy leadership. Amongst the duties of DHs is monitoring of teachers' work, for example by conducting class visits and observation of lessons. In most instances, labour movement leaders encourage their members to resist such visits. This assertion is supported by Ogina (2017) who posits that a sizeable majority of teachers oppose the DH's participation in their departments, particularly during class observation linked to monitoring and evaluating teaching and learning, as well as teacher performance. Similarly, Onasanya (2020) argues that many teachers get into conflicts with DH's due to their commitment to assign duties and monitor teachers' work.

### **3. Theoretical framing of the study**

This study is underpinned by Deming quality management theory which was developed by Deming in 1986 (Anderson, Rungtusanatham, and Schroeder (1994). This theory promotes quality in organizations (Gartner & Naughton, 1988). Deming, as a proponent of quality management, developed the Deming Quality management theory (Deming, 1993; Deming, 2000) which was based on 14 principles and was intended to guide organizations in transforming and improving the quality of management practice (Khan, 2010). Deming (1986) asserts that the principles are predicated on an assumption of how work is completed and how work outcomes should be evaluated. The Deming Quality management theory's 14 principles emphasize cooperation, learning, and encouraging the application of process quality management theory that should result in continual improvement of processes, products, services, and employee satisfaction. Anderson et al. (1994) created eight constructs from The Deming Quality management theory's 14 principles: visionary leadership, internal and external cooperation, learning, process management, continuous improvement, employee fulfilment, and customer satisfaction (Anderson et al, 1994). These principles are critical, and this study focuses on how departmental heads, teachers, principals, the departmental officials represented by the curriculum advisors interact in the teaching of mathematics in primary schools. Using this theory, pertinent questions should be answered based on the elements of their interactions such as, do DHs have mathematics department vision? Do teachers and the DHs cooperate? Do DHs and officials of the department cooperate? Are DHs supported in their management duties? Do mathematics teachers pedagogically improve their skills, and do they show willingness in doing that? Are DHs satisfied with their management and do they also get support from the seniors and the educational authorities? The following diagram (Figure 1) illustrates the quality management theory that underpins the Deming Quality management theory, as presented by Anderson et al (1995).

Figure1: Diagrammatic representation of the theory of quality management (Anderson et. al, 1994).



Source: reproduction after Anderson et. Al (1994).

According to the authors, the component of visionary leadership focuses on the provision of long-range direction of the organization (vision crafting, communicating it to members). Further, the internal and external cooperation component as indicated in the figure deals with how organizational members cooperate with each other and with the outside bodies (DHs, teachers and the principals, parents etc.). External cooperation focuses on outside stakeholders and in the context of this study, the Department of Basic education official such as the curriculum advisors. The learning aspect in the figure, according to Anderson et.al (1995) touches on the organizational members’ willingness to learn new ways of doing things. This element is critical since it contributes to teachers’ approaches to teaching mathematics are dynamic and changing. In this study, we combine this component with the element of continuous improvement of skills of teachers in teaching mathematics and DHs competencies of managing. Employees, like teachers and DHs must find satisfaction and fulfilment in the work that they are doing. This component can only be achieved when several factors are achieved such as providing them with support. Customer support in this study refers to whether parents and learners are satisfied with how the DHs perform in mathematics as a subject.

#### 4. Methods

Our philosophical approach to this study is anchored on social constructivism. Our choice of this epistemological stance is based on the views of Cresswel and Poth (2016); Cohen and Marion (2018) and Lincoln, Lynham and Guba (2018) who note that social world could

only be comprehended from the viewpoint of people who are part of the phenomenon under examination. Our paradigmatic lens assisted us in exploring the challenging phenomenon faced by mathematics departmental heads in managing teachers. The study was conducted in Limpopo Province, South Africa and the sample consisted of six primary mathematics teachers (coded T1, T2, T3, T4, T5, T6), six mathematics departmental heads (coded DH1, DH2, DH3, DH4, DH5 and DH6), six principals (coded P1, P2, P3, P4, P5 and P6) and one curriculum advisor (CA). The participants' inclusion criteria were based on gender mix, five years working experience and not less than three years in management position for the departmental heads, principals, and the curriculum advisor. Purposive sampling was a choice technique because of the reasons expressed by Yazan (2015); Dudovskiy (2018) and Hancock and Algozzine (2018) that a) provides the researcher(s) with freedom to select information rich units of analysis, and b) gather as much as possible data from the participants even if they are few. We subjected all the participants to the modified semi-structured interview schedule after conducting the pilot session with three participants (one teacher, one DH and one principal). After we collected data, we deployed inductive thematic data analysis strategy which enabled us to identify relevant data, break it into groups, sought divergent perspectives and constructed composite views (Akinyode & Khan, 2018). This qualitative thematic standard operating procedure is imperative as it provides a rigour and structure in arriving at scientific strands which are logical, coherent, and interrelated. In the next section we now focus on the results of the study.

## **5. Results and discussion**

The mandate of this examination was mainly focused on the analysis of the challenging experiences of departmental heads in managing mathematics in primary schools. Even though one of the researchers is the school principal, our positionality was clearly defined, and the study findings were not contaminated. Having foregrounded this section with the clear purpose of the study, the following are pertinent study thematic strands which emanated from rigorous process of data sifting, analysis, and synthesis.

- Stakeholder relational problems
- Lack of disciplinary expertise and specialization
- Teacher absenteeism and implications
- Work overload of mathematics DHs
- Insufficient support from the educational and local school authorities.
- Insubordination, dereliction, and non-cooperation of teachers

### ***5.1. Stakeholder relational problems***

Schools are ecosystems and constituted by various stakeholders who see things differently. These stakeholders include teachers, parents, education authority officials and learners. For the academic agenda to be achieved, all these stakeholders must set aside their differences and work together. Failure to do that will result in the low

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performance from teachers and learners. The teachers in the interviews were at pains and lamented the relationship issues amongst stakeholders.

T5, in responding complained that:

*“There is lack of good relations with the DH in the school, which is a challenge that I encountered. An unapproachable DH at times makes it difficult to share the challenges that I encounter with the subject, and which makes it difficult to report. When problems persist without solutions it means learners will have to move to the next grade without having the necessary support. As a teacher, my motivation and interest in the subject is diminished”.*

The view of the participant above resonated with T6 who retorted in this manner:

*“There is no good relationship and communication between myself and the DH. And also, poor relationship between teachers and DH are leading to poor communication between them”.*

The participating teachers in the study indicated that when the relationship amongst school stakeholders is not good, it can destroy effective teaching and learning in schools and due to this, no improvement on learner performance will occur. Some of the teachers pointed out that their supervisors do not have good relationship with teachers in schools. They further pointed out that they are afraid to approach their supervisors when they have challenges in the mathematics department because of their inaccessibility. One of the teachers pointed that there is no communication between teachers and DHs at school. Furthermore, she added that if there is no communication in the mathematics department, no improvement of learner performance would happen in the school.

The finding is in line with Onasanya (2020) who maintains that when there is no relationship between staff members and their supervisors, this can hinder progress in schools. The author further posits that staff members should have good relationship with their supervisors because it is an important ingredient for effective schools. The views expressed also negate Demings’ theory (1995) as espoused by Anderson et. al (1994) regarding cooperation. The views suggest that there is no cooperation and teamwork. It is critical that stakeholders cooperate (DHs and teachers) to ensure that the mathematics academic agenda is not compromised. Good workplace relationships exist among teachers, DHs, learners, and principals lead to higher school performance (Onasanya, 2020). DHs should have decent professional working relationships with their colleagues that would assist in uplifting the standard of togetherness in the mathematics department. Both teachers and DHs should feel free to approach each other when there is a need.

## **5.2. Lack of disciplinary expertise and specialization**

Mathematics is a specialized subject which requires teachers with not only content knowledge but also pedagogic expertise. This is fundamental in that South Africa is not

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ranked well when it comes to mathematics performance in comparison with other countries. The participants agree that there is a serious challenge regarding teacher subject knowledge. In expressing his assertions, T1 reacted thus:

*“It is not good to be led by a DH who does not have sound knowledge of the subject because he or she would not be able to give support on the issues of the subject in cases where teachers need assistance. A DH who is knowledgeable may be perceived as capable and might find it easy to notice when the teacher struggles, especially when she or he checks or moderates the teacher’s work”.*

Confirming the perceptions of the teacher above, the CA complained that:

*“Some of the DHs are supervising the mathematics subject without subject specialization. It is difficult for them to manage Mathematics teachers because they lack subject matter in Mathematics. Furthermore, when teachers need support during challenges in Mathematics, they do not get assistance”.*

The challenges demonstrated by teacher 1 and the curriculum advisor confirm the findings of various scholars. In the same vein, Malinga (2016) established that some DHs do not have the subject matter knowledge, pedagogical content knowledge or the credibility to lead subjects under their supervision. DHs who did not specialize in mathematics in tertiary institution have challenges when it comes to subject matter knowledge and pedagogical content knowledge in mathematics (Malinga, 2016). Due to the lack of subject matter knowledge and pedagogical content knowledge in mathematics, they would have trouble in supervising it. According to Anderson et. al (1994), learning is fundamental in improving organizational performance and as a result the finding contradicts this important component. It is fundamental that principals employ DHs and mathematics teachers who are experts in the subject. This would assist DHs in achieving the goals of their departments.

### **5.3. Teacher absenteeism and implications**

Teachers are professionals and they should conduct themselves ethically and professionally in their service. Regarding school attendance, they must ensure that they attend school and classes consistently and without fail. This does not mean that they are not allowed to be absent, but their absenteeism should comply with legislative guidelines. Amongst the problems identified during the interviews was chronic absenteeism by some teachers. Below is the view of teacher 4 on the matter:

*“Teachers do not come to schools to teach their learners on daily basis due to their personal problems. Their absenteeism caused us to work extra-hours without taking a break trying to cover their periods and this is a challenge that we encountered in our school”.*



Not only did DH2 maintained the views of T4, but also demonstrated the implications thereof and the views were expressed as follows:

*“When a teacher is continually absent, learner achievement can be significantly impacted in an undesirable way. Teachers’ absenteeism undermines the quality of teaching and learning in schools, and this could lead to parents’ reduced confidence in teachers”.*

In terms of the above findings, it seems that DHs and teachers might be unknowingly derailing the progress of their learners due to their high levels of absenteeism. The findings reveal that teacher absenteeism in schools can create negative perception in the eyes of both supervisors and learners in the schools and society. Furthermore, it can also hamper a good working relationship amongst colleagues and leads to a contaminated working relationships and affects learners’ motivation. Aucejo and Romano (2016) corroborate these expressions when they argue that teachers are continually absent from schools resulting in lower performance of learners. Teachers should come to school on daily basis where possible. They should make sure that they are well prepared when they go to class to teach learners. When they are absent from work due to valid reasons such as sicknesses and family responsibilities, they should devise mechanisms of catching up and closing the gaps.

#### **5.4. Work overload of mathematics DHs**

School leadership in allocating work, should consider the principle of fairness and equal work. Fair and equal workload help reduce teacher burnout. High work loaded staff members end up cutting corners and compromising quality. The views of participants in particular DHs paints a very worrying picture on this matter and their perceptions are captured below: In pouring out the frustrations of heavy workload, DH2 bemoaned the situation as follows:

*“Due to understaffing challenge, I am carrying the workload that hinders me to execute my role that I am expected to carry. The heavy workloads obstruct me from performing my instructional leadership roles of leading teachers towards teaching, learning and assessment”.*

Supporting DH2, DH3 lamented:

*“I have many roles to fulfil as DH such as teaching, monitoring, supervising, supporting, administration and many more. These roles are too numerous to be completed by one person because the DH is managing and leading all learning areas in Mathematics in the intermediate and senior phases”.*

The mathematics curriculum advisor (CA) who is charged with mathematics oversight in primary schools was fully aware of the challenges facing the DHs and echoed this expression:

*“DHs who are full time teachers with minimal time for supporting or monitoring their teachers’ work. This is a challenge because they are unable to render support fully to their teachers at schools due more work that they have”.*

Tapala, Van Niekerk, and Mentz (2020) validate the findings when they argue that DHs struggled to cope with workload when performing their duties in schools due to little time and many responsibilities. The authors further pointed that DHs are unable to perform all delegated duties due to workload, which makes it difficult for them to supervise teaching and learning. When DHs are given many duties to execute at schools, it is a problem because they would be unable to perform tasks that they are supposed to carry at schools due to workload. They would be unable to even supervise and monitor the effective teaching and learning at schools.

### **5.5. Insufficient support from the educational and local school authorities**

Supporting staff members and school management by the Department of Basic Education (DBE) is imperative. The DBE cannot expect schools to fulfil their academic mandates without providing support in various ways. On this matter, the DHs complained that they do not have proper support from the principals and DBE. This lack of support from the DBE and principals is exacerbated by the increasing uncaring nature of principals who often focus on governance matters while ignoring curriculum implementation. DHs protested that in most cases when they present their inputs on what the schools need to do to improve performance, the principals seem uncaring. These views were demonstrated by DH3 who complained in this manner:

*“I have many tasks to supervise in the school because I am the only departmental head for intermediate and senior phase, and I am controlling all the subjects in the two phases. Our school enrolment allows us to have one intermediate and senior phase DH. Due to that, I expect the support from the school leader and his deputy principal, but I do not get it. This high concentration of work leads to stress development leading to poor execution my duties properly”.*

In support of the laments of DH3 above, DH4 bewailed that:

*“The principal does not often have a focus on the curriculum implementation, but always focus on the governance area of the school. He is always worried about maintenance projects and fails to listen to the inputs about improving curriculum implementation. This has led to low morale amongst teachers in all subjects, leading to poor performance. I believe that to improve performance, the principal should focus more on supporting DHs and teachers in teaching and learning which would improve performance”.*

The perceptions of the DHs above resonate with the findings of various scholarly studies. Leithwood (2016) and Ogina (2017) argue that due to DHs lack of support from principals and district officials, their performance is not acceptable. They further maintained that DHs are unlikely to be innovative due to lack of support from their supervisors. This revelation is also supported by Mobara (2017) who mentioned that at the school level, the principals should be available to support DHs and teachers who have learners with

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learning barriers. One of the elements of Deming's theory as espoused by Anderson et. al, (1995) focuses on employee fulfillment. We argue that when school leadership does not support DHs, they will not be fulfilled in what they are doing. It is impossible for DHs to be fulfilled when they lack support from both the principals and the department of basic education. For DHs to do better in schools, they should be provided with support by their seniors. When DHs are supported, they would be able to perform their delegated tasks effectively. DHs should be provided with the necessary teaching and learning support materials that would assist them in performing their duties.

### **5.6. Insubordination, dereliction, and non-cooperation of teachers**

DHs cannot deliver the mathematics curriculum objectives and its agenda without the support and cooperation of teachers. One of the themes discussed was lack of support from DBE and school principals. This matter also extends to the absence and deliberate non-cooperation demonstrated by teachers towards DHs. Teachers' lack of support is depicted through disrespect and insubordination include failure to attend mathematics subject meetings organized by DHs and non-submission of lesson plans.

A highly frustrated DH2 retorted:

*"Some of the Mathematics teachers did not submit their work. Some of teachers go to the class without proper preparation. Some of teachers neglect to carry out instructions given to them by me and that is a challenge that I am facing in the school".*

Further acknowledging other challenges with teachers towards DHs, DH6 complained that:

*"My main challenge is that I face as a DH when performing my duties is the constant excuses by teachers to attend subject meetings. Most teachers sign the invitation in the communication book but later send cell phone messages to give apologies for failure to attend the meetings".*

The findings corroborate with Ogina (2017) and Onasanya (2020) who argue that there is no healthy interaction between teachers and DHs at schools. They further highlighted that teachers do not perform duties when delegated by their DHs. These behaviours translate into insubordination and deliberate non-cooperation. Teachers should attend subject meetings when invited by DHs in the mathematics department. They need to know that attending meetings is another way of teacher development and they would be able to interact with each other in meetings. They would also be able to share ideas about learner improvement in the mathematics department.

The purpose of this study was to expose the challenges DHs experience in managing mathematics teachers. Through various participants (teachers, departmental heads principals and the curriculum advisors), several serious challenges and impediments were identified which have negative implications on the functions of the DHs. These findings were characterized as follows: relational issues, subject specialization, absenteeism, workload, absence of support from authority, and insubordination. As authors, we can

conclude that the challenges identified in the study have negative ramifications on the performance of both DHs and learners.

## 6. Conclusion

The purpose of this study was to explore pertinent challenges DHs experience in managing mathematics departments in primary schools. In the study, we deployed qualitative research approach and further reviewed authoritative and extant literature in examining the phenomenon. The study was underpinned by quality management theory of Deming as modified by Anderson et.al. As argued elsewhere in the study, mathematics is a very critical subject in schools and reports paint a very disturbing picture of how South Africa perform in comparison to other counties of the world. Using qualitative research approach, the investigation led to several interesting results listed as follows: relational issues amongst stakeholders, lack of expertise by DHs in teaching the subject, teacher absenteeism, work overload of the DHs, inadequate support from both education authorities and the school itself, and insubordination and lack of cooperation from teachers. This study was significant in that it provides new insights in the epistemology of mathematics management in primary schools.

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