PRINCIPALS' INSTRUCTIONAL SUPERVISORY PRACTICES ON STUDENTS' ACADEMIC PERFORMANCE IN MATHEMATICS IN PUBLIC SECONDARY SCHOOLS IN KILUNGU SUB-COUNTY, KENYA

COLLETA NGAMI KUMONYA

A Project Submitted to the School of Educational Management and Curriculum Studies in Partial Fulfilment of the Requirement for the Award of Degree of Masters of Education in Administration of Machakos University, Kenya

OCTOBER 2025

DECLARATION

I declare that this project is my original work and has not been presented in any other university/institution for consideration of any certification. This research project has been complemented by referenced sources duly acknowledged. Where text, data (including spoken words), graphics, pictures or tables have been borrowed from other sources, including the internet, these are specifically accredited and references cited using current APA system and in accordance with anti-plagiarism regulations.

Signature: ..... Date: 24/10/25

Colleta Ngami Kumonya
E55-12117-2021

Supervisor

This project has been submitted for appraisal with our approval as university supervisor

Signature: ..... Date: 24/10/25

Prof. Kimiti Richard Peter

Department of Education Management and Curriculum Studies

Machakos University

Signature: ..... Date: 29/10/2025

Dr. Francis Mutua

Department of Educational Communications and Technology and Early Childhood Education

Machakos University

DEDICATION

This work is dedicated to my loving husband, Leonard Kitumu, whose unwavering support and encouragement have been my constant source of strength and inspiration throughout this journey. Your belief in me has been invaluable.

To my wonderful children, Laurine, Peter, and Lilian, your patience and understanding during the long hours of study and research have been deeply appreciated. You are my motivation and joy, and I hope this achievement serves as an inspiration for you to pursue your dreams with determination and perseverance.

ACKNOWLEDGEMENT

Foremost, I would like to thank the Almighty God for granting me the opportunity to study. Also, I would like to express my sincere gratitude to my supervisors Prof. Kimiti Richard Peter and Dr. Francis Mutua for their continuous support in my study. Their guidance and moral support led to completion of this work.

Special thanks go to the lecturers at the Department of Educational Management and Curriculum Studies of Machakos University for their role in the course of my study. I must also thank Charles for typing this work. Lastly, I thank my colleagues Miriam, Irene and Kasaine for the encouragement and support they extended to me during the course of our study.

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ABBREVIATIONS AND ACRONYMS

CDE	County Director of Education
KCSE	Kenya Certificate of Secondary Education
KICD	Kenya Institute of Curriculum Development
MOE	Ministry of Education
NACOSTI	National Commission for Science, Technology and Innovation
NGO	Non-Governmental Organization
TPD	Teacher Professional Development
SPSS	Statistical Package for the Social Sciences
TSC	Teachers Service Commission

ABSTRACT

Kilungu Sub-County faces significant challenges in the educational sector, particularly concerning students' performance in Mathematics. Despite efforts to improve educational outcomes, students continue to struggle with understanding and applying mathematical concepts, leading to subpar academic achievement. The purpose of this study was to establish the effect of principals' instructional supervisory practices on students' academic performance in Mathematics in public secondary schools in Kilungu Sub- County, Kenya. The research was guided by four objectives: to examine the effect of principals' supervision of professional records, principals' classroom visitation, principals' instructional leadership, and principals' provision of teacher professional development, on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. The research was guided by instructional leadership theory. A correlational research design was adopted. The study focused on 20 public secondary schools in Kilungu Sub-County, Makueni County, Kenya, with the target population comprising 20 principals, 66 Mathematics teachers, and 800 students. Stratified random sampling was employed to select six schools. A simple random sampling technique was used to select 21 Mathematics teachers and 249 Form Three students. Both interviews and questionnaires were used to gather data. Content analysis was used to analyze the qualitative data from the interviews. The study found that principals' instructional supervisory practices significantly influenced students' academic performance in Mathematics. Specifically, the supervision of professional records promoted accountability and instructional alignment, leading to better student outcomes. Classroom visitation encouraged learner engagement and provided teachers with useful feedback, though it was underutilized for professional development. Instructional leadership by principals contributed to improved lesson delivery and academic support, despite some inconsistencies in promoting collaborative teaching cultures. The provision of teacher professional development enhanced teaching effectiveness, though challenges such as limited funding and insufficient follow-up were noted. The study concluded that all four supervisory domains were positively associated with improved Mathematics performance. It recommended strengthening record supervision, institutionalizing structured classroom visitation, promoting collaborative instructional leadership, and prioritizing need-based teacher development. The research also advocated for strategic policy support to reduce principals' administrative burdens and enhance their focus on instructional leadership. These findings provide a practical framework for improving educational outcomes through targeted leadership interventions in public secondary schools.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In the realm of educational leadership, the role of school principals is pivotal in shaping the academic outcomes of students. This is particularly significant in the context of Mathematics education, where performance metrics often reflect broader educational challenges and successes. Research has consistently shown that effective instructional supervision by principals can lead to improved teaching practices and, consequently, better students' academic performance (Hallinger, Wang, & Chen, 2019). The focus on instructional leadership involves various supervisory practices, including monitoring professional records, classroom visitations, and supporting teacher professional development (TPD), all aimed at enhancing the quality of instruction and student learning outcomes.

Principals' supervision of professional records, such as lesson plans, assessment reports, and attendance records, plays a crucial role in ensuring that teaching and learning activities are aligned with educational standards and goals. This practice not only helps in maintaining accountability but also provides a framework for continuous improvement in teaching methodologies (Ubogu, 2024). When principals actively engage in the supervision of these records, they can identify areas where teachers need support, thereby fostering a culture of continuous professional growth and high academic standards.

Classroom visitation is another critical aspect of instructional supervision. Through regular classroom visits, principals can observe the teaching process, provide immediate feedback, and engage in reflective discussions with teachers about their

instructional strategies (Bush & Glover, 2019). This hands-on approach allows principals to directly influence the instructional quality and address any pedagogical issues promptly. The effect of classroom visitation on students' academic performance has been well- documented, with studies indicating that consistent and constructive feedback from principals can lead to significant improvements in teaching practices and student learning outcomes (Kraft, Marinell & Yee, 2016).

Monitoring teachers' instructional practices is essential for maintaining high educational standards. Principals who are actively involved in observing and evaluating classroom activities can ensure that teaching methods are effective and aligned with curricular goals (Chabalala & Naidoo, 2021). This supervisory practice involves not only evaluating teaching performance but also providing the necessary support and resources for teachers to enhance their instructional skills. Effective monitoring can identify gaps in instructional delivery and offer targeted interventions to address these issues, thereby improving overall students' academic performance in Mathematics.

Furthermore, the provision of TPD opportunities for teachers is a critical component of instructional leadership. Principals who prioritize TPD create an environment that encourages teachers to continuously update their knowledge and skills (Kilag & Sasan, 2023). This commitment to professional growth is particularly important in the field of Mathematics, where ongoing changes in curricula and pedagogical approaches require teachers to stay abreast of new developments. By supporting TPD, principals can enhance teachers' instructional capabilities, which in turn positively impacts students' academic achievement.

Globally, the importance of instructional leadership in improving educational outcomes has been widely recognized. Research in various countries has shown that principals who actively engage in instructional supervision, such as conducting classroom observations and providing feedback to teachers, tend to see improvements in student academic performance. For example, a study conducted in the United States by Grissom, Egalite, and Lindsay (2021) found that principals who are actively involved in instructional leadership activities, including regular classroom visits and giving feedback to teachers, tend to see higher student performance in standardized tests. Similarly, in Australia, Robinson and Gray (2019) emphasized the role of principals in fostering a collaborative school culture that supports continuous TPD and reflective practice among teachers.

In the African context, several studies have underscored the challenges and opportunities associated with instructional supervision in schools. In South Africa, for example, Naicker and Mestry (2019) examined the instructional leadership practices of school principals and their impact on students' academic achievement. They found that effective instructional supervision, particularly through regular classroom visits and teacher mentoring, was linked to improved students' academic performance in Mathematics. In Nigeria, Alimi, Ehinola, and Alabi (2021) explored the effect of principals' supervisory roles and academic achievement, highlighting the critical need for ongoing TPD and support for teachers to enhance instructional quality.

Kenya has also seen considerable focus on the role of school leadership in improving educational outcomes. The Ministry of Education (MOE) in Kenya has implemented various policies aimed at strengthening instructional supervision in schools. Recent studies have indicated that principals who engage in robust supervisory practices tend

to have students with better academic performance. For example, a study by Nyagosia, Waweru, and Njuguna (2020) found that principals' involvement in instructional supervision, such as monitoring lesson plans and conducting classroom observations, was positively correlated with students' performance in national examinations. This aligns with the broader national agenda of enhancing the quality of education through effective school leadership.

In Kilungu Sub-County, the need for effective instructional supervision is underscored by the persistent challenges in students' academic performance in Mathematics. Despite various educational reforms and interventions, the performance of students in this subject remains a concern (Ministry of Education, Kenya, 2019). Data from the Kenya Certificate of Secondary Education (KCSE) between 2019 and 2023 reveal that only 35% of students in Kilungu Sub-County achieved a grade of C+ or higher in Mathematics, compared to the national average of 50% (Ministry of Education, Kenya, 2023). This disparity underscores the critical need to evaluate the effectiveness of instructional supervision within the sub-county. Schools in the area often face obstacles such as insufficient resources, lack of adequate teacher training, and inconsistent implementation of supervisory practices. Additionally, there is notable variation in how principals execute their roles as instructional leaders, which may contribute to the differences in student performance. Factors such as socioeconomic conditions and resource distribution further complicate the educational landscape, affecting both supervision and academic outcomes in Kilungu Sub-County.

A recent study by Muthama and Mativo (2022) emphasized the importance of principals' instructional leadership in addressing these challenges. They found that schools where principals actively engaged in supervising instructional practices,

providing feedback, and supporting teacher development reported significant improvements in students' Mathematics performance. This study aimed to explore the effect of principals' instructional supervisory practices on students' academic performance in Mathematics, providing insights that could inform policy and practice in Kilungu Sub-County.

1.2 Statement of the Problem

Effective instructional supervision is crucial for improving the quality of education and enhancing student academic outcomes. Principals, as key instructional leaders, play a central role in overseeing instructional practices such as monitoring professional records, conducting classroom visitations, and providing teacher professional development (TPD). Research has consistently shown that these practices are positively associated with improved teaching methods and better academic performance, particularly in subjects like Mathematics (Grissom, Egalite, & Lindsay, 2021; Robinson & Gray, 2019). Despite these recognized benefits, there remains a significant gap in understanding how these specific supervisory practices impact students' academic performance in Mathematics at the secondary school level.

In Kenya, while previous studies have generally explored educational leadership, they have not specifically addressed the effect of principals' instructional supervision on Mathematics achievement. The gap in subject-specific research, particularly in the context of Mathematics, leaves a crucial area unexplored. Additionally, much of the existing literature has relied on quantitative methods, potentially overlooking the valuable experiences and insights of teachers and students regarding the effectiveness of instructional supervision practices.

Empirical studies on instructional supervision in Kenya, such as those by Nyagosia, Waweru, and Njuguna (2020), and in other regions like Nigeria (Alimi, Ehinola, and Alabi, 2021), have examined broader aspects of instructional leadership. However, these studies do not provide detailed insights into the role of principals' specific supervisory practices in improving student performance in Mathematics. This lack of focused research on Mathematics leaves a critical gap in the literature, particularly in how principals' actions directly influence student outcomes in this subject. By addressing these issues, this study aimed to fill the existing gaps in knowledge and practice. It sought to provide empirical evidence on the specific effect of principals' instructional supervisory practices on students' academic performance in Mathematics in Kilungu Sub- County, Makueni County.

1.3 Purpose of the Study

The purpose of this study was to establish the effect of principals' instructional supervisory practices on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.

1.4 Objectives of the Study

The study aimed to achieve the following research objectives:

i. To examine the effect of principals' supervision of professional records on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.
ii. To examine the effect of principals' classroom visitation on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.

iii. To establish the effect of principals' instructional leadership on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.

iv. To establish the effect of principals' provision of teacher professional development on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.

1.5 Research Hypotheses

The present study was guided by the following research hypotheses:

i. There is no significant effect of principals' supervision of professional records on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.

ii. There is no significant effect of principals' classroom visitation on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.

iii. There is no significant effect of principals' instructional leadership on students' academic performance in Mathematics in public secondary schools in Kilungu Sub- County, Kenya.

iv. There is no significant effect of principals' provision of teacher professional development on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.

1.6 Significance of the Study

By providing empirical evidence on how principals' supervisory practices affect mathematics performance, this study could inform educational policy decisions at both

the county and national levels. The insights gained from this research may guide the development of policies aimed at enhancing the effectiveness of instructional supervision. For instance, the Ministry of Education may use the findings to design targeted training programs for principals, focusing on the supervisory practices that have the most significant impact on students' academic outcomes.

The research provides school administrators with actionable strategies to enhance their leadership effectiveness by identifying the specific supervisory practices that contribute to improved students' academic performance in Mathematics. This might lead to a more supportive and conducive learning environment, ultimately benefiting both teachers and students.

The findings might highlight the importance of continuous teacher training and development, encouraging public secondary schools to invest more in professional growth opportunities for teachers. This might lead to better teaching practices, higher teacher morale, and improved student learning outcomes.

The research contributes to the broader academic discourse on instructional leadership and its impact on students' academic performance. The study's findings might serve as a reference for future research, helping to build a more comprehensive understanding of effective school leadership practices.

1.7 Delimitations of the Study

This study was delimited to examining the effect of principals' instructional supervisory practices on students' academic performance in Mathematics within public secondary schools in Kilungu Sub-County, Makueni County, Kenya. Specifically, the study examined four key aspects of principals' supervisory roles: supervision of professional

records, classroom visitation, instructional leadership, and provision of teacher professional development. The research was confined to public secondary schools located within Kilungu Sub-County, limiting the extent to which the findings could be extrapolated to schools in other regions or educational contexts. Additionally, the study is limited to the subject of Mathematics, given its critical role in educational achievement and the observed performance challenges within this area. Other subjects are not considered in this research. The study involved principals, mathematics teachers, and students within the selected public secondary schools, and the insights gathered from these groups was used to understand the impact of instructional supervisory practices on academic performance in Mathematics.

The research was conducted over a period of six months, encompassing data collection, analysis, and reporting, to allow for comprehensive data gathering while ensuring timely completion of the study. The study was further delimited to specific instructional supervisory practices, namely the supervision of professional records, classroom visitation, instructional leadership, and the provision of teacher professional development, with other aspects of school leadership and management beyond the scope of this research. Data was collected using questionnaires and interviews, designed to capture both quantitative and qualitative data relevant to the research objectives. By setting these delimitations, the study aimed to provide focused and relevant insights into the relationship between principals' instructional supervisory practices and students' academic performance in mathematics within the specific context of Kilungu Sub- County's public secondary schools.

1.8 Limitations of the Study

One of the primary limitations was that the data were collected exclusively from public secondary schools within Kilungu Sub-County, Kenya. As a result, the findings are specific to this geographical area and may not be applicable to other regions with differing socio-economic, cultural, or educational contexts. To mitigate this, the study exercised caution when generalizing the results to other counties or regions that may have distinct demographic profiles or educational systems. The research carefully framed its conclusions within the context of Kilungu Sub-County, acknowledging that factors specific to the area, such as local resources, teaching strategies, and student performance trends, might not reflect the conditions in other regions. By doing so, the study highlights the need for further research in different contexts to validate or contrast the findings and to explore the broader applicability of the results.

A second limitation related to potential response bias among the participants, particularly among the principals. As the principals' instructional supervisory practices were under examination, their responses were influenced by personal or professional biases, which affected the objectivity of the findings. Additionally, teachers, who are also a key part of the study, were reluctant to provide honest and candid responses due to concerns about possible repercussions from their principals. To mitigate these limitations, several steps were taken to uphold the integrity of the study and minimize bias. Measures to ensure confidentiality, anonymity, and ethical conduct were emphasized throughout the data collection process. Participants were assured of their rights to privacy and the protection of their responses. Additionally, a neutral and non-threatening approach was adopted in the administration of surveys and interviews to encourage honest and unbiased participation from all respondents.

1.9 Assumptions of Study

The study assumed that the instructional supervisory practices chosen have an effect on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County. Moreover, respondents would be willing to co-operate and comment honestly and truthfully on factors that influence students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County.

1.10 Theoretical Framework

Instructional leadership theory, originally championed by Leithwood and Hallinger (1993), posits that effective school leadership is central to improving teaching and learning processes, which in turn enhances students' academic outcomes. At the core of this theory is the role of school leaders, particularly principals, who are seen as instructional visionaries. Rather than acting solely as administrators, principals are expected to set high academic standards, establish clear instructional goals, and provide the necessary resources and support to achieve these objectives (Leithwood & Riehl, 2005). Instructional leadership involves active engagement in curriculum development, the supervision of instruction, the promotion of professional learning communities, and the use of data to make informed decisions that support teaching practices.

One of the fundamental principles of instructional leadership theory is that school leaders should not only oversee but actively shape instructional practices within their schools. This engagement includes setting clear academic goals, establishing expectations for teaching and learning, and ensuring that teachers have the resources and support they need to meet these expectations (Leithwood, Harris, & Hopkins, 2008). Principals who embrace this model of leadership are often referred to as "lead learners" because they engage in continuous learning and collaborate with teachers to

enhance professional development and instructional effectiveness (Robinson, Lloyd, & Rowe, 2008). These leaders model best practices, encourage reflection among their teaching staff, and provide ongoing feedback to support improved student outcomes.

However, there are significant critiques of instructional leadership theory. Critics argue that it oversimplifies the complexities of school leadership by placing too much responsibility on the principal, often overlooking the broader context in which schools operate, such as socio-economic disparities, community dynamics, and the role of other educational leaders (Gronn, 2003). Additionally, the theory has been criticized for assuming that the principal is the sole instructional leader, which may not be the case in many schools where leadership is distributed among various administrators. This narrow focus can undermine the contributions of other key figures in the school, such as heads of departments, who play an essential role in driving instructional improvements within specific subject areas (Spillane, Halverson, & Diamond, 2004). As such, the theory may not fully capture the collaborative nature of instructional leadership, which in reality is often a shared responsibility. In response to these critiques, recent literature has emphasized the concept of shared instructional leadership, which acknowledges that leadership is not the sole responsibility of the principal but is distributed across various levels of the school administration. This approach recognizes that leadership functions can be carried out by vice-principals, department heads, instructional coordinators, and even teacher leaders, each contributing their expertise to improve school-wide instructional practices. Shared leadership has become particularly relevant in secondary schools, where subject-specific leadership, such as the leadership provided by heads of departments, plays a crucial role in ensuring the effective delivery of the curriculum (Harris, 2008). In this

light, instructional leadership is not only about the principal's vision but also about creating a collaborative environment in which all educators contribute to improving student outcomes.

The instructional leadership theory remains highly relevant in the context of this study, providing a conceptual framework to understand the impact of principals' supervisory practices on students' academic performance in Mathematics. By focusing on key elements of instructional leadership, such as the supervision of instruction, curriculum development, and professional development, this study aimed to explore how principals' leadership practices influence the effectiveness of teaching and, ultimately, students' academic achievement in Mathematics within public secondary schools in Kilungu Sub- County, Kenya.

However, this study also expands the traditional focus of instructional leadership by considering the roles of other school leaders, such as heads of departments, who are often critical in supporting instructional practices within their specific subject areas. The leadership of heads of departments is essential for improving subject-specific outcomes, particularly in Mathematics, where specialized knowledge and expertise are crucial. Thus, the study incorporates a shared leadership model that acknowledges the contributions of other school leaders in promoting instructional excellence. By integrating this broader view of leadership, the research aimed to provide a more comprehensive understanding of how leadership practices contribute to students' academic success in Mathematics.

Moreover, the study addresses the critique of focusing solely on the principal as the central figure in instructional leadership. While principals certainly play a pivotal role

in setting the vision and direction for the school, the successful implementation of instructional practices often depends on the contributions of other leaders within the school, including department heads and teacher leaders. By considering both individual and collective leadership efforts, this study provides a more nuanced view of instructional leadership in schools.

In conclusion, instructional leadership theory provides a valuable lens through which to explore the relationship between school leadership practices and student outcomes. However, by broadening the framework to include shared leadership and the roles of other school leaders, this study aimed to offer a more comprehensive understanding of how leadership influences academic performance. By examining both the practices of principals and the contributions of other school leaders, the study sought to contribute to the existing body of knowledge on educational leadership and school improvement, specifically within the context of Mathematics education.

1.11 Conceptual Framework

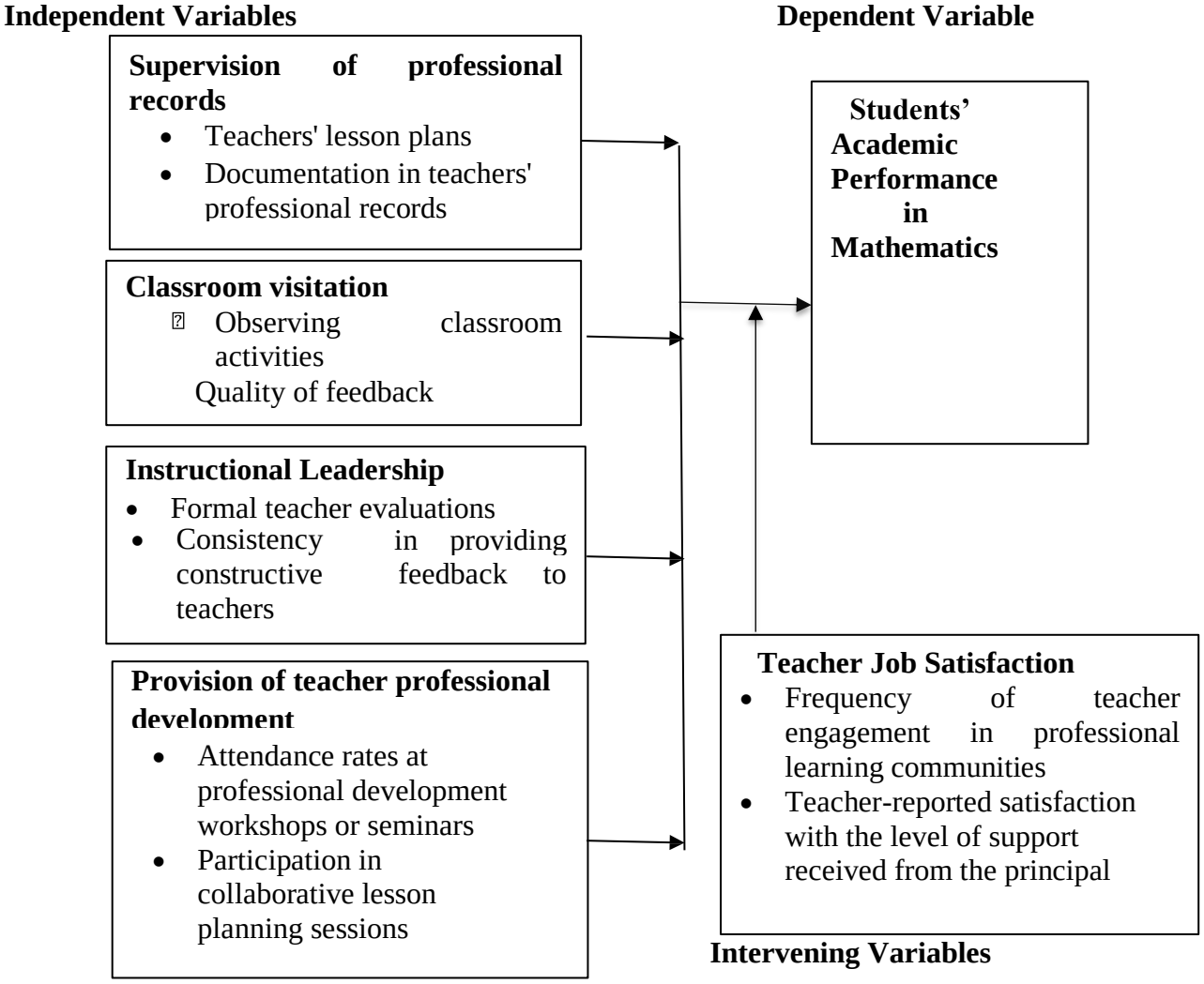

Figure 1.1: Conceptual Framework

Source: Researcher (2025)

Figure 1.1 presents the conceptual framework on the effect of principals' instructional supervisory practices on students' academic performance in Mathematics, considering the impact of supervision of professional records, classroom visitation, instructional leadership, and the provision of professional development for teachers. Principals' supervision of professional records ensures that teaching practices align with curriculum

standards, promoting adherence to best practices and improving instructional quality. Classroom visitations provide principals with direct insights into instructional methods, enabling them to offer immediate feedback and address challenges promptly, thus enhancing student understanding and performance. Regular instructional leadership helps maintain high teaching standards and accountability, fostering continuous professional growth and directly impacting students' academic performance. Supporting professional development enables teachers to stay current with educational practices, enhancing their instructional methods and student learning outcomes.

However, the effectiveness of these supervisory practices is influenced by intervening variables such as teacher job satisfaction. Teacher job satisfaction can significantly impact the effect of principals' supervisory practices on students' academic performance. When teachers are satisfied with their jobs, they are more likely to be motivated, engaged, and committed to their professional responsibilities. This satisfaction can enhance their responsiveness to supervisory practices, such as feedback from classroom visitations and participation in professional development. Conversely, if teachers are dissatisfied, they may be less receptive to supervision and professional growth opportunities, which can diminish the potential benefits of these practices on student performance. Additionally, job satisfaction can influence teacher retention rates, with satisfied teachers more likely to remain in their positions, providing continuity and stability that positively affect student learning outcomes.

1.12 Operational Definition of Terms

Academic Performance in Mathematics: Refers to students' achievement and proficiency in mathematical concepts, skills, and problem-solving abilities. This may be assessed through standardized tests, classroom assessments, and performance on mathematical tasks and assignments, reflecting students' understanding and mastery of mathematical content and skills.

Classroom Visitation: Refers to the practice of school leaders observing teaching and learning activities firsthand within classroom settings. This includes activities such as observing instructional delivery, student engagement, and classroom management practices, with the goal of providing feedback and support to enhance instructional effectiveness.

Instructional Leadership: Refers to the actions and behaviors of school leaders aimed at improving teaching and learning processes within educational institutions. This includes activities such as setting high academic standards, supervising instruction, promoting professional development, and fostering a collaborative learning environment.

Instructional Supervision: Involves the ongoing assessment and evaluation of teachers' instructional practices and performance. This includes activities such as classroom observations, curriculum alignment checks, and performance evaluations, aimed at identifying areas for improvement and providing targeted support to enhance teaching quality.

Instructional Supervisory Practices: Encompass the specific actions and strategies employed by school leaders to support and enhance instructional effectiveness within their schools. These practices include the supervision of professional records, classroom visitation, instructional leadership, and the provision of professional development, all aimed at improving teaching quality and students' academic outcomes.

Professional Records: Involves the oversight and review of teachers' instructional materials and documentation, such as lesson plans, schemes of work, record of work, assessment data, and student progress reports. This process ensures alignment between instructional planning and educational objectives while providing support and feedback to teachers.

Teacher Job Satisfaction: Refers to educators' subjective perceptions and feelings about their work experiences within the school environment. This includes factors such as satisfaction with workload, professional development opportunities, support from school leadership, and perceived autonomy and decision-making authority, which contribute to overall job satisfaction and morale among teachers.

Teacher Professional Development: Refers to the facilitation and support of ongoing learning opportunities for educators. This includes activities such as organizing workshops, seminars, and collaborative learning communities, as well as providing resources and support to enhance instructional practices and professional growth.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews literature related to factors that influence students' academic performance in Mathematics in public secondary schools. It is concerned with the review of related literature on the influence of principals' supervisory roles: supervision of professional records, classroom visitation, instructional leadership, and provision of teacher professional development on students' academic performance in Mathematics.

2.2 Effect of Principals' Supervision of Professional Records on Students' Academic Performance in Mathematics

Understanding the factors that contribute to students' academic performance is crucial for educational improvement. One key area of focus is the role of principals' instructional supervisory practices, which encompass various activities aimed at enhancing teaching quality and student learning outcomes. This section reviews existing literature on the effect of principals' supervision of professional records on students' academic performance in Mathematics, highlighting how effective supervision practices can drive educational success.

Furthermore, a study by Fuller and Hollingworth (2019) highlights the importance of principals' use of data from professional records in making informed decisions regarding instruction and interventions. When school principals actively monitor and analyze student performance data alongside teachers' records, they can identify patterns in student achievement, pinpoint instructional weaknesses, and implement timely corrective actions. In Mathematics, this data-driven supervision is particularly beneficial in tracking student progress and ensuring that instruction remains focused on

helping students develop strong problem-solving skills.

The supervision of professional records by principals is a critical component of instructional leadership, significantly impacting the academic performance of students, particularly in Mathematics. Professional records, which include lesson plans, assessment reports, attendance records, and teachers' professional development logs, provide a structured framework for monitoring and enhancing the quality of instruction. Effective supervision of these records ensures that teaching practices are aligned with curriculum standards and educational objectives, thereby fostering an environment conducive to student learning and achievement. Robinson, Lloyd, and Rowe (2020) assert that principals who actively supervise professional records create a structured environment that promotes teacher accountability and continuous improvement in instruction. Their findings suggest that schools with strong supervision practices tend to demonstrate higher academic performance, particularly in subjects like Mathematics, where instructional planning is essential.

Recent studies have highlighted the importance of principals' engagement with professional records as a means of promoting accountability and continuous improvement among teachers. According to Leithwood, Harris, and Hopkins (2020), principals who rigorously supervise professional records are better equipped to identify areas where teachers may require additional support or professional development. This proactive approach not only enhances the instructional capabilities of teachers but also positively influences students' academic outcomes. In the context of Mathematics education, where precision and clarity in instruction are paramount, the regular review of lesson plans and assessment records can help ensure that teaching methods are effective and that students are meeting learning objectives.

Furthermore, the supervision of professional records allows principals to maintain a clear and accurate understanding of the academic progress and challenges faced by students. By closely monitoring assessment reports and students' academic performance data, principals can identify trends and patterns that may indicate underlying issues in the instructional process. For instance, a consistent decline in Mathematics scores across multiple classes could signal a need for targeted interventions, such as additional training for teachers or the adoption of new teaching strategies (Hallinger, Wang, & Chen, 2019). This data-driven approach to supervision enables principals to make informed decisions that directly contribute to the improvement of students' academic performance in Mathematics.

The role of supervision extends beyond ensuring adherence to teaching standards; it also fosters a culture of collaboration. Teachers who receive consistent feedback on their professional records are more likely to engage in collaborative discussions about their instructional methods. Harris and Jones (2020) found that schools where principals promoted collaborative review of professional records among teachers showed significant improvements in academic outcomes. This collaborative approach helps in refining teaching strategies and encourages teachers to adopt innovative methods that cater to the diverse needs of students.

A study by Sun and Leithwood (2020) examined how principals who foster a culture of collaboration and shared responsibility influence teacher effectiveness and student academic achievement. The research found that schools where principals promote collaborative leadership practices tend to see higher levels of teacher effectiveness, which in turn positively impacts student outcomes. The study highlighted that when teachers work together and share responsibility for school improvement, they are more

likely to engage in reflective practice and adopt innovative instructional strategies, contributing to better academic results. When teachers are actively involved in the review and analysis of their professional records, they are more likely to engage in reflective practice and adopt innovative teaching methods. This collaborative supervision model not only enhances the professional growth of teachers but also creates a more cohesive and supportive learning environment for students.

Additionally, the supervision of professional records contributes to the creation of a transparent and organized learning environment. Kythreotis, Pashiardis, and Kyriakides (2019) found that principals who regularly engage with the professional records of teachers ensure that lesson plans, assessments, and student progress reports are aligned with school objectives. This approach not only improves the quality of instruction but also provides a clearer understanding of student progress, allowing for timely interventions when necessary. The researchers also noted that such a structured environment helps students stay on track with their learning, particularly in challenging subjects like Mathematics.

In addition, the regular supervision of professional records by principals contributes to the development of a robust accountability system within schools. By ensuring that teachers maintain accurate and up-to-date records, principals can hold educators accountable for their instructional practices and students' academic outcomes. This accountability framework is essential for maintaining high standards of teaching and learning, particularly in Mathematics, where students' conceptual understanding and problem-solving skills are continuously assessed. Research by Sebastian and Allensworth (2019) underscores the importance of accountability in driving educational improvement, noting that schools with strong accountability systems tend to achieve

better academic results.

Moreover, the effect of supervision on teachers' professional development is also crucial. When principals routinely review and provide feedback on professional records, it facilitates targeted teacher development. This dynamic is particularly important in Mathematics education, where specific instructional weaknesses can be addressed through professional growth opportunities. Spillane and Healey (2019) argue that when principals focus on record supervision, they are better equipped to offer professional development that is tailored to the needs of teachers, resulting in improved teaching practices and better student outcomes.

For example, O'Sullivan (2021) found that regular audits of lesson plans and assessment records help identify gaps in curriculum delivery, allowing for timely interventions. Similarly, a study by Blase and Blase (2020) demonstrated that when principals provide consistent feedback based on the review of professional records, teachers are more likely to implement changes that enhance their instructional practices. This continuous feedback loop is vital for fostering an environment of ongoing professional development and instructional excellence.

Marzano, Waters, and McNulty (2019) emphasize that using technology to track and review professional records enhances the effectiveness of supervision. Their study shows that digital tools allow principals to access real-time instructional data, enabling them to provide timely and targeted support to teachers, which contributes to better student outcomes in subjects like Mathematics.

Moreover, the role of technology in the supervision of professional records cannot be overlooked. The integration of digital tools for tracking and reviewing professional

records has been shown to enhance the efficiency and effectiveness of supervisory practices. According to Marzano, Waters, and McNulty (2019), the use of data management systems allows principals to access real-time information on instructional practices, facilitating more informed decision-making and targeted support for teachers. This technological approach to supervision ensures that principals can maintain a comprehensive overview of instructional quality and student progress, ultimately leading to improved academic outcomes in Mathematics.

2.3 Effect of Principals' Classroom Visitation on Students' Academic Performance in Mathematics

Principals play a pivotal role in ensuring instructional quality through their supervisory practices, one of which is classroom visitation. This practice involves principals visiting classrooms regularly to observe teaching methods, student engagement, and overall instructional quality. The purpose of classroom visitation is to provide immediate feedback and support to teachers, improving teaching practices and ultimately enhancing students' academic performance, particularly in Mathematics.

Classroom visitation is integral to instructional supervision and has a substantial impact on student outcomes. When principals engage in regular classroom observations, they gather first-hand information about how lessons are delivered, how students are engaging, and whether the curriculum is being effectively implemented. Effective classroom visitation provides principals with the opportunity to give teachers constructive feedback on their instructional methods, helping them refine their teaching strategies to better meet students' needs. As noted by Blase and Blase (2020), this process is crucial for fostering a culture of continuous instructional improvement, where both teachers and students benefit from higher standards of teaching.

Research suggests that classroom visitation leads to better alignment between teaching practices and curriculum goals, especially in subjects like Mathematics where precision and structured learning are key to success. In a study by Kraft, Marinell, and Yee (2016), it was found that principals who frequently conduct classroom observations are better able to identify areas where teachers struggle, such as explaining complex mathematical concepts. This enables principals to provide targeted professional development or mentoring opportunities to help teachers overcome these challenges. The result is an improvement in the quality of instruction, which directly impacts students' understanding and performance in Mathematics.

Bush and Glover (2019) echoed these findings, noting that consistent classroom visitation by principals creates a more coherent instructional environment across schools. This is especially important in Mathematics, where sequential learning and mastery of concepts are critical for student success. Through regular observations, principals can ensure that the curriculum is being taught effectively and that all students are progressing as expected. Feedback from these observations enables teachers to refine their instructional approaches, ensuring that students are building a strong foundation of knowledge and skills in Mathematics.

One of the most significant effects of classroom visitation on student performance is the quality of feedback provided to teachers. According to Robinson, Lloyd, and Rowe (2008), feedback that is specific, timely, and focused on instructional improvement is crucial for teacher development. When principals provide constructive, detailed feedback based on their classroom observations, it encourages teachers to reflect on their practices and make necessary adjustments to improve student outcomes. This reflective practice is essential for Mathematics instruction, where small changes in

teaching techniques can have a significant impact on students' ability to grasp challenging concepts (Wiliam, 2018).

Additionally, a study by Gurr, Drysdale, and Mulford (2020) demonstrated that principals who focus on providing actionable feedback after classroom visits foster a growth- oriented culture among teachers. This approach motivates teachers to continually improve their instructional strategies, ultimately benefiting students. For Mathematics teachers, this type of feedback can lead to the adoption of innovative teaching methods, such as the use of visual aids or interactive problem-solving exercises, which are particularly effective in helping students understand complex mathematical ideas.

Classroom visitation also provides an opportunity for principals to identify exemplary teaching practices that can be shared with the broader teaching staff. By recognizing and promoting effective instructional strategies observed during classroom visits, principals can create a culture of collaboration and professional learning within the school. As noted by Sebastian, Allensworth, and Huang (2020), schools where principals regularly observe classrooms and share best practices among teachers tend to exhibit higher levels of student achievement, particularly in Mathematics. This is because teachers are encouraged to learn from one another and implement proven teaching methods that enhance student learning outcomes.

In addition to promoting collaboration among teachers, classroom visitation by principals can contribute to the development of professional learning communities within the school. These communities, which encourage teachers to engage in collective problem- solving and share instructional strategies, are particularly beneficial in

Mathematics education, where innovative teaching approaches are needed to address diverse student learning needs (Jones & Harris, 2020). Principals who actively support and facilitate these communities help create a supportive environment where teachers feel empowered to continuously improve their instructional practices.

While classroom visitation has been shown to improve instructional quality, its effectiveness depends on how it is conducted. Teachers are more likely to embrace feedback and make changes to their teaching practices when they view classroom visits as opportunities for growth rather than as evaluative measures. Gawlik (2018) highlighted the importance of building trust between principals and teachers, noting that when classroom visits are seen as punitive, teachers may become defensive and resist feedback. Conversely, when visits are conducted in a supportive and non-evaluative manner, teachers are more open to suggestions and more likely to implement changes that improve student outcomes.

The use of technology in classroom visitation has further enhanced the effectiveness of this supervisory practice. According to Brown, Benson, and Stein (2021), the integration of digital tools for recording and analyzing classroom observations allows principals to provide more detailed and actionable feedback. These tools enable principals to track instructional practices over time, helping them identify patterns and trends that may not be immediately apparent during a single observation. This continuous monitoring of instructional practices ensures that principals can offer ongoing support to teachers, ultimately leading to sustained improvements in student performance in Mathematics. Through digital platforms, principals can record exemplary teaching methods observed during classroom visits and share them with other teachers, promoting a culture of continuous improvement. As noted by Coelli and

Green (2019), schools where principals regularly utilize technology to enhance classroom observations tend to see higher levels of student engagement and achievement in Mathematics.

In addition to regular classroom visitations, principals should adopt a more holistic approach to instructional supervision. Hallinger and Heck (2017) argue that classroom observations should be combined with other leadership practices, such as instructional coaching, data-driven decision-making, and professional development initiatives. When principals integrate these activities into their overall instructional leadership strategy, they create an environment where both teachers and students can thrive. This holistic approach ensures that classroom visits are not isolated events but part of a broader effort to improve teaching and learning outcomes in Mathematics.

Moreover, regular follow-up and continued support after classroom visitations are essential for ensuring that the feedback provided during observations translates into lasting improvements. Shatzer, Caldarella, and Hallam (2014) found that principals who provide ongoing support through mentoring and coaching after classroom visits are more likely to see sustained improvements in instructional quality and student performance. This is particularly important in Mathematics, where continuous development and refinement of teaching practices are necessary for student success.

2.4 Effect of Principals' Instructional Leadership on Students' Academic Performance in Mathematics

Effective instructional supervision, particularly through consistent monitoring practices, plays a significant role in shaping teachers' instructional methods and, consequently, students' academic performance. Principals' instructional leadership is a

fundamental aspect of instructional leadership that directly influences how teaching practices align with curricular goals and educational standards. This section explores the existing literature on the effect of principals' instructional leadership on students' academic performance in Mathematics, with an emphasis on how these practices contribute to educational success.

Monitoring involves principals regularly overseeing and evaluating teachers' instructional practices, providing constructive feedback, and ensuring that teaching methods align with educational objectives. Effective monitoring is proactive, aiming to identify instructional strengths and weaknesses early on, which fosters professional growth among teachers and enhances students' academic performance. In Mathematics, where precision, problem- solving, and conceptual understanding are critical, continuous monitoring by principals can lead to targeted interventions that significantly boost student outcomes.

Recent studies underscore the importance of principals' active involvement in monitoring to improve educational outcomes. Grissom, Egalite, and Lindsay (2021) found that principals who consistently monitor classroom instruction can better support teachers in refining their teaching strategies. This monitoring provides valuable insights into classroom dynamics and identifies areas where teachers may struggle, enabling principals to offer targeted support such as personalized feedback, professional development opportunities, or peer coaching. These strategies are particularly important in Mathematics, where teachers need ongoing guidance to adopt new techniques that enhance students' problem-solving skills and understanding of complex concepts.

The effect of principals' monitoring on students' academic achievement is closely tied to the quality of feedback provided to teachers. Darling-Hammond, Hyler, and Gardner (2020) noted that feedback is most effective when it is specific, actionable, and focused on instructional improvement. When principals engage in thorough classroom observations and provide teachers with detailed feedback, they create a culture of continuous improvement. Teachers can use this feedback to make informed adjustments to their instructional methods, thereby fostering a dynamic and responsive learning environment where students thrive. In the context of Mathematics education, this process is crucial because small, iterative improvements in teaching practices can lead to significant gains in student performance.

Moreover, Sebastian, Huang, and Allensworth (2019) emphasize that effective monitoring fosters a culture of accountability and continuous improvement. Principals who regularly assess both teachers' instructional practices and students' academic outcomes can hold educators accountable for their performance, which encourages consistency and high standards in the classroom. In Mathematics, where students' progress depends on clear, structured instruction, this accountability framework ensures that teaching practices remain aligned with curricular goals and that students are consistently receiving the instruction they need to succeed.

Principals' monitoring practices not only provide individual feedback but also contribute to the development of collaborative teaching environments. Research by Leithwood, Harris, and Hopkins (2020) suggests that collaborative environments—where teachers regularly share best practices and engage in peer observations—are associated with higher academic achievement among students. In Mathematics, fostering collaboration among teachers allows for the exchange of innovative teaching

approaches and problem- solving techniques, which can significantly enhance instructional quality. When principals facilitate these collaborative spaces, they create an environment where teachers benefit from collective expertise, which directly impacts student outcomes.

Bryk, Sebring, and Allensworth (2021) highlighted that effective monitoring systems combined with data-driven decision-making significantly enhance student achievement in Mathematics. Principals who actively use data from classroom observations to inform instructional practices can identify patterns and trends that require intervention. This data-driven approach ensures that monitoring is not limited to a single classroom visit but is part of a broader strategy to support continuous teacher improvement and student success. By focusing on the use of data, principals are better able to provide teachers with the resources and guidance necessary to address specific student learning challenges, particularly in Mathematics, where individualized attention and tailored instructional methods can yield substantial improvements in academic performance.

The effectiveness of principals' monitoring practices also depends on their instructional leadership skills and the overall school climate. Louis, Murphy, and Smylie (2019) found that principals who possess strong instructional leadership skills are more effective in supporting and monitoring teachers. These principals are adept at providing clear, constructive feedback, fostering a collaborative school environment, and leveraging data to inform instructional decisions. In schools where principals demonstrate effective leadership, teachers are more likely to feel supported and motivated to improve their instructional practices, which leads to better student outcomes.

Additionally, the school climate plays a critical role in determining the success of monitoring practices. A supportive and collaborative school environment enables principals to conduct regular and comprehensive monitoring without resistance from teachers. In resource-constrained settings, however, principals may face challenges such as limited time, staff shortages, and insufficient resources, which can hinder their ability to monitor teachers effectively (Leithwood et al., 2020). Addressing these challenges requires a concerted effort to build principals' capacity for instructional leadership and to provide the necessary resources for effective monitoring. Principals need adequate support and professional development to refine their monitoring skills and implement strategies that enhance both teaching and learning.

Fullan and Quinn (2020) argue that consistent monitoring, coupled with constructive feedback, leads to sustained improvement in instructional practices and student outcomes. The authors highlight the importance of regular follow-up after classroom observations to ensure that the feedback provided to teachers translates into lasting instructional changes. This is particularly important in Mathematics, where continuous development of teaching practices is necessary to address the evolving needs of students. Principals who engage in ongoing monitoring and support foster a learning environment where both teachers and students are continuously improving.

Furthermore, the integration of data-driven decision-making into monitoring practices enhances the effectiveness of instructional supervision. Principals who use data from classroom observations, assessments, and student performance metrics are better positioned to offer targeted interventions and support for teachers. This approach ensures that monitoring is not simply an evaluative process but a collaborative effort to identify instructional gaps and improve student learning outcomes. Bryk, Sebring, and

Allensworth (2021) emphasized that schools with robust monitoring systems that incorporate data-driven practices tend to achieve better academic results, particularly in Mathematics, where students' progress is closely linked to the quality of instruction.

2.5 Effect of Principals' Provision of Teacher Professional Development on Students' Academic Performance in Mathematics

Teacher professional development (TPD) is a cornerstone of educational improvement, especially in enhancing instructional practices and boosting student outcomes. Principals play a pivotal role in facilitating and supporting professional development initiatives, which are crucial for equipping teachers with the skills and knowledge necessary to meet diverse student needs. The provision of professional development for teachers by principals is a critical element of instructional leadership that can significantly influence students' academic performance, particularly in Mathematics. Effective professional development encompasses activities aimed at enhancing teachers' content knowledge, instructional skills, and pedagogical strategies. In the context of Mathematics, where instructional rigor and clarity are vital, TPD is essential for ensuring teachers remain current with best practices and are equipped to address students' diverse learning needs.

Recent research highlights the crucial role of principals in fostering and supporting teacher professional development. According to Darling-Hammond, Hyler, and Gardner (2020), principals who prioritize professional development create an environment that promotes continuous learning and improvement. This commitment to professional growth is particularly important in Mathematics, where curricular changes and evolving pedagogical approaches require teachers to stay up-to-date with new developments. Principals who actively engage in and support professional development

initiatives help ensure that teachers can deliver high-quality instruction, which in turn positively impacts student achievement.

Desimone and Garet (2015) underscore that effective professional development is characterized by relevance, duration, and the potential for collaboration. Programs that are directly aligned with teachers' instructional needs and that extend over time are more likely to lead to meaningful changes in teaching practices. For Mathematics teachers, professional development that emphasizes content-specific pedagogy, innovative instructional strategies, and data-driven decision-making can result in substantial improvements in student learning outcomes. Principals play a critical role in identifying and facilitating access to such targeted TPD opportunities, ensuring that these initiatives meet the specific needs of Mathematics educators and students.

The collaborative aspect of professional development is also crucial for its success. Research by Sun, Penuel, and Frank (2020) indicates that TPD programs that foster teacher collaboration contribute to a culture of shared learning and collective responsibility. Principals who promote professional learning communities, where teachers can engage in peer coaching and the exchange of best practices, help create an environment that encourages ongoing professional growth. Such collaboration is especially beneficial in Mathematics, where teachers can share strategies for explaining difficult concepts, integrating technology, and developing problem-solving skills.

Collaborative learning environments fostered by principals help teachers tackle instructional challenges more effectively, thereby enhancing both teacher quality and student achievement. Teachers in these communities are more likely to reflect on their practices, experiment with new teaching methods, and collectively problem-solve. For

instance, Mathematics teachers who collaborate within TPD sessions can collectively explore methods to simplify complex mathematical reasoning, improving students' comprehension and performance (Killion, 2020). By encouraging these collaborative spaces, principals ensure that teachers continually enhance their instructional methods, which directly benefits students' academic performance.

Principals' active involvement in professional development is crucial for aligning TPD efforts with broader school improvement goals. Kraft and Blazar (2018) found that when principals are directly involved in planning and implementing professional development initiatives, these activities are better aligned with the school's instructional priorities. In Mathematics, this might include professional development focused on improving problem-solving skills, fostering mathematical reasoning, and integrating technology into the classroom to enhance student engagement and understanding.

Moreover, principals who work closely with teachers to tailor TPD initiatives to specific instructional challenges ensure that professional development is not a generic exercise but a targeted effort aimed at addressing critical gaps in teaching. In Mathematics, this could mean focusing on developing instructional strategies for abstract concepts like algebra or calculus, which are often stumbling blocks for students. When professional development aligns with the school's vision for instructional improvement, it creates a cohesive effort toward better teaching practices and improved academic outcomes (Knight, 2018).

The role of principals in creating a supportive environment that encourages teacher participation in professional development cannot be overstated. Sebastian, Allensworth, and Huang (2019) note that schools where principals actively support and

encourage professional development tend to see higher levels of teacher engagement and participation. Principals can support professional development in various ways, such as providing time during the school day for training sessions, offering financial support for external training opportunities, and recognizing and rewarding teachers' efforts to improve their instructional practices.

When teachers feel supported and valued by their principals, they are more likely to engage in professional development activities and apply new strategies in their classrooms. In Mathematics, where continuous learning is essential to keep up with new teaching techniques and curricular shifts, the principal's support can significantly influence a teacher’s willingness to engage in TPD. Guskey and Yoon (2020) argue that professional development that is ongoing, intensive, and directly connected to classroom practice is more likely to lead to improved teaching and learning outcomes. By fostering a culture of professional growth, principals ensure that teachers feel empowered to explore new methods, which ultimately benefits student learning.

Sustained professional development has a lasting impact on both teacher effectiveness and student outcomes. Guskey and Yoon (2020) emphasize that professional development must be ongoing and linked to practical classroom applications to achieve lasting improvements. Principals play a critical role in ensuring that TPD initiatives are not isolated events but are part of a broader strategy for long-term instructional improvement. By integrating professional development into a continuous cycle of learning and reflection, principals create an environment where teachers can regularly update their skills and adapt to new challenges in Mathematics education.

A study by Knight (2018) found that TPD programs incorporating instructional coaching are particularly effective in helping teachers implement new strategies and improve student outcomes. Instructional coaching provides teachers with individualized support, enabling them to refine their instructional practices through real-time feedback and reflection. In Mathematics, this personalized approach can help teachers address specific instructional challenges, such as improving student engagement in problem-solving activities or enhancing conceptual understanding of complex topics.

The integration of technology into professional development has further enhanced its effectiveness. Technology-based TPD platforms provide teachers with access to a wealth of resources, including instructional videos, webinars, and online forums where they can engage with experts and peers. According to Brown, Benson, and Stein (2021), digital tools for professional development offer flexibility and access to high-quality content that is often unavailable through traditional in-person training. For Mathematics teachers, technology can provide real-time insights into teaching practices, such as the use of digital simulations or interactive software to teach mathematical concepts.

Principals who encourage the use of technology in TPD not only enhance teachers' instructional capacity but also promote the integration of digital tools in the classroom, which is increasingly important in today's technology-driven educational environment. This dual approach to professional development helps teachers become more adept at using technology to support student learning, ultimately leading to better outcomes in Mathematics.

2.6 Empirical Review

Imamah and Churrahman (2022) aimed to analyze the effect of academic supervision by principals on teacher performance. A systematic literature review was conducted, and data were collected by documenting and reviewing articles related to academic supervision and published between 2015 and 2021. In total, 25 articles from national and international journals were obtained from Google Scholar, DOAJ, and lens.org. It was found that academic supervision by school principals not only improved teacher performance but also encouraged their development and individual approaches and provided them with the required training and motivation.

Bambi, Daniel and Barkindo (2021) investigated principals' instructional supervision of teachers' instructional strategies and assessment methods correlate of students' academic performance in Business Studies in junior secondary schools in Taraba State. The study adopted correlational survey research design using a questionnaire to collect its data. The population of this study consisted of 97 Business Studies teachers. As a result of the relative small size of the population (97), census sampling technique was adopted that allowed all the population to be used. A self-developed questionnaire titled "Principal's Instructional Supervision of Business Studies Teachers' Questionnaire (PISBSTQ)" was used for data collection. The instrument was validated by 3 experts from the department of Physical Sciences Education of Modibbo Adama University, Yola and trial tested using Cronbach Alpha to get a reliability co-efficient of 0.76. The data obtained were analysed using mean and standard deviation to answer the research questions; while Pearson's Product Moment Correlation (PPMC) was used to test the hypotheses at 0.05 level of significance. The results of the study revealed that; there is a significant high positive relationship between principal's supervision of teachers'

instructional strategies and students' academic performance in business studies in junior secondary schools in Taraba state (r = 0.977, p < 0.05); and also that there was a significant high positive relationship between principal's supervision of business studies teachers' assessment method and students' academic performance in junior secondary schools in Taraba State (r = 0.980, p < 0.05). The study concluded that principal's instructional supervision of teachers' instructional strategies and assessment method correlates of students' academic performance in Business Studies.

Salaganda, Mwamakula and Rupia (2024) aimed to assess the contribution of heads of schools' classroom visitation practices on teachers' job performance in public secondary schools in Mbogwe district council, Geita – Tanzania. The study was guided by Reflective Practice Theory established by Donald Schön (1983). The researcher employed a mixed-methods approach using a convergent parallel design. The target population of the research was 383 and a sample size of 104 participants, encompassing 92 teachers, 6 heads of schools, 4 ward educational officers, 1 district education officer, and 1 district quality assurance. The collected data was cleaned, processed, and analyzed using SPSS 24. Quantitative data was analyzed using percentages and displayed in frequency tables. Qualitative data was labelled, appropriately coded, and transcribed under specified themes. The findings of the study revealed that the head of schools regularly carried out classroom visitation and ensured teachers' job performance.

Yosief, Okemasisi and Paulos (2022) established how head-teachers' classroom visitation influences students' performance in public junior schools in Keren Sub-zone. The study was guided by systems theory and employed mixed-method approaches with a concurrent triangulation design. The study targeted public junior schools in Keren

Sub-zone Anseba Region. Systematic sampling, simple random sampling and purposeful sampling were used to select 44 teachers, 326 students, five head-teachers, and two Educational Officers of the Keren Sub-zone. A total of 377 respondents took part in the study. Questionnaires were used to collect data from teachers and students, whereas interview was conducted to get information from head-teachers and Educational Officers. The quantitative data was analysed descriptively with the help of SPSS Version 21 and reported in frequency tables and percentages. The qualitative data was organized into themes based on the research questions and reported in a narrative form and direct quotations. The study established that in the high-performing schools, head-teachers practiced the classroom visitation activities better than those in poorly performing schools thus the reason for low performance in some public junior schools in Keren Sub-zone.

Muthoni, Gitumu and Mwaruvie (2020) assessed the relationship between headteachers' supervision of professional documents and academic performance in primary schools in Embu and Murang'a counties. A descriptive survey research design was used. The target population was 14,786 respondents; simple random sampling was used to select 256 of these. Data were collected using questionnaires, interviews and an observation checklist. To ascertain reliability, the instrument was piloted, and Cronbach's alpha coefficient was calculated as 0.93. The data were analysed using descriptive statistics involving frequencies, percentages, means and standard deviations and inferential statistics, precisely, correlation. The results show that the development of professional documents was common in primary schools and that the best documents supervised by headteachers were schemes of work. The null hypothesis tested was not rejected based on the correlation of $r=-.044<0.05$ and $P=0.732>0.05$ between

headteachers' supervision of professional documents and academic performance.

Didion, Toste and Filderman (2020) examined the impact of teacher professional development on reading outcomes for students in kindergarten through 8th grade. A secondary aim was to determine whether study, program, or participant characteristics were potential moderators of these effects. A comprehensive search of published and unpublished research between 1975 and 2017 resulted in 28 studies that met prescribed criteria. Results indicate that TPD has a moderate and significant, positive average effect on reading achievement. However, moderator analyses did not explain the variance in the effects of TPD on student outcomes. Primarily, studies represented typically-developing students in the elementary grades, with only three studies including middle school students and four studies including reading outcomes of students with or at-risk for reading disabilities.

Rowe (2020) examined the relationship between the number of mandated PDWs attended over 3 academic school years and 10th grade student reading achievement levels as measured by the District of Columbia Comprehensive Assessment System (DC CAS) as well as whether the increased number of mandated PDWs predicts reading levels on the DC CAS. Guskey's model of teacher change was the theoretical framework. Archived DC CAS reading achievement level data from 370 10th grade students were retrieved for an ordinal logistic regression and Spearman rho correlational analyses. Spearman rho analysis initially revealed a significant positive relationship between mandated PDWs and DC CAS reading scores across 3 consecutive academic school years (r = .897, r = .816, and r =.503). Because reading achievement data were nonparametric/ordinal in nature, a more conservative technique was conducted that revealed a nearly zero rho coefficient of r = -.020. Regression

analyses revealed no significant predictive relationship between the number of mandated PDWs attended and DC CAS reading levels. The findings may contribute to social change by showing district administrators that changing teachers' ability to teach reading more effectively to students is much more multifaceted and complex in nature than just mandating the attendance of PDWs.

Ngui, Mulwa and Mwanza (2023) sought to investigate the influence of primary school head teachers' supervision practice of checking of professional records on academic performance in public primary Kenya. The study objectives sough to establish the influence of head teachers' practice of checking of lesson plans and the records of work covered on students' academic performance in public primary schools in kangundo sub county, Kenya. The study used psychological theory of supervision. The study employed descriptive survey research design. The target population comprised of 32 schools which consists of all the 32 headteachers and all the 338 primary school teachers in Kangundo Sub County. Census was used to select 29 schools. A sample of 102 teachers was derived using simple random sampling techniques. Data collection was done by use of questionnaires. Descriptive statistics were used to analyze quantitative data which was presented by use of frequency distribution tables. The study findings revealed from the headteachers 33.3% and majority of the teachers 59.2% that the headteachers never checked the lesson plans. About 44.4% of the headteachers and 53.1% teachers indicated that the headteachers never checked the records of work covered. The study concluded that lack of head teachers' practice of checking of professional documents affected academic performance.

2.7 Research Gaps

While a considerable body of literature has examined the effect of principals' instructional supervisory practices on academic performance, several gaps remain that underscore the need for the current study. Firstly, most of the existing studies are situated in contexts outside of Kenya, such as Nigeria, Tanzania, and Indonesia, which may not be directly applicable to the unique educational settings in Kilungu Sub-County, Kenya. For instance, Imamah and Churrahman (2022) focused on academic supervision in various regions but did not investigate how such practices impact Mathematics performance specifically, nor did it consider the dynamics of secondary education in rural Kenya. Similarly, studies like Yosief, Okemasisi, and Paulos (2022) on head-teachers' classroom visitation in Eritrea and Bambi, Daniel, and Barkindo (2021) on instructional supervision in Business Studies in Nigeria do not provide insights into how principals' instructional leadership practices influence Mathematics achievement in the Kenyan context.

Conceptually, much of the existing literature emphasizes certain aspects of instructional leadership, such as classroom visitation and teacher professional development. However, many studies do not provide a comprehensive view of how these practices integrate into broader instructional leadership frameworks that include supervision of professional records and curriculum development. For example, while Salaganda, Mwamakula, and Rupia (2024) focused on classroom visitation and Yosief, Okemasisi, and Paulos (2022) examined its relationship to student performance, they did not examine how principals' instructional leadership as a holistic approach impacts Mathematics teaching or the relationship between these practices and students' academic outcomes. This leaves a conceptual gap in understanding the specific roles

that principals play in improving Mathematics performance through their supervisory practices.

Methodologically, while many studies employ quantitative research designs to assess the relationship between instructional leadership and academic performance, few integrate qualitative data that provides deeper insights into the lived experiences of principals, teachers, and students. Most studies, including those by Muthoni, Gitumu, and Mwaruvie (2020), Bambi, Daniel, and Barkindo (2021), and Salaganda, Mwamakula, and Rupia (2024), have used correlational survey designs or descriptive statistics to quantify relationships, but these approaches often fail to capture the richness of how these relationships manifest in practice. The current study aimed to fill this methodological gap by adopting a mixed-methods approach, integrating both quantitative and qualitative data to provide a more comprehensive understanding of principals' instructional supervisory practices.

The research gaps identified in the existing literature emphasize the need for a study that explores the holistic role of principals' instructional leadership in improving Mathematics performance in public secondary schools in Kilungu Sub-County. This study therefore aimed to explore the effect of principals' instructional supervisory practices on students' academic performance in Mathematics, providing insights that could inform policy and practice in Kilungu Sub-County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides an overview of the research methodology that was employed to investigate the effect of students' academic performance in Mathematics in public secondary schools and the principals' instructional supervisory practices. In-depth information on the research design, study variables, study location, target population, sampling technique, sample size, data collection instruments, pilot testing comprising of reliability, and validity, data collection process, data analysis, and ethical issues will all be covered in this chapter.

3.2 Research Design

This study adopted a correlational research design, which is commonly employed in both scientific and social science research to explore the relationships between variables without altering or manipulating them. As defined by Kumar (2018), correlational research seeks to identify the degree of association or correlation between two or more variables, making it particularly useful when examining natural occurrences or phenomena that cannot be subjected to experimental manipulation. In this design, the researcher systematically gathers data on the selected variables and analyzes whether a statistical relationship exists between them, using techniques such as correlation coefficients. The key strength of this approach lies in its ability to uncover patterns or associations between variables in real-world settings, where experimental control may not be feasible.

The correlational design provides valuable insights into how variables influence one another, and in this study, it was used to assess the impact of principals' instructional

supervisory practices on students' academic performance in Mathematics. By employing this design, the study ensured that it could examine the strength and direction of the relationships between the instructional leadership practices of principals and the academic outcomes in a non-experimental, naturalistic context.

3.3 Research Methodology

To provide a more comprehensive understanding of the research problem, this study employed a mixed-methods research methodology, combining both quantitative and qualitative approaches. The integration of these two distinct research techniques allows for a more nuanced exploration of the variables under investigation and enriches the overall findings. Quantitative data collection was used to generate numerical insights and statistical patterns, offering the advantage of objectivity and generalizability across a broader population.

This quantitative component enabled the study to measure the strength and direction of the relationships between the principals' instructional supervisory practices and student performance in Mathematics, employing statistical tools such as correlation analysis and regression models to quantify these associations. On the other hand, the qualitative aspect of the research provided deeper, context-rich insights into the human experiences behind the numerical data. Qualitative techniques, including interviews and open-ended survey questions, were used to capture the perceptions, attitudes, and lived experiences of principals, teachers, and students, offering a more holistic view of the impact of instructional leadership on academic outcomes. According to Mohajan (2018), qualitative research is essential for understanding the underlying processes, motivations, and interpretations that drive the statistical trends observed in quantitative research. The combination of both methodologies in this study allowed for

triangulation, where the strengths of one method help validate and contextualize the findings of the other, leading to a more comprehensive and reliable understanding of the research problem. This mixed-methods approach not only strengthened the study's conclusions but also provided a richer, multi-dimensional perspective on the complex relationship between instructional leadership and student performance.

3.4 Locale of the Study

The study was conducted in Kilungu Sub-County, located in Makueni County, Kenya, at approximately latitude 1.7861° S, and longitude 37.3606° E. Kilungu Sub-County is predominantly rural, with a landscape characterized by rolling hills and small-scale agricultural activities. The area was known for its vibrant community and commitment to education, despite facing several challenges related to resource availability and infrastructure development.

Kilungu Sub-County has a mix of educational institutions, including several public secondary schools that cater to students from diverse socio-economic backgrounds. These schools vary in size, resources, and academic performance, providing a representative sample for examining the effect of principals' instructional supervisory practices on students' academic performance in Mathematics. The choice of Kilungu Sub-County as the locale for this study is driven by a unique educational context where the impact of instructional leadership can be observed in diverse settings. The public secondary schools in the region face common challenges such as limited resources, high student-teacher ratios, and varying levels of community support, making it an ideal setting for studying the influence of principals' supervisory practices on academic outcomes.

There are approximately 20 public secondary schools in Kilungu Sub-County, which served as the primary units of analysis for this study. The study spanned a period of six months, allowing sufficient time for data collection, analysis, and interpretation. During this period, the researcher gathered data through various methods, including surveys, interviews, and document analysis, to comprehensively examined the effect of principals' instructional supervisory practices on students' academic performance in Mathematics.

3.5 Target Population

The target population refers to the entire group of individuals or entities to which the researcher aimed to generalize the study findings (Casteel & Bridier, 2021). The target population for this study comprised 20 public secondary schools of Kilungu Sub-County, Makueni County, Kenya. The units of observation for this study was 886 respondents comprising of (20) principals, (66) Mathematics teachers, and (800) Form Three students.

The inclusion of principals in the study was justified by their central role in instructional leadership and supervision. Principals are responsible for overseeing the educational processes within the school, including the implementation of instructional practices and teacher development. As key figures in shaping the learning environment, principals' perspectives on their supervisory practices are essential for understanding the impact of instructional leadership on students' academic performance in Mathematics.

Mathematics teachers are included because they are directly involved in the teaching and learning processes. Teachers' experiences and perceptions of principals' instructional leadership are valuable for assessing the effect of supervisory practices on

the actual teaching of Mathematics. Their input helps to establish the relationship between principals' instructional practices and the implementation of effective teaching strategies in the classroom. Moreover, teachers' feedback on professional development opportunities and instructional supervision provided insights into the support provided by school leadership to enhance teaching quality.

Form Three students are included as they are the direct beneficiaries of the instructional practices implemented by their teachers, who in turn are supervised by the principals. Although students may not be able to directly assess the specifics of principals' instructional leadership, their academic performance in Mathematics can serve as an indirect measure of the effectiveness of instructional leadership. By collecting data on their academic performance (e.g., grades, test scores, and assessments), the study aimed to correlate these outcomes with principals' instructional practices. Including students allows for a broader understanding of how leadership practices influence the learning experiences and outcomes of students.

Table 3.1: Target Population

	Target population	**Percent**
Form Three students	800	90.3
Mathematics Teachers	66	7.4
School principals	20	2.3
Total	**886**	**100.0**

Source: Makueni County Education Office (2024)

3.6 Sampling Procedure and Sample Size

3.6.1 Sampling Procedure

This study utilized a multi-stage sampling technique to ensure a representative and unbiased sample reflecting the diversity of Kilungu Sub-County's public secondary school system. The process began by dividing the sub-county into three divisions: Nunguni, Ilima, and Kikoko. Within each division, simple random sampling was employed to select two schools, totaling six schools. This method ensured each school has an equal chance of being selected, thereby maintaining fairness and minimizing selection bias.

After the schools have been chosen, the next stage of sampling involves purposive sampling to select six principals who are actively engaged in instructional leadership and relevant to the study's objectives. That is, 2 principals for each division: Nunguni, Ilima, and Kikoko, totaling to six. For student participants, the focus was on Form Three students. A simple random sampling technique was employed to select a representative sample from a compiled list of these students, ensuring each student has an equal opportunity to be chosen. Similarly, for selecting Mathematics teachers, a simple random sampling technique ensured that the sample accurately represents the population of teachers involved in this subject.

3.6.2 Sample Size

The sample size for this study is determined using Yamane’s simplified formula, which is appropriate for finite populations. The formula calculates the sample size by dividing the total population size by one plus the product of the population size and the square of the margin of error. With a population size of 886 and a margin of error set at 0.05, the formula gives:

$$n = \frac{N}{1+N\,(e)^{2}}$$

Where; n is the sample size

N is the population size and

e is the margin of error.

N = 886

e = 0.05

$$n = \frac{886}{1+ 886\,(0.05)^{2}}$$

= 276

The total sample size for this study consisted of 276 respondents. Given that some participants were purposively selected, such as the principals, and others were randomly sampled, such as the students and teachers, the sample size for each group was calculated separately based on the specific sampling method used.

For Form Three students, the total population was 800. Using the sampling proportion of 276/886 = 0.312, the sample size for Form Three students was calculated as 800 × 0.312 = 249 students. For Mathematics teachers, the population was 66. Applying the same proportion, the sample size for Mathematics teachers was determined to be 66 × 0.312 = 21 teachers. Since principals were purposively sampled due to their critical role in instructional leadership, all 6 principals from the selected schools were included in the study. Regarding the schools, Kilungu Sub-County has 20 public secondary schools, and to ensure diversity in the sample, 6 schools were randomly selected, ensuring that each school had an equal chance of being chosen.

Given the diversity in the types of schools within Kilungu Sub-County, which includes boys' schools, girls' schools, mixed schools, and day schools, stratified random sampling was employed. This ensures that each school type is adequately represented in the study, particularly considering that Mathematics performance can be influenced by school type (e.g., all-boys, all-girls, mixed-gender settings). Stratification allowed the study to capture any potential variation in Mathematics performance associated with different school settings. The sample size was distributed as in Table 3.2:

Table 3.2: Sample Size

Subgroup	**Total Population**	**Sampling technique**	**ample Size**
Form Three Students	800	Simple Random Sampling	249
Mathematics	66	Simple Random Sampling	21
Teachers	20	Purposive Sampling	6
School Principals			
Total	**886**		**276**

3.7 Data Collection Instruments

According to Haraldsen (2023), research instruments are the means through which information is gathered for a study. In this study, both interviews and questionnaires were employed to collect data, with each instrument chosen for its unique strengths in capturing different types of data. Interviews were conducted with principals to gather qualitative data, offering a platform for them to provide detailed and nuanced insights into their instructional supervisory practices. The use of interviews allowed for an open-ended dialogue, where principals could elaborate on their experiences, perceptions, and challenges related to instructional leadership, thus providing a deeper understanding of

how these practices affect students' academic performance in Mathematics. Interviews are particularly effective in exploring complex and context-dependent issues that cannot be easily quantified, making them ideal for capturing the personal perspectives of educational leaders.

In contrast, questionnaires were administered to students and teachers to collect quantitative data. The structured nature of questionnaires enabled the collection of large- scale data efficiently, allowing for a broader representation of the population. This method was particularly suited for gathering numerical and statistical information on the students' academic performance and the teachers' views on the effectiveness of principals' supervisory practices. The use of standardized questions in the questionnaires ensured consistency and ease of analysis, as responses could be quantified and subjected to statistical analysis to determine relationships and trends. The combination of both instruments—interviews and questionnaires—was driven by the need to gather both comprehensive qualitative insights and reliable quantitative data. This dual approach facilitated a well-rounded investigation, where the quantitative data provided statistical evidence of patterns and correlations, while the qualitative data enriched the understanding of those patterns by offering detailed, contextual insights. The integration of these two methods allowed for a more robust analysis and a fuller understanding of the research problem, thereby ensuring that both the breadth and depth of the data were effectively captured.

3.7.1 Questionnaire for Students

The student questionnaire was designed to capture detailed information across six sections. Section A focused on gathering demographic data, including the students' age, gender, and other relevant academic details to provide context for the analysis. Section

B explored the principals' supervision of professional records, specifically investigating whether principals monitor important academic documentation such as student attendance, lesson plans, and assessment reports. Section C delved into the principals' classroom visitation practices, aiming to understand how often and in what ways principals observe classroom teaching activities. Section D examined the principals' role in instructional leadership, particularly focusing on their involvement in setting academic standards, monitoring progress, and fostering a collaborative teaching culture. Section E looked at the provision of teacher professional development, gathering information on whether and how principals support teachers' growth through training or other professional development opportunities. Finally, Section F assessed students' academic performance in Mathematics, gathering data on their grades, exam scores, and general achievements in the subject, which helped in understanding the impact of the principal's supervisory practices on student outcomes.

3.7.2 Questionnaire for Teachers

The teacher questionnaire was also divided into six sections to ensure comprehensive data collection. Section A gathered demographic information about the teachers, including their age, gender, years of teaching experience, and academic qualifications. In Section B, the questionnaire focused on the principals' supervision of professional records, asking teachers to reflect on the extent to which their principals monitor lesson plans, assessments, and attendance records. Section C examined principals' classroom visitation practices, exploring how often they observe classroom activities, what feedback they provide to teachers, and whether these observations lead to improvements in teaching practices. Section D focused on instructional leadership, seeking to understand the principals' role in shaping teaching strategies, monitoring

academic standards, and supporting teachers to meet curriculum goals. Section E explored the provision of teacher professional development, looking into how principals support teachers' continuous learning and growth through workshops, seminars, and other development opportunities. Finally, Section F investigated the perceived influence of instructional supervisory practices on students' academic performance in Mathematics, from the teachers' perspective, to evaluate how principals' leadership impacts teaching quality and student achievement in the subject.

3.7.3 Interview Schedule for School Principals

An interview is a one-on-one conversation between a researcher and a participant in a study (Bresler & Stake, 2017). The principals' qualitative data was gathered using the interview guide. The instruction manual included open-ended questions designed to elicit principals' opinions on how principals' instructional supervisory practices affect students' academic performance in Mathematics in public secondary schools.

Principals' interviews were divided into 5 sections: Section A gathered information on the principals' supervision of professional records; Section B gathered information on principals' classroom visitation; Section C gathered information on principals' instructional leadership; Section D gathered information on the principals' provision of teacher professional development; Section E gathered information on students' academic performance in Mathematics in public secondary schools.

3.8 Pilot Test

A pilot study is a small-scale investigation used to test research procedures, sample recruitment strategies, data collection instruments, and other methodologies before conducting a large-scale study (Flick, 2020). Pilot testing was done to help assess the

feasibility of research methods and instruments before proceeding to the full-scale investigation. Pilot testing was done to also identify and address potential logistical challenges, refine data collection methods, and validate research instruments. Pilot testing also allowed for preliminary insights and feedback, contributing to the fine-tuning of research questions. Two public secondary schools in Mukaa Sub-County (Kilome Secondary School and Mukaa Boys Secondary School), which did not make up the sample population, was used for piloting. The research tool was given to a sample of 28 respondents. The pilot study's results were utilized to evaluate the research instruments' relevance, clarity, and comprehensibility.

3.9 Validity of Research Instruments

An instrument's validity refers to the accuracy with which it measures what it is intended to measure. Content validity was evaluated to ensure that the research instruments adequately cover all the relevant aspects of the study. Supervisors and educational assessment specialists reviewed the instruments to ensure that the questions represent the full range of instructional supervisory practices, teacher professional development, and students' academic performance in Mathematics. Their feedback was crucial in refining the instruments to ensure they are comprehensive and accurately aligned with the study's objectives. This evaluation process helped confirm that the instruments measure exactly what they are intended to.

Construct validity was assessed to verify that the instruments truly measure the theoretical concepts they are intended to capture. This included ensuring that the items in the questionnaires and interview schedules are reflective of the underlying constructs, such as principals' instructional leadership, teacher support, and student achievement in Mathematics. Testing construct validity helped ensure that the research

tools are not only measuring surface-level behaviors but also the deeper theoretical factors influencing academic performance.

Face validity was evaluated by seeking the judgment of experts to determine if the research instruments appear to measure what they are intended to, based on the common- sense understanding of the respondents and the field. This type of validity ensures that the instruments seem appropriate and logical to those familiar with the subject matter, even if it is not a formal statistical measure of accuracy. Experts, including educational professionals, were asked to review the instruments and assess whether the questions appear relevant and clear for measuring principals' supervisory practices and students' performance in Mathematics. Feedback from this process guided any necessary revisions to improve the clarity and appropriateness of the instruments.

3.10 Reliability of Research Instruments

Reliability refers to the consistency of an instrument in producing stable and dependable results when applied repeatedly under the same conditions. To assess the reliability of the research instruments used in this study, a test-retest method was employed. The test-retest method involves administering the same instrument to the same group of respondents at two different points in time, and then comparing the results to assess consistency.

For this study, a pilot test was conducted using a sample of 25 students from one of the schools involved in the pilot phase. After an interval of two weeks, these students were asked to complete the same questionnaire again. This allowed for the comparison of responses over time, providing an indication of the instrument's stability and reliability. To analyze the consistency of the responses, the data collected from both rounds were

examined using the Cronbach's alpha coefficient, a widely used measure of internal consistency. The Cronbach's alpha value ranges from 0 to 1, with higher values indicating greater reliability. In line with standard practices, a reliability coefficient of 0.7 or above was considered acceptable, as suggested by Sember, Meh, Sorić, Starc, Rocha and Jurak (2020), indicating that the instruments used in the study were reliable for gathering data in the main research phase. This process ensured that the instruments employed in the study produced consistent and replicable results, contributing to the overall credibility and validity of the research findings.

The reliability analysis was conducted separately for each construct as measured in the students' and teachers' questionnaires. The results are summarized in Table 3.3.

Table 3.3: Reliability Coefficients for Questionnaire Constructs

Construct	**spondent Group**	**ch's Alpha (α)**
Supervision of Professional Records	Students	0.821
Supervision of Professional Records	Teachers	0.844
Classroom Visitation	Students	0.789
Classroom Visitation	Teachers	0.832
Instructional Leadership	Students	0.803
Instructional Leadership	Teachers	0.818
Provision of Teacher Professional Development	Students	0.861
Provision of Teacher Professional Development	Teachers	0.887
Students' Academic Performance in Mathematics	Students	0.792
Students' Academic Performance in Mathematics	Teachers	0.804

The results indicate that all constructs achieved Cronbach's Alpha values above 0.78, demonstrating strong internal consistency across the items used to assess each domain. The highest reliability was found in the construct "Provision of Teacher Professional Development" for both respondent groups, with $\alpha = 0.861$ (students) and $\alpha = 0.887$

(teachers), indicating a very high degree of consistency in how respondents interpreted and responded to those items. These findings confirm that the questionnaires were reliable tools for measuring the study's constructs and support the use of the collected data in subsequent analyses.

3.11 Data Collection Procedure

The researcher first obtained a letter of introduction from the university, which was presented to each respondent (see Appendix I). The purpose of this letter was to inform the respondents about the study, its objectives, and the researcher's affiliation with the university, thereby ensuring transparency and establishing the legitimacy of the study. The letter also served as formal permission to approach the respondents and collect the necessary data for the research.

Furthermore, the researcher secured a permit from the National Commission for Science, Technology, and Innovation (NACOSTI) to ensure adherence to ethical standards and regulatory requirements for research involving human subjects. In addition to NACOSTI's approval, the researcher obtained authorization from the County Offices in Kilungu Sub-County, in compliance with local regulations governing research activities in public schools. This permission ensured that the study was conducted in accordance with county educational policies and with the cooperation of local educational authorities.

To facilitate thoughtful and thorough responses, the drop-and-pick-later method was employed for the administration of the questionnaires. This method allowed respondents a period of two weeks to complete and return the questionnaires, ensuring adequate time for careful consideration and maximizing the likelihood of obtaining a

high response rate. The researcher, with the assistance of trained research assistants, oversaw the administration of the research instruments. Prior to data collection, the research assistants underwent training to ensure they were well-equipped to address any questions or concerns from the respondents.

Upon collection, the data was coded and stored in a password-protected computer file to guarantee confidentiality and protect the integrity of the data throughout the research process. This data management approach helped maintain the privacy of the participants while ensuring secure handling of the research data.

3.12 Data Analysis

Data analysis offers a way for extrapolating inductive conclusions from data and distinguishing the subject of study from statistical outliers in the research data (Fletcher, 2020). Content analysis was used to analyze the qualitative data from the interviews. The data was then presented in a narrative format. To make data entry easier, questions were coded, and all completed questionnaires were referred to. Descriptive statistics, including mean, frequency, standard deviation, and percentages, was used to profile sample characteristics and major patterns emerging from the data. To facilitate this, a Likert Scale was used to enable easier presentation and interpretation of data. The data was presented in tables and charts.

Chi-Square analysis was used to evaluate the hypotheses at a significance level of 0.05. Chi-Square is more appropriate for testing the relationship between categorical variables, such as the association between principals' supervisory practices (e.g., classroom visitation, supervision of professional records) and students' academic performance (e.g., pass/fail rates, grade categories). This method helped assess whether

there are statistically significant associations between the independent and dependent variables, as categorized data are often involved in education-related research.

Table 3.4: Operationalization of Variables

Objective	Nature of data collected	Statistical techniques	Mode of presentation
To examine the effect of principals' supervision of professional records on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.	*Quantitative data *Qualitative data	*Measures of central tendency (mean) *Measures of dispersion (standard deviation) *Frequencies and percentages *Chi-Square *Content analysis	*Frequency tables, percentages and pie charts *Narrative form
To investigate the effect of principals' classroom visitation on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.	*Quantitative data *Qualitative data	*Measures of central tendency (mean) *Measures of dispersion (standard deviation) *Frequencies and percentages *Chi-Square *Content analysis	*Frequency tables, percentages and pie charts. *Narrative form
To establish the effect of principals' instructional leadership on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya.	*Quantitative data *Qualitative data	*Measures of central tendency (mean) *Measures of dispersion (standard deviation) *Frequencies and percentages *Chi-Square *Content analysis	*Frequency tables, percentages and pie charts *Narrative form
To evaluate the effect of principals' provision of teacher professional development on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya	*Quantitative data *Qualitative data	*Measures of central tendency (mean) *Measures of dispersion (standard deviation) *Frequencies and percentages *Chi-Square *Content analysis	*Frequency tables, percentages and pie charts *Narrative form

To examine the effect of principals' supervision of professional records on students'academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. To investigate the effect of principals' classroom visitation on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. To establish the effect of principals' instructional leadership on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. To evaluate the effect of principals' provision of teacher professional development on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya

3.13 Ethical Considerations and Logistics

The rights of the participants were maintained by following ethical guidelines when conducting the study. Participants were asked for their informed consent and given guarantees of confidentiality and anonymity. The study's voluntary nature and the fact that participants can leave at any point without incurring any fees were also made clear to them. The researcher prioritized logistical ethics. Logistical ethics refers to the ethical considerations and measures taken to ensure the proper handling, storage, and protection of data collected during the study. This included implementing appropriate data security measures to safeguard collected information from unauthorized access or breaches. This was especially important when dealing with sensitive or personally identifiable information. The researcher and research team received training in research ethics to ensure they were knowledgeable about ethical guidelines and best practices. Training helped prevent ethical violations. Equally crucial was human relation ethics. The researcher obtained informed consent from participants before involving them in the study. This included providing clear information about the study's purpose,

procedures, potential risks and benefits, and the participants' right to withdraw at any time. Moreover, the researcher ensured the privacy and confidentiality of participants' personal information and data. Participants were assured that their responses were kept confidential and that their identities were not disclosed without their consent.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter presents the analysis and interpretation of data collected on the influence of principals' instructional supervisory practices on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. The presentation is aligned with the study's objectives and research hypotheses. Both quantitative and qualitative data were analyzed to examine how various supervisory practices — including supervision of professional records, classroom visitation, instructional leadership, and provision of teacher professional development — affect KCSE Mathematics performance. The chapter begins with a summary of the response rate, followed by background information on respondents, and then analysis based on each thematic area.

4.1.1 Response Rate

The study employed three data collection instruments targeting different respondent categories: questionnaires for Mathematics teachers and Form Three students, and interview guides for school principals. The instruments were administered across six public secondary schools selected using stratified random sampling within Kilungu Sub-County. Of the total intended sample size of 276 respondents, the study achieved the following response rates:

Table 4.1: Response Rate

Respondent Group	Sample Size	Responses Received	Response Rate (%)
Form Three Students	249	186	74.7%
Mathematics Teachers	21	16	76.2%
School Principals	6	5	83.3%
Total respondents	**276**	**207**	**75.0%**

These rates fall within the acceptable threshold for Social Science research. According to Heeringa, West, Heeringa and Berglund (2017), a response rate of 70% and above is considered adequate for reliable data analysis and interpretation. The strong response was attributed to proactive follow-up, school-level coordination, and assurance of confidentiality, which encouraged respondent participation.

4.2 Background Information of Respondents

This section presents the demographic characteristics of the student and teacher respondents who participated in the study. Understanding the background of the participants provides valuable context for interpreting their views on the influence of principals' instructional supervisory practices on students' academic performance in Mathematics.

4.2.1 Students' Demographic Information

A total of 186 Form Three students from six public secondary schools in Kilungu Sub-County participated in the study. Their demographic information was analyzed based on age and gender.

4.2.1.1 Age of the Students

Students were asked to indicate their age category. The distribution is shown in Figure 4.1.

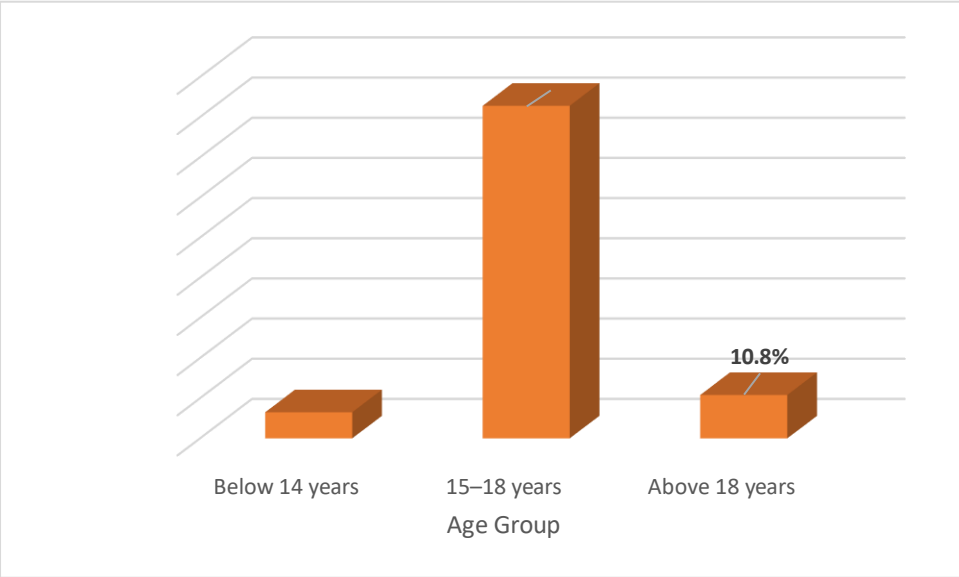

Figure 4.1: Age of Student Respondents

The data shows that the majority of student respondents (82.8%) were aged between 15 and 18 years, which aligns with the typical age bracket for Form Three students in public secondary schools in Kilungu Sub-County. This age distribution implies that the responses reflect the views of students who are developmentally and academically positioned to engage meaningfully with Mathematics at the secondary level. Their insights are therefore relevant and reliable for assessing the impact of principals' instructional supervisory practices on their academic performance.

4.2.1.2 Gender of the Students

The gender distribution of student respondents is presented in Figure 4.2.

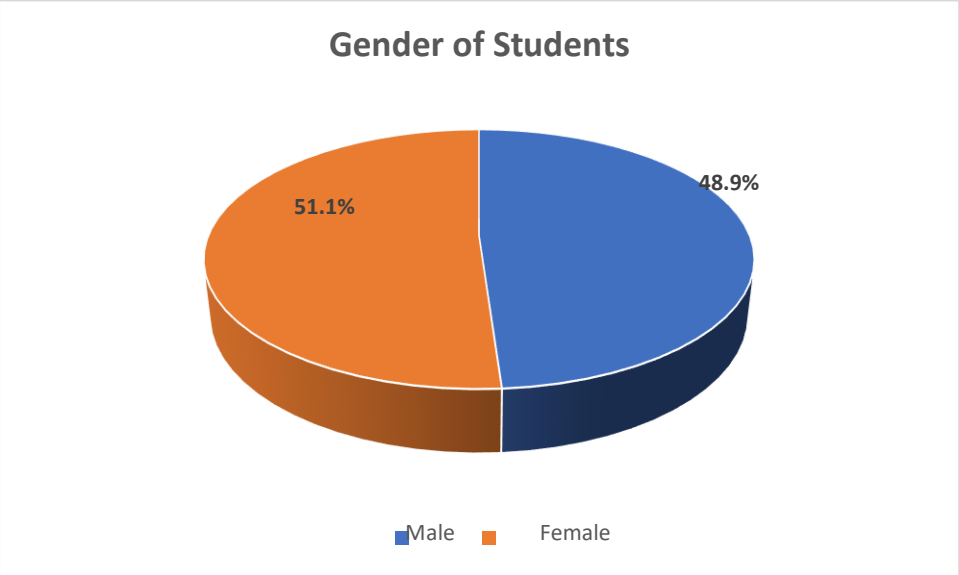

Figure 4.2: Gender of Student Respondents

The gender balance was fairly even, with a slight female majority (51.1%). This near-equal gender representation from both male and female students enhances the generalizability of the findings, as it ensures that the influence of principals' supervisory practices is assessed from a balanced viewpoint. It also allows for equitable reflection of gender-related experiences in Mathematics performance.

4.2.2 Teachers' Demographic Information

A total of 16 Mathematics teachers from six public secondary schools in Kilungu Sub-County responded to the questionnaire. Their demographic characteristics were analyzed to help contextualize their perspectives on principals' instructional supervisory practices. The information covered four key areas: age, gender, teaching experience, and highest level of education.

4.2.2.1 Age of the Teachers

The age distribution of the Mathematics teachers is as presented in Figure 4.3.

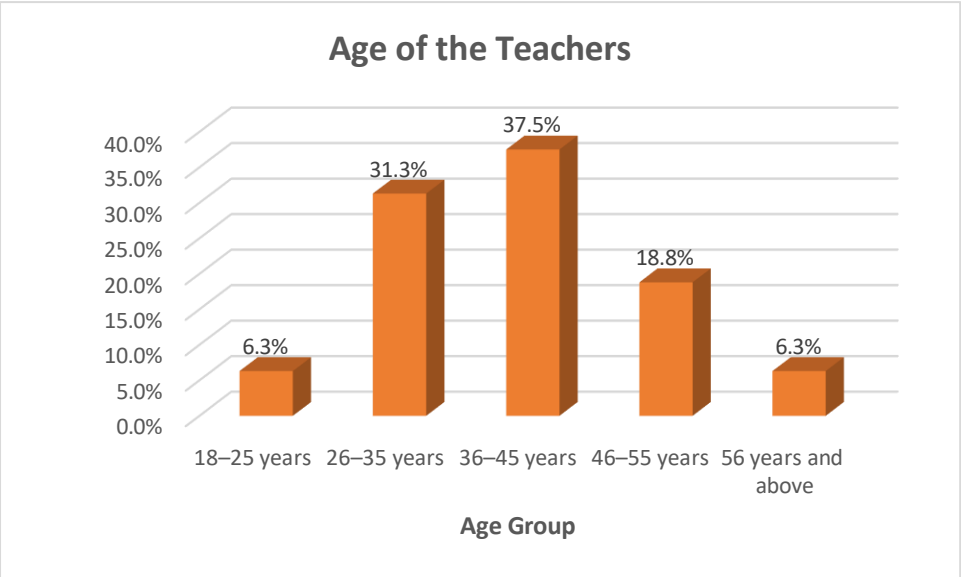

Figure 4.3: Age of Teacher Respondents

This distribution shows that a significant proportion of Mathematics teachers (68.8%) fall within the 26–45 years age range, suggesting a workforce in their prime professional years. The predominance of the 36–45 age group implies that many teachers have accumulated sufficient classroom experience, which could influence their perceptions and responses regarding principals' instructional supervisory practices. This enhances the credibility of their input on the link between supervision and student performance.

4.2.2.2 Gender of the Teachers

The teachers were required to indicate their gender. The gender breakdown of the mathematics teachers is shown in Figure 4.4.

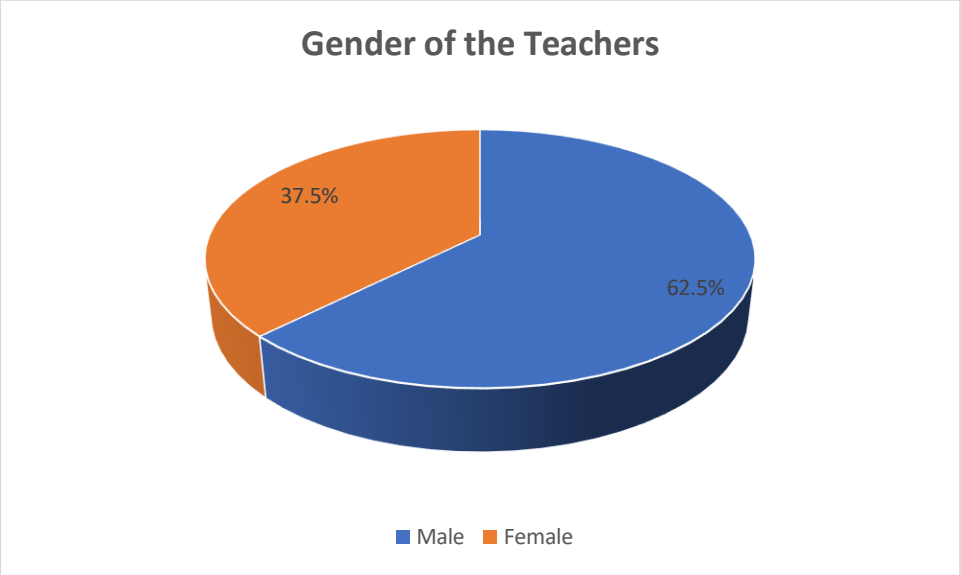

Figure 4.4: Gender of Teachers

This distribution indicates that 62.5% of the Mathematics teachers were male, while 37.5% were female, revealing a gender disparity in favor of male teachers. This may reflect national or regional trends where male dominance persists in Science, Technology, Engineering, and Mathematics (STEM) subjects like Mathematics. The gender composition suggests that the findings may be more reflective of male teachers' experiences with instructional supervision. It also highlights the need for gender-responsive supervision strategies that consider the differing challenges or support needs of male and female teachers in enhancing student performance.

4.2.2.3 Teaching Experience

Further, the teachers were asked to indicate their teaching experience. The teaching experience of the teachers is summarized in Figure 4.5.

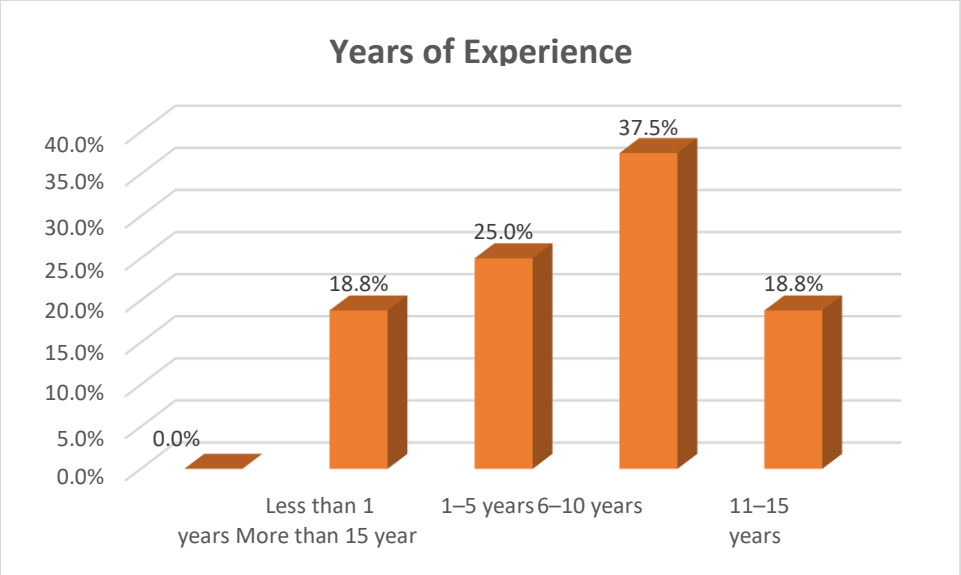

Figure 4.5: Teaching Experience

The data reveals that the majority of Mathematics teachers (81.3%) had over 5 years of teaching experience, with 37.5% having taught between 11 and 15 years. This indicates that the teacher respondents represent a mature and professionally seasoned group with substantial exposure to classroom dynamics and instructional practices. The high level of teaching experience suggests that the responses are grounded in practical, long-term engagement with the subject and school environment. Consequently, their insights into the effectiveness of principals' instructional supervisory practices are likely to be informed, credible, and reflective of sustained professional interaction with school leadership.

4.2.2.4 Teachers' Highest Level of Education

The researcher asked the teachers about their academic qualifications. The results are presented in Figure 4.6.

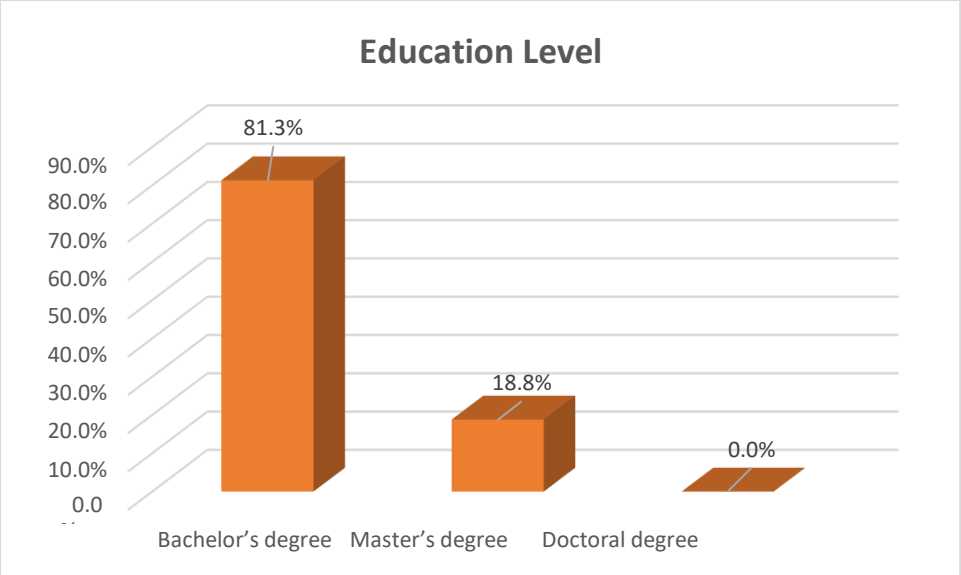

Figure 4.6: Teachers' Academic Qualifications

The data indicates that 81.3% of the mathematics teachers held a Bachelor's degree, while 18.8% had attained a Master's degree. None of the respondents held a Doctoral qualification.

This qualification profile suggests that the teacher cohort meets the minimum academic requirements for secondary school teaching in Kenya, with a notable segment having pursued advanced studies. The presence of postgraduate qualifications may contribute to more reflective and evidence-based classroom practices, enhancing the validity of their evaluations of principals' instructional supervisory practices.

4.3 Supervision of Professional Records and Students' Academic Performance in Mathematics

The study sought to examine how the supervision of professional records by principals influences students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Respondents were asked to rate their level of agreement with a set of statements designed to assess the extent to which principals

check, update, and use academic records as part of their instructional leadership. The findings from students' responses are presented in Table 4.2.

Table 4.2: Students' Responses for Principals' Supervision of Professional Records

Statement	Mean	Std. Dev.
The principal often checks to ensure that our attendance and academic records are accurate.	4.012	0.670
I am aware when the principal updates or reviews our academic progress records.	4.416	0.953
The principal discusses the importance of keeping good records with us.	4.262	0.860
I feel that the principal's attention to records helps me feel supported in my studies.	4.169	0.898
Knowing that the principal oversees our records makes me feel more responsible for my work.	3.859	0.657
I believe the principal's supervision of records makes our school run better.	4.312	0.743

Table 4.2 revealed that students agreed that the principal often updated or reviewed academic progress records (M = 4.416), discussed the importance of keeping accurate records (M = 4.262), and that the principal's supervision of records contributed to improved school operations (M = 4.312). These responses suggest students perceive record supervision as a valuable leadership function that fosters transparency, accountability, and effective school management.

They also agreed that the principal's attention to academic records made them feel

supported (M = 4.169), and that frequent checks on attendance and academic records help ensure accuracy (M = 4.012). Furthermore, students agreed that such supervision encouraged them to take greater personal responsibility for their schoolwork (M = 3.859). These findings are supported by Fuller and Hollingworth (2019), who argue that supervision of academic records empowers principals to make informed, data-driven

decisions that shape instruction and interventions effectively. In addition, Robinson, Lloyd, and Rowe (2020) emphasize that structured supervision of professional documents fosters teacher accountability and aligns teaching with curriculum goals, resulting in enhanced student outcomes.

Interviews with school principals provided further depth to these findings. Principals reported that supervision of academic and attendance records was a routine and essential component of their instructional leadership. They highlighted that regularly reviewing lesson plans, marks registers, and schemes of work enables them to monitor both student progress and teacher diligence. Some principals mentioned using this data to identify struggling students early and coordinate remedial efforts with subject teachers. This practice, according to them, has led to improved student engagement and accountability.

Moreover, several principals emphasized the motivational impact of this oversight. When students know that their records are being scrutinized not just for compliance but for support purposes, they tend to take their academic responsibilities more seriously. The principals also noted that proper supervision of records fosters a culture of organization and punctuality among both teachers and learners.

Teachers were asked to rate their agreement with statements relating to how principals supervise professional documents such as schemes of work, lesson plans, class registers, and records of work. The findings are presented in Table 4.3.

Table 4.3: Teachers' Responses for Principals' Supervision of Professional Records

Statement	Mean	Std. Dev.
The principal regularly reviews professional records to ensure compliance with standards.	4.438	0.602
The principal effectively communicates expectations regarding professional record-keeping to staff.	4.219	0.677
The principal provides constructive feedback on the maintenance of professional records.	4.125	0.724
The principal demonstrates a clear understanding of the importance of professional record supervision.	4.406	0.614
The principal ensures that professional records are updated and accurate.	4.312	0.645
The principal actively supports staff in addressing any challenges related to professional record-keeping.	3.938	0.809

Table 4.3 showed that teachers agreed most strongly that principals regularly review professional records for compliance (M = 4.438) and that they understand the importance of supervising those records (M = 4.406). These responses reflect a clear recognition of the principal's instructional leadership role in promoting accountability and standards alignment.

Teachers also agreed that principals effectively communicate record-keeping expectations (M = 4.219), ensure accuracy and currency of records (M = 4.312), and provide constructive feedback (M = 4.125). The slightly lower but still positive mean (M = 3.938) regarding support with record-keeping challenges indicates that while

principals are supportive, there may still be gaps in providing hands-on assistance when teachers encounter difficulties. According to Robinson, Lloyd, and Rowe (2020), effective supervision of professional records improves instructional quality and student performance by enhancing teacher accountability and planning. Similarly, Fuller and Hollingworth (2019) emphasized the importance of using professional records for data-driven decision-making, particularly in Mathematics instruction where precision and performance tracking are critical.

Further, Leithwood, Harris, and Hopkins (2020) concluded that principals who actively monitor records can identify instructional weaknesses early and provide tailored support, consistent with teachers' responses indicating constructive feedback and support from school heads. The alignment of current findings with these authors supports the assertion that record supervision is not simply administrative but strategic and instructional.

Interview responses from school principals reinforced the quantitative findings. One principal shared:

> *"We monitor schemes of work and lesson plans weekly. It helps us ensure syllabus coverage and alignment with national goals, especially in Mathematics where progression is key."*

Another principal described how they provide follow-up support:

> *"When records show gaps in lesson planning or assessment, I meet the teacher for discussion. Sometimes it leads to recommending CPD sessions or peer support."*

Some principals mentioned using a checklist or digital tools to review record submissions systematically:

"We use digital templates for lesson plan submissions. It allows for easier tracking and lets me give comments instantly. Teachers also appreciate how quickly they get feedback."

4.4 Classroom Visitation and Students' Academic Performance in Mathematics

The research aimed to analyse how classroom visitation by principals influences students' academic performance in Mathematics in public secondary schools in Kilungu Sub- County, Kenya. Data were gathered from both students and teachers using Likert-scale questionnaires. Students were asked to indicate their level of agreement with statements about how principals' classroom visits influence their learning environment and personal engagement in Mathematics. Table 4.4 presents the findings.

Table 4.4: Descriptive Statistics for Students' Responses on Principals' Classroom Visitation

Statement	Mean	Std. Dev.
The principal often visits our classroom to see how we are being taught.	4.312	0.684
I like it when the principal comes to our classroom and talks to us.	4.125	0.739
The principal's visits make our classroom environment better.	4.219	0.712
The principal gives teachers advice based on what is seen during classroom visits.	4.156	0.701
I feel more interested in participating in class when the principal is present.	4.031	0.823
The principal's visits help me see how important good teaching is.	4.281	0.665

As per Table 4.4, students agreed that the principal's visits helped them recognize the importance of good teaching (M = 4.281), improved the classroom environment (M = 4.219), and led to teachers receiving advice based on observations (M = 4.156). They also agreed that they liked when the principal interacted with them in class (M = 4.125), felt more motivated to participate during such visits (M = 4.031), and observed that the

principal made efforts to monitor teaching regularly (M = 4.312).

Teachers were asked to assess how principals' classroom visitation practices influenced teaching and learning outcomes in Mathematics. Their responses to statements were analyzed and are presented in Table 4.5.

Table 4.5: Descriptive Statistics for Teachers' Responses on Principals' Classroom Visitation

Statement	Mean	Std. Dev.
The principal conducts regular classroom visits to observe teaching practices.	4.562	0.619
The principal provides timely and constructive feedback following classroom observations.	4.125	0.764
The principal demonstrates a visible presence during classroom visitations.	3.281	0.881
The principal actively engages with both teachers and students during classroom visits.	3.719	0.794
The principal's classroom visitations contribute to a positive school climate.	2.875	0.933
The principal utilizes classroom visitations as an opportunity for professional development.	2.438	1.041

Table 4.5 revealed that teachers strongly agreed that principals regularly conduct classroom visits to observe teaching practices, as reflected by the highest mean score (M= 4.562). Teachers agreed that these visits are often followed by constructive feedback (M = 4.125), and that principals engage actively with both students and teachers during these sessions (M = 3.719).

However, there was a neutral response regarding the principal's visibility during visitations (M = 3.281) and the extent to which these visits contribute to a positive

school climate (M = 2.875). These mid-range scores suggest inconsistency — while visits are taking place, they may not be frequent or impactful enough to shift broader perceptions of school culture or leadership presence.

Notably, teachers disagreed that classroom visitation is utilized as a professional development strategy (M = 2.438). This points to a missed opportunity in transforming observation into growth-oriented engagement, such as post-observation coaching, peer learning, or targeted workshops. The lack of alignment between supervision and teacher development diminishes the long-term instructional value of the practice.

According to Blase and Blase (2020), the true benefit of classroom visitation lies in how it improves teaching and learning environments — a view echoed by the teachers who recognized the feedback and engagement that follow principal visits. Similarly, Kraft, Marinell, and Yee (2016) emphasized that effective classroom observations enable principals to identify specific pedagogical weaknesses, particularly in subjects like Mathematics, and intervene with targeted support. Yet, this potential appears underutilized in the current study, as evidenced by the low mean score on the use of visits for professional development.

In line with Robinson, Lloyd, and Rowe (2008), who argue that feedback must be actionable and part of a developmental loop, the findings suggest that while feedback is provided, it is not consistently linked to broader school improvement goals. Teachers in this study recognize the observational component but seem to experience a disconnect between being observed and being supported.

Furthermore, Bush and Glover (2019) stressed that classroom visitation must be embedded in a wider culture of collaboration, feedback, and instructional coaching. The

neutral responses regarding visibility and climate suggest that such a culture is either not fully developed or not uniformly implemented. The study thus reinforces the idea that observation alone is insufficient — it must be accompanied by structured follow-up to be effective. Interviews were conducted with school principals to explore their experiences and perceptions regarding classroom visitation. All interviewed principals confirmed that classroom visitation was part of their routine supervisory practices. One principal stated:

> *"I make a point of visiting at least two classes every week, especially Mathematics. It gives me an opportunity to see how lessons are being delivered and how students are engaging with the material."*

This comment reflects a strategic approach to visitation, particularly in core subjects such as Mathematics where consistent supervision is vital for ensuring syllabus coverage and instructional quality. Another principal emphasized the purpose and outcome of these visits:

> *"My main aim during classroom visits is to observe the interaction between teachers and students. I take notes and later sit with the teacher to discuss what worked and what could be improved."*

This demonstrates that for some principals, classroom visitation is closely tied to instructional coaching and formative feedback, rather than mere compliance monitoring. The feedback loop between observation and consultation is essential in reinforcing professional development, although quantitative data from teachers suggested that this is not always consistently applied across all schools. However, there were variations in the depth of engagement. One principal acknowledged:

> *"Sometimes, I'm not able to follow up after every visit because of administrative workload. I wish I had more time to support teachers beyond observation."*

This statement reflects one of the core challenges facing school leaders — balancing

instructional supervision with other managerial duties. It also offers a partial explanation for why teachers may perceive classroom visitation as insufficient in fostering professional development. Additionally, another principal noted that visibility in the classroom boosts student attentiveness:

> *"Whenever I walk into a class, even briefly, I notice students straighten up. My presence reminds them that their performance matters, especially in Maths."*

Such observations support the student responses, which indicated increased motivation and focus when the principal is present during lessons.

4.5 Instructional Leadership and Students' Academic Performance in Mathematics

The study aimed to establish the effect of principals' instructional leadership on students' academic performance in Mathematics in public secondary schools in Kilungu Sub- County, Kenya. Responses were collected from students and teachers and are analyzed separately. Students were asked to rate their agreement with statements related to the principals' instructional leadership. Table 4.6 presents the results.

Table 4.6: Students' Responses on Principals' Instructional Leadership

Statement	Mean	Std. Dev.
I notice when the principal talks to teachers about how they are teaching.	4.188	0.721
The principal ensures that teachers do a good job through regular checks.	4.375	0.688
Teachers improve their teaching because the principal monitors them.	4.000	0.799
The principal's instructional leadership makes them more responsible.	3.875	0.856
I believe the principal's involvement in monitoring teachers helps us learn better.	4.219	0.712
Teachers feel supported by the principal's checks and advice.	4.094	0.762

The highest-rated item was *"The principal ensures that teachers do a good job through regular checks"* (M = 4.375), indicating that students are aware of their principals' oversight in promoting instructional accountability. These findings are consistent with Leithwood, Harris, and Hopkins (2020) emphasize that active instructional leadership improves both teaching quality and student outcomes, particularly when principals engage directly with monitoring and supporting teachers. Students' perceptions of regular checks and support reflect these principles.

Students also agreed that the principal's involvement helps improve their learning (M = 4.219), encourages teachers to improve (M = 4.000), and provides teachers with support (M = 4.094). This implies that students recognize a connection between effective instructional leadership and improvements in teaching quality and outcomes. The responses also reflect Sebastian, Huang, and Allensworth's (2019) assertion that instructional leadership fosters accountability and consistency in pedagogy, leading to a more structured and effective learning environment.

The statement *"The principal's instructional leadership makes them more responsible"* received the lowest score among the six (M = 3.875), though it still falls in the "agree" category. This may suggest that while students perceive instructional leadership positively, its broader influence on shaping principal behavior is less visible or emphasized in the school setting. Similarly, Grissom, Egalite, and Lindsay (2021) argue that principals who monitor classroom instruction are better positioned to offer responsive feedback and ensure instructional alignment — practices that students in this study recognized as helping them "learn better."

Teachers were asked to indicate their level of agreement with statements that reflected various aspects of principals' instructional leadership. The results are presented in Table 4.7.

Table 4.7: Teachers' Responses on Principals' Instructional Leadership

Statement	Mean	Std. Dev.
The principal effectively monitors teachers' lesson planning and preparation.	4.562	0.599
The principal provides guidance and support to teachers based on monitoring outcomes.	4.219	0.688
The principal ensures consistency in teaching standards through monitoring activities.	3.344	0.833
The principal utilizes multiple methods for monitoring teacher performance.	3.875	0.741
The principal encourages a culture of collaboration and reflection through monitoring processes.	2.781	0.914
The principal acknowledges and addresses challenges identified during teacher monitoring.	3.531	0.762

The results in Table 4.7 indicated that teachers strongly agreed that principals effectively monitor lesson planning and preparation (M = 4.562), which reflects a

strong presence in overseeing curriculum implementation and teacher readiness. This shows that classroom planning is consistently supervised and serves as a key control point for instructional quality. The findings resonate with those of Grissom, Egalite, and Lindsay (2021) who emphasized that instructional leadership is most effective when principals consistently engage with teachers' lesson planning and follow through with feedback. The strong agreement on monitoring planning underscores the importance of aligning day-to-day instruction with curriculum goals — a critical factor in Mathematics instruction where sequencing and structure matter significantly.

They also agreed that principals provide guidance based on monitoring outcomes (M = 4.219), and that multiple methods are used in monitoring (M = 3.875). These responses suggest that monitoring is not only consistent but also varied in approach, with principals offering targeted feedback and follow-up support based on observed practices. Moreover, teachers agreed, that principals acknowledge and respond to instructional challenges identified through monitoring (M = 3.531), suggesting that support mechanisms are inplace but may vary in depth or frequency. The moderate agreement that teachers receive support from principals aligns with Darling-Hammond, Hyler, and Gardner (2020), who argue that leadership must be both evaluative and developmental. The teachers' perception of varied monitoring methods and some acknowledgment of teaching challenges supports this view.

Teachers expressed a neutral stance regarding whether principals ensure consistency in teaching standards (M = 3.344). This rating may reflect uneven enforcement of instructional policies across subjects or classrooms. The perception that monitoring contributes to uniform standards is present but not strongly endorsed. However, the neutral response on collaboration reflects Leithwood, Harris, and Hopkins (2020), who

caution that without a deliberate focus on professional learning communities and peer engagement, monitoring may become more compliance-driven than developmental. Similarly, Sebastian, Huang, and Allensworth (2019) noted that school environments that encourage shared instructional leadership and continuous learning foster deeper and more sustainable improvements in teaching quality.

There was also a neutral response on whether principals encourage collaboration and reflection among staff (M = 2.781), indicating that while monitoring exists, it may not be paired with strong efforts to foster collegial learning or teamwork. This finding is supported by Bryk et al. (2021), who stress the need for school leaders to not only monitor instruction but also nurture environments that support collective growth, especially in performance-oriented subjects like Mathematics.

The principals' interview responses provided valuable context for understanding how instructional leadership is implemented in practice. Their insights support, clarify, and in some cases contrast the perceptions shared by students and teachers. In response to the interview prompt, *"Do you personally visit classrooms to observe teachers' lessons? If yes, could you explain how these classroom visitations contribute to your role as an instructional leader?"*, all interviewed principals affirmed that classroom visitation was a consistent component of their leadership. However, their approaches varied significantly in terms of depth and frequency. One principal elaborated:

> *"Instructional leadership to me means staying close to the classroom. I don't just observe. I review lesson plans, assessments, and attend departmental meetings. My goal is to understand how Mathematics is being taught and whether students are keeping up."*

This response reveals a proactive and multidimensional approach to instructional leadership — one that integrates both formal and informal monitoring activities. Such

leadership ensures that classroom practices align with curriculum expectations, especially in technical subjects like Mathematics. Several principals discussed their role in providing feedback and guidance:

> *"After I observe a class, I meet the teacher and we reflect together. I provide suggestions and also listen to their challenges. Sometimes it's about the content; other times, it's student discipline or lack of resources."*

This collaborative feedback model demonstrates responsiveness and personalization. However, it also contrasts with teachers' survey responses, which showed that while monitoring is acknowledged, collaborative culture and professional development opportunities are perceived as limited. Another principal emphasized the importance of consistency:

> *"I try to ensure all departments operate with the same standards. I check schemes of work and assessment records to identify gaps. If I notice discrepancies, I follow up with both the teacher and the HOD."*

This aligns with the student and teacher data on regular monitoring but suggests that the enforcement of standards may be more top-down than peer-driven, which could explain why collaboration received a neutral score in the teacher responses. Despite these efforts, principals acknowledged practical challenges:

> *"The biggest barrier is time. Between administrative tasks, community meetings, and emergencies, I sometimes miss scheduled instructional reviews. When that happens, some areas might not receive enough attention."*

This admission highlights a systemic issue — that the effectiveness of instructional leadership can be constrained by competing responsibilities, making sustained follow-up and reflection difficult.

4.6 Provision of Teacher Professional Development and Students' Academic Performance in Mathematics

The study sought to establish the effect of principals' provision of teacher professional development on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Students were asked to share their perceptions on how teacher professional development. The results are presented in Table 4.8.

Table 4.8: Students' Responses on Provision of Teacher Professional Development

Statement	Mean	Std. Dev.
The principal arranges for teachers to attend training sessions to improve their teaching skills.	4.344	0.691
I have seen improvements in how teachers teach after attending training sessions arranged by the principal.	4.125	0.754
The principal's support for teacher training helps us learn better.	4.281	0.709
Teachers use new methods they learn in training to help us understand better.	4.062	0.782
I appreciate when the principal recognizes teachers who work hard to improve through training.	4.000	0.805
The principal's support for teacher training makes our school a better place to learn.	4.188	0.728

Students agreed most strongly that the principal's support for teacher training directly helps them learn better (M = 4.281), and that organizing training opportunities is a regular practice (M = 4.344). This demonstrates a perceived link between well-supported teachers and enhanced academic outcomes in Mathematics. According to Darling-Hammond, Hyler, and Gardner (2020), when principals prioritize and support teacher learning, instructional quality improves—leading to stronger student performance.

Additionally, students agreed that teachers improve after attending principal-organized training (M = 4.125), and that those improvements translate into the use of better teaching methods (M = 4.062). These views highlight the effectiveness of continuous learning in promoting responsive, student-centered instruction. Desimone and Garet (2015) emphasized that effective professional development must be tailored to the needs of teachers and extend over time. Students' perception that new methods are applied in class implies that training is not only attended but also translated into classroom practice, confirming the real-world relevance of those sessions.

Further, students appreciated principals who recognize teachers' efforts in self-improvement (M = 4.000), and believed that such support contributed to a better school environment overall (M = 4.188). This suggests that students not only value the academic outcomes of professional development, but also the broader culture of respect and growth it fosters. The importance of leadership recognition, as highlighted by Sun, Penuel, and Frank (2020), is also evident in student agreement with the statement about principals acknowledging teachers who improve through training. This recognition likely fosters a culture of motivation and continuous improvement. Also, the belief that principal- supported training improves the learning environment aligns with Guskey and Yoon (2020), who argue that impactful professional development is directly linked to better student outcomes and a more cohesive school climate.

Teachers were asked to rate their level of agreement with statements about the principals' provision of teacher professional development. Their responses are presented in Table 4.9.

Table 4.9: Teachers' Responses on Provision of Teacher Professional Development

Statement	Mean	Std. Dev.
The principal prioritizes teacher professional development within the school's budget and resources.	4.219	0.681
The principal offers a variety of professional development opportunities tailored to teacher needs.	3.875	0.722
The principal actively sought feedback from teachers to inform professional development initiatives.	3.531	0.764
The principal supports teachers in implementing new skills and strategies learned through professional development.	4.000	0.705
The principal fosters a culture of continuous learning and growth among staff.	3.344	0.803
The principal recognizes and celebrates teacher achievements and contributions to professional development.	3.750	0.759

The results in Table 4.9 indicated that teachers agreed that principals prioritize professional development within the school's budget and resources (M = 4.219), and that they support teachers in applying new skills gained from training (M = 4.000). Darling- Hammond, Hyler, and Gardner (2020) noted that impactful professional development is not just about access, but also sustained implementation and alignment with school goals.

Respondents also agreed that a range of training opportunities are provided (M = 3.875), and that teachers' efforts in professional development are recognized (M = 3.750). Moreover, Sebastian, Allensworth, and Huang (2019) emphasized the role of leadership in celebrating growth and fostering motivation suggesting that teachers feel their efforts are valued — an important factor in promoting continuous engagement. However, the mean for *"The principal actively sought feedback from teachers to inform professional development initiatives"* was lower (M = 3.531). Desimone and Garet (2015)

highlighted the importance of tailoring TPD to actual teacher needs which could reduce the relevance and impact of training activities.

The statement that fell into the "Neutral" range was *"The principal fosters a culture of continuous learning and growth among staff"* (M = 3.344). This implies that while individual efforts are recognized, the systemic and sustained promotion of continuous learning might be lacking or inconsistently implemented across schools. However, the relatively lower score for fostering a culture of continuous learning echoes concerns raised by Sun, Penuel, and Frank (2020), who emphasized that TPD must be embedded in a school-wide learning environment. This disconnect suggests that while training events may occur, they are not always followed by collaborative reflection, experimentation, or peer learning — all of which are crucial for lasting instructional change.

Interviews with principals provided additional perspectives on how they support teacher professional development and its influence on student performance in Mathematics. Most principals affirmed that organizing or facilitating teacher training was a key responsibility. One principal stated:

> *"We regularly arrange in-service training sessions for Mathematics teachers, especially during holidays. We invite facilitators from the county office or use experienced staff to lead internal workshops."*

This response indicates structured and recurring efforts to build teacher capacity, particularly through external expertise and peer learning. It also aligns with the quantitative finding that most teachers agree their principals provide a range of professional development opportunities. Another principal emphasized the strategic nature of the training:

> *"Before planning any training, I meet with department heads to identify gaps. Sometimes it's classroom management, sometimes it's about how to break down difficult Maths concepts. We want every training to be purposeful."*

This quote reflects a data-informed and needs-based approach to professional development. It also reinforces the teacher survey item regarding feedback being used to inform TPD planning, which had a moderate mean score of 3.531. While some principals do integrate teacher voice, this is not yet a universal practice. The importance of implementation support was also noted:

> *"After training, I do follow-up classroom visits to see if teachers are applying what they learned. If not, I ask why. Sometimes they need more support, or the training wasn't practical enough."*

This insight directly supports the teacher data, where respondents agreed that principals assist them in applying new skills (M = 4.000). It suggests that where instructional leadership is strong, it involves a cycle of training, application, and feedback. However, one principal candidly shared a challenge:

> *"The biggest problem is funding. Sometimes we can only train a few teachers at a time, or we depend on donor programs. Without sustained financial support, TPD becomes inconsistent."*

This aligns with broader educational concerns regarding the sustainability of TPD efforts. Although prioritization exists, as indicated by the highest teacher mean score (M = 4.219), resource constraints remain a significant barrier. Another theme was recognition and teacher motivation. One principal remarked:

> *"I always recognize teachers who take initiative — whether it's attending training or mentoring others. We even mention it during staff meetings. It encourages others to step up too."*

4.7 Students' Academic Performance in Mathematics

This section presents an analysis of students' self-reported academic behaviors and perceptions related to Mathematics performance. Students were asked to indicate their level of agreement with statements on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Table 4.10 presents the findings.

Table 4.10: Students' Responses on Academic Performance in Mathematics

Statement	Mean	Std. Dev.
I feel confident in my ability to understand and apply mathematical concepts.	4.062	0.728
I actively engage in class activities and discussions related to Mathematics.	3.969	0.799
I consistently complete my Mathematics assignments and homework on time.	3.875	0.856
I seek help from my teacher or peers when I encounter difficulties with Mathematics.	4.094	0.782
I perform well on Mathematics assessments, including tests and quizzes.	3.844	0.821
I am motivated to improve my skills and knowledge in Mathematics.	4.219	0.691

Students expressed the agreement with being motivated to improve their Mathematics skills and knowledge (M = 4.219), suggesting high intrinsic motivation—a critical factor for success in this subject. The student-reported motivation and engagement reflect the theoretical perspective of Grissom, Egalite, and Lindsay (2021), who found that principals' leadership practices shape school climate, which in turn impacts student attitudes and confidence. The present findings suggest that students are learning in environments where instructional supervision and teacher support encourage proactive learning.

They also reported strong tendencies to seek help when needed (M = 4.094), and to feel confident in understanding mathematical concepts (M = 4.062). Sebastian, Huang, and Allensworth (2019) emphasize that students' academic outcomes are influenced not just by instructional quality but also by student behaviors such as help-seeking, participation, and motivation. The high scores on items related to these behaviors align with the notion that instructional supervision—when effective—supports a conducive environment for such traits to flourish.

Moderate agreement was noted for completing assignments on time (M = 3.875) and engaging in class activities (M = 3.969), suggesting generally good but not optimal academic discipline and participation. Additionally, the fact that students agree they seek help and feel confident is consistent with Leithwood, Harris, and Hopkins (2020), who argue that effective school leadership builds not only teacher quality but also student autonomy and academic perseverance—especially in challenging subjects like Mathematics.

The lowest score—though still within agreement—was for performance on assessments (M = 3.844), hinting at a possible gap between effort and actual academic outcomes, or the challenges posed by summative evaluations in Mathematics. Also, the findings support Hallinger, Wang, and Chen's (2019) assertion that instructional improvements must be coupled with formative assessment strategies to ensure that gains in learning behaviors translate into measurable academic results.

Teachers were asked to assess student academic outcomes in Mathematics. Their responses provide a complementary perspective to the students' self-assessments. Table 4.11 summarizes their feedback.

Table 4.11: Teachers' Responses on Students' Academic Performance in Mathematics

Statement	Mean	Std. Dev.
I observe that my students demonstrate confidence in their ability to understand and apply mathematical concepts.	3.812	0.733
I notice active participation from my students in class activities and discussions related to Mathematics.	3.688	0.801
My students consistently submit their Mathematics assignments and homework on time.	3.500	0.822
I observe that my students proactively seek help when they encounter difficulties with Mathematics.	3.938	0.768
Based on assessments, including tests and quizzes, I perceive that my students perform well in Mathematics.	3.625	0.794
I see that my students exhibit motivation and eagerness to improve their skills and knowledge in Mathematics.	3.875	0.729

Teachers agreed that students proactively seek help when they encounter challenges in Mathematics (M = 3.938), and that students exhibit motivation and eagerness to improve their skills (M = 3.875). These findings are consistent with Fuller and Hollingworth (2019) emphasized the importance of data-informed instructional supervision, suggesting that when principals engage in monitoring and support, students show increased engagement and confidence.

Confidence in understanding mathematical concepts (M = 3.812) and participation in class (M = 3.688) also received positive evaluations, reflecting students' willingness to engage and apply themselves during lessons. Further, Sebastian, Huang, and Allensworth (2019) highlighted that sustained instructional leadership contributes to school cultures where students feel empowered and supported. The relatively high ratings for confidence and motivation reflect such an environment, even though assessments and homework consistency lag slightly behind. Teachers agreed, albeit at

the threshold (M = 3.500), that students consistently complete their assignments on time, which could point to issues like homework management, competing responsibilities, or varying levels of self-discipline among learners. Similarly, the mean for student performance on assessments (M = 3.625) was lower than motivation or help-seeking, reinforcing a subtle but important pattern seen in student responses — that effort and engagement may not fully translate into top-tier assessment outcomes. The observed gap between student motivation and actual performance supports the findings of Hallinger, Wang, and Chen (2019), who warned that improvements in instructional leadership must be matched with adequate feedback and differentiation strategies if they are to impact summative performance metrics. Also, the combination of agreement on proactive behaviors and the slight decline in academic outcome indicators reflects the view of Leithwood, Harris, and Hopkins (2020): that leadership must go beyond support to include clear academic goal-setting and individualized interventions — particularly crucial in technical subjects like Mathematics.

4.8 Chi-Square Analysis

This section presents the results of the Chi-square tests used to determine whether there is a statistically significant association between principals' instructional supervisory practices and students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County. The independent variables were the four supervisory domains — supervision of professional records, classroom visitation, instructional leadership, and provision of teacher professional development — while the dependent variable was students' academic performance, categorized as low, moderate, or high. The findings are as shown on Table 4.12.

Table 4.12: Chi-Square Test Results on the Association Between Supervisory Practices and Student Academic Performance

Supervisory Practice	Chi-Square Statistic	Degrees of Freedom (df)	p-Value
Supervision of Professional Records	21.726	4	0.0013
Classroom Visitation	18.843	4	0.0045
Instructional Leadership	22.317	4	0.0009
Teacher Professional Development	19.782	4	0.0031

The results indicated statistically significant associations across all four supervisory practices. For supervision of professional records, the Chi-square value was $\chi^2(4) = 21.726$ with a p-value of 0.0013. This implies a strong and statistically significant association between the way principals oversee professional records—such as lesson plans, attendance registers, and academic reports—and the academic outcomes of students. Schools where principals consistently review and engage with such documents appear more likely to experience higher student achievement, reinforcing the critical role of instructional monitoring.

Similarly, a significant relationship was observed between classroom visitation and student academic performance, with a Chi-square value of $\chi^2(4) = 18.843$ and a p-value of 0.0045. This suggests that when principals actively visit classrooms, observe teaching, and provide immediate feedback, the result is an improved academic environment. These findings support the idea that presence-based supervision helps enhance teaching quality and student engagement, particularly in subjects like Mathematics that demand high instructional clarity.

Instructional leadership also demonstrated a significant association with academic outcomes, yielding a Chi-square value of $\chi^2(4) = 22.317$ and a p-value of 0.0009. This result highlights the central role that principals play in setting instructional expectations, mentoring teachers, and facilitating curriculum alignment. When principals are proactive in their pedagogical leadership, the academic success of students tends to improve accordingly. Among the four areas assessed, instructional leadership recorded the strongest statistical association, indicating its foundational influence on teaching and learning. Lastly, the provision of teacher professional development was significantly associated with students' Mathematics performance, with $\chi^2(4) = 19.782$ and a p-value of 0.0031. This finding reinforces the view that when principals invest in building teacher capacity—through seminars, workshops, and continuous learning opportunities—it directly contributes to improved student outcomes. Students benefit from updated teaching strategies and more confident, capable teachers.

These findings have important implications. The statistical evidence confirms that all four supervisory practices are not only operationally relevant but also empirically linked to student academic performance. This reinforces the study's conceptual framework and validates the descriptive and qualitative insights previously presented. From a policy perspective, the results suggest that principals' leadership and oversight should be central to strategies aimed at improving academic outcomes, especially in Mathematics where teaching precision and continuous monitoring are essential.

Furthermore, the findings align with Robinson, Lloyd, and Rowe (2020) who argued that structured supervision enhances accountability and student learning, while Darling-Hammond, Hyler, and Gardner (2020) stressed the importance of principal-supported

professional development. Similarly, Leithwood, Harris, and Hopkins (2020) emphasized that leadership that fosters teacher collaboration and reflection contributes to student achievement. Therefore, the statistically significant associations identified in this study not only confirm the theoretical foundations of instructional supervision but also provide actionable evidence for improving educational outcomes in Kilungu Sub-County and beyond.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings from the study, draws conclusions based on the analysis, and offers practical recommendations for educational stakeholders. The study sought to examine the effect of principals' instructional supervisory practices on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. The supervisory practices examined included the supervision of professional records, classroom visitation, instructional leadership, and the provision of teacher professional development. The study utilized a mixed-methods approach, drawing data from students, teachers, and principals through questionnaires and interviews. Quantitative data were analyzed using descriptive statistics and Chi- square tests, while qualitative data provided contextual insights to deepen the interpretation of results.

5.2 An Overview of the Study's Results

This study aimed to investigate the effect of principals' instructional supervisory practices on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. The study focused on four key areas of supervision: supervision of professional records, classroom visitation, instructional leadership, and provision of teacher professional development. The following is a summary of the key findings organized by research objectives.

5.2.1 Principals' Supervision of Professional Records and Students' Academic Performance in Mathematics

The findings from the study indicate a significant positive relationship between principals' supervision of teachers' professional records and the academic performance of students in Chemistry. Schools where principals actively monitor and ensure the proper maintenance of professional records—such as lesson plans, schemes of work, and assessment reports—demonstrated a higher level of organization and alignment with curriculum standards, which contributed to improved student outcomes in Chemistry.

The supervision of professional records ensures that teachers are not only prepared for each lesson but also that their teaching methods and materials align with educational objectives. When principals regularly review these records, they provide teachers with the necessary feedback and guidance, helping them to improve instructional practices. This structured oversight fosters an environment of accountability, which enhances the quality of teaching and directly influences student learning.

The study shows that when principals are actively engaged in reviewing lesson plans, schemes of work, and assessment reports, teachers are more likely to organize their instruction effectively. This consistent oversight supports teachers in delivering high-quality lessons, which results in greater clarity for students and, consequently, better academic performance in Chemistry.

Moreover, the study suggests that principals who engage more frequently in supervising professional records are better positioned to identify areas where teachers may need additional support or professional development. By monitoring these records,

principals can offer timely interventions, such as additional resources or professional development opportunities, to help teachers address specific instructional challenges. This proactive approach ensures that teaching remains aligned with best practices and curriculum standards, which in turn contributes to improved student outcomes.

In essence, principals who effectively manage teachers' professional records foster an environment that encourages continuous improvement in teaching. By providing regular oversight and constructive feedback, principals contribute to a culture of accountability and growth among teachers, which has a direct and positive impact on students' academic performance in Chemistry. The significant relationship observed between principals' supervision of professional records and students' academic performance underscores the crucial role that instructional leadership plays in shaping educational outcomes.

5.2.2 Principals' Classroom Visitation and Students' Academic Performance in Mathematics

The study's findings highlight a significant relationship between principals' classroom visitation practices and the academic performance of students in Mathematics. Schools where principals engage in frequent classroom visitations, observing teaching methods and providing feedback, demonstrate stronger instructional practices, leading to improved student performance in Mathematics.

Classroom visitation by principals serves as a critical form of instructional supervision, offering principals firsthand insight into the teaching and learning processes. By directly observing classroom activities, principals can assess the quality of instruction, identify areas where teachers may need additional support, and offer immediate,

constructive feedback. This feedback plays a vital role in helping teachers refine their teaching methods and adapt their instructional strategies to meet students' needs more effectively.

The study indicates that when principals are actively involved in classroom visitations, teachers tend to feel more supported and motivated. The regular feedback provided by principals helps teachers address specific areas for improvement, such as clarifying complex concepts or enhancing student engagement. This active involvement also fosters a sense of accountability, encouraging teachers to maintain high instructional standards, which directly impacts the quality of education students receive in Mathematics.

Additionally, classroom visitations contribute to the creation of a collaborative environment within the school. When principals engage in regular observations and share their insights with teachers, it opens opportunities for professional dialogue and collective problem-solving. Teachers can reflect on their instructional practices and collaborate with their colleagues to adopt new strategies that improve student learning. This collaborative approach is particularly valuable in Mathematics, where instructional techniques and approaches can significantly affect student comprehension and achievement.

Furthermore, principals' classroom visitations allow them to monitor the implementation of the curriculum and ensure that teaching aligns with educational goals and standards. By observing the methods used to teach mathematical concepts, principals can ensure that lessons are designed to foster critical thinking, problem-solving, and application of mathematical skills, all of which are essential for student

success in the subject. The findings underscore the importance of principals' classroom visitations as a key aspect of instructional leadership. Principals who regularly visit classrooms, provide constructive feedback, and foster a culture of collaboration among teachers contribute to an environment where both educators and students thrive. This active engagement in classroom supervision is crucial for improving the quality of teaching and, consequently, enhancing student performance in Mathematics.

5.2.3 Principals' Instructional Leadership and Students' Academic Performance in Mathematics

The findings from the study indicate that principals' instructional leadership significantly influences students' academic performance in Mathematics. Principals who take an active role in guiding, supporting, and evaluating the instructional practices of their teachers contribute directly to the enhancement of student outcomes in the subject. The study highlights that principals' ability to set clear educational goals, engage in continuous feedback, and provide targeted professional development for teachers fosters an environment where both teaching and learning are optimized.

Principals who exhibit strong instructional leadership play a critical role in shaping the quality of instruction by setting high academic standards and providing the necessary resources and support for teachers. This leadership involves not only monitoring classroom practices but also establishing a culture of continuous improvement and collaboration among staff. When principals take a hands-on approach in supporting teachers' instructional methods, they help ensure that teaching practices align with the curriculum and that students are provided with the necessary tools to succeed. The study further reveals that principals who engage in instructional leadership activities, such as formal teacher evaluations, curriculum oversight, and setting clear expectations for

instructional quality, create a supportive environment that empowers teachers to improve their pedagogical skills. These principals are more likely to encourage professional development programs that are specifically tailored to the needs of Mathematics teachers, helping them stay current with instructional strategies and best practices. This ongoing professional growth ultimately benefits students by ensuring that they receive high-quality instruction that meets their learning needs.

Additionally, principals who lead by example, modeling best practices in teaching and encouraging reflective practices among their staff, promote a positive school climate that enhances both teacher effectiveness and student achievement. Instructional leadership is not solely about overseeing the curriculum, but also about inspiring teachers to strive for excellence in their teaching practices. The study emphasizes that when principals support teachers in their professional growth, it leads to a more effective teaching environment, where teachers feel confident and equipped to teach complex Mathematical concepts, which translates into better student outcomes.

The study's findings indicate that the role of instructional leadership goes beyond administrative responsibilities and includes actively guiding and nurturing the professional development of teachers. By fostering a shared vision of educational excellence and supporting teachers' instructional practices, principals help create a collaborative and supportive learning environment. This, in turn, enhances the quality of teaching in Mathematics, which directly impacts students' academic performance.

Therefore, principals' instructional leadership is a crucial factor in improving students' academic performance in Mathematics. Through their active involvement in curriculum development, teacher support, and the promotion of high standards, principals

significantly influence the teaching and learning processes, leading to enhanced student achievement. The study highlights the need for principals to continue to prioritize instructional leadership as a means of fostering an environment that promotes academic excellence and supports student success in Mathematics.

5.2.4 Principals' Provision of Teacher Professional Development and Students' Academic Performance in Mathematics

The findings from the study underscore the significant role that principals play in enhancing students' academic performance in Mathematics through the provision of teacher professional development (TPD). Principals who actively support and prioritize professional development for their teaching staff contribute to improving the quality of instruction, which directly benefits student outcomes in Mathematics.

Teacher professional development is essential for ensuring that educators remain knowledgeable about current teaching strategies, technological advancements, and the evolving needs of students. The study reveals that principals who regularly invest in targeted TPD programs for Mathematics teachers help improve the instructional methods and pedagogical skills necessary for fostering students' understanding of complex mathematical concepts. Such professional development initiatives can range from workshops and seminars to collaborative learning opportunities, all aimed at enhancing teachers' ability to deliver effective instruction and meet the diverse learning needs of their students.

The study highlights that when principals provide teachers with opportunities for professional growth, they not only enhance instructional practices but also boost teacher

morale and job satisfaction. Teachers who feel supported in their professional development are more likely to be motivated and engaged, which, in turn, positively influences their teaching performance. This is particularly crucial in Mathematics, where instructional quality plays a pivotal role in students' success. By facilitating ongoing TPD opportunities, principals ensure that teachers are equipped with the latest teaching strategies, which improves their effectiveness in the classroom and contributes to better student performance in Mathematics.

Moreover, the findings suggest that principals who actively promote collaborative TPD efforts, such as peer mentoring, team teaching, and professional learning communities, foster a culture of continuous improvement. This collaborative approach allows teachers to share best practices, discuss challenges, and work together to improve instructional strategies. In the context of Mathematics education, where problem-solving and conceptual understanding are critical, such collaborative efforts enable teachers to refine their teaching methods and adopt innovative strategies that can significantly enhance student learning outcomes.

The study further reveals that principals who encourage participation in TPD programs that focus on both content knowledge and pedagogical skills see a direct improvement in their teachers' ability to teach complex mathematical concepts. Professional development that is closely aligned with the specific needs of the subject area helps teachers build confidence in their subject knowledge and teaching practices. This directly impacts their ability to engage students in meaningful learning, resulting in better academic performance in Mathematics. Therefore, the provision of teacher professional development by principals plays a critical role in improving students' academic performance in Mathematics. By offering ongoing TPD opportunities,

principals ensure that teachers are continually enhancing their instructional skills, which positively influences teaching effectiveness. Furthermore, principals who promote collaborative TPD initiatives help foster a supportive learning environment for both teachers and students, ultimately leading to improved student achievement in Mathematics. The findings emphasize the importance of principals' active involvement in facilitating and supporting professional development as a key strategy for improving educational outcomes.

5.3 Conclusions

Based on the findings of the study, the following conclusions were drawn:

1. Supervision of professional records is a critical aspect of instructional leadership that plays a significant role in enhancing student achievement. When principals regularly monitor essential documents such as lesson plans, attendance registers, and assessment records, they foster accountability, ensure instructional alignment, and enable early intervention, all of which contribute to improved academic performance.

2. Classroom visitation by principals is an effective means of influencing the learning environment and boosting student engagement. The presence of principals in the classroom, alongside their interest in teaching activities, motivates students and provides teachers with valuable feedback. However, to maximize the impact of classroom visitations, they should be systematically

3. integrated with follow-up support and professional development opportunities for teachers.

4. Instructional leadership by principals significantly impacts both teaching quality and student outcomes. Principals who regularly monitor instructional practices and provide ongoing guidance and support contribute to improved lesson delivery and greater student understanding of Mathematics. Despite these benefits, the study acknowledges that principals face competing administrative demands, and a greater focus on collaboration and consistent standards could further strengthen their instructional leadership.

5. The provision of teacher professional development is directly linked to enhanced academic performance among students. Principals who facilitate or organize professional development initiatives help improve teachers' instructional practices, which in turn leads to better student engagement and comprehension. For professional development to be more effective, it should be informed by teacher feedback and supported by a sustained culture of continuous learning.

5.4 Recommendations

Based on the findings of the study, the following recommendations are made:

1. Principals should continue and intensify the regular supervision of professional records, including lesson plans, schemes of work, and assessment documentation. This practice ensures that teaching is aligned with curriculum objectives and provides early insights into student progress. Additionally, the adoption of digital

2. tools for record tracking and feedback is recommended to streamline the process, allowing for timely interventions and increased transparency.

3. Principals should not only maintain a visible presence in classrooms but also establish systematic post-observation feedback mechanisms. These mechanisms should include reflective discussions, coaching, or peer mentoring sessions that reinforce good teaching practices and address instructional challenges. Institutionalizing follow-up activities will ensure that classroom visitation becomes a more effective developmental tool, fostering continuous improvement rather than simply serving as a monitoring exercise.

4. Principals are encouraged to adopt a more inclusive and collaborative approach to instructional leadership. This can be achieved by engaging teachers in shared planning, regular departmental reviews, and reflective dialogue on pedagogy. These practices will help to address the existing gaps in collaborative culture and improve consistency in teaching standards. Instructional leadership should be prioritized in school improvement plans, and school heads should receive appropriate training to support these efforts.

5. Professional development initiatives should be designed based on the actual needs of teachers and delivered in a sustained, context-specific manner. Principals should gather feedback from teachers to inform training design, ensuring that professional development is not isolated but integrated with classroom practice and peer learning. Furthermore, education stakeholders, including the Ministry of Education and school boards, should allocate specific budgets for ongoing teacher development, particularly for technical subjects like Mathematics.

6. Given the challenges principals face in balancing administrative duties with instructional supervision, policymakers should consider supporting principals through leadership development programs. Additionally, some administrative responsibilities should be delegated to other staff members to allow principals to focus more on instructional leadership, enhancing their capacity to guide teachers and improve student outcomes.

7. Schools should establish systems for recognizing both student and teacher efforts related to supervision and academic improvement. Acknowledging progress and professional growth can reinforce a culture of excellence and motivate all stakeholders to take an active role in the teaching–learning process. Such recognition systems will help foster a sense of accountability and pride in the educational process.

5.5 Suggestions for Further Studies

Based on the findings and limitations of this study, the following suggestions for further research are proposed:

1. Future studies should be conducted in other sub-counties or across multiple counties to compare how principals' instructional supervisory practices vary by region.
2. This study used a cross-sectional design, which provides a snapshot of the current situation to capture changes over time and provide insights into the long-term effects of principals' supervisory practices on students' academic outcomes.

3. Further research should investigate how principals' supervisory practices influence academic performance in other core subjects, such as English, Science, or Kiswahili. This would contribute to a more comprehensive understanding of instructional leadership across different disciplines, shedding light on whether the practices identified in this study are consistent across subjects.
4. Future studies could explore how principals' supervisory practices operate in private school settings and assess whether the outcomes differ significantly from those in public institutions.

REFERENCES

Adeniran, A. O. (2025). Understanding Cronbach's Alpha in Social and Management Studies. *Current Science Research Bulletin*, *2*(02), 11-16.

Alimi, O. S., Ehinola, G. B., & Alabi, F. O. (2021). Principals' instructional leadership and students' academic performance in public secondary schools in Nigeria. *Journal of Educational Management*, 19(2), 55-70.

Bambi, B. I., Daniel, L. & Barkindo, H. M. (2021). Principals' Supervision of Teachers' Instructional Strategies and Assessment Method as Correlates of Students' Academic Performance in Business Studies in Junior Secondary Schools in Taraba State, Nigeria. *Advances in Multidisciplinary and Scientific Research Journal*. https://doi.org/10.22624/aimed/abmic2021-v2-p10

Blase, J., & Blase, J. (2020). Effective instructional leadership: Teachers' perspectives on how principals promote teaching and learning in schools. *Journal of Educational Administration*, 38(2), 130-141.

Bresler, L. & Stake, R. E. (2017). Qualitative research methodology in music education. *Critical essays in music education*, 1(2), 113-128.

Brown, K., Benson, G., & Stein, M. (2021). Enhancing classroom observation through technology: Implications for instructional leadership. *Journal of Educational Administration*, 59(4), 529-548.

Bryk, A. S., Sebring, P. B., & Allensworth, E. (2021). *Organizing schools for improvement: Lessons from Chicago*. Illinois: University of Chicago Press.

Bush, T., & Glover, D. (2019). School leadership and students' academic outcomes: Exploring the impact of principal leadership on students' academic achievement. *Educational Management Administration & Leadership*, 47(5), 783-800.

Casteel, A., & Bridier, N. L. (2021). Describing Populations and Samples In Doctoral Student Research. *International Journal of Doctoral Studies, 16*(1),473-489.

Chabalala, G., & Naidoo, P. (2021). Teachers' and middle managers' experiences of principals' instructional leadership towards improving curriculum delivery in schools. *South African Journal of Childhood Education, 11*(1), 1-10.

Coelli, M., & Green, D. A. (2019). The role of instructional leadership in high-performing schools: Evidence from classroom observations. *Economics of Education Review*, 73, 101932.

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2020). *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute.

Desimone, L. M., & Garet, M. S. (2015). Best practices in teachers' professional development in the United States. *Psychology, Society, & Education*, 7(3), 252-263.

Didion, L., Toste, J. R., & Filderman, M. J. (2020). Teacher professional development and student reading achievement: A meta-analytic review of the effects. *Journal of Research on Educational Effectiveness*, *13*(1), 29-66.

Fletcher, A. J. (2020). Applying critical realism in qualitative research: methodology meets method. *International journal of social research methodology*, 20(2), 181- 194.

Flick, U. (2020). *Introducing research methodology: A beginner's guide to doing a research project*. Newcastle: Sage.

Fullan, M., & Quinn, J. (2020). *Coherence: The right drivers in action for schools, districts, and systems*. Thousand Oaks: Corwin Press.

Fuller, C., & Hollingworth, S. (2019). The role of principals in data-driven decision making in schools. *Educational Management, Administration & Leadership*, 47(6), 891-910.

Gawlik, M. (2018). Instructional leadership and the charter school principal. *School Leadership & Management*, *38*(5), 539-565.

Grissom, J. A., Egalite, A. J., & Lindsay, C. A. (2021). How principals affect students and schools: A systematic synthesis of two decades of research. *Educational Researcher*, 50(9), 612-628.

Gronn, P. (2003). *The new work of educational leaders: Changing leadership practice in an era of school reform*. London: Paul Chapman Publishing.

Gurr, D., Drysdale, L., & Mulford, B. (2020). Instructional leadership in high-performing schools. *School Leadership & Management*, 40(3), 215-233.

Guskey, T. R., & Yoon, K. S. (2020). What works in professional development. *Phi Delta Kappan*, 81(7), 748-750.

Hallinger, P., & Heck, R. H. (2017). Collaborative leadership and school improvement: Understanding the impact on school capacity and student learning. *School Effectiveness and School Improvement*, 28(4), 453-478.

Hallinger, P., Wang, W. C., & Chen, C. W. (2019). Assessing the effects of instructional leadership on students' academic achievement in Hong Kong secondary schools. *School Effectiveness and School Improvement*, 30(1), 36-54.

Haraldsen, G. (2023). What computerized business questionnaires and[1] questionnaire management tools can offer. *Advances in Business Statistics, Methods and Data Collection*, 335-355.

Harris, A., & Jones, M. (2020). The impact of principal leadership on student outcomes: The mediating role of teacher instructional practices. *School Effectiveness and School Improvement*, 31(3), 362-383.

Harris, A. (2008). Distributed leadership: The role of the headteacher in leading school improvement. *School Leadership & Management*, 28(3), 205-221.

Heeringa, S. G., West, B. T., Heeringa, S. G., & Berglund, P. A. (2017). *Applied survey data analysis*. chapman and hall/CRC.

Imamah, N. and Churrahman, T. (2022). Academic Supervision by School Principals for Improving Teacher Performance. *KnE Social Sciences*. https://doi.org/10.18502/kss.v7i10.11209

Jones, M., & Harris, A. (2020). The impact of principal leadership on student outcomes: The mediating role of teacher instructional practices. *School Effectiveness and School Improvement*, 31(3), 362-383.

Kilag, O. K. T., & Sasan, J. M. (2023). Unpacking the Role of Instructional Leadership in Teacher Professional Development. *Advanced Qualitative Research*, *1*(1), 63-73.

Killion, J. (2020). *The feedback process: Transforming feedback for professional learning*. Learning Forward.

Knight, J. (2018). *Instructional coaching: A partnership approach to improving instruction*. Thousand Oaks, California: Corwin Press.

Kraft, M. A., & Blazar, D. (2018). Taking teacher coaching to scale: Can personalized professional development improve teaching across schools? *Educational Researcher*, 47(8), 533-545.

Kraft, M. A., Marinell, W. H., & Yee, D. (2016). School organizational contexts, teacher turnover, and student achievement: Evidence from panel data. *American Educational Research Journal*, 53(5), 1411-1449.

Kumar, R. (2018). *Research methodology: A step-by-step guide for beginners*. London: Sage.

Kythreotis, A., Pashiardis, P., & Kyriakides, L. (2019). Instructional leadership in schools: A review of leadership practices in improving student outcomes. *International Journal of Educational Management*, 33(5), 1152-1168.

Leithwood, K. A., & Hallinger, P. (1993). Cognitive perspectives on educational administration: An introduction. *Educational Administration Quarterly*, *29*(3), 296-301.

Leithwood, K., & Riehl, C. (2005). What we know about successful school leadership. In

W. A. Firestone & C. Riehl (Eds.), *A new agenda: Directions for research on educational leadership* (pp. 22-50). Teachers College Press.

Leithwood, K., Harris, A., & Hopkins, D. (2008). Seven strong claimed about successful school leadership. *School Leadership & Management*, 28(1), 27-42.

Leithwood, K., Harris, A., & Hopkins, D. (2020). Seven strong claimed about successful school leadership revisited. *School Leadership & Management*, 40(1), 5-22.

Louis, K. S., Murphy, J., & Smylie, M. (2019). Caring leadership in schools: Findings from exploratory analyses. *Educational Administration Quarterly*, 55(4), 645-682.

Marzano, R. J., Waters, T., & McNulty, B. A. (2019). *School leadership that works: From research to results*. Alexandria, Virginia: ASCD.

Ministry of Education, Kenya. (2019). *Basic Education Statistical Booklet*. Nairobi: Ministry of Education.

Ministry of Education, Kenya. (2023). *KCSE Results Analysis*. Nairobi: Ministry of Education.

Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People*, *7*(1), 23-48.

Muthama, S. M., & Mativo, P. M. (2022). The impact of instructional leadership on students' academic performance in Mathematics in Kilungu Sub-County, Kenya. *Journal of Educational Leadership and Policy Studies*, 4(1), 23-37.

Muthoni, M. J., Gitumu, M. W., & Mwaruvie, J. (2020). The relationship between headteachers' supervision of professional documents and academic performance in primary schools in Embu and Murang'a counties. *International Journal of Pedagogy and Teacher Education*, *4*(2), 92-104.

Naicker, I., & Mestry, R. (2019). The instructional leadership role of primary school principals. *South African Journal of Education*, 39(1), 1-12.

Ngui, P. M., Mulwa, J. K., & Mwanza, R. (2023). Headteachers' supervision practices in teaching/learning and pupils' academic performance in public primary schools in Kenya.

Nyagosia, P. O., Waweru, P. N., & Njuguna, D. (2020). Instructional leadership and its impact on students' academic performance in national examinations: A study of secondary schools in Kenya. *International Journal of Educational Management*, 34(5), 851-867.

O'Sullivan, M. (2021). The impact of instructional supervision on teaching quality: A case study. *Educational Management Administration & Leadership*, 49(5), 731-745.

Robinson, V. M., Lloyd, C. A., & Rowe, K. J. (2020). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly*, 44(5), 635-674.

Robinson, V. M., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly*, 44(5), 635-674.

Robinson, V., & Gray, E. (2019). Effective instructional leadership practices: Evidence from Australian schools. *Educational Management Administration & Leadership*, 47(3), 456-472.

Rowe, C. (2020). *Relationship Between Teacher Professional Development and Urban High School Students' Reading Achievement* (Doctoral dissertation, Walden University).

Salaganda, G., Mwamakula, F., & Rupia, C. (2024). Contribution of Heads of Schools' Classroom Visitation Practices on Teachers' Job Performance in Public Secondary Schools in Mbogwe, Geita–Tanzania. *International Journal of Education Foundations*, *1*(2), 79-86.

Sebastian, J., & Allensworth, E. (2019). Linking principal leadership to students' academic achievement: The role of teacher-student relationships and climate. *Educational Administration Quarterly*, 55(4), 532-564.

Sebastian, J., Allensworth, E., & Huang, H. (2020). The role of teacher leadership in how principals influence classroom instruction and student learning. *American Journal of Education*, 126(1), 205-240.

Sebastian, J., Huang, H., & Allensworth, E. (2019). Examining integrated leadership systems in high schools: Connecting principal and teacher leadership to organizational processes and student outcomes. *School Effectiveness and School Improvement*, 30(3), 339-362.

Sember, V., Meh, K., Sorić, M., Starc, G., Rocha, P., & Jurak, G. (2020). Validity and reliability of international physical activity questionnaires for adults across EU countries: systematic review and meta-analysis. *International journal of environmental research and public health*, *17*(19), 7161.

Shatzer, R. H., Caldarella, P., & Hallam, P. R. (2014). Comparing the effects of instructional and transformational leadership on student achievement: Implications for practice. *Educational Management Administration & Leadership*, 42(4), 445-459.

Spillane, J. P., & Healey, K. (2019). Leadership practice and the changing role of principals in the 21st century. *Journal of Educational Administration*, 57(3), 305- 324.

Spillane, J. P., Halverson, R., & Diamond, J. B. (2004). Towards a theory of leadership practice: A distributed perspective. *Journal of Curriculum Studies*, 36(1), 3-34.

Sun, J., & Leithwood, K. (2020). Leadership and teachers' emotions: Supporting teachers to succeed. *Educational Management Administration & Leadership*, 48(1), 165- 184.

Sun, J., Penuel, W. R., & Frank, K. A. (2020). Leadership and teachers' professional learning: Examining the roles of formal and informal leaders. *Educational Administration Quarterly*, 56(3), 367-408.

Ubogu, R. (2024). Supervision of instruction: a strategy for strengthening teacher quality in secondary school education. *International Journal of Leadership in Education*, *27*(1), 99-116.

Wiliam, D. (2018). *Creating the schools our children need: Why what we're doing now won't help much (and what we can do instead)*. Learning Sciences International.

Yosief, Y. T., Okemasisi, K., & Paulos, W. M. (2022). Establishing How Head-Teachers'classroom Visitation Practice Influences Students'performance In Public Junior Schools In Keren Sub-Zone, Eritrea. *European Journal of Special Education Research*, *8*(3).

APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

Dear Sir/ Madam,

RE: ACADEMIC RESEARCH PROJECT

I am a student of Master of Education at Machakos University. I wish to conduct research entitled **principals' instructional supervisory practices and students' academic performance in mathematics in public secondary schools in Kilungu sub-county, Kenya**. A questionnaire has been designed and was used to gather relevant information to address the research objective of the study. The purpose of writing to you is to kindly request you to grant me permission to collect information on this important subject from your organization.

Please note that the study was conducted as academic research and the information provided will be treated in strict confidence. Strict ethical principles will be observed to ensure confidentiality and the study outcomes and reports will not include reference to any individuals.

Your acceptance will be highly appreciated. Yours faithfully,

COLLETA NGAMI KUMONYA E55-12117-2021

APPENDIX II: STUDENTS' QUESTIONNAIRE

I am conducting a research study to investigate how the principals' instructional supervisory practices relates to students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. To accomplish this, I am requesting your voluntary participation in completing a confidential and anonymous questionnaire. The results of the study will inform policy decisions to enhance principals' instructional supervisory practice in public secondary schools in Kilungu Sub-County, Kenya.

SECTION A: DEMOGRAPHIC INFORMATION

1. Age Below 14 years [ ] 15-18 years [ ] above 18 years [ ]

2. Gender? Male [ ] Female [ ]

SECTION B: PRINCIPALS' SUPERVISION OF PROFESSIONAL RECORDS

Please indicate your level of agreement with the following statements on the effect of principals' supervision of professional records on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on principals' supervision of professional records	1	2	3	4	5
The principal often checks to ensure that our attendance and academic records are accurate.					
I am aware when the principal updates or reviews our academic progress records.					
The principal discusses the importance of keeping good records with us.					
I feel that the principal's attention to records helps me feel supported in my studies.					
Knowing that the principal oversees our records makes me feel more responsible for my work.					
I believe the principal's supervision of records makes our school run better.					

SECTION C: PRINCIPALS' CLASSROOM VISITATION

Please indicate your level of agreement with the following statements on the effect of principals' classroom visitation on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on principals' classroom visitation	1	2	3	4	5
The principal often visits our classroom to see how we are being taught.					
I like it when the principal comes to our classroom and talks to us.					
The principal's visits make our classroom environment better.					
The principal gives teachers advice based on what is seen during classroom visits.					
I feel more interested in participating in class when the principal is present.					
The principal's visits help me see how important good teaching is.					

SECTION D: PRINCIPALS' INSTRUCTIONAL LEADERSHIP

Please indicate your level of agreement with the following statements on the effect of principals' instructional leadership on students' academic performance in Mathematics

in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on principals' instructional leadership	1	2	3	4	5
I notice when the principal talks to teachers about how they are teaching.					
The principal ensures that teachers do a good job through regular checks.					
Teachers improve their teaching because the principal monitors them.					
The principal's instructional leadership makes them more responsible.					
I believe the principal's involvement in monitoring teachers helps us learn better.					
Teachers feel supported by the principal's checks and advice.					

SECTION E: PRINCIPALS' PROVISION OF TEACHER PROFESSIONAL DEVELOPMENT

Please indicate your level of agreement with the following statements on the effect of principals' provision of teacher professional development on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on principals' provision of teacher professional development	1	2	3	4	5
The principal arranges for teachers to attend training sessions to improve their teaching skills.					
I have seen improvements in how teachers teach after attending training sessions arranged by the principal.					
The principal's support for teacher training helps us learn better.					
Teachers use new methods they learn in training to help us understand better.					
I appreciate when the principal recognizes teachers who work hard to improve through training.					
The principal's support for teacher training makes our school a better place to learn.					

SECTION F: STUDENTS' ACADEMIC PERFORMANCE IN MATHEMATICS

Please indicate your level of agreement with the following statements on the students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on students' academic performance in Mathematics	1	2	3	4	5
I feel confident in my ability to understand and apply mathematical concepts.					
I actively engage in class activities and discussions related to Mathematics.					
I consistently complete my Mathematics assignments and homework on time.					
I seek help from my teacher or peers when I encounter difficulties with Mathematics.					
I perform well on Mathematics assessments, including tests and quizzes.					
I am motivated to improve my skills and knowledge in Mathematics.					

Thank You.

APPENDIX III: TEACHERS' QUESTIONNAIRE

Dear Participant,

Thank you for agreeing to participate in this study. Your input is invaluable and will contribute to a better understanding of the effect of principals' instructional supervisory practices on students' academic performance in Mathematics. Please take a few moments to complete the following questionnaire honestly and to the best of your ability. Your responses will be kept confidential, and participation is voluntary.

SECTION A: DEMOGRAPHIC INFORMATION

1. Age:

   18-25 years [ ] 26-35 years [ ] 36-45 years [ ] 46-55 years [ ]

   56 years and above [ ]

2. Gender:

   Male [ ] Female [ ]

3. Years of Teaching Experience:

   Less than 1 year [ ] 1-5 years [ ]

   6-10 years [ ] 11-15 years [ ]

More than 15 years [ ]

4. Highest Level of Education:

High school diploma [ ] Bachelor's degree [ ] Master's degree [ ] Doctoral degree [ ]

SECTION B: PRINCIPALS' SUPERVISION OF PROFESSIONAL RECORDS

Please indicate your level of agreement with the following statements on the effect of principals' supervision of professional records on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on principals' supervision of professional records	1	2	3	4	5
The principal regularly reviews professional records to ensure compliance with educational standards.					
The principal effectively communicates expectations regarding professional record-keeping to staff.					
The principal provides constructive feedback on the maintenance of professional records.					
The principal demonstrates a clear understanding of the importance of professional record supervision.					

The principal ensures that professional records are updated and accurate.					
The principal actively supports staff in addressing any challenges related to professional record-keeping.					

SECTION C: PRINCIPALS' CLASSROOM VISITATION

Please indicate your level of agreement with the following statements on the effect of principals' classroom visitation on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on principals' classroom visitation	1	2	3	4	5
The principal conducts regular classroom visits to observe teaching practices.					
The principal provides timely and constructive feedback following classroom observations.					
The principal demonstrates a visible presence during classroom visitations.					
The principal actively engages with both teachers and students during					

classroom visits.					
The principal's classroom visitations contribute to a positive school climate.					
The principal utilizes classroom visitations as an opportunity for professional development.					

SECTION D: PRINCIPALS' INSTRUCTIONAL LEADERSHIP

Please indicate your level of agreement with the following statements on the effect of principals' instructional leadership on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on principals' instructional leadership	1	2	3	4	5
The principal effectively monitors teachers' lesson planning and preparation.					
The principal provides guidance and support to teachers based on monitoring outcomes.					
The principal ensures consistency in teaching standards through monitoring activities.					

The principal utilizes multiple methods for monitoring teacher performance.					
The principal encourages a culture of collaboration and reflection through monitoring processes.					
The principal acknowledges and addresses challenges identified during teacher monitoring.					

SECTION E: PRINCIPALS' PROVISION OF TEACHER PROFESSIONAL DEVELOPMENT

Please indicate your level of agreement with the following statements on the effect of principals' provision of teacher professional development on students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on principals' provision of teacher professional development	1	2	3	4	5
The principal prioritizes teacher professional development within the school's budget and resources.					
The principal offers a variety of professional development opportunities tailored to teacher needs.					

The principal actively sought feedback from teachers to inform professional development initiatives.					
The principal supports teachers in implementing new skills and strategies learned through professional development.					
The principal fosters a culture of continuous learning and growth among staff.					
The principal recognizes and celebrates teacher achievements and contributions to professional development.					

SECTION F: STUDENTS' ACADEMIC PERFORMANCE IN MATHEMATICS

Please indicate your level of agreement with the following statements on the students' academic performance in Mathematics in public secondary schools in Kilungu Sub-County, Kenya. Where 5=Strongly agree, 4= Agree, 3=Neutral, 2= Disagree and 1= Strongly disagree

Statements on students' academic performance in Mathematics	1	2	3	4	5
I observe that my students demonstrate confidence in their ability to understand and apply mathematical concepts.					
I notice active participation from my students in class activities and					

discussions related to Mathematics.					
My students consistently submit their Mathematics assignments and homework on time.					
I observe that my students proactively seek help when they encounter difficulties with Mathematics.					
Based on assessments, including tests and quizzes, I perceive that my students perform well in Mathematics.					
I see that my students exhibit motivation and eagerness to improve their skills and knowledge in Mathematics.					

Thank You.

APPENDIX IV: INTERVIEW GUIDE FOR PRINCIPALS

1 What instructional supervisory activities do you typically perform in public secondary schools?

2 Can you elaborate on how you ensure that instructional materials are provided to teachers to support their teaching practices?

3 Could you discuss some of the in-service courses or professional development opportunities that you facilitate for teachers in your county?

4 How do you determine the relevance and effectiveness of these professional development courses for enhancing teaching practices?

5 In your experience, do principals typically review teachers' professional documents?

If so, could you describe this process?

6 Which specific documents do principals commonly check during their review of teachers' professional records?

7 Do you personally visit classrooms to observe teachers' lessons? (b) If yes, could you explain how these classroom visitations contribute to your role as an instructional leader?

8 How do you provide feedback to teachers based on your observations during classroom visitations?

9 Can you share any strategies or initiatives you have implemented to support teachers in improving their instructional practices?

10 How do you ensure that there is consistency in teaching standards across different classrooms and subject areas within the school?

11 What challenges, if any, do you encounter in overseeing instructional practices within the school, and how do you address these challenges?

APPENDIX V: INTRODUCTION LETTER

REPUBLIC OF KENYA

Telegrams:.....

Telephone:.....

Email:scdekilungu09@gmail.com

Education Office,
Kilungu Sub County
P.O. Box 568 - 90130
NUNGUNI.

MINISTRY OF EDUCATION
STATE DEPARTMENT OF EARLY LEARNING & BASIC EDUCATION

Date: 18th April 2025

TO

Whom it may Concern

RE: COLLETA NGAMI KUMONYA (E55/12117/2021)

The above mentioned is a master's student at Machakos University and a teacher at kilungu Boys Sec. School. Kindly allow/assist her conduct her research in your institution.

SUB-COUNTY DIRECTOR OF EDUCATION
KILUNGU SUB-COUNTY
P.O. Box 568-90130 NUNGUNI
Date: 13/04/25

KIRIMI MIRITI
SUB COUNTY DIRECTOR OF EDUCATION
KILUNGU

APPENDIX VI: NACOSTI PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 859341

Date of Issue: 10/May/2025

RESEARCH LICENSE

This is to Certify that Ms., COLLETA NGAMI KUMONYA of Machakos University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Makueni on the topic: PRINCIPALS' INSTRUCTIONAL SUPERVISORY PRACTICES ON STUDENTS' ACADEMIC PERFORMANCE IN MATHEMATICS IN PUBLIC SECONDARY SCHOOLS IN KILUNGU SUB-COUNTY, KENYA for the period ending : 10/May/2026.

License No: NACOSTI/P/25/4172858

859341

Applicant Identification Number

Deputy Director
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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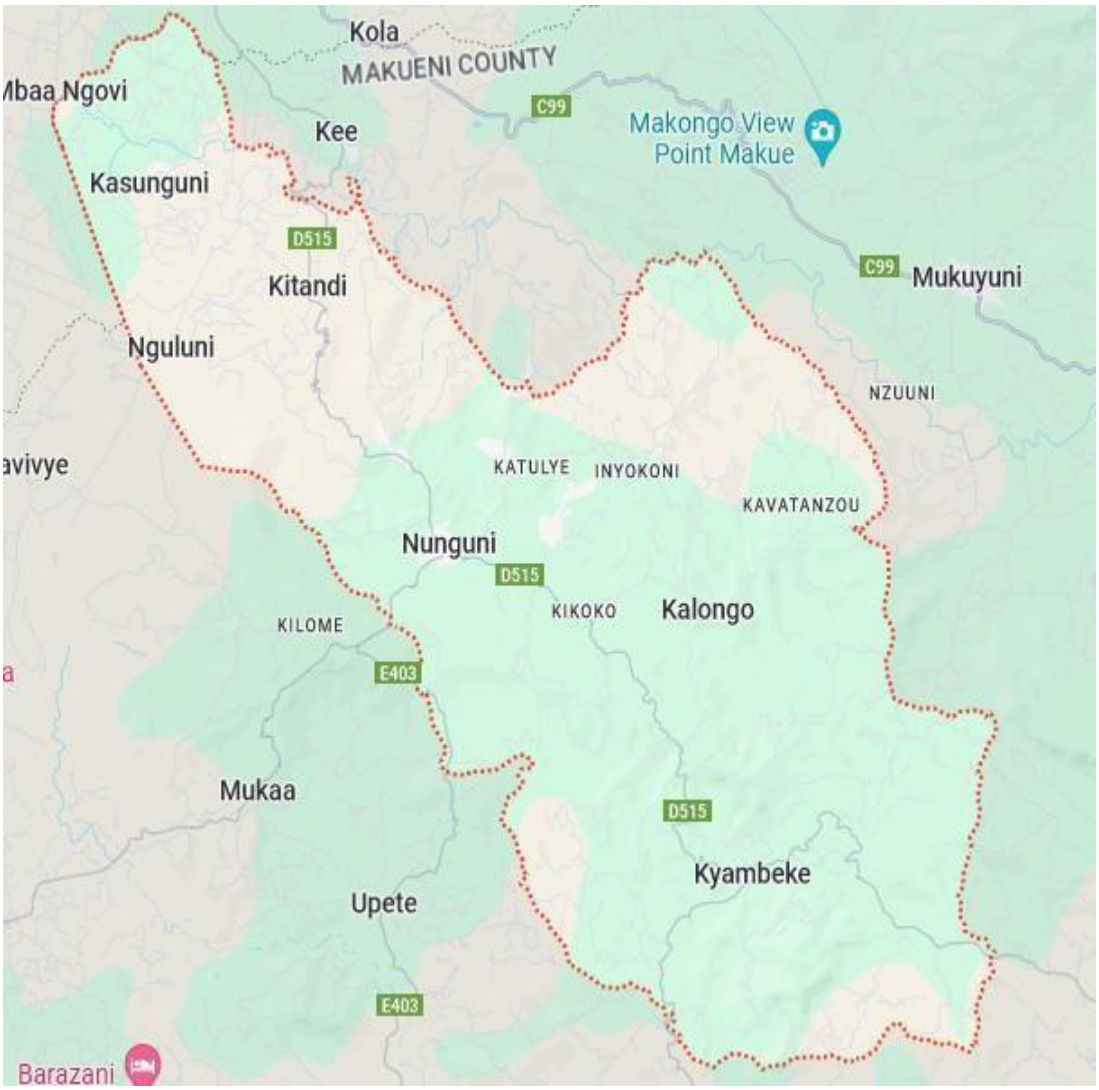
See overleaf for conditions

APPENDIX VII: MAP OF KILUNGU SUB-COUNTY



APPENDIX IX: TRANSMITTAL LETTER

MACHAKOS UNIVERSITY
OFFICE OF THE DEAN GRADUATE SCHOOL

Telephone:254-(0)735247939, (0)723805929
Email: graduateschool@mksu.ac.ke
Website: www.mksu.ac.ke

P.O Box 136-90100
Machakos
KENYA

REF. MksU/ASA/GS/3/3

9th April, 2025

The Director,
National Commission for Science, Technology and Innovation
P.O Box 30623,
NAIROBI

Dear Sir

RE: COLLETA NGAMI KUMONYA (E55/12117/2021)

The above named is a masters student in the second year of study and has cleared course work. The University has cleared her to conduct a research entitled: **"Principals' Instructional Supervisory Practices on Students' Academic Performance in Mathematics in Public Secondary Schools in Kilungu Sub-County, Kenya."**

Kindly assist her with a Research Permit in order to undertake the research.

Thank you.

DEAN OF GRADUATE SCHOOL P.O. BOX 136 - 90100, MACHAKOS
03 APR 2025
MACHAKOS UNIVERSITY

PROF. KIMITI RICHARD PETER, PhD
DEAN GRADUATE SCHOOL

KRP/em