



WALLAGA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

**ROLE OF SCHOOL LEADERSHIP IN TECHNOLOGY
INTEGRATION: IN PRIMARY SCHOOL OF KOLFE
KERANIYO SUB CITY OF ADDIS ABABA
ADMINISTRATION**

MA. THESIS

BY:

ABRAHAM BOGALE

JUNE,2026

NEKEMTE, ETHIOPIA



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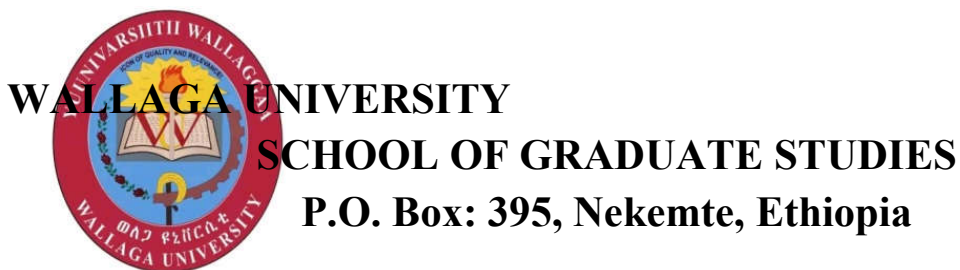
**A THESIS SUBMITTED TO COLLEGE OF EDUCATIONAL AND
BEHAVIOURAL SCIENCE IN PARTIAL FULFILMENTS OF THE
REQUIREMENT FOR THE AWARD OF THE MASTERS OF ARTS
(MA) IN SCHOOL LEADERSHIP AND MANAGEMENT**

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June, 2026

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APPROVAL SHEET FOR SUBMITTING FINAL THESIS

As member of the Board of the Final M.A. thesis open defence, we certify that we have read and evaluated the thesis prepared by **Abraham Bogale** Under the title “**Role of School Leadership in Technology Integration: In Primary School of Kolfe Keraniyo Sub City of Addis Ababa Administration**” and recommended that the thesis is accepted as fulfilling the thesis requirement for the Degree of Master of Art (MA) In Educational Leadership and Management.

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Certification of the final thesis

I hereby certify that all the correction and recommendation suggested by the board of examiners are incorporated in to the final thesis entitled “**Role of School Leadership in Technology Integration: In Primary School of Kolfe Keraniyo Sub City of Addis Ababa Administration**” by **Abraham Bogale**.

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STATEMENT OF THE AUTHOR

I Mr. **Abraham Bogale Under** hereby declare and affirm that the thesis entitled “**“Role of School Leadership in Technology Integration: In Primary School of Kolfe Keraniyo Sub City of Addis Ababa Administration”** is my own work conducted under the supervision of **Olana Dabal (PhD)**. I have followed all the ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I have adequately cited and referenced all the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and I have not misrepresented, fabricated, or falsified any idea / data / fact / source in my submission. This thesis is submitted in partial fulfilment of the requirement for a degree from the Post Graduate Studies at Wallaga University. I further declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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ACRONYMS/ABBREVIATIONS

TPACK	: Technological Pedagogical Content Knowledge
Context	: Framework for teacher knowledge needed for tech integration.
SAMR	: Substitution, Augmentation, Modification, Redefinition
PD	: Professional Development
LMS	: Learning Management System
ICT	: Information and Communication Technology
TK	: Technological Knowledge
PK	: Pedagogical Knowledge
CK	: Content Knowledge
MoE	: Ministry of Education
ESDP	: Education Sector Development Plan (Ethiopia)
FGD	: Stands for Focus Group Discussion

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ABSTRACT

The aim of this study was to investigate the role of school leadership integration to technology in Primary School of Kolfe Keraniyo Sub City Of Addis Ababa Administration. The researcher employed descriptive survey design and quantitative research approach. The study included 262 teachers, and school leaders from selected primary schools. The researcher used questionnaires, and used SPSS version 25 to perform descriptive and inferential statistical tests. The results of the main findings show that technology integration was at a moderate level, with a grand mean of 2.765. In particular, access to ICT devices (mean = 3.05) and leadership vision (mean = 3.25) seemed to be doing better, even though the technical support (mean = 2.22) and professional development (mean = 1.98) stayed weak. Educational leadership practices were also low, with an average mean score of 2.36, and the main gaps were seen in communicating the ICT vision and supporting innovation. Correlation analysis also indicated a positive and significant connection between leadership and technology integration. Meanwhile, regression analysis confirmed that leadership had a strong effect on ICT integration ($R^2 = 0.997$, $p < 0.001$). Furthermore, the findings of the study showed that schools had limited ICT infrastructure, unreliable internet access, poor maintenance services, and not enough on-going teacher training. Most teachers used technology for simpler lesson activities, rather than applying more advanced digital learning approaches. The study concluded that effective educational leadership is a central ingredient for successful technology integration. When leadership backing is weak, the ICT roll out stays inconsistent and incomplete in schools. The study recommends strengthening leadership capability, improving ICT infrastructure, scaling up professional development programs, and setting up continuous monitoring

Key words: Educational leadership, technology integration, student academic achievement,

CHAPTER ONE

INTRODUCTION

This chapter introduces the study by presenting the background of the research problem, articulating the problem statement, and setting out the objectives that direct the inquiry. It further highlights the importance of the study in exploring how educational leadership contributes to the effective integration of technology. The chapter also specifies the delimitations and limitations that establish the boundaries of the research. To promote conceptual clarity, key terms are operationally defined. Lastly, the chapter closes with a description of the study's organization, summarizing how the research is arranged across the following chapters.

1.1. Background of the study

The educational environment has undergone major changes due to rapid technological development because schools need dedicated leaders who can manage technology implementation processes (Richardson *et al.*, 2021). Educational leaders play a crucial role because they support digital literacy programs which enhance teaching methods and ensure all students receive equal access to technological resources. The main issue educational institutions encounter today emerges because they must adopt digital technologies which they do not yet understand how to use effectively. Educational institutions experience difficulties because their leadership capabilities remain insufficient and they lack essential training programs while their staff members resist adopting new methods (Ertmer & Ottenbreit-Leftwich, 2013). The research examines how educational leadership affects schools' success in implementing technology through various school leadership roles including principals and instructional coaches who provide teachers with technology-based tools for improving student learning. The research investigates effective technology integration practices in 1-8 education through analysis of leadership methods and policy regulations and training development frameworks.

Educational leaders drive technology integration through their ability to develop a common vision which they use to create an innovative atmosphere while supplying essential

technology resources (Fullan 2016). According to the International Society for Technology in Education (2018), effective leaders must model digital learning by demonstrating the use of technology in administrative and instructional tasks, provide professional development to ensure teachers are proficient in using digital tools, establish policies that promote equitable access to technology, and encourage collaboration among stakeholders to support continuous improvement. Research shows that different leadership styles create distinct effects on how organizations adopt new technologies. Transformational leaders who motivate and inspire teachers create a better environment for technology adoption than transactional leaders who enforce rules through mandatory compliance (Anderson and Dexter 2005). The use of distributed leadership models which share decision-making power between administrators, teachers, and technology specialists has proven to support sustainable technology implementation (Hammond et al. 2021).

The implementation of technology in educational institutions faces multiple challenges which obstruct its successful execution. Educators show resistance to change because they fear failure and prefer traditional methods which constitute a major obstacle to progress according to Ertmer and his colleagues from 2012. The lack of proper infrastructure in low-income areas results in educational institutions dealing with obsolete equipment and substandard internet access and limited technical assistance according to Selwyn 2017. The inadequate training which many teachers receive in technology integration results in their ineffective educational implementation according to Kopcha 2012. Schools face additional restrictions on their capacity to fund innovative technologies because of existing policy and funding constraints according to Zhao and Frank 2003. Existing studies demonstrate that leadership plays a crucial role in technology adoption yet researchers still need to examine more deeply how different leadership styles influence digital transformation across various school environments. This study seeks to address this gap by examining successful case studies, leadership frameworks, and policy recommendations that can facilitate effective technology adoption in schools.

The Ministry of Education 2021 report shows that Ethiopia needs educational technology for its urban areas, especially Addis Ababa, which currently implements modern teaching methods. Educational leaders in Kolfe Keraniyo's primary schools play a pivotal role in

driving technology integration by setting a clear vision, mobilizing resources, and fostering a culture of innovation (Mekonnen & Assefa, 2023). Successful schools in the sub-city often have principals who actively promote digital literacy by modelling technology use in administrative tasks and classroom observations (Girma & Solomon, 2022). The school leaders encounter three main challenges because they have limited financial resources and their infrastructure does not meet requirements and teachers refuse to accept new teaching methods (Habtamu & Desalegn, 2021). Research shows that transformational leadership approaches, which focus on collaborative decision-making, lead to better technology adoption results than top-down directives (Asrat & Yigzaw, 2023). Local universities and NGOs and private sector companies can establish partnerships to obtain critical resources for teacher training and infrastructure projects (Tadesse & Bekele, 2022).

Kolfe Keraniyo primary schools need dedicated leaders and professional training programs and better school facilities to succeed at technology implementation. School leaders need to collaborate with the Addis Ababa Education Bureau and community organizations to obtain resources and establish an environment that supports digital learning (Tesfaye & Mebratu, 2023). Primary schools in the sub-city can use technology to improve their teaching quality and student engagement and learning outcomes by solving these problems.

This study contributes to the broader discourse on educational technology in Ethiopia by providing insights into the role of leadership in overcoming barriers to digital transformation at the primary school level.

1.2. Statement of problem

The global vision for educational technology integration sees three elements as essential to transform educational systems through educational technology, which includes equal opportunity access, essential infrastructure elements, and educational digital toolkit resources that support teaching activities (UNESCO, 2022). An Ethiopian policy in this aspect is the support of ICT in education (Ministry of Education [MoE], 2023), which expects schools to have leadership that drives innovation, teachers with high skills, and resources that are always available (Abebe & Mulugeta, 2022). In Kolfe Keraniyo Sub-City primary schools, the current situation shows a severe infrastructure shortage, which includes missing

functional computer labs and minimal internet access and teachers lacking training and support to use their existing technology (Kolfe Keraniyo Education Office, 2023). The gap that exists is indicative of a larger problem facing the entire continent, as it is only about 28% of African primary schools that have computer labs that are fully operational (African Union, 2022). The gap demonstrates how developed countries and developing countries differ because high-income countries supply basic ICT resources to 90% of their primary schools while low-income countries only provide this support to 40% of their primary schools (World Bank, 2023). The Ethiopian research landscape still contains significant gaps because most existing research fails to study how school leaders impact technology use in urban primary schools and how teachers perceive the school support they receive (Demissie & Samuel, 2023). The current research will address these existing research gaps by delivering local evidence about leadership methods and challenges while providing practical solutions that will help connect educational policies with actual classroom practices.

1.3. Basic Research Questions

1. What is the status of school leadership in primary schools?
2. What is the present level of technology integration in primary schools *Kolfe Keraniyo*
3. To what extent does leadership influence technology integration integration in primary schools *Kolfe Keraniyo*?
4. Is there a statistically significant relationship between school leadership and technology integration in primary schools *Kolfe Keraniyo* ?”

1.4. Objective of the study

1.4.1. General Objectives

To assess the role of educational leadership in the integration of technology in primary schools, with a specific focus on schools in Kolfe Keraniyo Sub-City, Addis Ababa City Administration

1.4.2. Specific Objectives

1. To assess the level of technology integration in primary schools.
2. To examine the status of educational leadership practices in Technology in primary schools
3. To identify if there is significant relationship between educational leadership and technology Integration in in *Kolfe Keraniyo*'s primary schools
4. "To examine the influence of leadership on the integration of technology."

1.5. Significance of the study

The findings of this research study provide essential practical benefits while delivering important academic value to the main educational stakeholders in Ethiopia. The school leaders and administrators from Kolfe Keraniyo Sub-City can use the research results to develop specific strategies which will help them implement technology solutions and solve problems they encounter at primary schools. The research establishes a process which helps teachers recognize their technology requirements and provides them with research-based methods for achieving successful technology use in classroom environments through better leadership assistance. The research provides sub-city and Addis Ababa Education Bureau policymakers with data-based solutions which help them improve ICT policies and allocate resources efficiently while determining essential areas for teacher development. Education researchers will obtain new knowledge about how leadership styles affect technology adoption processes in Ethiopian urban environments which represents an essential research gap in current studies. Teacher training institutions can use research findings to create educational programs which meet actual digital skills needs of schools through their pre-service and in-service training. The study develops customized solutions which use research evidence to help close the digital divide in primary education while supporting Ethiopia's national goals for educational modernization. The developed framework will function as a teaching tool which African urban educational institutions can use to address their technology integration difficulties.

1.6. The scope study

The research examines educational leadership and technology implementation in primary schools located in Kolfe Keraniyo Sub-City in Addis Ababa Ethiopia. The study is limited to 7 out of 23 primary schools in the sub-city due to the following reasons: First, researchers needed to select a smaller sample size which would enable them to collect detailed data while maintaining their study standards. Second, the selected schools provide a complete picture of different implementation environments because they have different technological systems and leadership methods and student backgrounds. Third, accessibility and administrative cooperation played a key role, as these schools demonstrated willingness to participate in the study. The research scope includes multiple dimensions because it assesses current technology integration levels and investigates leadership methods and their impact on teacher experiences with technology and existing ICT systems. The research results provide important localized findings but primary school results from Addis Ababa will not be completely applicable because of the small sample size and particular sub-city location. The study intentionally excludes secondary schools and private institutions to maintain a clear focus on public primary education challenges. The research boundaries which researchers established will help them conduct their study because they need to understand how leadership functions in technology adoption at Kolfe Keraniyo's primary schools.

1.7. Limitation of the study

The study faced limitations due to **time constraints**, as data collection was restricted to a short academic calendar, and **budget limitations**, which reduced the ability to expand the sample size and include more schools. The **place of data collection** was confined to Kolfe Keraniyo Sub City, limiting generalizability to other sub-cities or rural Ethiopian schools, while the **sample coverage** was relatively small, affecting representativeness. In addition, **contextual challenges** such as infrastructure gaps and resource shortages may have influenced responses. Future research should therefore expand the geographic scope to other sub-cities and rural areas, increase sample size for stronger reliability, conduct longitudinal studies to capture long-term leadership impacts, secure greater budget allocation for broader

data collection, and undertake comparative analysis across different school contexts to provide deeper insights.

1.8. Operational Definition of Key Terms

1. Educational Leadership: In this study, educational leadership is defined as the functions and practices of principals, vice-principals, and other school administrators in directing, coordinating, and supporting teachers and students to achieve quality teaching and learning. Particular emphasis is placed on leadership actions that facilitate and influence the integration of technology within schools.

2. Technology Integration: Technology integration denotes the systematic incorporation of digital tools, platforms, and resources (such as computers, projectors, internet access, and educational software) into instructional delivery and school management. Within this research, it is evaluated by the degree to which teachers and students apply technology in a pedagogically meaningful manner.

3. Schools: For the purpose of this study, schools are operationalized as primary schools located within the selected sub-city, serving as the contextual settings in which the practices of educational leadership and technology integration are examined.

4. Teaching and Learning Outcomes: Teaching and learning outcomes are conceptualized as both academic achievements, as well as enhancements in instructional practices, resulting from the effective application of technology under the direction of educational leadership.

1.9. Organization of the Study

The research topic receives comprehensive analysis through five chapters which form the structure of this study. Chapter One begins the introduction by presenting background information about the study and defining the research problem and aims of the study and its importance and research scope and study constraints and definitions of essential terms and layout of the research document. Chapter Two presents a literature review which includes theoretical and empirical research about leadership practices and teacher satisfaction in both global and local contexts. Chapter Three presents the research methodology because it includes information about research design and sampling techniques and data collection methods and analysis procedures and data analysis approaches. Chapter Four shows how the research results were processed and analyzed through both quantitative and qualitative methods. The major findings of the study are summarized in Chapter Five which also presents research-based conclusions and practical recommendations for educational policy and leadership practices.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents a review of relevant literature on educational leadership and technology integration in schools, serving as both the theoretical and empirical groundwork for the study. The study examines how school leaders support technology adoption and implementation in classroom environments through their selected methods and the difficulties they encounter. The study investigates how leadership methods and professional development activities and resource allocation connect to successful technology implementation in educational settings. The review combines previous research studies and theoretical frameworks to discover what exists in the literature while creating a base for research about how educational leadership helps technology-based learning in the studied schools.

2.1. Conceptual Frame Work of Leadership Roles and Technology Integration

The current state of education systems throughout the world experiences rapid transformations which occur because of global economic integration and technological advancements and the changing needs of students. The educational institutions of today must implement new systems which will prepare students to function in complex technological environments that require advanced knowledge to succeed. Educational leadership exists as a core element which drives effective teaching and student progress and complete school development. Educational institutions need to integrate technology into their teaching methods because it creates new pathways for students to acquire and generate and share information.

Educational institutions throughout the world experience fundamental educational changes which emerge because of global economic integration and technological innovations and new student learning requirements. Educational institutions are expected not just to impart knowledge but to ready students for complex, technology-saturated, knowledge-driven

societies. Educational leadership has become essential in fostering effective teaching, learning, and organizational advancement.

Educational institutions require technology integration because it transforms how students display and use their knowledge.

Educational leadership and technology integration exist as interdependent systems. Leaders who demonstrate effective leadership create technological use visions which they support through teacher assistance and resource distribution and they promote an atmosphere which embraces new ideas. This essay examines the concept of leadership, educational leadership, and its dimensions, and explores technology integration in education, with particular emphasis on the key dimensions or aspects of technology integration.

2.2. Leadership

Leadership is generally defined as the process of influencing individuals or groups to achieve shared goals. The process requires leaders to establish a path forward while they develop an atmosphere which drives people to work together toward their shared objectives. Leadership functions through all human activities because leaders show their power to lead when they show their ability to guide people toward their objectives through their actions and their interactions with others. Leaders in organizations require vision development skills together with their ability to create effective communication systems and their expertise in solving problems and managing organizational transition. Leaders raise their effectiveness through their demonstration of integrity and adaptability and empathy and strategic thinking abilities. Social and technological transformation needs of today require leadership to develop new ways of thinking which can handle upcoming obstacles.

2.3. Educational Leadership

The research serves as both practical and academic material which benefits all main stakeholders who work within Ethiopia's educational system. The results will present essential strategies that school leaders and administrators should use to enhance technology integration while solving primary school implementation challenges. The technological

requirements of teachers will be assessed through research-based guidelines which show the most effective methods for administrative support of digital classroom implementation. Sub-city and Addis Ababa Education Bureau policymakers will use the study to obtain data-based recommendations which will enhance ICT policies and resource management and professional development activities. Education researchers will acquire fresh knowledge about the relationship between leadership practices and technology integration in an urban Ethiopian context which is a significant gap in the existing literature. The results will help teacher training colleges to align their pre-service and in-service training programs with the digital skills schools need. The research supports customized evidence-based solutions which help reduce the digital divide and aid Ethiopia's educational modernization goals for primary education. The established structure serves as an educational reference for African urban school systems which face challenges in technology integration.

The world experiences different rates of technology adoption in primary schools because developed countries show higher digital use while developing nations encounter substantial obstacles according to UNESCO 2022. In Africa only 28 of primary schools possess operational computer laboratories while internet connectivity remains inadequate especially in rural regions according to the African Union 2022 report. The National ICT in Education Strategy through its implementation in Ethiopia has achieved some educational success because urban schools especially those located in Addis Ababa maintain superior educational resources compared to rural schools according to MoE 2021. The situation continues to face obstacles because power outages occur frequently and schools do not have adequate equipment and teachers need to develop their digital skills according to Abebe and Mulugeta 2022. Kolfe Keraniyo Sub-City displays inequities because certain schools receive technology through NGO donations while other schools exist without essential equipment according to Teshome and Dawit 2023. The main problem arises when organizations stop maintaining their equipment which causes their broken tools to remain inactive because they lack the required technical assistance according to Habtamu and Desalegn 2022. Teachers display resistance to technology implementation because they lack sufficient training and they worry about how technology will affect their established teaching procedures according to Ertmer and Ottenbreit-Leftwich 2013.

Primary education institutions need dedicated financial support for infrastructure systems and teacher development programs because these actions will help them successfully implement their sustainable digital empowerment initiatives. The existing challenges require educational institutions to establish specific funding systems which will enable them to construct essential infrastructure and train teachers for implementation of permanent digital empowerment strategies.

2.4. Dimensions of Educational leadership

Educational leadership is a multidimensional concept encompassing various roles and responsibilities. Key dimensions include:

Instructional Leadership focuses on improving teaching and learning by supporting teachers, monitoring instructional practices, and aligning curriculum with learning goals. Leaders in this dimension emphasize pedagogical quality and student achievement.

Transformational Leadership emphasizes vision, change, and motivation. Transformational educational leaders inspire teachers and students to embrace innovation, pursue continuous improvement, and adapt to new educational demands, including technological change.

Distributed Leadership recognizes that leadership is shared among various stakeholders rather than concentrated in a single individual. Teachers, technology coordinators, and students may all assume leadership roles, particularly in technology integration initiatives.

Ethical and Moral Leadership highlights values such as fairness, equity, and social responsibility. Educational leaders must ensure that decisions, including those related to technology use, promote inclusivity and do not marginalize disadvantaged learners.

Strategic Leadership involves long-term planning, resource management, and policy development. This dimension is particularly important for sustainable technology integration, as it requires careful planning, budgeting, and evaluation.

Educational leadership is an intricate concept that not only includes managerial tasks but also incorporates a variety of functions that are fundamental to the enhancement and novelty in schools, such as strategic, relational, and pedagogical ones. On the subject of driving significant change, for instance, integrating technology, recognizing these different but linked dimensions gives a vital structure for examination. This research looks at the different aspects of leadership that are based on the literature and each one helps in a specific way to form the atmosphere that is favourable for the digital shift. The first dimension of Visionary and Strategic Leadership establishes the direction which leaders use to inspire their teams toward achieving shared objectives. Effective leadership requires leaders to establish a clear and appealing future vision which aligns with both educational policies and the specific needs of their local school (Fullan, 2016). The digital learning plan needs to establish its technology integration objectives through specific educational goals which focus on enhancing teaching methods and learning outcomes for students. Visionary leaders maintain ongoing communication of their organizational purpose while this process establishes shared responsibility which enhances staff confidence (Leithwood *et al.*, 2020). The educational institution needs this dimension because its current technology usage lacks structure and requires a unified strategic objective to function effectively.

The process of Instructional Leadership manages all aspects of educational delivery. The leaders who operate in this field concentrate on three primary areas which include assessing curriculum standards and determining teacher performance and measuring student success (Hallinger, 2011). The instructional leaders ensure that all digital tools used in educational settings must follow correct pedagogical practices. The instructors demonstrate effective tool usage while providing in-class feedback and creating opportunities for students to engage in technology-based educational activities. The dimension describes the leaders learning process which enables teachers to effectively integrate technology into their lesson design and assessment procedures (Blau & Shamir-Inbal, 2017).

2.5. Technology Integration in Education

The Ethiopian educational system increasingly requires the deliberate and effective use of digital tools and resources to strengthen teaching, learning, and administrative processes. Institutions must align technology with their pedagogical objectives, instructional practices, and evaluation frameworks to ensure meaningful integration. When properly implemented, technology enhances student engagement, supports individualized learning, fosters collaboration, and expands access to diverse educational materials (UNESCO, 2023).

In Ethiopia, recent reforms have emphasized the adoption of **learning management systems**, **educational software**, **digital simulations**, and **online communication platforms** to improve access and quality. However, successful integration depends on visionary leadership. Educational leaders must articulate a clear vision, provide professional development opportunities, secure necessary infrastructure, and cultivate an environment that encourages innovation. Because technology projects rely heavily on leadership, effective leaders are essential for setting direction, delivering training, and sustaining project activities (Luo et al., 2024).

The Ethiopian Ministry of Education has also prioritized digital transformation through initiatives such as the **Digital Strategy 2025**, which highlights the role of ICT in expanding equitable access to education and bridging urban–rural divides. These efforts underscore the importance of leadership, infrastructure, and capacity-building in ensuring that technology integration contributes to national development goals.

2.6. Dimensions or Aspects of Technology Integration

Technology integration in education can be understood through several key dimensions or aspects:

Pedagogical Dimension focuses on how technology supports teaching and learning processes. This includes using digital tools to promote critical thinking, creativity, collaboration, and problem-solving rather than merely delivering content.

Technological Dimension refers to the availability, accessibility, and reliability of technological infrastructure, including hardware, software, internet connectivity, and technical support. Adequate infrastructure is a prerequisite for successful integration.

Professional Development Dimension emphasizes continuous training and support for teachers and educational staff. Educators must develop both technical skills and pedagogical knowledge to effectively integrate technology into their teaching practices.

Organizational and Leadership Dimension involves policies, vision, and leadership support for technology use. Educational leaders must encourage innovation, allocate resources, and create an environment that supports experimentation and collaboration.

Equity and Ethical Dimension addresses issues of access, inclusion, and responsible technology use. Leaders must ensure that all students benefit from technology integration and that digital tools are used ethically and safely

2.7. Teachers' Implementation Challenges and Perceptions of Leadership Support

Teachers serve as crucial elements that practice technology integration at their schools but encounter multiple obstacles which prevent them from using digital resources according to Tondeur et al. 2017. Ethiopian primary school teachers demonstrate low technology usage because they need more training and they fear equipment breakdowns according to Kassa and Tilahun 2023. The Kolfe Keraniyo study found that only 30 percent of teachers used ICT tools for their work which they mainly used to complete administrative tasks instead of teaching through interactive methods according to Zenebe and Adane 2023. The additional work which people must complete to learn about new technologies leads to their feeling overwhelmed because they do not receive proper assistance according to Kopcha 2012. The way teachers view leadership in schools affects their Technology adoption because administrative support through training and technological assistance leads to higher Technology adoption rates according to Hammond et al. 2021. Teachers who work at under-resourced schools face neglect because their school leaders concentrate on developing infrastructure instead of supporting their teaching according to Demissie and Samuel 2023.

The organization needs to develop structured professional development programs which include mentorship initiatives and teacher-leadership programs to create an environment which supports teachers in using technology according to Yizengaw 2020. The entire process which needs to be completed presents essential requirements for both digital literacy development and equal learning access in primary education.

2.7.1 Theoretical Framework: Role of School Leadership in Technology Integration

The study establishes its theoretical framework through a research premise, which asserts that successful technological integration in educational organizations relies on effective leadership abilities. Leadership affects technology adoption processes because it establishes organizational vision, workplace culture, operational regulations, and resource systems which create opportunities for users to engage with digital resources.

Transformational Leadership Theory

Transformational leadership defines leadership as a process where leaders function as change agents who motivate their followers to adopt new ideas. Transformational leaders establish a common vision for technology integration through their collaborative work and their dedication to developing others, which helps teachers build their technological competencies (Bass & Avolio, 1994; Leithwood & Jantzi, 2005). The theory requires two components, which include intellectual stimulation and customized support, to help users adapt to technological changes.

Diffusion of Innovation Theory

Rogers' (2003) framework shows how organizations develop technology usage through progressive implementation. Leadership positions determine how fast organizations adopt new technology because leaders affect communication methods, organizational customs, and decision-making practices. The innovation process advances when leaders demonstrate their commitment to innovation and provide necessary resources while modeling technology use.

Technology Leadership Framework (ISTE Standards)

The ISTE framework emphasizes visionary planning, equity, and empowering teachers to innovate. Leaders must create a technology vision that ensures student access to digital materials and continuous teacher training. They also establish guidelines for ethical technology use and make decisions based on data analysis (ISTE, 2018).

Ethiopian Context

In Ethiopia, technology integration faces challenges such as **limited infrastructure, inadequate teacher training, and disparities between urban and rural schools**. Many schools lack reliable electricity, internet connectivity, and sufficient digital devices (Tesfaye, 2020). Teachers often have low digital literacy, and professional development opportunities are sporadic (Kassa & Tilahun, 2023).

Transformational leadership is particularly relevant because Ethiopian school leaders must **mobilize scarce resources, inspire teachers despite constraints, and advocate for equitable access to ICT**. Diffusion of Innovations explains adoption gaps, where urban schools act as early adopters while rural schools lag behind. ISTE Standards provide global benchmarks, but Ethiopian leaders must adapt them to local realities such as multilingual classrooms and limited bandwidth. TPACK highlights the need for teacher competence, but Ethiopian schools require **sustained professional development programs** to build ICT skills.

2.8 Conceptual Framework

The conceptual framework for this study is grounded in the relationship between educational leadership and technology integration as key drivers of effective teaching and learning outcomes. The framework assumes that leadership practices directly and indirectly influence the successful integration of technology in educational institutions.

At the core of the framework is **educational leadership**, encompassing instructional, transformational, distributed, ethical, and strategic leadership dimensions. These leadership

dimensions shape institutional vision, policy development, resource allocation, and professional culture.

Educational leadership influences several **mediating variables**, including teacher professional development and availability of technological infrastructure. These mediating factors determine how effectively technology is integrated into pedagogical practices.

Technology integration functions as a **critical intervening variable**, reflected through pedagogical use of technology, technological readiness, equity of access, and ethical use. When technology integration is well-supported, it enhances teaching strategies, learner engagement, collaboration, and assessment practices.

This conceptual framework provides a structured lens for understanding how leadership practices enable technology integration and how, together, they contribute to improved educational quality. The study examines the relationship between educational leadership practices (independent variables) and technology integration outcomes (dependent variables), moderated by contextual factors (intervening/moderating variables).

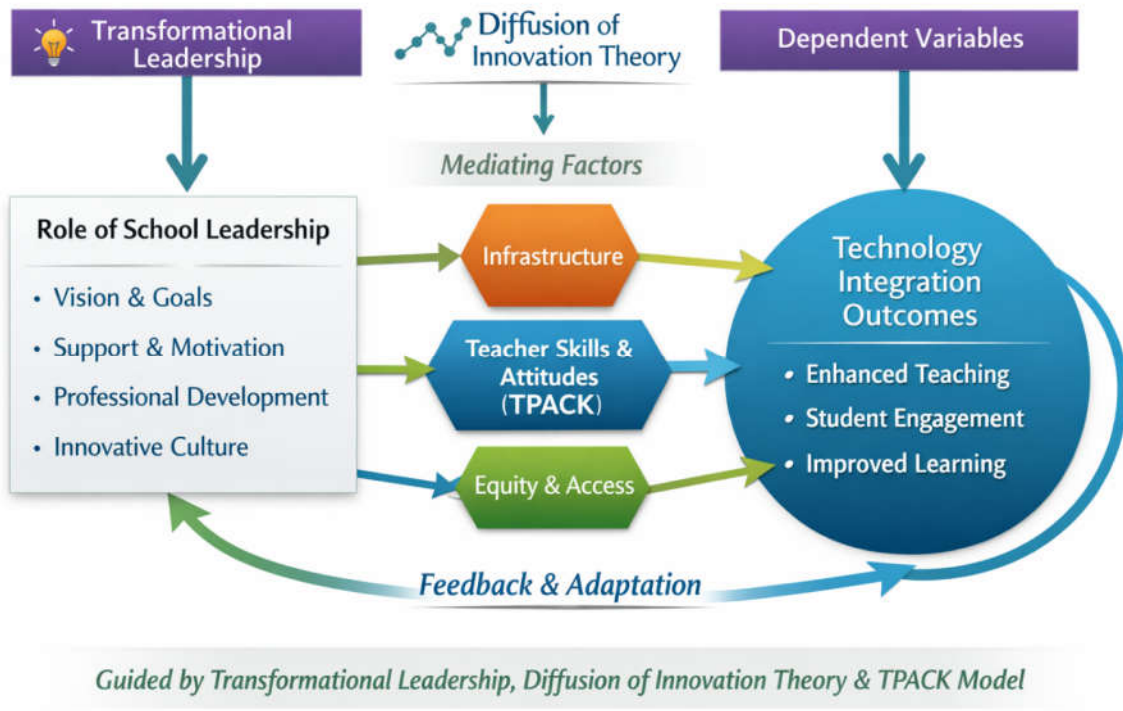
Ethiopian Context

In Ethiopia, the conceptual framework is particularly relevant because leadership practices strongly influence the success of ICT adoption in schools. Despite national ICT policies, implementation remains inconsistent due to **limited infrastructure, inadequate teacher training, and urban–rural disparities** (Tesfaye, 2020).

School leaders play a pivotal role in bridging these gaps by:

- **Strategic planning** to mobilize scarce resources.
- **Professional development** to improve teachers' digital competence (Kassa & Tilahun, 2023).
- **Visionary leadership** to inspire teachers and students despite constraints.
- **Policy alignment** to adapt global frameworks (ISTE, TPACK) to local realities.

Thus, the Ethiopian context highlights that **transformational and strategic leadership dimensions** are essential for overcoming systemic barriers and ensuring equitable technology integration.



CHAPTER THREE

RESEARCH METHODOLOGY

The research methodology for this chapter shows the complete research design together with its approach and target population and its sampling methods and data collection and analysis techniques which were used to study technology integration in primary schools located in Kolfe Keraniyo. The study used the transformational leadership model together with Technological Pedagogical Content Knowledge framework developed by Bass and Riggio and Mishra and Koehler. The chapter presents a discussion about ethical matters together with the methods which were implemented to achieve dependable results..

3.1. Research Approach

This study adopted a mixed-methods approach, combining both quantitative and qualitative strategies to strengthen the validity and reliability of findings. The quantitative method was employed first, as it allowed the researcher to reach a large number of respondents within a short period of time, thereby enhancing the generalizability of results (Creswell, 2014). Following this, a qualitative method was applied to supplement the numerical data and provide deeper insights into participants' opinions and suggestions. Techniques such as focus group discussions and document analysis offered richer contextual understanding. Using both approaches together enabled triangulation, which increased the credibility of the findings and ensured more dependable conclusions (Kothari, 2004; Tashakkori & Teddlie, 2010).

3.2. Research Design

The study utilized an explanatory sequentialmixed-methods design (Creswell, 2014), beginning with a quantitative survey to examine the relationships between leadership practices and technology integration. The survey results revealed significant variables and patterns, which then informed the qualitative phase. In this stage, case studies were conducted through focus group discussions, observations, and document analysis to explain the underlying reasons behind the statistical findings. This two-phase design ensured that quantitative evidence was contextualized, clarifying both causal processes and contributing factors. Additionally, a descriptive and correlational design (Kothari, 2004; Bush, 2008;

Hallinger, 2011) was employed to portray existing leadership practices in Kolfe Keraniyo Sub City primary schools and to analyze their statistical associations with technology adoption. By combining descriptive portrayal with correlational analysis, the study provided both generalizable evidence and deep contextual insights. The triangulation of data enhanced validity and offered a comprehensive understanding of how leadership influences technology integration in Ethiopian schools.

3.3. Research Methods

Data for this study was gathered through surveys,, focus group discussions, and document reviews. Focus group sessions involved selected school leaders, and challenges. In addition, school documents such as ICT policies and training guidelines examined to complement the findings. Employing multiple methods enhanced the depth of information collected and strengthens the validity of the research (Creswell & Plano Clark, 2018; Cohen, Manion, & Morrison, 2018).

3.4. Source of Data

3.4.1. Primary Data Sources

The study was gather primary data directly from respondents using surveys, and focus group discussions. School leaders, including principals, ICT coordinators, and teachers, was purposively selected to participate in these activities. Focus groups used to explore participants' perspectives, experiences, and challenges concerning educational leadership and the use of digital technologies. This approach ensured the collection of detailed and relevant information aligned with the objectives of the research (Creswell & Plano Clark, 2018).

3.4.2. Secondary Data Sources

Secondary information was drawn from existing documents and official records connected to leadership and technology integration in schools. These materials included ICT policy guidelines, training manuals, reports from education offices, and other related documents. Secondary sources provided contextual understanding, support the analysis of primary data,

and confirm the reliability of findings. They also help situated the study within established institutional and policy frameworks (Cohen, Manion, & Morrison, 2018).

3.5. Population Sample and Sampling Technique

3.5.1 Population of the Study

The study population referred to the entire group from which the sample is drawn (Creswell & Creswell, 2018). In this research, the target population consisted of selected government primary schools located in Kolfe Keraniyo Sub-City. Specifically, the study focused on Kara Kore, Biruh Tesfa, Rephi Japan, Mesereate Idiget, General Wako Gutu No. 2, Yemane Birhan, and Keraniyo Medihanealem No. 2 primary schools. Out of the 23 government primary schools in the sub-city, six schools, representing approximately 26% of the total, were purposively selected. The selection was guided by the need to obtain a manageable yet representative sample size that was enable in-depth investigation within the constraints of time and available resources (Patton, 2015).

Selecting 20–30% of the total population was generally regarded as adequate in small-scale educational research, as it provided sufficient breadth to ensure validity while allowing closer examination of specific cases (Kothari, 2004). The schools were chosen for this study reflects the diversity of the larger group and, therefore, serve as a reliable basis for analysis. Within these schools, the study population consisted of 652 teachers and department heads. In addition, six principals and 3 vice principals were included to participate from the selected schools were purposively chosen to take part in Focus Group Discussions (FGDs), ensuring that the role of leadership were also incorporated into the study (Creswell & Poth, 2018).

The purposive sampling technique was deliberately chosen based on Patton's (2015) recommendation to guarantee that the schools included in the study provided a rich source of information that was essential for thorough analysis. The selection considered different aspects of the schools, like their size, their location, and their infrastructure, with the intention of getting the most variation in the sub-city. This way of doing things was given the findings a chance to be based on different experiences and difficulties faced by the people rather than a statistically representative group that was possibly homogenous but still

convenient for research. On the other hand, purposive sampling method was very much suitable for qualitative and mixed-methods research which require depth, contextual understanding, and study of specific phenomena in a given setting as it enables the researchers to pick the cases that can best show the research problem.

3.5.2. Sample Size

To determine the sample size, Yemane's (1967) formula was employed, as the total population size was known and finite. The formula is expressed as:

$n = N / (1 + N(e^2))$ Where, e = margin of error accepted 0.05, N = population size, 625

$$n = 625 / (1 + 625(0.0025)) = 625 / 2.5625 = 271$$

Then, $n=271$ accordingly, the sample size determined for this study was 271 respondents from these only 262 responded the given questionnaires.

3.6. Sample Size Distribution

Table 1: Sample Size

Name of selected schools	Total Teachers	Proportionality	Sample size	Sampling technique	Principals and Vice principals
Kara Kore	130	19.5%	53	Simple random	1
Repi Japan	80	11.8%	32	Simple random	2
Biruh Tesfa	125	11.8%	51	Simple random	2
Meserate Idiget	110	16.6%	45	Simple random	1
General Wako Gutu No2	92	13.65%	37	Simple random	1
Yemane Birhan	65	9.6%	26	Simple random	1
Keraniyo Medanilem No2	70	9.96%	27	Simple random	1
Total	652	100%	271		9(interview and FGD)

3.6.1. Sampling Unit

Teachers and department heads of the study area were the sampling unit for this proposal.

3.6.2 Sampling Techniques

For this study, both probability (simple random sampling and non-probability (purposive sampling) techniques were undertaken to collect data from the sample population of the study, Purposive sampling for selecting the appropriate institutions from the total of the primary schools

3.6.2.1 Sampling Techniques for Qualitative Data

The purposive sampling method was used due to the researcher's professional background. The researcher had worked as a school principal, education expert, and team leader in the education sector, at the Kolfe Keraniyo sub-city education office. This experience was help in identifying appropriate representative samples from the target population. Based on this experience, purposive sampling employed to select 9 FGD participants, including 6 principals and vice-principals from selected primary schools in the sub-city.

3.7. Data Gathering Instruments

Quantitative and qualitative data was generated using questionnaire; and FGD .and also used observations

3.7.1. Quantitative Data gathering Instruments

3.7.2. Questionnaire

To gather both quantitative and qualitative data, a structured questionnaire was distributed among the teachers and staff (n=271) from these only 262 responded. The tool consisted of closed-ended Likert-scale items (to assess perceptions and frequency) and open-ended questions (to provide explanatory insights) which were included in a detailed manner. To guarantee that all the respondents were able to understand the questions clearly and also that the questions were suitable for the culture of the respondents, the questionnaire was

translated and made available in Amharic and Afan Oromo besides an English version. The researcher went to the site and himself distributed and collected all the questionnaires according to a protocol based on random selection from official attendance records. This facial administration increased the response rate to the maximum and also facilitated the immediate addressing of any participant inquiries, thus contributing to the quality and reliability of the data (Dillman *et al.*, 2014).

3.7.3. Qualitative Data Gathering Instruments

3.7.3.1. Focus Group Discussion

In order to validate the data and include the learners' perspective, three Focus Group Discussions (FGDs) was organized, with each FGD consisting of five students (total n=9) from Leaderships. The participants were chosen intentionally to represent different genders, levels of Education in Leaderships, and varying engagement with technology in school, as per their self-reports. This manner of sampling, which was purposeful and variation-maximizing, was very beneficial for the quality of the data as it enables capturing a wide range of experiences and viewpoints (Patton, 2015). A FGD guide was used to stimulate discussion about access to, utilization and attitudes towards educational technology.

3.8. Methods of Data Analysis

For analysing quantitative data both descriptive and inferential statistics was used. For analysing the level of implementation and identifying challenges, descriptive statistics was used while for exploring the Educational Leadership and Technology Integration Schools: The Case Of Primary School of Kolfe Keraniyo Sub City of Addis Ababa. It was used for identifying both individual and the effects of independent variables on the dependent variable. For descriptive and inferential statistics SPSS software version 25 was used. Qualitative data analysed by narrating respondent's idea and perception.

3.9. Data Reliability and validity

3.9.1. Reliability

The researcher evaluated the internal consistency reliability of their questionnaire items through the application of Cronbach's Alpha. The result showed a coefficient of $\alpha = 0.835$ for 56 items. According to Nunnally and Bernstein (1994), a Cronbach's Alpha value above 0.80 is considered very good, indicating that the instrument is reliable. The questionnaire used in this study achieved good internal consistency according to its results which provided stable and consistent measurements for the sample.

Reliability Statistics	
Cronbach's Alpha	N of Items
.835	56

3.9.2. Validity

The research instrument gained validity through its thorough development process which included expert assessment of the questionnaire items that measured expected constructs.

The items were designed based on established theories of Roles of Leadership. The instrument achieved content validity because it successfully measured every aspect which needed to be assessed for the research variables. The instrument's validity receives additional support from its reliability result which shows a high Cronbach's Alpha score of 0.835 across 20 measurement items because consistent measurement functions as a fundamental requirement for effective assessment tools. The questionnaire used in this study was valid for assessing Role of leadership and Technology integration

3.10. Ethical Consideration

The most essential for the study was ethical consideration. They also specified it as different principles of ethical consideration have been compiled as a result of analysing the ethical rules nine professional social sciences research association (Bryman, 2007). The unanimity of the respondents respected to ensure that they have not been asked their name on the questionnaire and their volunteerism to give information in the fulfilment of the study

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

Introduction

This chapter presents the data, analysis, and interpretation related to the role of leadership in technology integration in primary schools of the Kolfe Keraniyo Administration. The analysis is based on data collected through questionnaires and interviews administered to school leaders and teachers. A total of 271 questionnaires were distributed, of which 262 were properly completed and returned. The remaining 15 questionnaires were excluded from the analysis due to incomplete responses or non-return. And also 9 respondents were participated in Focal group discussion. The data presented in this chapter provide the basis for examining the level of technology integration, the status of educational leadership practices, and the relationship between leadership and technology use in the selected primary schools.

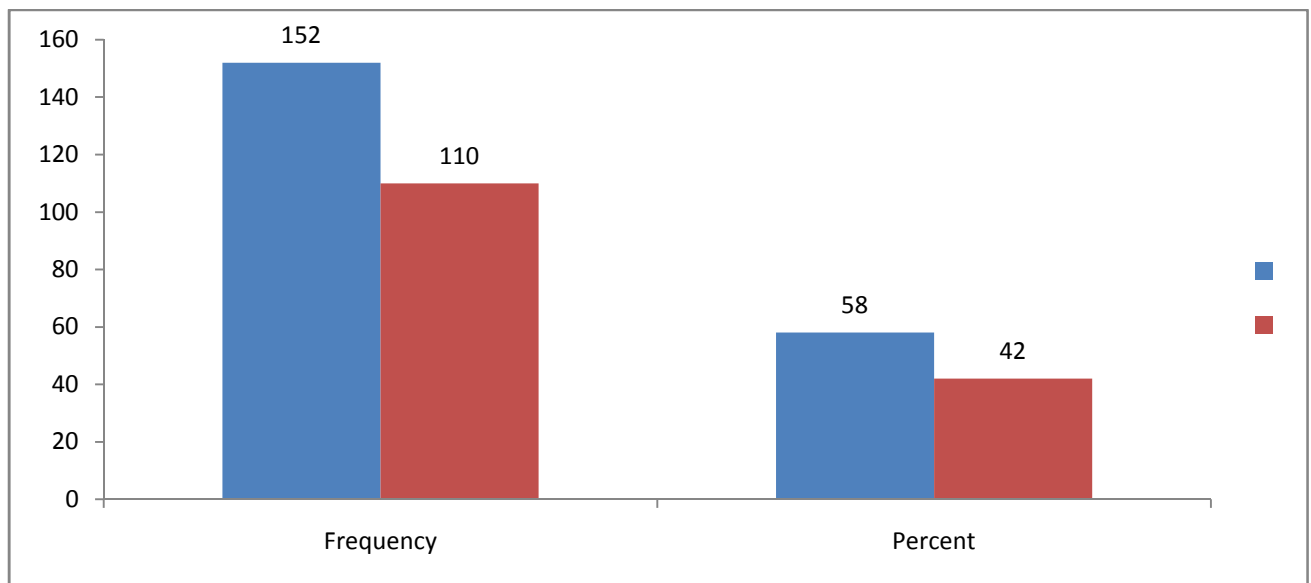


Figure 4.1: Gender of the respondents

The distribution of respondents by gender shows that males made up the majority of the participants. The survey results showed that 152 respondents identified as male which formed 58 percent of the total while 110 respondents identified as female which made up 42

present. The study results show that more male participants took part in the research study. The study results show that both male and female participants took part in the research study which produced results that accurately reflected the actual gender distribution of the study population. The research study achieved balanced participation which produced results that demonstrated different viewpoints while decreasing the risk of gender bias in the evaluation of leadership methods and technological adoption practices in elementary educational settings.

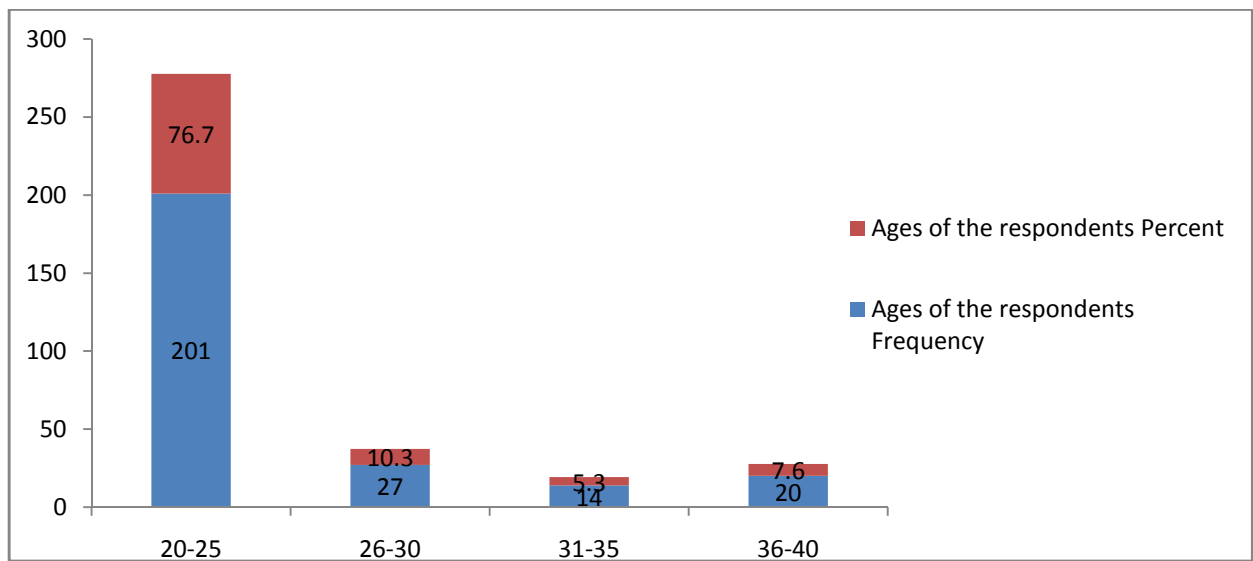


Figure 4.2: Ages of the respondents

The age distribution of the respondents shows that the majority were in the 20–25 age group. The category included 201 respondents which accounted for 76.7 percent of the total participants showing that most participants belonged to the younger age group. The 26-30 age group followed as the second largest group with 27 respondents who made up 10.3 percent of the total study population. Smaller proportions of respondents were aged 31–35 and 36–40 with 14 respondents (5.3 percent) and 20 respondents (7.6 percent) respectively. The study results show that younger teachers and school staff members dominate the research findings which create different opinions about leadership methods and technology use because younger respondents tend to know more about digital technologies

Table 4.1: Position of the Respondents

		Frequency	Percent
Position of the Respondents	Teachers	239	91.2
	Department Head	12	4.6
	Vice principal	11	4.2
	Total	262	100

The distribution of respondents by position shows that department heads formed the largest group in the study. Among the total respondents of 262 Teachers made up the majority with 239 members who represented 91.2 percent of the total. Department Head made up a small proportion, with 12 respondents representing 4.6 percent, while vice principals accounted for 11 respondents or 4.2 percent. The data reflect school-level academic coordinators opinions because they are the main decision-makers in their positions. Primary school leaders who integrated technology into their work provided valuable insights about their leadership practices according to the results.

4.1. The Role of School leadership integrating Technology

Educational leadership matter a lot when it comes to blending technology into the teaching, and learning routine. In other words, school leaders basically have to build a kind of steady space where teachers, plus students feel ok using technology for learning. When leaders actually do it well, they bring a clear view, practical direction, chances for professional growth, and the necessary technological tools. All that supports both classroom teaching, and the behind-the-scenes administrative tasks. They also push teachers to try newer ways of teaching, and digital learning utilities that can rise how involved students are, and help their academic results. When technology is integrated properly, schools gain smoother communication, easier access to information, more hands-on, interactive learning, and generally more organized handling of educational work. Yet, in reality the success part depends a good bit on the commitment and leadership capabilities of the school leaders. Leaders who encourage ongoing professional development and supply the right tech support make it easier for schools to adjust to shifting educational expectations, and new demands. So yes, educational leadership becomes crucial for making sure technology is used

effectively to lift education quality, and overall school performance (Anderson & Dexter, 2005).

Table 4. 2: Role of Educational Leadership

NO	Variables	Mean	SD
1	Principal communicates vision for technology use	3.41	1.124
2	Leadership acts as role model using technology	2.43	1.422
3	Principal advocates ICT in curriculum	2.26	1.595
4	Leadership encourages experimentation with digital tools	2.26	1.14
5	Principal prioritizes ICT budget	2.10	1.200
6	Technology repaired timely	2.11	1.43
7	Equal access to shared technology	2.03	1.12
8	Reliable alternative power sources	2.14	1.34
9	Facilitates ICT experience-sharing sessions	2.54	1.44
10	Grand Mean	2.36	1.31

Table 4.2 shows what respondents think about educational leadership and how it helps integrate technology in schools. The whole analysis was done using frequency, percentage, and mean values based on what the respondents said. The grand mean is 2.36, so that overall number suggests the role of educational leadership in technology integration is low, or at least it isn't really strongly seen.

For the item about principals clearly communicating a vision on how technology should be used in classrooms, most of the respondents seemed not convinced. Specifically 201 (76.7%) strongly disagreed, 27 (10.3%) disagreed, 20 (7.6%) agreed, and 14 (5.3%) were neutral. The item mean was 3.41, and the standard deviation was 1.33, which basically points to a weak perception related to leadership communication when it comes to ICT direction.

Then for leadership acting as a role model in using technology during staff meetings and administrative communication, the responses were more mixed. 114 (43.5%) agreed, 53 (20.2%) strongly agreed, 44 (16.8%) disagreed, 12 (4.6%) strongly disagreed, and 39

(14.9%) stayed neutral. The mean score was 2.43, and the standard deviation was 1.22, so this gives the idea of a moderate level of practice, but only among some school leaders.

On principals who are actively pushing ICT within the curriculum, 163 (62.2%) strongly disagreed, 17 (6.5%) disagreed, 25 (9.5%) agreed, 26 (9.9%) strongly agreed, and 31 (11.8%) stayed neutral. The mean score is about 2.26 (SD = 1.23) so this points to weak advocacy leadership for ICT integration, in other words not much leading on that front.

In terms of making a safe, supportive space where teachers can try out and test digital tools, 132 (50.4%) strongly disagreed, 12 (4.6%) disagreed, 48 (18.3%) agreed, 40 (15.3%) strongly agreed, and 30 (11.5%) were neutral. The mean of 2.26 (SD = 1.21) seems to show minimal encouragement for experimentation. About allocating budgets for ICT infrastructure, 107 (40.8%) disagreed, 90 (34.4%) strongly disagreed, 31 (11.8%) agreed, 12 (4.6%) strongly agreed, and 22 (8.4%) were neutral. The mean is 2.10 (SD = 1.37) which reflects not enough financial backing for ICT development, like it's not really there. For prompt upkeep of technological equipment, 121 (46.2%) disagreed, 43 (16.4%) strongly disagreed, 62 (23.7%) agreed, 17 (6.5%) strongly agreed, and 19 (7.3%) were neutral. The mean score 2.11 (SD = 1.41) indicates a weak, or slow, maintenance response.

On fair and equal access to shared ICT resources, 87 (33.2%) strongly agreed, 43 (16.4%) agreed, 35 (13.4%) disagreed, 38 (14.5%) strongly disagreed, and 59 (22.5%) were neutral. The mean of 2.03 (SD = 1.26) suggests a relatively better situation compared to the other leadership areas mentioned.

As for supplying standby power systems like generators or UPS, 113 (43.1%) agreed, 57 (21.8%) strongly agreed, 42 (16.0%) disagreed, 13.

About the chances for teachers to exchange ICT skills, 112 (42.7%) said yes, 37 (14.1%) strongly agreed, 43 (16.4%) disagreed, 45 (17.2%) strongly disagreed, and 25 (9.5%) stayed neutral. The mean score sits at 2.54 (SD = 1.24) which kind of indicates a not-too-strong leadership effort, more like a moderate level when it comes to encouraging teamwork and shared work.

Taken together, the results look like school leadership has a rather limited influence on technology integration. There are, however, some encouraging spots, especially around resource exchanging, collegian collaboration, and partial role modeling. Still, gaps are clearly there in the areas of vision framing, ICT advocacy, spending on infrastructure, and even the maintenance routines and systems.

These outcomes match with Anderson and Dexter (2005), who basically stressed that capable educational leadership, really matters if technology is going to be integrated properly. Their point is that when leaders give a clear direction, offer the right assistance, and make sure resources are available, teachers often become more confident and willing to use technology in day-to-day teaching.

From the focus group conversations, participants also seemed to agree with the same general picture. They mentioned that quite a number of school leaders do not really follow up much after ICT integration activities, and they also reported there are not enough ICT resources. At the same time, they talked about maintenance services that take too long, plus training opportunities that are too few. A few participants noted that some principals actually motivate technology use, but for many others, formal institutional backing still feels weak. Others added that practical difficulties keep showing up, like limited budgets, unstable electricity, and weak internet connections, and all of these things end up slowing down effective ICT implementation in schools

4.2. The Level of technology integration By School Leadership

The amount of technology integration by school leadership i guess has to do with how far school leaders really go in supporting, pushing for, using technology in teaching, learning, and even school administration. In practice, effective school leaders nudge teachers to use digital tools, supply ICT resources, set up training sessions, and also build a kind of supportive, comfortable atmosphere so technology use feels normal within the school. When leadership backing is strong, teachers often get more self-belief and the students usually end up with better learning experiences, or at least smoother ones. Still, if leaders have limited technological understanding, or if the infrastructure is not really there, and there isn't ongoing assistance, then technology integration can become shaky and less successful. So

basically, school leadership is a key factor in making sure educational technology is actually implemented in schools in a meaningful way (Anderson & Dexter, 2005).

Table 4. 3: The Level of technology integration

NO	Variables	Mean	SD
1	The ratio of students to functional devices (laptops/tablets) in my classroom is sufficient for group or individual activities."	3.05	1.323
2	The administration provides adequate time during the work week for me to learn and plan technology-based lessons.	3.01	1.202
3	Our school leadership provides a clear vision for how technology should be integrated into our specific curriculum.	3.25	1.33
4	There is a clear and fast protocol for reporting and fixing technical issues (broken hardware/software) in this school.	2.22	1.412
5	My principal encourages us to collaborate and share digital lesson plans with one another	3.25	1.206
6	I use technology to provide students with alternative ways to demonstrate their understanding (e.g., videos, digital posters, quizzes	2.88	1.220
7	Technology allows me to personalize learning materials to meet the different needs of my students.	2.78	1.517
8	The professional development workshops provided by the school focus on how to teach with tech, not just how to turn it on.	1.98	1.54
9	I feel confident in my ability to troubleshoot basic technical problems that occur during a lesson.	2.78	1.595
10	Grand mean	2.765	1.37

Table 4.3 kind of presents respondent's views on how much technology is integrated in schools, using frequency percentages, mean and standard deviation values. The overall grand mean of 2.765 shows that technology integration in schools is at a moderate level, so it does not look like it is strongly developed, neither does it seem poorly done either. It just sits somewhere in the middle.

For the ratio of students to functional devices like laptops and tablets, 35.9% of respondents were neutral, 21.8% agreed, and 21.4% strongly agreed. At the same time, 11.8% disagreed and 9.2% strongly disagreed. The item recorded a mean score of 3.05 (SD = 1.323), meaning respondents moderately agreed that devices are available for classroom use in group or individual activities.

About whether the administration provides enough time for planning technology-based lessons, 24.8% agreed and 15.3% strongly agreed, while 19.1% disagreed. Also 17.6% strongly disagreed, and 23.3% stayed neutral. The mean of 3.01 (SD = 1.202) indicates a moderate level of administrative support, specifically in relation to planning time.

When it comes to the statement that school leadership provides a clear vision for technology integration, 37.8% strongly agreed and 20.6% agreed. But 17.2% disagreed, 4.6% strongly disagreed, and 19.8% were neutral. The mean of 3.25 (SD = 1.33) suggests a comparatively stronger agreement that leadership provides direction for ICT integration in curriculum practices. For the availability of a clear and fast system for reporting , and fixing technical issues, 27.1% were neutral, 23.7% strongly agreed and 21.8% agreed, while 16.8% strongly disagreed and 10.7% disagreed. The mean score of 2.22 (SD = 1.412) suggests weak technical support and maintenance responsiveness, kind of low.

About whether principals encourage collaboration and sharing of digital lesson plans, 26.3% agreed and 11.5% strongly agreed, while 24.0% strongly disagreed, 16.8% disagreed , and 21.4% were neutral too. The mean of 3.25 (SD = 1.206) points to a moderate level of leadership backing, for teachers working together and exchanging materials.

When looking at the use of technology for alternative student assessment, like videos, quizzes , and digital posters, 26.3% agreed and 20.6% strongly agreed. Meanwhile 18.3% strongly disagreed 17.2% disagreed and 17.6% were neutral. The mean score of 2.88 (SD = 1.220) shows moderate adoption of technology in assessment practices overall.

For personalization of learning through technology, 29.0% were neutral, 20.2% agreed, and 13.4% strongly agreed. But on the other side, 19.5% strongly disagreed and 17.9% disagreed.

The mean of 2.78 (SD = 1.517) indicates a moderate implementation of tailored learning and differentiated instruction using ICT tools, not really consistent yet.

Regarding professional development workshops that focus more on teaching with technology than on basic computer use, the responses were kind of all over: 29.8% strongly disagreed, 29.4% strongly agreed 15.6% agreed, 15.3% were neutral and 9.9% disagreed. The mean score is 1.98 (SD = 1.54), which kind of points to mixed perceptions, and yes, it also suggests that the ICT-related training isn't equally effective across the board.

When it comes to confidence in troubleshooting even basic technical problems during lessons, 52.3% of respondents stayed neutral 15.6% agreed, 15.6% strongly agreed, 17.6% disagreed, and 14.5% strongly disagreed. The mean value of 2.78 (SD = 1.595) shows a moderate level of teacher confidence when dealing with those technical issues, not too high, not too low, just somewhere in the middle.

Looking at the bigger picture, the grand mean of 2.765 indicates a moderate level of technology integration in schools. The findings really show a blend of strong points and some challenges in areas like device availability, leadership backing, classroom use, and also technical assistance that teachers can actually rely on.

These results seem to match Ertmer and Ottenbreit-Leftwich (2010), since they claim that real technology integration depends not only on having access to tools, but also on teacher capability, teacher beliefs, and strong institutional backing. In a similar way, Anderson and Dexter (2005) stress that school leadership matters a lot for how ICT gets used, because leaders provide direction, needed materials, and ongoing support. And without that leadership kind of push, technology integration ends up inconsistent, and often, it remains pretty limited. Taken together, the results suggest that technology integration is this multi-dimensional process that gets shaped by infrastructure availability, leadership commitment and teacher readiness too. Like schools that reinforce those pieces, meaning the resources, the guidance and the preparedness of teachers, are more likely to reach meaningful yet sustainable integration of technology for teaching and learning.

4.3. Relationship between educational leadership and technology integration

4.3.1. The relationship between leadership practices and Students academic Achievement

Educational research establishes a strong connection between leadership practices and academic success of students. School leaders who demonstrate effective leadership abilities boost student performance through their work in educational standards development educational environment building and classroom instruction improvement. Teachers perform better in their teaching duties when school leaders establish a precise vision and track teaching activities and give helpful comments and promote teamwork. The leadership behaviors of school officials create more reliable teaching methods which lead to better student participation that results in improved academic performance. Educational leaders who build a positive school atmosphere together with their high expectations for students and teachers enable both groups to reach their maximum potential. Research shows that schools with strong instructional and transformational leadership practices achieve better student results than schools that lack proper leadership backing.

Table 4. 4: The correlation between the variables

Correlations		Communicating School Vision and Goals	Monitoring Classroom Teaching	Promoting a Positive School Climate	Integrating Technology
Communicating School Vision and Goals	Pearson 1 Sig. (2- tailed)	1	.292** .000	-.039 .532	.334** .000
Monitoring Classroom Teaching	Pearson .292** Corre Sig. (2- tailed)		1 .000	.172** .005	.344** .000
Promoting Positive	a Pearson -.039 School Corre		.172**	1	.334**

Climate	Sig. (2-	.532	.005	.000
	tailed)			
Integrating	Pearson	.334**	.344**	.334**
Technology	Corre			1
	Sig. (2-	.000	.000	.000
	tailed)			
	N	262	262	262
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4.4 shows the Pearson correlation thingy among communicating school vision and goals, monitoring classroom teaching, promoting a positive school climate, and integrating technology. The result is based on 262 respondents, so it's not just a small group.

The findings suggests that communicating school vision and goals has a positive, and significant link with integrating technology ($r = .334$, $p < .01$). In other words, when school leaders clearly communicate their vision and goals, technology integration in schools also seems to improve, more or less.

Monitoring classroom teaching also has a positive and significant relationship with integrating technology ($r = .344$, $p < .01$). This means that good classroom supervision, from the school leader's side, tends to support better use of technology for teaching and learning.

Promoting a positive school climate shows a positive association with integrating technology as well ($r = .334$, $p < .01$). So, a supportive, encouraging school atmosphere—kind of the whole emotional tone helps classrooms use technology more strongly.

Overall, the results indicate that all the leadership variables are positively associated with technology integration. Basically stronger educational leadership roles are connected with better integration of ICT in schools. The study results show that three different leadership roles have equal importance for integrating Technology while classroom teaching monitoring stands out as the most powerful factor.

4.3.2. The influence of Leadership on integrating Technology

Table 4. 5:Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.998a	.997	.997	1.092
a. Predictors: (Constant), Communicating School Vision and Goals, Monitoring Classroom Teaching, Promoting a Positive School Climate				

Source: Field Survey (Feb, 2026)

Table 4.5, it kind of presents the summary of the regression analysis looking at how leadership influences technology integration. Here the predictors were communicating school vision and goals, monitoring classroom teaching, as well as promoting a positive school climate.

The result shows a really strong relationship between leadership practices and the way technology gets integrated, with an R value of 0.998. So, this means there is an almost perfect positive relationship between the independent variables and technology integration. The R Square value is 0.997, which suggests that 99.7% of the variation in technology integration is explained by the leadership variables that were put in this model. Also, the adjusted R Square of 0.997, confirms the model remains highly dependable even after adjusting for the number of predictors used.

Meanwhile, the standard error of the estimate is 1.092; this indicates a very low amount of prediction error, no big surprises there. It also suggests the model matches the data quite well and gives strong explanatory capacity.

In general, these findings imply that leadership practices like communicating the vision, monitoring teaching, and strengthening a positive school climate, have a very powerful effect on how technology is integrated in schools.

Table 4. 6: ANOVAa

ANOVA ^a						
		Sum	of			
Model		Squares	df	Mean Square	F	Sig.
1	Regression	31.160	3	10.387	31.773	.000 ^b
	Residual	84.340	258	.327		
	Total	115.500	261			

a. Dependent Variable: Integrating technology

b. Predictors: (Constant), Promoting a Positive School Climate, Communicating School Vision and Goals, Monitoring Classroom Teaching

Table 4.7 kind of presents the ANOVA results that were used to check whether the regression model, which looks at the influence of leadership on integrating technology, is overall significant. In the model, they include things like communicating school vision and goals, monitoring classroom teaching, and then promoting a positive school climate as the predictors, so it's not only one factor.

From the output, the regression model appears to be statistically significant. There is an F-value of 31.773, and a p-value reported as 0.000 ($p < 0.05$). So, this suggests that the joint or combined effect of the leadership variables does predict the integration of technology in schools in a way that is statistically meaningful.

If we look at the sums of squares, the regression sum of squares is 31.160 with 3 degrees of freedom, whereas the residual sum of squares is 84.340 with 258 degrees of freedom.

The total variation is listed as 115.500. Also, the mean square for regression is 10.387, and it's noticeably higher than the mean square for residual, 0.327. That comparison kind of supports the idea that the model accounts for a significant portion of the variation in technology integration.

Overall, the ANOVA result supports the view that leadership practices have a significant influence on integrating technology in schools, and the regression model is statistically valid, as well as reliable, even if the relationships are presented in a pretty compressed way.

Table 4. 7: Coefficients

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.672	.197		3.416	.001
	Communicating School Vision and Goals	.230	.045	.285	5.103	.000
	Monitoring Classroom Teaching	.163	.044	.208	3.670	.000
	Promoting a Positive School Climate	.186	.033	.309	5.690	.000

a. Dependent Variable: integrating Technology

Table 4.8 shows the regression coefficients, kinda illustrating how leadership practices come into play with technology integration. The predictors cover communicating school vision and goals, monitoring classroom teaching, and also promoting a positive school climate, or at least that's how they're framed.

Overall, the findings suggest that each predictor variable has a positive, statistically meaningful effect on integrating technology. The constant sits at 0.672. In other words, it's the initial or baseline level of technology integration if all the predictors are set to zero, kind of a starting point.

When it comes to communicating school vision and goals, the relationship is positive and significant: $B = 0.230$, $\beta = 0.285$, $t = 5.103$, $p < 0.001$. This means that when school leaders communicate the vision clearly, they help raise the degree of technology integration.

Also monitoring classroom teaching has a pretty significant positive effect ($B = 0.163$, $\beta = 0.208$, $t = 3.670$ $p < 0.001$) which hints that regular oversight during instruction helps teachers make better use of technology, in general.

Then, promoting a positive school climate, it shows the strongest influence among the predictors ($B = 0.186$, $\beta = 0.309$, $t = 5.690$ $p < 0.001$). So it seems that a supportive and encouraging school atmosphere really matters, like it becomes the driving factor for technology integration.

Overall, the findings suggest that every leadership variable is significantly and positively tied to technology integration, and yea promoting a positive school climate is the most influential one, among them.

4. 4.Results from Focal Group Discussion

Focus Group Discussion Findings on the Role of Leadership in Technology Integration in Schools

Level of Technology Integration in Primary Schools

The focus group discussion revealed that technology integration in primary schools of Kolfe Keranio Sub-City is gradually improving, although it is still at a developing stage. Participants explained that digital tools are mostly used for administrative tasks such as student record management, communication, and reporting, while classroom integration remains limited in many schools.

“Technology is becoming part of our daily school activities. We use digital systems for student records, communication, and reporting. However, classroom integration is still limited because many teachers lack adequate access to technological resources.”

Participants further noted disparities among schools in terms of access to ICT infrastructure and digital tools.

“Some schools are ahead in technology integration, while others are struggling because of shortages of computers, internet connectivity, and technical support.”

These findings align with previous studies which emphasize that technology integration depends on infrastructure, institutional readiness, and support systems (Dexter, 2018; Ertmer & Ottenbreit-Leftwich, 2013).

Role of Educational Leadership in Technology Integration

Participants strongly emphasized that school leadership plays a central role in promoting technology integration. They indicated that principals and vice principals are responsible for setting direction, motivating teachers, and supporting ICT implementation in schools.

“A school leader must lead by example. Even if the principal is not an ICT expert, they should demonstrate commitment and encourage teachers to use technology in teaching and administration.”

“When leaders continuously encourage teachers, organize ICT training, and monitor implementation, teachers become more willing to adopt new technologies.”

Participants also highlighted that leadership support is essential for building confidence among teachers and sustaining technology use in schools.

These views are consistent with Fullan (2016) and Anderson and Dexter (2005), who argue that leadership is a critical driver of educational innovation and technology adoption.

Theme 3: Challenges in Technology Integration

The discussion identified several challenges that hinder effective technology integration, including limited infrastructure, insufficient training, budget constraints, and resistance to change among some teachers.

“Many teachers are interested in using technology, but they lack confidence and sufficient training. This sometimes creates resistance whenever new digital systems are introduced.”

“Policy expectations are often higher than the realities we face. Schools are expected to implement digital systems, but the necessary infrastructure is not always available.”

These findings are consistent with Hew and Brush (2007), who identified resource and training constraints as major barriers to ICT integration in education.

Relationship between Leadership and Technology Integration

A key finding from the discussion is the strong relationship between educational leadership and the level of technology integration in schools. Participants agreed that leadership significantly influences how effectively technology is adopted and sustained.

“Where leadership is strong, teachers feel motivated to experiment with new technologies. Leadership creates the environment that makes technology integration possible.”

“The attitude of the principal influences the whole school. If the leader values technology, teachers are more likely to use it effectively.”

These insights are supported by Leithwood, Harris, and Hopkins (2020), who highlight leadership as a key factor in school improvement and innovation.

The focus group discussion confirmed that educational leadership plays a vital role in technology integration in primary schools. Despite challenges related to infrastructure, training, and resources, strong leadership was identified as a key driver of successful technology adoption. Leaders contribute by setting vision, motivating teachers, supporting professional development, and creating a culture that embraces innovation

4.5. Document Review

Document review was conducted to complement the qualitative and quantitative data gathered through Focus Group Discussions and questionnaires. The review included ICT policy guidelines, teacher training manuals, school administrative records, student records, and education service reports obtained from relevant offices in Kolfe Keranio Sub-City. The purpose was to triangulate data sources and gain a clearer understanding of how technology integration and educational leadership are reflected in official documents and school practices.

The ICT policy guidelines reviewed show that educational leadership is expected to play a central role in driving technology integration in schools. The documents emphasize that school leaders are responsible for planning ICT implementation, ensuring the effective use of digital resources, supporting teachers through continuous supervision, and promoting a culture of innovation. Leaders are also expected to coordinate training opportunities and mobilize resources to support ICT development. However, the documents also acknowledge that leadership effectiveness is often constrained by limited infrastructure and insufficient technical capacity at school level.

Training manuals further highlight the responsibility of school leaders in facilitating ICT capacity-building programs. They indicate that principals and vice principals are expected to encourage teacher participation in ICT training, monitor classroom application of digital tools, and provide ongoing professional support. Despite these expectations, school reports suggest that leadership involvement in structured ICT mentoring and follow-up activities varies significantly across schools.

Student records were also reviewed, particularly attendance registers, academic performance records, and digital or manual grading systems. In some schools, student data is partially managed through digital platforms, especially for grade reporting and attendance tracking. However, many schools still rely heavily on manual record-keeping systems. The records indicate that where school leaders actively support ICT use, student data management tends to be more organized, accurate, and timely. In contrast, schools with weaker leadership engagement in ICT adoption often experience delays and inconsistencies in student record management.

Education service reports from the Sub-City Education Office highlight ongoing efforts to improve digital transformation in schools. These reports emphasize leadership development, ICT infrastructure expansion, and teacher training as priority areas. The education services also outline monitoring and support mechanisms intended to ensure effective implementation of ICT policies. However, the reports acknowledge persistent gaps between planned strategies and actual implementation, mainly due to resource limitations and uneven leadership capacity across schools.

Overall, the document review findings indicate that educational leadership plays a critical role in shaping the effectiveness of technology integration and school management systems. Strong leadership contributes to better organization of student records, improved adoption of digital tools, and more effective implementation of education service directives. Conversely, limited leadership engagement is associated with weaker ICT utilization and inconsistent record management practices. The findings further confirm that although policy and education service frameworks strongly support digital transformation, practical implementation depends heavily on the commitment and capacity of school leaders.

4.6. Observations

Direct observations were conducted in selected primary schools of Kolfe Keranio Sub-City to examine how technology is used in day-to-day school activities and to understand the practical role of educational leaders in supporting ICT integration. The observation focused on classroom practices, school administration processes, availability of ICT facilities, and the interaction between school leaders, teachers, and students in relation to technology use.

In several schools, it was observed that basic ICT infrastructure such as computers, projectors, and printers was available, although in limited quantity. In some cases, computer labs existed but were not fully functional due to insufficient maintenance, lack of updated software, or irregular electricity and internet access. This limited functionality affected the consistent use of technology in teaching and learning activities.

It was also observed that school leaders, particularly principals and vice principals, played an active role in encouraging teachers to use available technologies. In some schools, leaders were seen supervising ICT rooms, discussing with teachers about lesson preparation using digital tools, and monitoring administrative data management systems. In these cases, leadership presence appeared to positively influence staff engagement with technology.

However, in other schools, limited leadership involvement in ICT-related activities was observed. In such settings, technology use remained minimal and mostly confined to administrative offices rather than classroom instruction. Teachers in these schools relied

more on traditional teaching methods, and ICT equipment was underutilized or stored without regular use.

Student engagement with technology also varied across schools. In classrooms where teachers integrated ICT tools, students showed higher interest, participation, and motivation during lessons. Multimedia presentations and digital learning materials were observed to increase student attention and interaction. In contrast, classrooms without ICT integration showed more passive learning behavior and limited student engagement.

Regarding school leadership practices, it was observed that schools with proactive leaders tended to have better-organized ICT schedules, clearer instructions for technology use, and more frequent teacher support activities. Leaders in these schools demonstrated commitment by allocating time for ICT coordination meetings and encouraging peer sharing of digital skills among teachers.

Overall, the observation findings indicate that the effectiveness of technology integration in schools is strongly influenced by the active involvement of educational leaders. Where leadership support was strong, ICT tools were more frequently used and better integrated into teaching and learning processes. Where leadership involvement was weak, technology use remained limited and inconsistent. These observations support the findings from FGDs and document reviews, confirming that leadership plays a central role in successful technology integration in primary schools.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

Introduction

The study presents its findings through this chapter which provides a comprehensive summary of its results and draws conclusions from its main findings and presents recommendations to solve the detected problems. The summary highlights the major findings, the conclusions reflect the implications of those findings, and the recommendations provide practical guidance for improving educational leadership and technology integration in primary schools.

5.1. Summary of Findings

The sample included 58% male and 42% female respondents, showing a kind of fairly balanced participation, though you still can feel the tilt. Most respondents (76.7%) were aged 20–25, indicating a young workforce that is generally comfortable with digital tools. In terms of position, department heads dominated (91.2%) followed by teachers (4.6%) and then vice principals (4.2%) so in practice the findings largely represent school-level coordinators' viewpoints, not some spread across roles.

The study found that technology integration in primary schools is progressing but remains at a moderate level. Digital technologies are mainly used for administrative functions such as student record management, communication, and reporting. Classroom application of ICT tools is still limited due to inadequate infrastructure, insufficient access to computers and internet services, and a lack of technical support. Significant differences in technology adoption were observed among schools.

5.1 1.Level of Technology Integration

Overall the findings suggest a moderate level of technology integration in schools (grand mean = 2.765). Device access is moderate (mean = 3.05), and administrative backing for

planning is also moderate (mean = 3.01). Leadership vision seems relatively stronger (mean = 3.25), but then weak technical support shows up (mean = 2.22) and limited maintenance is another issue that pulls down what can actually be implemented. Use of ICT for teaching, assessment, and individualized learning is moderate (means 2.78–2.88). Still, professional development is weak (mean = 1.98), which affects teachers' competency and confidence over time. So integration is present, but it is not consistent and is clearly restrained by infrastructure constraints plus training gaps, overall.

5.1.2 Role of School Leadership

Leadership practices are not very strong, with an average score of 2.36. One of the main issues is that leaders are not good at sharing their vision for using technology, and they don't do a great job of promoting the use of technology either, with a score of 2.26. Leaders also don't encourage trying new things, and they don't manage budgets or maintain technology well, with scores ranging from 2.10 to 2.11. Overall, it seems like leaders need to work on supporting and promoting the use of technology in their organizations.

Some moderate practices exist in fair resource distribution (mean = 2.03), power backup systems (mean = 2.14), and teacher collaboration support (mean = 2.54). Overall, leadership support for ICT is not strong enough to fully drive integration. The findings revealed that school leadership plays a vital role in facilitating technology integration. Principals and vice principals support ICT implementation by providing direction, encouraging teachers, organizing training opportunities, and monitoring technology use. Leaders who demonstrate commitment to digital transformation help create a positive environment for innovation. Their support increases teacher confidence and willingness to incorporate technology into both instructional and administrative activities.

5.1.3. Relationship between school Leadership and Technology Integration

The correlation results show a positive and significant relationship between school leadership practices and technology integration. Communicating vision ($r = 0.334$), monitoring teaching ($r = 0.344$), and promoting school climate ($r = 0.334$) all positively relate to ICT integration ($p < 0.01$). This indicates that better leadership is associated with higher technology use in

schools. The study identified a strong positive relationship between school leadership and technology integration. Schools with proactive and supportive leaders showed higher levels of ICT adoption and utilization. Leadership influences teacher attitudes, motivation, and engagement with technology. Participants emphasized that leaders who value digital innovation create favorable conditions for technology use, resulting in more effective implementation of ICT in teaching, learning, and school management.

5.2.4. The Role of Leadership in Technology Integration

Regression shows that school leadership has the greatest influence on technology integration with $R^2 = 0.997$. The model holds with $F = 31.773$, $p < 0.001$. The effect of leadership is positive in all aspects. The strongest influence is in creating a positive school climate, room monitoring ($\beta = 0.208$) and expressing and clarifying a school vision ($\beta = 0.285$).

The results show that the higher the level of supportive, clear, and involved leadership in the teaching activities of the school, the higher the level of technology integration. The findings confirmed that leadership is a key driver of successful technology integration in schools. Effective leaders establish a clear vision for ICT use, mobilize resources, coordinate professional development, and promote a culture of innovation. They also supervise implementation and provide continuous support to teachers. Despite challenges such as limited infrastructure and funding, strong leadership significantly enhances the sustainability and effectiveness of technology integration initiatives.

5.2. Conclusions

The research shows that educational leadership functions as a primary force which determines how technology gets used in Kolfe Keraniyo primary schools

The study comes to the conclusion that technology integration in primary schools in Kolfe Keraniyo Sub-City is at a moderate level right now. Even though some ICT tools are available and they are occasionally used during teaching learning, their use is not yet fully uniform, or it is not properly embedded into day to day classroom practice. The findings indicate that technology is mostly applied for basic instructional chores like slide

presentations and lesson support , while more advanced actions such as personalized learning and digital assessment are still limited. This kind of condition seems to be shaped by practical obstacles , for example inadequate access to ICT devices, the internet being unstable, large class sizes, and technical breakdowns happening often , and then not being dealt with quickly enough.

The study also concludes that the educational leadership practices tied to technology integration are generally weak. School leaders do not consistently put forward a well-defined vision for ICT use, and they are not really pushing for its inclusion in teaching and learning routines. Support for ICT infrastructure through finance is also inadequate, and the system for maintaining technological tools is not managed in an effective way. Because of this, teachers frequently work in settings where direction, available materials, and on-going support for technology use are scarce. Still, there are some encouraging leadership actions, especially when it comes to encouraging staff collaboration, making experience sharing easier, and using technology for administrative conversations, but these actions are not strong enough to bring about full scale integration. The study concluded that technology integration in primary schools is improving but remains constrained by inadequate infrastructure, limited resources, and insufficient training. School leadership plays a crucial role in promoting the effective use of technology by providing vision, support, motivation, and professional development opportunities. The findings further revealed a strong positive relationship between leadership effectiveness and technology integration. Therefore, strengthening leadership capacity and improving ICT resources are essential for enhancing technology adoption and improving teaching, learning, and school management practices.

Finally the study concludes that educational leadership has a strong and statistically significant influence on technology integration in primary schools. In the schools where leadership practices like clear communication of the vision, active monitoring of classroom instruction, and the push for a positive school climate are stronger, they tend to show higher levels of ICT integration. Among these things, promoting a positive school climate actually plays the most influential part. Overall, the results confirm that effective leadership is a key determinant for successful technology integration, and without solid leadership support, the use of ICT in schools stays limited and at times inconsistent.

5.4. Recommendations

Research findings indicate that educational leadership development and technology integration implementation in Kolfe Keraniyo primary schools which need to be improved should follow these recommendations.

- First, principals need to clearly communicate a strong and practical vision for ICT use in teaching and learning. This vision should not stay theoretical, but should be translated into simple school based strategies that teachers can easily understand, and apply in their classrooms.
- Second, education authorities and school leadership should prioritize investment in ICT infrastructure. Schools need adequate computers, tablets, projectors and stable internet access, plus regular maintenance services. Without reliable infrastructure even motivated teachers cannot integrate technology into teaching effectively. Also, attention should be given to reducing delays in repairing broken devices, so that learning is not interrupted, even for a short time.
- Third, continuous professional development programs should be strengthened. Training should focus not only on basic computer skills but also on practical classroom integration of technology. Teachers need direct, hands-on mentoring that helps them design lessons, use digital tools for assessment, and apply technology for personalized learning.
- Fourth, school leaders should create a more supportive and encouraging environment for teachers. Teachers should feel willing to try new digital tools, without fear of failure. Regular collaboration and experience sharing sessions should be expanded too, so that teachers can learn from each other and build confidence in using ICT.
- Fifth, stronger leadership monitoring and follow up mechanisms should be established. Principals and supervisors should actively observe how technology is being used in classrooms and provide constructive feedback that helps

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- Paraphrase: Abebe and Mulugeta (2022) explored both the opportunities and challenges associated with incorporating ICT into Ethiopian primary schools.
- Paraphrase: Anderson and Dexter (2005) conducted an empirical study that examined how frequently technology leadership appears in schools and its impact.
- Paraphrase: The African Union (2022) provided a continental overview of ICT in education, outlining progress made and ongoing gaps across African countries.
- Paraphrase: This African Union (2022) report assessed the state of digital learning infrastructure in Africa's primary schools.
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APPENDIXES

Appendix A: Field Survey Questionnaires

Field Survey Questionnaires

Dear Teacher,

This questionnaire is prepared to collect data for research. The research focuses in observing "Role of leadership in technology integration schools in Kolfe Keranio Sub-City Primary Schools, Addis Ababa". This questionnaire consists of two parts: part one deals with the Role of leadership general information of respondents and parts two are used to measure the participants' Role of leadership and level of technology integration. The information you are going to provide is used purely for the research purpose. Your answers are completely confidential and your name will not be written in this form. Therefore, assistance and genuine response are highly required for the success of the study. I cordially request your collaboration in responding to this questionnaire.

Thank you in advance

Part I: Please fill the following blank space about your background information.

1. Gender Male ☐ Female ☐
2. Age 16-25 ☐ 26-35 ☐ above 36 ☐
3. Level of Education: Secondary school ☐ Diploma ☐ Degree ☐ second Degree ☐
4. Position: Teachers ☐ Department head ☐ vice principal ☐
Principal ☐

Part II: Rate the following variables of to assess role of leadership

If you are interested to explain more, you can use the back page of the questionnaire by specifying the questions number.

Where the question requires ranking (5=strongly disagree 4 =dis agree = 3= Neutral, 2= agree ,1= strongly Agree.) please choose by putting a tick mark (√) on the number that express best your level of rating.

No	Items	Response options				
Objective 1: Role of leadership		5	4	3	2	1
1	School leaders clearly communicate the school's goals and vision for teaching and learning.					
2	School leaders regularly observe classroom teaching and provide constructive feedback.					
3	School leaders encourage teachers to share ideas and participate in important school decisions.					
4	School leaders actively support teacher professional development (workshops, trainings, mentorship).					
5	School leaders recognize and appreciate teachers' effort and good performance.					
6	School leaders manage school resources fairly and transparently.					
7	School leaders promote a positive, respectful, and collaborative school climate.					
8	School leaders respond promptly and fairly to teachers' concerns and challenges.					
9	School leaders set high expectations for teaching quality and student achievement.					
10	the leadership practices in this school help me perform my job effectively					

Part II: Rate the following Objective 2: Level of technology integration

If you are interested to explain more, you can use the back page of the questionnaire by specifying the questions number.

Where the question requires ranking (5=strongly disagree 4 =dis agree = 3= Neutral, 2= agree ,1= strongly Agree.) please choose by putting a tick mark (✓) on the number that express best your level of rating.

No	Level of technology integration	5	4	3	2	1
1	Teachers in my school regularly use digital devices (computers, tablets, projectors) during lessons.					
2	Students in my school frequently use technology to complete classwork and homework.					
3	Technology is integrated into lessons in a way that enhances students' understanding of the subject.					
4	I can easily access functional ICT equipment (e.g., internet, computers, printers) when needed for teaching.					
5	Digital resources (videos, simulations, educational apps) are commonly used to make lessons more engaging.					
6	Technology is used to assess students' learning (e.g., online quizzes, digital tests, learning platforms).					
7	Teachers in this school feel confident in using technology as part of their everyday teaching.					
8	Technology is used to differentiate instruction for students with different learning needs.					
9	Collaborative tools (e.g., email, messaging apps, online platforms) are used to communicate with students and parents.					
10	Technology integration in my school supports effective teaching and learning.					

Thank you in advance for your cooperation

Appendix B

Key informant interview to be filled by **principals**

Dear Participants, This study is entitled by A Study on Educational Leadership and Technology Integration Schools: The Case of Primary School of Kolfe Keraniyo Sub City of Addis Ababa City Administration. Thus the purpose of this questionnaire is to collect data and assess Educational Leadership and Technology Integration in primary Schools and to point out and make recommendations on possible strategic interventions for key stakeholders, and this research is part of the degree and I hope that you will be willing to help me. The information collected through this Interview will be used purely for academic purpose. Your response will be kept confidential and you are kindly requested to give your response.

1. How do you personally define "successful technology integration" in a primary school context?
2. What specific leadership actions have you taken this year to encourage teachers to use digital tools?
3. How do you balance the school budget between traditional needs (books/chairs) and technological needs (computers/Wi-Fi)?
4. In what ways do you think your leadership style impacts the speed at which teachers adopt new technologies?
5. What is the biggest leadership challenge you face when trying to modernize your school's technology?



