EARLY GRADE READING INTERVENTIONS AND LEARNERS' READING ABILITIES IN PUBLIC PRIMARY SCHOOLS IN KIAMBU COUNTY, KENYA

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DECLARATION AND APPROVAL

This thesis is my original work and has not been presented for examination in this or any other university

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DEDICATION

I dedicate this thesis to my loving family, who have always been supportive to me, showering me with their unwavering love, encouragement, and kindness throughout my academic journey. Their endless sacrifices, understanding, and belief in me have been invaluable, and I am grateful to have them in my life.

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ABSTRACT

The majority of learners in Kenya's primary school are not able to read at early grade level. With the support of United States Agency International Development and Department for International Development, Kenya's Ministry of Education came up with the Early Grade Reading Activities (EGRA) with the aim of improving reading in grades one to three. This study sought to investigate the influence of the Early Grade Reading interventions on the reading abilities of learners in public primary schools in Kiambu County. The objectives of the study were: to establish the influence of teachers' capacity-building intervention on learners'reading abilities; the influence of Early Grade Readtng Activities teaching and learning resources on learners'reading abilities; the influence of monitoring and evaluation on learner's reading abilities; and the influence of ICT use by teachers on learners' reading abilities. The study was guided by the Vygotsky's Socio-cultural Cognitive Development Theory and Holdaway Theory of Literacy Development. It employed the descriptive survey research design. The target population was 26,156 respondants from the 576 public primary schools in Kiambu County. This population comprised 1,408 grade one to three teachers and 24,748 grade 3 learners in the public primary schools in Kiambu County. A sample of 1066 individuals comprising of 57 lower grade teachers and 1009 grade 3 learners were selected using the cluster sampling technique. Questionnaires were used to collect data from the teachers while an achievement test was used to collect data from learners. A pilot study was carried out to establish validity and reliability of the research instruments. Data was analysed using frequencies, percentages, means, and standard deviation while the multiple linear regression method was used to test the relationships between variables at the 0.05 level of significance. Results showed that teachers' capacity building interventions (β= 0.474, t= 4.055, *p*= .000) had a p-value that is less than 0.05 level of significance, which led to the rejection of the first hypothesis of the study. These results imply that teacher capacity building interventions have a positive and statistically significant influence on reading abilities of early grade learners in public primary schools in Kiambu County. EGRA teaching and learning resources (β= 0.209, t= 2.263, *p*= .028) also had a p-value that is less than the 0.05 level of significance, which led to the rejection of the second hypothesis of the study. This implies that EGRA teaching and learning resources have a positive and statistically significant influence on reading abilities of early grade learners in public primary schools in Kiambu County. Similarly, EGRA monitoring and evaluation (β= 0.231, t= 2.295, *p*= .026) had a p-value that is less than the 0.05 significance level, which led to the rejection of the third hypothesis of the study. This implies that EGRA monitoring and evaluation has a positive and statistically significant influence on reading abilities of early grade learners in public primary schools in Kiambu County. On the other hand, EGRA ICT interventions (β=0.089, t= 0.933, *p*= 0.356) had a p-value that is less than 0.05 level of significance, which meant that there was no sufficient evidence to reject the fourth hypothesis of the study. This implied that EGRA ICT interventions do not have a statistically significant influence on reading abilities of early grade learners in public primary schools in Kiambu County. Based on the findings, the study concludes that interventions that seek to build teacher capacity, improve teaching and learning resources, and enhance instructional monitoring and evaluation are effective in improving early grade reading abilities. The study recommends that the Ministry of Education should sustain these interventions. However there is need to reevaluate how the ICT interventions were implemented because results indicate that these interventions were not having a significant influence on learners' reading ability.

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LIST OF ABBREVIATIONS AND ACRONYMS

ASAL	Arid and Semi-Arid Lands
CBC	Competency Based Curriculum
DFID	Department for International Development
ECD	Education Development Centre Inc.
EFA	Education for All
GoK	Government of Kenya
GSCE	General Certificate of Secondary Education (UK)
KICD	Kenya Institute of Curriculum Development
Kshs	Kenya Shillings
M&E	Monitoring and Evaluation
MoE	Ministry of Education
NACOSTI	National Commission for Science, Technology and Innovation
NASMLA	National Assessment System for Monitoring Learning Achievement
RoK	Republic of Kenya
RSA	Research Solution Africa
RTI	Research Triangle Institute
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SSA	Sub-Saharan Africa
T&L	Teaching and Learning
UN	United Nations
UNESCO	United Nations Education, Scientific and Cultural Organization
USA:	United States of America
USAID	United State Agency for International Development

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The focus of this study is to assess the effects of Early Grade Reading Activities (EGRA) interventions on the reading abilities of learners in public primary schools in Kiambu County. This chapter provides an overview of the study,it presents the background of the topic and highlighting the research problem along with the research objectives. This chapter also outlines the rationale and significance of the study, the scope, limitations, assumptions of the research and the operational definition of the terms

1.2 Background to the Study

Education is a human right as stated in the Universal Declaration of Human Rights (UDHR) in the document of 1948 (UNESCO, 2005). However, the first worldwide nations' commitment to education came much later when delegates from 155 governments gathered in a World Conference in Jomtien, Thailand in March 1990 where two documents were adopted: The World Declaration on Education for All and the Framework for Action to Meet Basic Learning Needs (UNESCO, 1994). Later, the Dakar Framework of Action in 2000 and the World Education Forum 2000 recognized the need for curriculum transformation to provide quality education that would liberate people from psychological, economic and technological dependence. The World Education Forum (WEF) of 2015 further re-affirmed the vision of the worldwide movement on Education for All (UNESCO, 2015). According to UNESCO (2000), learners need to enjoy the good intentions of Education for All (EFA), which is a UNESCO's strategy to ensure provision of equitable and quality education to all children.

According to Tomas et al. (2021), reading skill form the basis of all learning as it is a crucial achievement in lifelong learning since it is a tool that cuts across the school curriculum. The reading skills particularly of learners in the early grades play a critical role in their academic performance and ability to meet educational benchmarks. However, many learners in the early grades struggle with reading, which can have a range of negative implications for their educational and broader future prospects. Though access to primary school is high, progression in reading outcomes remain low (Uwezo, 2015). Children who do not develop the learning skills in early primary education are trajectory of limited economic opportunities. There is need therefore to ensure that the central importance of children's time spent in education are rewarded with useful skills of literacy outcomes (Piper & Zuikowski, 2015), through changing the nature of teaching and reading process to meet global acceptance of literacy for development of individuals in society.

UNESCO (2014) reported that 250 million children globally have not acquired the basic literacy skills of which 57 million are from disadvantaged backgrounds. As Piper and Zuikowski (2015) noted, the focus of education has moved from access to achieving desired learning outcomes. Piper, Schroeder and Trudell (2016) argue that although the universal primary education has largely been achieved in most countries, educational quality as measured by learner outcomes has remained stagnant. The school readiness among learners under seven years remain low and desperate (Uwezo, 2015). This is not in line with the agenda 2063 of African Union (AU) of catalysing education and skills revolution to build knowledge, human capital, capabilities and skills leading to improved quality education and building capacities at all levels of education (MoE, 2017).

According to the National Assessment of Educational Progress (NAEP) data for 2019, only 35% of fourth-grade students in the United States of America (USA) were proficient in reading (Arnold, 2022). The data also showed that the achievement gap between students from low-income backgrounds and their more affluent peers persisted, with the former group scoring lower on average. Research also suggests that the reading abilities of early grade learners significantly impact their future success in education and beyond (Eivers *et al*., 2017). Students who struggle with reading in early grades are more likely to experience academic difficulties throughout their educational journey, leading to lower academic achievement, higher risk of dropping out of school, and limited opportunities for future success (Rodriguez *et al.,* 2020). Efforts are being made to improve the reading abilities of early grade learners in the USA. These include interventions like phonics-based reading instruction, targeted support for struggling readers, and equitable access to high-quality educational resources, including literature, technology, and instructional materials (Hernandez *et al.,* 2019). Additionally, increased family engagement and support is crucial for developing strong reading skills in early grade learners.

In Europe, data from the Progress in International Reading Literacy Study (PIRLS) indicate that most European countries perform well in reading literacy overall. In the 2016 PIRLS, Russia, Finland, and Ireland emerged top in early grade learners' reading literacy (Maroco, 2020). England, Germany, the Netherlands, and Denmark were also performing above the international average. However, Bulgaria, Romania, and Malta were performing below the international average. Similar to the USA, students from lower socioeconomic backgrounds are more likely to experience reading difficulties in Europe. This is concerning, as reading difficulties impact future academic success and lifelong learning. Interventions implemented by European

countries to improve early grade reading outcomes range from teacher training, provision of evidence-based instruction strategies, and provision of free books to enhancing access to libraries particularly by disadvantaged students (Eivers *et al*., 2017).

Reading abilities of early grade learners in Asia vary depending on the country and region. In India and Pakistan, access to education, resources, and standard literacy methods is not equitable (Daller *et al*., 2022). Many students from lower-income families face barriers, including limited access to education and resources, inadequate teacher training, and low-quality educational materials. A study conducted in Philippines by Tomas *et al*. (2021) found that only 31% of grade-3 learners could read English independently. This study that analysed 4216 English reading profiles also established the majority of the learners were at the non-mastery reading levels and that most learners had poor reading culture. According to Tomas *et al.* (2021), the non-reading culture in the Philippines has contributed to making the Philippines uncompetitive in the world economy.

On the other hand, Japan, South Korea, and Hong Kong have high literacy rates and are among the top-performing countries in international reading assessments. For example, in PIRLS 2016, Japan ranked 4th, while Hong Kong ranked 8th out of 50 participating countries in terms of reading literacy (Maroco, 2020). While some Asian countries face significant literacy challenges, there are evolving and on-going efforts in many countries in the region to improve reading abilities among early grade learners. There are efforts to improve student access to books and educational resources like tablets and workbooks and teacher professional development. The cost of implementing early grade literacy intervention in Pakistan was estimated at USD

1,531 per school (Byrne *et al.*, 2023). This statistics indicates the kind of efforts that the country has put in place to enhance early grade reading.

In most African countries, the majority of children are not reading at grade level by the end of primary school (Phala & Hugo, 2022). Reading abilities are influenced by factors such as poverty, lack of access to resources, inadequate teacher training, and lack of appropriate reading materials. One of the main challenges in Africa is low levels of literacy and insufficient reading instruction, which contribute to poor reading outcomes (Dagada, 2022).

In addition, many children in Africa speak languages other than the official language of instruction, which puts them at a disadvantage in learning to read (Akkari, 2022). Generally, early grade learners in Africa struggle with basic reading skills such as letter recognition, phonics, vocabulary, and comprehension (Phala & Hugo, 2022). Many learners struggle with interpreting and making meaning from what they read, which is critical for effective learning across all subjects.

The situation in Kenya has not been very different from that of other African countries. The majority of learners in Kenya are still not reading at grade level by the end of primary school (Mandillah, 2019). Studies show that learners face language barriers as they are required to learn in English, the official language of instruction, while many learners speak local languages and only learn English in school (Hsieh *et al*., 2017; Spernes & Korir, 2021). This makes it difficult for learners to comprehend and interpret what they are reading. Low levels of literacy, inadequate teacher training, and insufficient learning materials are also challenges to learners' reading abilities. Many teachers in Kenya have limited training in reading instruction, which can result in ineffective teaching strategies, and a lack of knowledge in improving

learners' reading skills (Banda *et al*., 2022). In some cases, teachers themselves may have low levels of literacy, particularly in rural areas where there is a shortage of qualified teachers. In addition, many schools in Kenya lack adequate learning resources such as sufficient reading materials, textbooks, and teacher guides (Katam, 2019; Ngure *et al.*, 2019). This makes it difficult for learners to practice reading and hampers the efforts of teachers to teach reading effectively.

A study conducted in Kenya in 1998, by Southern and Eastern Quality (SACMEQ) on English reading among Standard Six learners reported that while 64.8% of learner in that class reached the minimum level deemed desirable of mastery, only 23% had attained English reading level desirable for successful learning in Standard Seven (Nzomo *et al*, 2001). The SACMEQ 2010 survey revealed that Kenyans learners in Standard Six performed better than their counterparts in 15 countries in Sub-Saharan Africa (SSA). However, 12.2% of standard six learners had not even reached a minimum reading mastery showing poor learning of literacy in public primary schools in Kenya. Therefore, early grade reading competency is critical for continued retention and success in educational achievements of a country (Piper *et al*, 2015).The success in early grade reading activities would lead to great achievement in Kiambu County.

In 2019, the government introduced the new Competency Based Curriculum (CBC), which incorporated the EGRA intervention for the grade one to three (USAID, 2019). EGRA materials were revised to ensure that they are compliant with CBC principles. According to Evan *et al*. (2021), these principles included meaningful, positive and empowering assessment; provision of timely and differentiated support that is tailored to learners' learning needs; learners' progression that is based on demonstration of

mastery rather than seat time; active learning that uses numerous pathways and different pacing, and explicit, transparent, and measurable learning expectations. These principles may lead to improvement in reading abilities in Kiambu County.

CBC emphasizes on practical training and infusion of knowledge through observation, experiential learning, and experimentation (Torres *et al*., 2018). The role of examinations was diminished as the CBC framework emphasizes the use of innovative methods of assessment. Chipsiror (2020) observed the experiential learning emphasized in the CBC is vital to the development of emerged reading skills. According to the Report on monitoring of learners' progress in grade 3, most learners met the expectations with 35.85% in listening and speaking, reading and language structure at 33.03% and 32.6% in writing. However below 29.37% met the exceeding expectations (KNEC, 2020) though better performance could be achieved. Thus there was need to carry out a research to establish the intervention of EGRA on learner's reading abilities in Kiambu county.

1.3 Statement of the Problem

Despite the efforts made by the Kenya government to achieve UNESCO's goal of Education for All, the country is far from attaining quality education. In particular, little seems to have been done on quality of overall reading abilities for the learners, which affects the general academic outcomes in education. The learning assessment results showed low reading levels in primary school classes and it lags behind other educational attainments in the education system. Reading was key to development and the early grade reading activities lay the foundation for such development. Teaching and learning of the reading skills should be a priority in pursuit of quality education outcomes. In view of the importance of reading, the outcome in reading has been low

and static, thus an issue that necessitated the Early Grade Reading Activities (EGRA) interventions.

The EGRA interventions aimed at improving English and Kiswahili reading for learners in Grades one to three in Kenya and teachers in these grades have been implementing the programme since 2015. The midline evaluation conducted in 2017 showed that the programme had led to notable improvement in learners reading skills. However, the level of improvement varied from one region to another. Despite having a high teacher- classroom ratio of 1:2, the proportion of Grade 3 learners in Kiambu who could do Grade 2 task was 39.5% as compared to 51.8% in Nyeri and 50.5% in Nairobi.It was also noted that early grade learners in public primary schools in Kiambu County had lower reading fluency than their counterparts in the private primary schools. The study further showed that only 36.4% of grade-3 learners could read at least 80 words per minute, which is the standard reading speed for grade 3 learners globally.

The report on monitoring of learners' progress in 2019 showed that below 29.37% of Grade 3 met the exceeding expectation in Reading activities. This statistics raise questions regarding the effectiveness of the interventions of the EGRA programme within Kiambu County. This study, therefore, sought to investigate the influence of the EGRA interventions on learners' reading abilities in lower public primary schools in Kiambu County. Specifically, the study aims to determine whether there is a significant improvement in learner reading abilities following the implementation of EGRA interventions in order to provide insights that can inform policy and practice.

1.4 Purpose of the Study

The purpose of this study was to investigate the influence of the Early Grade Reading Interventions and the learners reading abilities in public primary schools in Kiambu County.

1.5 Research Objectives

The study focused on the following objectives:

a) To examine the influence of teachers' capacity-building interventions on reading abilities of early grade learners in public primary schools in Kiambu County.

b) To establish the influence of EGRA teaching and learning resources on reading abilities of early grade learners in public primary schools in Kiambu County.

c) To assess the influence of EGRA monitoring and evaluation on reading abilities of early grade learners in public primary schools in Kiambu County.

d) To establish the influence of EGRA ICT interventions on reading abilities of early grade learners in public primary schools at Kiambu County.

1.6 Null Hypotheses

The following null hypotheses were tested:

H_{01}: There is no statistically significant influence of EGRA teachers' capacity-building interventions on the reading abilities of early grade learners in public primary schools in Kiambu County.

H_{02}: There is no statistically significant influence of EGRA teaching and learning resources reading abilities on early grade learners in public primary schools in Kiambu County.

H_{03}: There is no statistically significant influence of EGRA monitoring and evaluation on the reading abilities of early grade learners in public primary schools in Kiambu County.

H_{04}: There is no statistically significant influence EGRA ICT interventions on the reading abilities of early grade learner in public primary schools at Kiambu County.

1.7 Significance of the Study

By quantifying the effectiveness of EGRA in improving reading abilities for early grade learners, the research contributes to the development of evidence-based approaches to enhance educational outcomes and support learners' achievements.The study finndings could be used by policymakers at the ministry of education, practioners involved in the design and implementation of educational programmes, and researchers and schools in the field of education to enhance literacy programmes.

The study findings could be used by the policymakers at Ministry of Education to understand how effectively the EGRA interventions are being undertaken in the CBC curriculum and its influence on reading abilities. The findings could contribute to the theoretical and practical knowledge towards solving problems faced by learners in reading and comprehending. The findings could also be useful to KICD for the development and refinement of the CBC curriculum toto improve reading activities at early grade levels. The findings of the study could be used by the MOE to plan

trainings for Early Grade teachers in this country to enhance teaching of reading and literacy in schools.

Headteachers of schools could use the finding to develop a monitoring plan for teachers in Early Grade classes. The study findings could reveal the degree to which teachers are actually implementing EGRA and outline future curriculum preparation for learners to enhance their learning abilities; and provide the basis on which recommendations can be made towards the improvement of the reading culture for the learners.

The findings of this study could also be essential for designing and implementing successful future programmes and interventions that target reading and literacy development in early grade learners.

The study generates new knowledge and insights, which advances the research agenda in literacy development and early grade reading interventions. The study findings could raise challenges and issues on literacy abilities requiring further research. Thus could be used as reference by other researchers as it adds to the body of knowledge on early grade reading abilities.

1.8 Limitations of the Study

The following limitations underpinned this study;

I. Some respondents may have been biased because the study examines performance issues that relate to their jobs. They may have felt that this study is out to expose them or their seniors making them more cautious in expressing their views. This concern was addressed by assuring respondents that the data will be used for research purposes only. They were also assured

that no information that could disclose their identity or that of their school will be included in the research report.

II. Similarly the respondents might have given socially acceptable information. To allay the fears, the researcher assured the respondents of confidentiality and anonymity of the responses.

III. Focus on early grade teachers and grade 3 learners may also limit the generalizability of findings to learners in other grades. Similarly, focus on public schools may limit the generalization of results to learners in private primary schools.

1.9 Delimitations of the Study

The study was conducted among grade-3 learners in public primary schools who had benefited from the EGRA programme. The study covered 57 public primary schools in four Sub-Counties that were selected randomly leaving out private schools that also teach reading. Given that literacy cuts across the board, data from these schools would enrich the findings. Private primary schools did not participate in the study because some use different educational systems such as GSCE. The study was conducted in Kiambu County and any generalization should be done with caution. The study targeted the teachers and learners who are the key participants in the teaching of EGRA.

1.10 Assumptions of the Study

The study was conducted with the following assumptions:

i. That all public primary schools in Kiambu County were implementing of EGRA interventions

ii. That all schools were keeping records of learners reading progression.

iii. That the methods and procedures used were able to distinguish differences in the implementation of EGRA interventions as well as the differences in reading abilities across the public primary schools.

iv. That schools that are more effective in implementing EGRA interventions would exhibit better reading abilities than their counterparts.

1.11 Operational definition Terms

The following are the definitions of the significant terms as used in the study:

Abilities is the measureable knowledge, skills, outcomes and values that learners should demonstrate as result of completing a course

Attitude means to individual ideals, views and options which can be either positive or negative towards the EGRA programme

Capacity refers to ability in skills and content to implement EGRA Intervention

Curriculum is taken as a course of study that provides the learner with some learning experiences under the guidance of the school.

Early Grade: They are crucial grades for development of the foundation needed for success of school and life

ICT: These are tools and systems that are used to create, store, convey, share, or process information.

Information and Communication Technology (**ICT):**The sum of tools to communicate,create,disseminate,store,and manage information in learning environment

Intervention Activities: Ashort term focused teaching programme with objectives aimed at a particular learner with specific needs

Literacy is the acquisition of skills necessary for reading and writing.

Monitoring and Evaluation: The continuous checking the progress and assessing systematically and objectively completion of a programme

Monitoring means to keep track or check on the progress of the EGRA programme

Orange Book is KICD'S source book for all the officially approved books for use in every class in Primary and Secondary schools

Pedagogy refers to methods used in teaching and learning used to implement a programme

Perception means the attitudes, feelings and opinions of learners or groups towards the idea, other people or institution.

Reading Abilities:Cognitive processes involved in understanding written text,decoding comprehending and fluency

Reading: The process of process of looking at written symbols and letters and deriving meaning from them.

Resources are the various items needed for learning of the programme

Teacher Capacity:The knowledge,skills and disposition that enble the teacher to plan,deliver,and reflect on effective instruction

Teacher: A person who is trained and certified to give instructions to learners in various learning areas.

Teaching and Learning resource: The materials designed to help facilitate teaching and learning

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the work of researchers in order to offer a critical look of the study. It shows existing gaps in knowledge to be addressed and the relevant themes of the study. These include; the concept of reading abilities, the EGRA programme, teachers' capacity-building interventions, teaching and learning resources, programme evaluation and use of ICT by teachers.

2.2 Reading Abilities

Reading abilities refer to the cognitive processes involved in understanding written text, including decoding, comprehension, and fluency (Hernandez et al., 2019). Reading abilities involve using knowledge of language, vocabulary, grammar, and syntax to comprehend text and extract meaning effectively. There are a number of components that constitute reading abilities. According to Nelson *et al.* (2018), the first component is the ability to scan for details and using organized graphics to understand texts. Scanning for details helps learners to efficiently locate specific information inside text. On other hand, using organized graphics to understand texts supports comprehension and retention of complex information by breaking down and visually representing it in an accessible way (Dessemontent and Chambrier, 2015).

Decoding, the ability to recognize and sound out words, is another critical component of reading abilities, particularly in early grade learners (Miske & Joglekar, 2018). It is the ability to decipher the sounds of letters and the process of translating those sounds into words. Decoding entails three key processes: phonological awareness, phonics, and word recognition (McNeill *et al*., 2023). Phonological awareness ability to

recognize and manipulate the sounds and patterns of spoken language. This includes recognizing and producing rhyming words, syllables, and individual phonemes. On the other hand, phonics is the ability to connect the sounds of spoken language to written letters and words (Milankov *et al*., 2021). This includes understanding the letter-sound relationships and decoding words by sounding out each letter or letter combination. Word recognition is the ability to quickly and accurately read words by sight, without having to sound them out.

Decoding is crucial because it is the foundation for reading fluency and comprehension. If a learner struggles with decoding, their ability to make sense of the text will be hindered, and they may fall behind in reading comprehension and academic progress (Vousden *et al.,* 2022). According to Wren (2004), the ability to associate letters with sounds, distinguish letters from numbers, or distinguish certain letters from a collection of letters is yet another critical component of reading literacy. Thus learner should also be able to distinguish lower cases from uppercase letters. Dessemontent and Chambrier (2015) added that reading literacy also entails the ability to hear and control sounds in words. A learner should also be able to partition words into letters, make words out of letters and insert or omit phonemes in a word as well as count number of phonemes in a word. Effective decoding skills enable learners to read fluently, recognize words automatically, and focus their cognitive resources on understanding and deriving meaning from the text.

Comprehension, the ability to understand the meaning of what is read, is equally important as it involves deriving meaning from the text (Hsu *et al*., 2023). It is the process of actively constructing meaning by connecting the information presented in a text to the reader's prior knowledge and experiences. Comprehension involves a range

of skills and strategies such as decoding, vocabulary, background knowledge and experiences, prediction, differencing, monitoring comprehension and summarization (Patria, 2020). Vocabulary is knowledge of words and their meanings, which allows for a deeper understanding of the text. Vocabulary plays a critical role in reading comprehension because every word carries meaning within a text, and without a strong understanding of important vocabulary, a student may struggle to understand what they are reading (Fitria, 2020). When students encounter unfamiliar words during reading, it can significantly hinder their comprehension, which can have a ripple effect on other academic areas. Vocabulary knowledge is important for word recognition and derivation of word meaning.

Background knowledge and experiences refers the readers' prior knowledge of the topic or subject, which helps them make connections and inferences while reading (Smith *et al*., 2020). Background knowledge and experience play a crucial role in reading comprehension, as they provide a framework for understanding new information and making connections between what is being read and what is already known. Prediction is a comprehension strategy used while reading to anticipate what might happen next in the text (Cevoli *et al*., 2022). It involves using clues from the text, such as foreshadowing, character actions or dialogue, and setting, to make informed guesses about what may occur next. By making predictions, readers actively engage with the text, developing a deeper understanding of the content (Prastika, 2020). It also helps readers to monitor their comprehension, as they evaluate whether their predictions are accurate and adjust their understanding of the text accordingly.

Inferencing is the ability to draw conclusions and make predictions based on the information presented in the text (Hall *et al.,* 2020). It involves using reasoning skills to fill in the gaps and understand the implicit meanings of the text. Inferencing is a critical component of reading comprehension because it allows readers to go beyond the literal meaning of the words and access the deeper, implied meanings of the text. This involves analyzing the author's word choice, tone, and point of view to make inferences about characters, settings, themes, and plot developments (Smith *et al.,* 2020). Inferencing can be challenging for some readers, especially those who may struggle with decoding or vocabulary. However, it is an essential skill for developing a deep understanding of the text. By making inferences, readers can connect the information presented in the text to their own experiences, which enhances their comprehension and helps them engage with the material on a more profound level (Hall *et al*., 2020).

Monitoring comprehension is an essential aspect of reading comprehension that involves actively paying attention to and reflecting on one's understanding of the text while reading (Patria, 2020). This process helps readers to identify and repair any misunderstandings or confusion that they may encounter as they read, thereby improving their overall understanding of the text. There are various strategies that readers can use to monitor their comprehension while reading. For instance, they can ask themselves questions about the text, such as "What is the main idea of this paragraph?" or "Who are the characters and what are they doing (Wiese, 2019)?" They can also make predictions about what might happen next in the text based on their previous knowledge and experiences. Furthermore, readers can use various metacognitive strategies to monitor their comprehension, such as summarizing the text, identifying key words or concepts, or visualizing the events described in the text

(Patria, 2020). These strategies help readers to maintain focus and attention while reading and to connect new information with their prior knowledge and experiences. Monitoring comprehension also help readers to recognize when comprehension has been lost or interrupted and use strategies to repair it such as rereading or clarifying.

Summarization is a reading comprehension strategy that involves identifying and condensing the essential information of a text into a shorter, more manageable form (Ozdemir, 2018). It is a skill that requires readers to understand the primary focus of a text and to be able to identify the most important information. Summarization helps readers to build a deeper understanding of the text, remember important information, and identify key themes and concepts. To summarize effectively, readers should first read the text carefully and identify the main ideas and supporting details (Patria, 2020). They should then condense this information into a shorter, more manageable form, while still retaining the essential information and key concepts. A well-written summary should be accurate, concise, and coherent, providing a clear overview of the main ideas and themes of the text. Summarization can have many benefits for readers, including improving comprehension, retention, and recall of important information (Hsu *et al.*, 2023). It can also help readers to identify key themes and concepts, and make connections between different parts of the text. In addition, summarization can be an effective strategy for test-taking and note-taking, as it helps readers to organize complex information in a concise and meaningful way.

Fluency is the final major component of reading ability. It refers to a reader's ability to read quickly and accurately with appropriate prosody, or expression (Hsu *et al.*, 2023). After understanding texts, the focus is then shifted to improving the speed of reading and being able to build academic vocabulary (Dessemontent & Chambrier,

2015). Fluent readers are able to read smoothly and effortlessly, making it easier for them to comprehend the text and focus on higher-level comprehension tasks such as making inferences and connections between the text and their prior knowledge. Fluent readers are characterized by a number of key features, including fast and accurate word recognition, automaticity of decoding and comprehension processes, appropriate use of intonation and stress to convey meaning, and the ability to sustain attention and comprehension over extended periods of reading (Hsu *et al*., 2023).

Fluent reading is essential for many aspects of academic success, including reading comprehension, vocabulary development, and critical thinking skills. Fluency helps readers engage in meaningful and enjoyable reading experiences (Hernandez *et al*., 2019). To build fluency, readers need to practice reading regularly and deliberately, focusing on increasing speed, accuracy, and appropriate use of prosody. One of the effective strategies for developing fluency is repeated reading, where readers practice reading the same text multiple times (Stevens *et al*., 2019). Another strategy is timed reading, where readers try to read as many words as possible in a short amount of time (Erp, 2021). Fluency can also be enhanced through teacher-guided oral reading, where a teacher provides feedback and support to help students improve their reading fluency (Cockerill *et al.,* 2023). For teachers to be effective on improving learners reading fluency, they must develop mastery of these strategies. The strategies also require application of a wide range of materials including textbooks and storybooks. Consequently, building the capacity of teachers to deliver these strategies and providing adequate teaching and learning materials are prerequisite to improving the reading fluency of early grade learners.

Reading abilities can vary widely among individuals as the development of reading abilities takes time and practice. Some learners may read well below grade level, while others may excel in reading above grade level. Factors such as motivation, prior knowledge, and interest in the topic can also influence reading abilities (Smith *et al.,* 2022). Furthermore, the instructional programmes early grade learners receive can significantly impact their reading abilities. Effective reading programmes incorporate evidence-based teaching practices, such as phonics instruction, comprehension strategies, and guided reading practice. Learners benefit and improve their reading skills much faster when instructions are well designed and delivered appropriately (Dessemontent & Chambrier, 2015). Leaners also need support in form of textbooks, pictures, and story books to hone their reading skills.

According to the MoE (2012), education programme plan to provide learning opportunities and experiences to the learners in order to achieve the educational goals and specific objectives required by the Kenyan society. The Kenyan education system is mainly examination driven and the quality of education is seen in terms of learners' abilities (Waruguru, 2013). Literacy allows every person to acquire knowledge, skills, attitudes and values necessary to shape a sustainable future (MoE, 2014). The future of students depends on the abilities in examination as they provide the gauge to the academic strength of the learner and justify whether their stay in school had a merit. However, according to the Ministry of Education (2015), the overall goal of literacy abilities is released through improved delivery methods and instructions, access of text books and supplementary materials.

UNESCO (2012) report that primary education is the basic education aiming to prepare children to attain the competence needed to advance further and make a

worthy contribution to a society that is constantly changing. Learning to read is important to learners' academic success (Lyons, 2003; Bartilol, 2015). The launching of EGRA to address literacy abilities was in line with the international standards as well as the goal and priorities of the Kenyan Government (USAID, 2014).However as Uwezo (2015) indicated, learning abilities remain low and static, and there is need to implement a well-structured programme to remove the different kinds of barriers for good academic outcome. Thus, there was need to evaluate the interventions of EGRA in Kiambu County.

The Uwezo Six (2016) report stated that nationally, 8% in Standard Eight learners could not do Grade-two work across the country while 92% of Standard Eight learners could do Grade two work in English, Kiswahili or Mathematics but only 91% could do the three subjects combined. This shows no significant improvement in learning outcomes (Uwezo, 2016), indicating that children in Kenya complete standard eight without acquiring the basic competences expected of a learner in Grade two. Despite marginal improvement from 46 to 50 percent of learners aged 7- 13 years who could read a grade two story book between 2011and 2014 (Uwezo, 2015), literacy level remained almost unchangeable. Uwezo (2015) assessment showed that (90%) of the vast majority of school-aged children in Kenya attend school but the grade gap is high where difference between the grade they are enrolled is lower than the expected grade. Therefore there is need for further intervention to enhance reading

In addition, the 2019 Annual status of education report (ASER) report on Kenya highlighted that only about 22% of the 7-10-year-old learners surveyed could read at the right level expected for their age, while about 23% could not read a single English word. This is a worrying trend because early-grade reading is critical in laying a

strong foundation for future academic success. This report that was based on a survey of over 34,000 households in 35 counties also showed that learners from urban areas performed better than those from rural areas, and the ability to read in English is highest among learners who speak English at home. Only about 19% of rural children aged between 7 and 10 years old were able to read at the expected level for their age, compared to 40% of urban children. The report also showed significant regional differences in reading outcomes, with some regions exhibiting much higher levels of reading proficiency than others. For instance, children in the coastal region of Kenya performed better in reading tests, with over 30% of children being able to read at the expected level for their age, compared to only about 10% in the Northern region of Kenya.

In 2020, NASMLA observed that 86.9% and 87.5% of learners did not attain Level-1 competencies in English and Kiswahili respectively (KNEC, 2020). Level-1 competencies mainly entail the application of knowledge on alphabet to organize words in alphabetical order. Similarly, 58.8% and 51.3% of the learners did not attain Level-4 competencies in English and Kiswahili respectively, which entails reading with comprehension and making inferences. There was high correlation between literacy and numeracy suggesting that learners who fail to develop the required competency in reading are more likely to struggle in other areas of study such as numeracy (KNEC, 2020).

2.3 The Early Grade Reading Activities Intervention

Various programmes aimed at improving reading abilities of early grade learners have been implemented across different parts of the world with varying degree of efficiency and effectiveness. In the United States, the Reading Recovery programme

has been successful in improving the reading abilities of struggling first-grade students (Denton & Hocker, 2016). The programme focuses on individualized instruction and involves intensive and systematic reading lessons. Empirical evidence has shown that students who participated in the Reading Recovery programme demonstrated significant improvements in reading accuracy, fluency, and comprehension compared to their peers in the control group.

In India, the Pratham programme, also known as the Read India Campaign, has been successful in improving the reading abilities of early grade learners in rural areas (Dube *et al.,* 2019). The programme involves child-centered reading instruction, the use of local language materials, and community mobilization to encourage reading. The programme has demonstrated significant positive effects on reading abilities of participating students. In Nepal, the National Early Grade Reading Programme (NEGRP) sought to improve early grade reading skills through the provision of reading materials in the learner's mother tongue and targeted teacher training methods (Vogt *et al.,* 2018). One of the main components of the programme was the systematic and structured approach to teacher training, with the focus aimed at improving pedagogical knowledge and supporting individual learner needs. Results showed promising signs of improved reading skills.

In Indonesia, the WordWorks programme was designed to help six-year-olds in rural areas with limited access to formal schooling (Piper *et al.,* 2017). The programme involved the use of low-cost teaching and learning materials focused explicitly on developing reading skills. Teachers received training on the programme, including how to use the materials efficiently. Results were positive, with participating learners experiencing significant improvements in reading accuracy and recognition. In

Pakistan, the Punjab Reading Project (PRP) used a variety of instructional methods aimed at improving reading outcomes in early grade learners (Kosnik *et al.,* 2018). The programme included teacher training in the latest pedagogical science, along with additional resources allocated to areas where early-grade reading was lagging. The results of the programme were promising, with participating learners demonstrating enhanced reading and comprehension skills.

Evidence-based interventions such as improving teacher training, providing access to reading materials, and fostering a reading culture have been explored in different African countries with aim of enhancing early grade learners' reading abilities and improve their academic outcomes (Dagada, 2022). However, the study by Graham and Kelly (2019) revealed that 15 early grade reading interventions had been implemented in the Sub-Saharan Africa (SSA) between 2014 and 2016 covering an estimated 16 million learners. However, the authors found that these interventions do not gauarantee improvement in reading outcome; the success of the interventions varied across contexts.

In Ghana, the Ghana Partnership for Education programme implemented a phonics-based reading instruction curriculum that has shown significant improvements in reading abilities of first-grade learners (Amankwaa & Nyamekye, 2020). The programme incorporates teacher training, parent engagement, and provision of learning materials to promote literacy development. The results of the programme showed significant gains in reading abilities of the participating students. In South Africa, the Vula Bula programme aimed to help learners develop foundational literacy skills in the early primary grades, with a particular focus on phonics and vocabulary instruction through experiential learning and consistent practice (Krauss *et al.*, 2018).

The programme also involved training teachers in the key concepts and strategies required to teach early grade reading effectively. Over time, participating learners experienced better results in word recognition, comprehension, and reading fluency.

The Reading and Numeracy Activity (RANA), implemented in Nigeria, South Sudan, and Uganda, offers a comprehensive approach to improving reading abilities in early grade learners. The programme focuses on training teachers, improving classroom infrastructure, creating an interactive learning environment, and developing relevant teaching materials for learners (Nieves *et al*., 2018). The results of the programme indicate that the intervention was effective in improving student reading outcomes. In Tanzania, the Teacher Community Assistant Initiative (TCAI) is a programme designed to improve early grade reading achievement by providing additional teaching support in classrooms, with a focus on English and Kiswahili instruction (Mwingira *et al*., 2016). The programme involved teacher training in child-centered learning approaches, classroom management, and the integration of technology to enhance the learning environment. The results showed that the TCAI programme had a positive impact on student reading competency.

In Uganda, the Literacy Achievement and Retention Activity (LARA) is a programme aimed at improving early grade reading outcomes in over 8,000 schools throughout Uganda (Ssenkande *et al*., 2024). The programme uses a structured phonics-based approach that emphasizes active engagement in the learning process and teacher training aimed at building the teachers' capacity to deliver effective reading instruction (Doherty *et al*., 2019). Results showed an increase in reading proficiency among participating students. In Ethiopia, the Early Grade Reading Activities (EGRA) programme has been successful in promoting reading proficiency among

first-grade learners (Lombardi, 2018). The programme involves teacher training and coaching in instructional strategies that promote phonemic awareness, fluency, and comprehension. The programme uses standardized assessments to monitor student progress and has been effective in improving reading abilities of early grade learners.

The review of literature suggests that effective national programmes for improving early grade reading should include several key features. These features include the provision of high-quality training and professional development opportunities for teachers (Snow *et al.,* 2016), the use of evidence-based teaching methods, such as explicit phonics instruction (Torgesen, 2005), the use of high-quality, culturally relevant instructional materials (UNESCO, 2016), the provision of ongoing support and coaching for teachers (Heckman & Kautz, 2012), and the involvement of parents, caregivers, and communities in the promotion of early grade reading (Wagner, 2009). Effective programmes should also be supported by sustainable funding and robust monitoring and evaluation systems (Amrein-Beardsley *et al.*, 2014).

In addition, a national programme for improving early grade reading should be comprehensive by using a holistic approach to addressing the various factors that influence children's reading outcomes. A comprehensive approach includes not only interventions that target the child directly, but also broader interventions that address factors such as teacher training, access to high-quality instructional materials, and community engagement (Benderly *et al*., 2019). This ensures that children receive support not only in the classroom but also in their homes and communities. A comprehensive approach also requires a sustained effort that is supported by ongoing monitoring and evaluation (Snow *et al.,* 2016) to ensure that interventions are effective and that progress is being made toward reaching programme goals.

Effective national early grade reading programmes should also have components that exhibit compatibility, synergy, and reinforceability. Compatibility refers to the need for programme components to be aligned with local contexts, resources, and needs (Zhang *et al*., 2015). Ensuring compatibility allows programmes to be responsive to local conditions, leading to increased effectiveness and sustainability. Synergy refers to the need for programme components to work together cohesively and complement each other (Dubeck *et al*., 2017). Synergy ensures that different components of the programme reinforce each other, leading to greater positive impacts. Reinforceability refers to the need for programme components to be continually reinforced and built upon over time. This includes the need for ongoing training and professional development for teachers, the provision of high-quality instructional materials, and the involvement of families and communities (Benderly *et al*., 2019).

The social pillar in Kenya Vision 2030 aims at creating a comprehensive, equitable and just society based on democratic ideals (Onyango, 2015). Education is expected to be the principal catalyst in this pillar. However, education through improved learning abilities is dependent on various key set factors to eradicate illiteracy. The provision of quality education and training to all Kenyans is fundamental to the success of the Government's overall development strategy (MoE, 2004). The Kenya National Education Policy points out that curriculum is vital for children's needs and that it should be responsive to different category needs (MoE, 2009). Therefore curriculum should be well structured and implemented in a way that all learners access and perform well academically.

The Kenya Constitution (2010) has provisions for children's right to free and compulsory basic education, including quality services for better learning outcomes. The approaches to quality education abilities thus require appropriate reading culture and processes that are learners-centred, recognizes the diversity of learning needs and

stages of cognitive, develops knowledge, skill and attitudes required for independent learning and problem solving thereby improving the quality of education outcomes for learners (MoE, 2012). EGRA supplemental materials were developed by participants in the Kenyan Ministry of Education Science and Technology under EGRA guidance (USAID, 2022). The supplementary materials mainly captured decodable stories that could be integrated into volumes of material accessible to young readers. They also encompassed simple stories that were bound as stand-alone materials for advanced readers.

Kenya has made progress to promote the academic abilities for the learners as reflected in the number of programmes designed to address quality issues (MoE, 2012). Early Grade Reading Activity Intervention seeks to improve the learning abilities of an estimated 7 million Class 1 to 3 primary school learners in Kenya (USAID, 2017). The EGRA was designed under *Tusome* programme meaning 'let's read' with the goal of dramatically improving primary literacy abilities (RTII, 2018). It was a nationwide programme funded by USAID and DFID and implemented by the RTII under the leadership of the Kenyan MoE. The programme effectively began in 2015 in all of Kenya's public primary schools as well as in low cost private schools serving low resourced urban settlements and was expected to run up to 2019. Thus the intervention technical approach employed learning materials and teaching methodologies with cut-edge tablets-based monitoring and evaluation system (USAID, 2017). This programme was designed based on rigorous research programmes which tested several implementation options that are relevant to the Kenyan context over several years (RTII, 2018).

EGRA was funded by USAID and DFID to the tune of Kshs. 7.3 billion and implemented by the RTII. It targeted to cover all public primary schools and an estimated 1,000 alternative basic education institutions (ABEIs) that serve low cost urban settlement schemes across the country. The targeted beneficiaries include 5.4

million primary school learners, 100,000 learners ABEIs, 48,000 teachers in public primary schools, 2000 teachers in ABEIs, 1052 tact tutors, and 67 instructional coaches (RTII, 2015). The programme sought to realize its goals by improving instructions and delivery methods, enhancing access to text books and other materials, refining the supervision and evaluation of teachers, and entrenching ICT in supporting literacy.

The EGRA s was built on the foundation of the Primary Mathematics and Reading (PRIMR) programme that was implemented between 2011 and 2014 (RTII, 2015). The PRIMR was a pilot programme that focused on testing EGRA interventions to examine their suitability for national roll-out. Specifically, PRIMR sought to determine instructional improvement that were needed, type of ICT needed to support the improvements, and decisions regarding language instruction (Piper *et al.*, (2017). The success of PRIMR paved way for the roll-out of the nationwide programme dubbed EGRA. The aim of EGRA was thus to scale up the implementation of elements that are proven to work and to be cost effective in the PRIMR to all parts of the country (USAID, 2017). However teacher training and coaching methods remained the same as in the PRIMR programme while the learning materials were refined in EGRA.

The EGRA programme encompassed four key interventions aimed at improving literacy levels: (1) developing the capacity of teachers to deliver classroom instructions, (2) enhancing access to book and other materials by schools, (3) improving supervision and instructional support, and (4) increasing collaboration between literacy stakeholders (USAID, 2017). Intervention also entails implementing a rigorous monitoring and evaluation system that sought to collect classroom data that would generate insights regarding areas that need improvement. The role of M&E was thus assigned to MOE curriculum support officers who were required to make

classroom observations, assess learners, and supply the data to analytical team for evaluation (Piper *et al*., 2018).

The EGRA tool is one of the components of 'Lets read, programme (USAID, 2022). It is an oral learner assessment designed to measure the most basic foundation skills for literacy acquisition in the early grades such as recognizing letters of the alphabet, reading simple words, understanding sentences and paragraphs, and listening comprehension (Piper *et al.,* 2017). According to RTII (2015), the implementation of the EGRA tool is designed to measure the most basic skills for literacy. As Piper *et al.* (2015) noted, EGRA tool had been used in more than 70 countries between 2002-2014. Thus Liberia, for example, implemented EGRA based intervention in 2008 and results showed very promising results in various learning outcomes. The programme increased the learning abilities for the learners and accelerated learning to an extent that is rarely found in education (Piper *et al*. 2015).Thus there is need to evaluate interventions of EGRA in Kiambu County.

RTI International has gradually released the responsibilities of EGRA to MoE but continue to provide technical support to the ministry as from 2019. The MoE through KICD incorporated EGRA intervention in the new Competency Based Curriculum (CBC) for the early years of Education (grade 1-3) in all public primary schools in Kenya and revised materials to ensure that they are CBC compliant to ensure the sustainability of EGRA (USAID,2019). MoE and TSC also developed and are rolling out joint county work plan that integrate EGRA key activities at county level which includes Kiambu.

The first intervention of the EGRA programmes entailed building the capacity of teachers to deliver reading instruction. This intervention was founded on the rationale that teachers play a critical role in developing learners' reading abilities (Zeng, 2023). Without adequate training, it can be difficult for them to impart necessary reading

skills. Inadequate teacher training can also lead to poorly structured lessons, which can make it difficult for students to understand new concepts effectively. Under the EGRA programme, teachers received training on the use of teaching materials for developing their reading instruction skills (USAID, 2022). The materials include lesson plans, storybooks, and other resources that promote reading comprehension.

Teachers also received training in phonemic awareness, phonics instruction, reading fluency, vocabulary instruction, and comprehension strategies, among other training themes (Piper *et al*, 2017). EGRA teacher capacity building was achieved through targeted workshop that provided teachers with the opportunity to network, share insights, learn from each other, and get updated on best reading instructional practices. EGRA also built the capacity of teachers through instructional monitoring and instructional coaching. Instructional monitoring involves collecting and using data to identify areas of strengths and weaknesses in teaching, and making informed decisions about appropriate supports and interventions (Dafouz & de la Fuente, 2017). Instructional coaching involves providing ongoing, individualized support to teachers to improve their instructional practices (Stansbury & Zimmerman, 2000). Studies have shown that instructional coaching can significantly improve teacher effectiveness and student learning outcomes (Knight, 2007). Furthermore, incorporating both instructional monitoring and instructional coaching can be particularly effective in improving early grade reading teachers' practices and students' learning outcomes (Miller & L'Allier, 2016).

The second EGRA intervention proving teaching and learning materials to schools to enhance learners' reading skills. In particular, the EGRA programme provided provides textbooks that support the teaching of reading (RTII, 2015). The programme

also provided schools with storybooks that are carefully selected to match their reading levels. They also provided teachers with lesson plans that are aligned with the Kenyan curriculum and designed to help teachers implement effective reading instruction strategies (USAID, 2022). In addition, the programme provided teachers with various teaching aids, such as posters, charts, and flashcards that support reading instruction and promote student engagement and participation. As at June 2017, 98% of Grade 1 and 2 teachers had received training under the EGRA Programme. According to a World Bank report (2019), the EGRA programme in Kenya had distributed approximately 18.5 million textbooks and other materials for early grade reading to over 23,000 public primary schools in the country.

The third intervention under the EGRA programme was instructional monitoring and evaluation. This intervention was meant to support teachers in improving their reading instruction strategies (Piper *et al,* 2017). Monitoring and evaluation was undertaken by the instructional coaches to ensure that teachers are addressing the specific needs of their students as well as the identified gaps in their reading instruction skills. The EGRA used various approach to monitor and evaluate reading instructions including classroom observations, peer coaching, and performance tracking (USAID, 2022). Classroom observations entailed visit to classrooms by instructional coaches to observe teachers' reading instruction techniques and provide feedback to help improve their instruction strategies. Peer coaching involved teachers observing their colleagues' reading instruction techniques and providing feedback to help improve their instruction strategies. On the other hand, performance tracking entailed analyzing the reading scores of learners to determine the effectiveness of the instructional programme, identify areas of need, and evaluate the progress.

The final EGRA intervention entailed integrating ICT in the teaching and learning of reading. This intervention focused on providing students and teachers with access to digital reading materials through tablets and computers (Piper *et al*, 2017). These materials include e-books, interactive reading games, and online reading programmes that are engaging, interactive, and designed to improve reading comprehension and fluency. The intervention also entailed providing digital tools to automate the assessment of reading skills for easier tracking of learners progress (USAID, 2022). The automated assessment tools enabled teachers to transmit data on learners' performance to the programme secretariat in real time.

2.4 Teacher Capacity Building and Learners' Reading Abilities

Capacity in teaching is perceived as abilities, skills and expertise of teachers to accomplish learning. Teachers need professional learning that cares for their need and build their skills, knowledge and confidence (Tomas *et al*., 2021). According to Rahman *et al*. (2011), quality of education and training largely depend on the quality of teachers' academic qualification, professionals' training, commitment and dedication as teachers are central to any successful implementation of education change. Banda (2019) further opined that teachers' capacity is particularly important for early literacy instructions with many studies detecting a disconnect between teachers' content knowledge and the knowledge needed in early education domain. In Banda's study, most of the surveyed teachers exhibited high confidence in their comprehension of essential domains of reading but were unable to demonstrate this comprehension when tested. Thus need for more training to enhance the skills and confidence in implementing reading activities

According to Zeng (2023), teachers who engage in capacity building programme exhibit improvement in their teaching practices. Teacher capacity-building initiatives, whether formal or informal, brings about positive changes in teachers' instructional skills and knowledge in their subject area (Gyimah & Ayinselya, 2022). Teacher capacity building exercises helps teachers to acquire new instructional knowledge and skills and polish their instructional practices. Many teachers in early grade classrooms are not equipped with the necessary skills and strategies to teach reading effectively (Kumari, 2022). Teacher capacity building interventions can provide these teachers with training and support to use evidence-based teaching methods that have been shown to be effective in improving reading abilities.

The study by Conn (2017) found that of all educational interventuons that were implemented in Sub-Saharan Africa (SSA), those that focus on improving instructional techniques and teacher pedagogical practices had the greatest effect in improving learning outcomes. The study used a meta-analysis approach to synethesize evidence from 56 studies that documented 83 interventions, and 66 experiements. The study found that educational interventions implemented in the SSA region could be classified into 12 categories including provision of school supplies, school management improvement programmes, infrastructure improvement, after school tutoring, class size change interventions, school feeding/ nutrition, scholarships, and teacher incentives. Results showed that programmes that focus on improving teachers' instructional techniques and pegagogy had an effect size of approximately 0.3, which was greater than other categories of interventions. This study however focused on interventions that sought to resolve a wide range of issues in the education sector. It is not clear whether any of the programmes that were examined were aimed at improving early grade reading outcomes.

The effect of teacher capacity building intervention on instructional strategy was demonstrated in the study by Anyiendah *et al.* (2020), which used the Solomon Four non-equivalent group design on 361 learners from public primary schools in Vihiga. Teachers in the study group were trained on how to correctly apply interactive instructions. The researcher then observed comprehension reading lessons for both the study and the control groups. Results showed that learners in the study group had better prediction skills than those in the control group. Prediction skills enhanced these learners reading comprehension. These results imply that the training providing to the teachers improved the teachers' instructional skills leading to enhanced prediction skills by the learners. Teacher capacity building also enhances instructors' confidence in teaching reading skills. The study by Banda (2019) found that teachers who had undertaken a capacity building programme that relates to literacy exhibited higher confidence in delivering literacy instructions than teacher who had not undertaken any capacity-building programme.

In addition, teachers may not have access to or be aware of the most effective reading materials for early grade learners. Capacity building interventions can help teachers select and use appropriate reading materials that are engaging, age-appropriate, and aligned to the learners' needs (Hammond *et al.,* 2019). Capacity building interventions may enhance reading abilities by enhancing classroom management. Effective classroom management is critical for creating a conducive learning environment (Marder *et al*., 2023). Teacher capacity building interventions can help teachers develop classroom management skills that support a positive and inclusive learning environment, fostering learners' motivation and willingness to learn. Moreover, capacity building intervention may help teachers develop assessment skills, enabling them to use formative assessment data to support learners' reading development and

adjust instruction accordingly (Peters *et al.*, 2021). Teacher capacity building interventions can encourage and facilitate collaboration and communication among teachers, school administrators, parents, and learners.

As Hay, Smith and Paulsen (2001) noted, majority of teachers are unprepared and unequipped for the working for them to gain a strong sense of empowerment. USAID (2012) stated, there is need to train and afford professional support to teachers. USAID (2016) reported that many teachers in SSA countries have little understanding about the link between first language and the second language literacy acquisition and how to teach multilingual context. Akyeampong *et al.* (2015) reported that teachers are not prepared to teach reading and writing especially higher skills like listening and reading comprehensions. Thus this challenge can easily be addressed through provision of in-service training and support to teachers. However Piper and Zuilkowski (2016) noted that in low-resource setting, in-servicing teacher training usually falls fairly low on the list of educational priorities below building schools, buying textbooks, and training of new teachers. Wawire (2020) adds that deficit in teachers knowledge and skills leads to low reading teacher self-efficacy and deficient implementation of reading instructions.

Research has noted that many teacher capacity building initiatives fail to deliver a change in teachers' instructional practices. According to Banda *et al.* (2023), teacher capacity building interventions should be both efficient and effective. Effective interventions are those that encompass both pedagogical and theoretical contents as well as opportunity for practical application of knowledge and instructional strategies. A well-designed teacher capacity building intervention should increase teachers' chances of embracing and practicing new instructional strategies. Paige *et al.* (2019)

opined that an effective teacher capacity building intervention should focus on content, utilize adult learning theory to foster active learning, be embedded in the teachers' job context, and support collaboration. An effective teacher training programme should also offer expert support and coaching, give opportunities for reflection and feedback, and should be sustainable over a long duration.

The study by Haile and Mendisu (2023) established that there was a connection between teacher capacity and student reading abilities. It was conducted in Ethiopia and involved first grade teachers from 30 elementary schools operated by the government. Results revealed that there was deficient phonological awareness among most of the first grade teachers. This deficiency was associated with inadequate subject and pedagogical knowledge, absence of on-the-job teacher training for the teachers, and inadequate teacher training programmes. These findings showcase the importance of building the capacity of early grade teachers in enhancing the reading abilities of early grade learners. The results also suggest that teacher capacity building intervention should focus on addressing teachers' subject and pedagogical knowledge.

Adhikari (2021) state that teachers' pedagogy, classroom management strategies and interaction with learners at classroom level can determine how much is learned. Jaffe *et al.* (2019) noted that learning outcome was contingent on the teachers' ability to create and sustain optimal learning environment. Thus, Yorke and Knight (2006) reveal that teachers who have good masterly of content, required knowledge and skills to perform. Teachers' capacity should be emphasized for quality of outcome to be maintained in literacy. Pedagogy and learning environment requires also designing teaching and learning interactive learning centred way that enables the exploratory action oriented and transformative learning (UNESCO, 2014). However to move

towards research-based pedagogy, teachers need additional pedagogical support to develop teaching and learning methods that motivates and empower learners' literacy and enhance competencies in learning abilities (Piper & Zuilkowski, 2015; MoE, 2017).Thus the need to evaluate the interventions of EGRA in Kiambu County.

A well planned curriculum respects the demand and motivation of literacy while direct learning experiences are realized through planned curriculum in reading. Washie (2006) states that the best way of organizing teaching and learning by use of a variety of instructional methods. In Nigeria for example, teacher who received training on reading instruction, employed reading methodologies frequently which improved outcome (USAID, 2016). However, Juker and Okellow (2012) noted that out-dated and ineffective pedagogy is the central reason for poor learning abilities. In South Africa, the government has been implementing a continuing teacher professional development programme for in-service teachers. The programme encompasses seminars, workshops, and mentorship (Banda *et al*., 2023). Although the programme has missed some targets, notable improvement in instructional skills among participants has been noted.

Kenya is currently experiencing very rapid societal changes that have led to changes in the needs and aspirations of the public. The Kenyan public has been yearning for an education system that prepares students for needs of the 21st century labour market (Opiyo, 2022). They have also been calling for creating of an education system that can make Kenyans more competitive in global economy. Therefore schools are expected to be prepared, not only to cope with such changes, but also to initiate educational changes in relation to the changing needs of the society. However schools can only accomplish this if teachers are professionally trained and continuously in-

serviced to improve their knowledge, pedagogical skills and competency (Chepkuto *et al.,* 2018). Retooling of teachers is necessary to make them responsive and adaptable to changing needs of modern day learners and the world today.

The Ministry of Education Science and Technology (2004) pointed out that it is the government's policy to ensure that quality is at the core of all education programmes. Consequently, measures have been put in place to support the professional growth of teachers and improve their academic and pedagogical skills. However the MoE (2012) general consensus is that teacher education in Kenya has not kept pace with development that has occurred throughout most developed countries as a policy framework is lacking while sometimes teacher education and teaching profession are not well defined to enhance learners' outcomes. Thus many teachers in developing contexts have not had direct explicit training on how to teach literacy, and curricula do not include literacy as a discrete subject of instruction, hence teachers are not trained to teach it (USAID, 2016).

Teacher education in Kenya is provided to meet the demand of the various levels of schooling. Primary courses focus on pedagogy and subject knowledge content. RoK (2012) stated that teacher education in Kenya has not kept pace with developments that have occurred mostly in the country. Research indicates insufficient focus on reading in pre-service education and training (INSET) as teachers have no real freedom in time planning as they focus on tests and examinations planning (RoK, 2014). Therefore failure to attend to teachers' professional development has led to real consequences for educational system outcomes (Piper, 2016). There is need for teachers to embrace change with new teachers paradigm shift in teaching and learning reading methods to enhance good outcomes of the learners (PTI, 2018).

The Kenyan national curriculum policy does not prescribe precise approaches for teaching early grade reading but rather stipulates that teaching methods be based on learners' needs, objective of lessons, and support creativity and sustainable development (Wawire, 2020). Wawire further noted that the pre-service training curriculum for early grade teachers in Kenya does not equip teachers with adequate skills for effective early grade reading instruction. The curriculum had only one language course that covers the four language skills: writing, listening, speaking, and reading. Teacher lecture and whole class oral repetition in lower grades are found to be the most common teaching and learning methods in the Kenyan context (Piper & Zuilkowski, 2015).

The Kenya Government has a mission to create an education and training environment that equips learners with desired values, attitudes, knowledge, skills and competencies, particularly in technology, innovation and entrepreneurship. Kiting (2022) observed that while most teachers in the Kenyan education sector had the skills and competency to teach their subject areas, most had no capacity to impart soft skills such as problem solving and communication. In addition, the majority of teacher had little capacity to train core values. This scenario highlights the need for continual in-service training to equip teachers with skills needed to implement the CBC, which emphasizes on values (Akala, 2021).

In 2020, the Teacher Service Commission introduced new guidelines that compel teachers in public schools to renew their professional certificates after every five years (Banda *et al.,* 2023). This policy directive has compelled teachers to seek professional development opportunities. However, providing training to the more than 220 thousand primary school teachers has proven to be a challenging task. Most attempts

to provide wide-scale training have deployed the cascade model where a small group of teachers get short-term training and asked to go back to their school and train their colleagues.

Improving the capacity of teachers is one of the interventions of the EGRA programme. The programme sought to modify the delivery of classroom instruction to make them more effective in delivering missing reading skills (Dubeck & Gove, 2015). Teacher capacity improvement is done through training, group teacher workshops, and pedagogical coaching offered through classroom support visits done on monthly basis. EGRA teacher capacity building initiative is done through a cascaded process. It begins with the initial training of pedagogical leaders that are leveraged to offer instructional support to teachers (World Bank, 2018). These pedagogical leaders are government employees that go by the title curriculum support officers (CSOs).

The EGRA programme engages the CSOs in 10-day training at the beginning of the school year where they receive training on instructional coaching, information and communication technology (ICT) use, use of the teacher guides, management of the monitoring and evaluation tablet and the Tangerine application, and supervision of book delivery (USAID, 2022). The CSO collected data from teachers using the tablet and Tangerine application by visiting the teachers assigned to him or her at least once per month. During the visit, the CSO conducts classroom observations, engages in a 10-15 minute feedback conversation with the teacher, who is expected to integrate the feedback into the next lesson. The teacher also undergoes induction training as well as the termly observation and coaching by the CSOs. The coaching and training focuses on the use of EGRA textbooks and teacher guides. It also sought to re-emphasize the

third element of the teaching cycle (the "You do" element) because the programme organizers had observed that most teachers in the primary school were proficient on the first element (You do) and the second element (We do, which are teacher centred but not the third element, which is student centred (Piper *et al*., 2017). Consequently, the coaching needed to ensure that the teaching cycle is complete by incorporate the third element.

2.5 EGRA Teaching and Learning Resources and learners' Reading Abilities

One of the key factors to improve learning outcome is to provide appropriate learning materials to enhance reading in lower grades (RTI, 2014). Learners require age appropriate and captivating books in addition to instructions that teachers offer in order to develop reading skills. Ngure (2019) argues that without appropriate reading materials, it is not possible to improve reading skills. Textbooks and other reading materials enable learners to establish a crucial link between reading skills acquisition and application of these skills. Availability of teaching and learning resources has an impact on implementation of reading programmes. Khamis (2009) found a significant direct relationship between support, assistance of teacher and learning resources of classroom and academic achievement of learners. Ritchie *et al* (2009) in their study showed that the learning environment of schools provides a supportive environment and is very effective on how the learners learn and develop their skills and abilities. Sterling (2009) also indicated that the rules and policies governing the classroom were effective in learning and influence outcomes.

Textbooks are among the teaching and learning resources that pay a crucial role in developing the reading abilities of early grade learners. Textbooks provide students with access to different kinds of texts, including prose, poetry, and informational texts (Haland *et al.*, 2021). This exposure to diverse texts helps students develop a wide

vocabulary and comprehension skills. Textbooks also provide students with structured opportunities to practice reading, from the simplest words and sentences to more complex texts (Clasen, 2021). This structured approach helps students develop a better understanding of the text and improves their reading skills. Textbooks are often designed to provide a sequence of learning activities that build upon each other (Vuzo, 2022). This scaffolding helps students gradually develop their reading abilities by providing opportunities for practice and consolidation. Textbooks also serve as a tool to reinforce learning, allowing early grade learners to practice reading in a systematic way (Clasen, 2021). The repetition of skills and concepts in different contexts helps students retain information and improve their reading abilities. In addition, textbooks often contain activities that require students to analyze, synthesize, and apply information from different texts (Laila *et al.*, 2021). These activities promote critical thinking and improve comprehension skills.

For a textbooks for have notable impact on learners reading ability, it must have certain basic characteristics and features. First, textbooks must be age-appropriate, which means that they should be designed keeping the developmental stage of early grade learners in mind (Vuzo, 2022). The content must be relevant, engaging, and interesting to the learners. Also, textbooks should be graded in a way that promotes systematic learning. Students should progress through the stages of reading, from learning sounds and letters to reading paragraphs and short articles. Similar, the text must incorporate pictures and images. Early grade learners benefit from picture support, which means that relevant images are included in the textbook to help students understand the content better (Clasen, 2021). Anyiendah *et al.* (2020) observed that using pictures and graphical materials helped to stimulate prediction

skills among struggling readers. With the graphical images, all the learner has to do is to say what he or she sees in the pictures.

Phonics and sight words are essential components of reading instruction in early grade learners. Phonics teaches students the sounds that letters make and how to blend those sounds to create words (Milankov *et al.,* 2021). On the other hand, sight words are words that students learn to read by sight. These are often high-frequency words that occur in written material. Textbooks must include both phonics and sight words in a systematic, graded manner. Effective early grade reading often start with phonics instruction and progress to more advanced blends, consonant clusters, and digraphs (Clasen, 2021). Phonics instruction helps students decode words when reading and supports their word recognition skills. The textbooks then introduce the sight words gradually, which help learners read fluently and quickly. By recognizing sight words, students do not have to decode each word, allowing them to focus on the meaning of the text.

Furthermore, textbooks should integrate other reading skills, such as comprehension, fluency, vocabulary, and reading strategies, in a way that facilitates the development of the overall reading ability of students. Laila *et al*. (2021) also opined that textbooks must be founded on local wisdom for them to be effective in improving reading abilities. Early grade learners find it easy to comprehend texts that are based on local contexts because they have the background knowledge and experience to connect and interpret these texts. Consequently, interventions that aim to make reading textbooks available to early grade learners should pay attention to how these textbooks are designed. The textbooks should incorporate all the essential characteristics needed to impart reading skills among young readers (Clasen, 2021). Teaching and learning

resource interventions should also incorporate a mechanism for ensuring that texts are reviewed on regular basis so that they remain relevant.

In addition to textbooks, schools should have supplementary teaching and learning materials for supporting early grade reading. One of the supplementary materials that can be integrated in early grade reading lessons are the phonics and sight word flashcards. Flashcards that display individual letters, sounds, words or phrases can be extremely useful for early grade learners to practice phonics and sight words (Robeldo & Gove, 2018). Flashcards can be used for a variety of activities, such as matching games, sorting activities, and drill practice. Flashcards can also be used to support repetition and review as well as encourage independent practice where students are given flashcards to practice at home. By using phonics flashcards, students will be able to practice and master the sounds of letters and letter combinations which they will use to decode words (Erbey, 2011). Sight word flashcards will help students learn word recognition by sight, which is essential for reading fluency.

Noordin *et al*. (2020) opined that teachers who use phonics and sightwords flashcards should introduce them gradually and in small batches. The teacher should then build on what they have learned by gradually introducing more complex phonetic sounds and higher frequency sight words. This will help early grade learners to focus on mastering a few sounds or words before they move on to the next ones. Teachers should also make flashcards interactive by using games and activities (Erbey, 2011). This implies that the design of flashcard should be systematic, something that a programme aimed at distributing teaching and learning materials should consider. Such a programme should also build the teachers capacity to use the flashcard appropriately.

Another supplementary material that can be useful in early grade reading is leveled readers. These are books that are organized and labeled based on the difficulty of the text (Robeldo & Gove, 2018). Early grade learners need to read books that are suited to their reading level to maintain their enthusiasm and maximize their reading growth. Leveled readers reinforce vocabulary, comprehension, and fluency (Saryati & Yulia, 2019). However, the use leveled readers also require a systematic approach for optimal outcomes. Before introducing leveled readers, teachers should assess the reading levels of their learners to determine the books that are appropriate for each learner (Desta, 2020). The assessment can be done through informal observations, graded reading passages, or formal comprehension tests. The teacher should introduce only one reading level at a time, starting with easier texts and working up to more challenging ones. The instructor should allow students to read and become comfortable with one level before moving to the next (Saryati & Yulia, 2019). The teacher should also provide guidance to the learners as they read through the leveled readers. In addition, the learners should be encouraged to use strategies like sounding out unfamiliar words, using context clues, and making connections to their own experiences.

Early grade reading lesson may also integrate games and activities for enhanced learning. Children love to play games and participate in activities, and incorporating reading into these fun settings can motivate and engage students (Malatu & Regassa, 2022). Educational games and activities such as puzzles, bingo, board games, and memory matching can provide a fun way for students to practice phonics, sight words, and other essential reading skills. Teachers can use word search puzzles with sight words, vocabulary words or spelling words for students to find and circle in the puzzle (Robeldo & Gove, 2018). This reinforces letter recognition skills and promotes

vocabulary development. They can also use crossword puzzles with vocabulary world or spelling words to encourage learners to comprehend nuances in spelling and understanding of language. Teachers can also create a bingo card with different reading skills or types of books (Desta, 2020). When students complete a task, they can cross it off their bingo card. The first student to complete a line wins a prize. Such games improves learning by making learners active in the learning process, solidifying the lessons, and creating fun and rewarding experiences. However, developing or acquiring such games and activities require time and materials that most teachers do not have.

Moreover, early grade reading lessons can be enhanced by introducing audio books. Audio books provide young readers with an opportunity to listen to fluent reading while following along with a written text (Robeldo & Gove, 2018). This helps young readers improve their comprehension, vocabulary, and fluency. Listening to a story being read aloud while following along with the printed text can help early readers better understand vocabulary, sentence structure, and tone. By listening to narrators read aloud, children can learn new words and their meaning, and this can expand their vocabulary (Noordin *et al.,* 2020). Audio books may also enable learners to read books independently, since they don't have to rely on adults to read to them. In addition, Listening to audio books can help children interpret tonal variations and develop the fluency needed to read aloud expressively (Robeldo & Gove, 2018). However, this strategy implies that apart from having the technology for playing the audio sound, teachers must have the reading text at hand for the learners to follow along. These resources are not available in most schools in the SSA region.

Similarly, early grade teachers can introduce educational apps and website to augment reading instructions. There are many educational apps and websites available that

provide interactive games, animations, and activities designed to reinforce early grade reading skills (Mulatu & Regassa, 2021). Educational apps and websites are often designed to be engaging and interactive, making them more appealing to young learners. This can encourage them to practice reading and learning more frequently. Another advantage of educational apps and websites is that they offer personalized learning experiences (Robeldo & Gove, 2018). This means that the learning activities and resources are tailored to each student's individual needs, encouraging them to progress at their own pace. In addition, most educational apps and websites often use a combination of text, images, and audio to convey information. This can be helpful for students with different learning styles, as they can engage with the content in different ways. Since educational apps and websites can be accessed from anywhere with an internet connection, they are a convenient way for learners to practice their reading skills at home or on-the-go (Darmayanti *et al.,* 2021). Moreover, many educational apps and websites provide immediate feedback to students on their progress. This can help them identify areas where they need improvement and take steps to address these areas.

Some educators also use of reading logs and journals as supplementary material for improving reading skills of early grade learners. These are tools used to keep track of a student's reading progress and encourage reflection on what has been read (Robeldo & Gove, 2018). A reading log typically includes information such as the title of the reading material, the author, and the date(s) it was read. It may also include a summary of what was read, the time spent reading, and the student's thoughts about the reading material. A reading journal is a more detailed version of a reading log, often including more personal reflections on the reading material (Mulatu & Regassa, 2022). Students may include their thoughts, feelings, and opinions about what they

read, as well as connections they make to their own lives or other texts. Students may also use a reading journal to note new vocabulary or literary devices they encounter while reading. Reading logs and journals are excellent resources for encouraging independent reading, critical thinking, and writing skills (Noordin *et al*., 2020). By keeping a reading log or journal, learners are encouraged to make reading a regular activity and set goals for themselves to read more. Learners also develop their comprehension and summarization skills by recording their thoughts and reflecting on what they have read.

Teaching and learning materials form the medium through which teaching is carried out. Gathumbi (2013) noted that availability of materials is powerful and consistent determinant of learning achievement. There is need for appropriate pedagogy skills but also a need for ``addition, there is need to use text books with adequate and appropriately graded reading text and supplementary readers for learners to practice. However, low availability of textbooks and reading materials both at school and home is a challenge to learners' literacy (RSA, 2014). Ngure (2019) explains that at the beginning of learning how to read, a child uses his or her vocabulary knowledge to match words verbal forms with written forms. As the child advances, he or she expands beyond oral vocabulary to written because written language is more diverse than spoken language. By the age of 10 years, the child begins to learn abstract words through reading, which are necessary for transition to the next class. Reading materials are extremely crucial in facilitating this transition and thus there is need to for the study to check if these materials are available in Kiambu County to enhance reading in lower grades.

Studies continue to show serious shortages of textbooks and learning materials in Kenyan classrooms (MoE, 2012). The government budgetary allocation for the sector

is insufficient and thus does impact negatively on the provision of resources such as textbooks which may affect the learning outcome (MoE, 2012). Studies also points to the use of inappropriate materials by early grade teachers as well as inappropriate application of materials. For instance, Anyiendah *et al*. (2020) found that early grade teachers in Vihiga County over-relied on pictures to promote the prediction of contents of comprehension passages. The teachers also confined themselves to pictures in the class textbooks and showed little effort to source additional materials. Participants in this study confided that over-reliance on pictures in the test was due to lack of adequate time to search and prepare supplementary pictures due to heavy workload. This implies that high learner-teacher ratio in Kenyan public primary schools is also barrier to the application of appropriate materials in teaching reading.

The Kenya National Education Sector Plan 2013-2018 focus on improving the quality of primary education outcomes and impact on sector investment while the Global partnership for Education is focusing on need to enrol all students and raise the literacy level (MoE, 2016). The Vision 2030 calls for a curriculum that accommodates individuals and incorporates social responsibility. However RoK (2014), states that the content of basic education needs to be designed to equip learners to develop full capacity in literacy to enhance their quality of life and engage in long life learning. This can only be effective if learning resources are made available to improve their outcome in reading at lower grades in Kiambu County and thus improve the quality of education in all levels. As we enter the classroom decision making become the responsibility of the teacher. A teacher is seen to be the key learning resource not so much as main source of knowledge but as the central organizer of learning for the learners (Gathumbi, 2013).

The EGRA Programme provide teachers with instructional materials including the lesson plans and scripts, learners' homework books and textbooks (Centre of Education Innovation, 2015) while the headteachers are trained to provide instructional leadership for their schools while managing the acquisition, utilization and maintenance of the new learning materials (USAID,2017). EGRA teaching and learning materials intervention encompasses redesigning textbooks and other materials to make them more responsive to missing reading skills (Dubeck & Gove, 2015). It seek to make the textbooks and other materials used to teacher reading more research-based. To enhance literacy outcomes, EGRA introduced low-cost methods of literacy instructions and evidence-based supplementary materials and resources (World Bank, 2018). The Orange Book is one of the books produce through the EGRA programme and given a nod by the KICD as a list of officially approved books for use in the CBC curriculum. The EGRA teaching and learning resource intervention also entails ensuring that the redesigned textbooks are accessible to learners within the public primary school (Gray-Lobe *et al*., 2022). The target of the programme is to ensure that there is a learner textbook ratio of 1:1 in both English and Kiswahili. This intervention also entailed provision of teachers' guides and supplemental readers.

Despite implementation of the EGRA programme since 2015, the study by Katam (2019) established that learner-text book ratio and and adequacy of instructional material varied across public primary schools in Kenya. The study utilized a cross-sectional survey design that entailed collecting data from 68 head teachers and 68 teachers from public primary schools in Migori, Narok, Murang'a, and Kitui counties. Results showed that public primary schools in Muranga and Kitui had an English test book to learners ratio of 1:3 while Migori and Narok counties had a ratio of 1:4.

These results implies that the EGRA programme had failed in meeting its objective of delivering 1 textbook for each student in all the four counties. The results also imply that there are disparities in the delivery of EGRA teaching and learning materials across regions with schools in some regions having fewer materials. The disparity means that studies conducted in other regions could not give a true picture regarding delivery of teaching and learning materials in Kiambu public schools.

The study by Ngure *et al*. (2019) also found that there were inadequate instructional resources for teaching and learning reading among grade 3 learners in Nairobi County. The study also utilized a survey design that entailed collecting data from 10 headteachers, 30 grade-3 teachers, and 150 grade-3 learners. About 7.1% of the teachers reported that there were no textbooks in their school while 60.7% said that available textbooks were few. These statistics suggests that over two-thirds of the schools in Nairobi County did not have adequate textbooks. Lack of textbooks hampers acquisition of reading skills. In addition, 32.1% said that their classes had no charts on the wall while 60.7% said that although available charts were inadequate. These statistics implies that over 90% of the schools in Nairobi County do not have adequate wall charts for teaching reading. This is an unfortunate situation because wall charts play a significant role in teaching reading, especially for young learners in early years of education.

Wall charts provide visual representation of reading concepts, aiding learners to understand and remember key concepts (Fitria *et al*., 2020). This is due to the use of images, colors, and graphics that activate the visual memory, making it easy for learners to remember what they have learned. Wall charts also provide an excellent way to differentiate learning and cater to the different needs of learners (Patria *et al*., 2020). Learners can use wall charts to learn at their own pace, review information,

learn complex concepts, or reinforce previously learned information. In addition, Wall charts support learners in acquiring new vocabulary, especially for learners who are struggling with language acquisition (Kabir *et al*., 2021). They provide visual clues to help learners construct meaning, linking the spoken or written word to its visual representation. Moreover, Wall charts promote concept development and encourage learners to build connections between unfamiliar concepts and their prior knowledge (Patria *et al*., 2020). This helps to improve cognitive processing, highlighting key concepts and principles in reading.

The study by Dawkins (2017) further observed that parental involvement played a major role in determining learners reading abilities. The study was conducted in South Carolina State in the USA and utilized a qualitative approach that entailed interviewing 9 elementary school teachers, observing classroom lessons and examining teachers' lesson plans. From the interviewees, most of the teachers believed that increasing the involvement of parents in reading world enhance learners' outcomes. Consequently, programmes that focus on providing learning materials should not focus on distributing these materials to schools only. These programmes should also ensure that parents also get the resources that need to facilitate reading achievement of their children. This is why ensuring that each student has access to own textbooks and other materials rather than sharing. When every student has his or her own books and materials, he or she would be able to carry them home making it possible for parents to get involved in their learning. However, the study by Dawkins (2017) had a relatively small sample of 9 respondents, which limits the generalizability of the outcomes of the study. As the government takes full responsibility of the EGRA interventions, there must be enough funds to buy enough materials to enhance the success and sustainability of the programme (USAID, 2019).

2.6 Monitoring and Evaluation and Learners' Reading Abilities

Monitoring is a formative assessment of the pedagogical practices of teachers that takes place on a continuous basis while evaluation is a summative assessment that takes place after a given period (Govender & Ajani, 2021). An effective monitoring and evaluation (M&E) system is one of the key factors to improve learning abilities. According to Ayot and Patel, (2000); MoE, (2009), the significant of instruction M&E is to serve as feedback to the education planner, teacher, learner, parent and other stakeholders. Monitoring and evaluating early grade reading instruction and teaching practices helps ensure that students are developing the necessary reading skills. Regular instructional M&E can identify areas where instruction and teaching practices can be improved, leading to improved student outcomes and increased academic success (Nash, 2021). Planner use this feedback to modify, introduce or drop subject or content, screening or selection of or further studies, training, research or certification.

In addition, M&E can identify areas of inefficiency or ineffectiveness in the early grade reading instruction and teaching practices (Munna & Kalam, 2021). Identifying these areas and making changes can lead to more effective use of instructional resources, better instructional practices, and more efficient use of classroom time. Instructional M&E also ensures accountability at all levels (Matara *et al*., 2022). School administrators, financiers, teachers, and parents can see how well students are progressing in their reading development and identify areas where they need to focus their efforts and resources. A key feature of an effective instruction M&E system is the presence of clear goals and objectives (Gove *et al.,* 2017). To develop an effective

M&E system, planners ought to set clear and measurable goals against which progress will be measured.

An effective instructional M&E system uses a range of methods to collect data about early grade reading instruction and teaching practices. This could include classroom observations, surveys of teachers and students, interviews with teachers, and analysis of curriculum materials. Govender and Ajani (2021) opines that M&E should not be conceived as system of enforcing compliance with rules and policies but rather a process of advising teachers and stimulating their creativity. The focus is often to identify the strengths and weaknesses of early grade reading instruction and teacher practices and look for trends and patterns that can be used to improve instruction and inform decision-making (Munna & Kalam, 2021). Instructional M&E also seeks to provide teachers with the feedback and support they need to improve their teaching practices. This could include professional development opportunities, resources, and individualized coaching. Instructional M&E gives educators the data and feedback that they need to adjust practices and instruction to better support students' reading development (Matara *et al*., 2022).

Another feature of an effective instructional M&E system is reliance of evidence-based assessments. A good instructional M&E system should use reliable and valid assessments, ideally those that are based on established research findings and best practices in early grade reading instruction (Nash, 2021). Several standardized assessment tools have been developed for use in assessing early grade reading instruction. One of these tools is the Dynamic Indicators of Basic Early Literacy Skills (DIBELS); This assessment tool is used to measure the basic reading skills of students in kindergarten through grade 6 (Govender & Ajani, 2021). It includes

measures of phonemic awareness, phonics, fluency, vocabulary, and comprehension. Another standard tool is Early Reading Diagnostic Assessment (ERDA): The ERDA assesses the early literacy skills of students in Kindergarten and grades 1-3 (Gover *et al.*, 2017). The ERDA evaluates phonemic awareness, letter recognition, phonics, and comprehension.

An effective instructional M&E system should also incorporate informal assessment methods. The most common informal assessment methods include running records, observation and analysis, retellings, informal reading inventories, reading conferences (Estes, 2018). Running records are a form of informal assessment that involves the teacher recording a child's reading as they read aloud from a passage of text (Jenkins, 2022). The teacher uses a coding system to track the child's reading behaviors, including errors, self-corrections, and how they decode unfamiliar words. Running records can be used to assess a child's oral reading fluency, decoding skills, comprehension, and self-monitoring abilities. The information gathered from running records can be used to inform instructional decisions, assess reading progress, and determine the effectiveness of reading interventions. In addition to being used as a formal assessment tool, running records can also be used informally by teachers during independent reading time to observe and document a student's reading behavior (Estes, 2018). Teachers can track the student's fluency, reading accuracy, and comprehension as they read aloud to the teacher.

Observation and analysis entails directly observing students and teachers in a classroom setting to gain insights into the quality of instruction (Johnson & Majewska, 2022). In this method, an observer may visit a classroom and observe the reading instruction programming action, taking notes on what they see and hear. This

informal method allows for continuous monitoring of instruction, providing teachers and administrators with regular feedback on student progress and the effectiveness of their pedagogical strategies (Iambi, 2018). It also allows for ongoing reflection and revision of instructional practices, which can improve student outcomes and lead to better academic achievement. An effective observation and analysis exercise should take a multi-dimensional approach that includes observing and analyzing the content, the teaching methods, and the learning environment (Kenyon, 2019).

Retelling involves having students recount a story or text they have read in their own words (Johnson & Majewska, 2022). After reading a passage, story or book, the teacher will prompt the student(s) to retell the story or text, either orally or in writing. The purpose of this assessment method is to measure comprehension, vocabulary acquisition, and the ability to summarize text, along with the ability to organize and communicate thoughts (Kenyon, 2019). This method can be used to assess the student's overall reading comprehension and to determine if they can recall and articulate the key ideas conveyed within the text. Retelling can be a useful tool for teachers to identify areas where students may be struggling. If a student has difficulty retelling the story, it may indicate a problem with comprehension, vocabulary or a fundamental lack of reading readiness (Estes, 2018). By observing and analyzing the retelling, teachers can then adjust their instruction accordingly, providing additional support for students who are struggling or challenging more advanced readers. Additionally, retelling can be used as an opportunity for students to practice their reading skills and build confidence in their ability to understand and engage with text, eventually leading to improved reading proficiency (Kenyon, 2019).

Informal reading inventories (IRIs) involve individual students reading a series of graded texts selected by the teacher or administrator (Estes, 2018). The main purpose of an IRI is to evaluate students' reading comprehension levels and identify areas in which they are experiencing difficulty. An IRI typically includes a series of short graded texts that are progressively more challenging, with each text accompanied by a set of comprehension questions and diagnostic tasks designed to assess the student's ability to read, understand and interpret text at different levels (McGrath *et al*., 2017). During the assessment, the teacher or administrator administers the IRI by asking the student to read the text aloud and then respond to the comprehension questions associated with each text. The teacher then scores the student's performance and uses these scores to determine their reading ability, including their accuracy, fluency, comprehension, and vocabulary usage. Informal Reading Inventories can be useful for identifying individual students' reading levels, skills, and areas of challenge (Estes, 2018). Teachers can then use the results to develop targeted interventions and support strategies that are tailored to the specific needs of each student. With regular use, IRIs can also help assess student progress over time, determine the effectiveness of instruction, and guide teaching decisions regarding instructional content, groupings, and pacing (McGrath *et al*., 2017).

Reading conferences involve individual conferences between the teacher and the student, where the teacher listens to the student read a text, provides feedback, and engages in a conversation about their reading experiences (Danter, 2020). During a reading conference, the teacher may ask the student to select a text they would like to read or provide them with a text appropriate to their reading level. The teacher then listens to the student read and notes any reading behaviors, such as pronunciation, fluency, comprehension, vocabulary usage, and more. The teacher may also ask the

student comprehension questions and engage in a conversation about the text to determine their understanding and engagement with the material. Reading conferences are a valuable assessment tool for early grade reading instructions because they allow for individualized assessment of each student's reading ability, strengths, and areas for improvement (Westlund, 2019). These conferences provide a way for teachers to identify areas where students may be struggling and provide targeted support to help students improve their reading abilities. Additionally, they provide opportunities for students to practice reading aloud and to receive immediate feedback on their reading performance, which can improve their reading skills and build their confidence in reading (Danter, 2020). Finally, reading conferences are useful for building a positive relationship with the teacher and creating a more student-centered and interactive learning environment.

An effective instructional M&E system should foster a culture of continuous improvement. It should provide ongoing professional development and support to teachers and staff, including regular feedback on their performance and opportunities for growth and improvement (Nash, 2021). It should identify areas where teachers need additional training or professional development and use data to guide professional development opportunities. Information communication technology (ICT) can also play a central role in enhancing the M&E of reading instructions. ICT can enhance reading instruction M&E by supporting digital assessments that more accurate, efficient, and informative (Dean *et al*., 2021). Digital assessments can include interactive reading passages, formative assessments, and instant feedback that help both teachers and students to monitor progress easily. The digital assessment can allow planners to collect and analyse vast amounts of data on student performance, making it easier to monitor progress and evaluate instruction.

According to Dole (2004), instructional coaching in USA became widespread after the implementation of the 2001 No Child Left Behind Act, which increased pressure on low performing schools to show improvement. The principle role was to guide the staff to improve instruction and support the teachers to improve achievement in the literacy area. As Ministry of Education (2012) pointed, the Curriculum Support officers are supposed to provide training to the teachers and support knowledge about the pedagogy. However the amount of time they spend with teachers varies from school to school. For example, between April and July 2014, number of class visit in Nairobi was 1334, Kisumu was 268 while in Kiambu it was only 80 (USAID, 2016). Therefore the ability to meet the teachers' needs in class is low which may affect the monitoring and evaluation of the learners' abilities. Therefore as Piper (2015) stated, enhancing the pedagogical support service the CSO offer to teachers require better understanding of existing workload and the number of schools each can monitor and evaluate as done in western countries.

The Landscape Report by USAID (2016) that focused on synthesizing empirical evidence on early grade literacy acquisition and instruction in developing nation found that a lot of progress had been realized in the past decade. This information allows the decision maker to make important judgement where necessary on reading programme (Uwezo, 2018). However, majority of the subject areas in literacy develop still lack rigorous empirical evidence. Available evidence is not sufficient to enlighten the development stakeholders on how to promote literacy acquisition. USAID recommended that to achieve sustainable improvement in literacy development, there is a need to change behaviours and instructional practices of teachers. The report also recommended the standardization of the reporting of literacy development studies and projects. The reports noted that many of the existing studies and report were marred

by inconsistent measurements, sample attrition, and low effect sizes. USAID (2016) also noted that there was little reference to instructional approaches that can work in improving literacy. The report highlights the need for more research into the subject of early literacy development in the context of the developing countries. By examining EGRA interventions in Kiambu County and its effect of reading abilities, the proposed study will address some of the gaps identified in the USAID report.

In developed countries like United Kingdom and the USA, M&E of pedagogical practices employ approaches that focus on performance indicators, performance reviews, and impact valuation (Muthoni et al., 2021). On the other hand, M&E of pedagogical practices within the African continent is hampered by many challenges. In South Africa, Govender and Ajani (2021) found that although official from the Department of Education visit schools to check on teaching practices, the visits are not regular. In Tanzania, Matete (2021) observed that the monitoring and evaluation (M&E) of learning in public primary schools was hampered by poor working conditions of school inspectors. The study established that the inspectors are not given allowances to facilitate their transportation to schools where they are required to conduct classroom observations. As results, the inspectors conduct a few visits to easily accessible schools. The current study sought to establish whether the M&E of early grade reading teaching practices in Kiambu County is hampered by similar challenges.

Despite the fact that CSO (formerly TAC tutor) have been there in primary since 1970, the quality and quantity of service they offer vary widely. The challenges in Kenya is not only to increase the amount of time the CSO spend with teachers but allow education officer in education system understand all pedagogy support CSO

systems. This is also owing to a shortage of COS and funding for transport among others issues (MoE 2012).The understaffing of education officers is also an issue in the education system in Kenya thus the Curriculum Support Officers are mostly involved in exam monitoring and other tasks that remove them from classroom (Piper *at el*, 2015). Thus they do not visit the schools as intended to monitor and evaluate the learners' outcome, and also provide lower primary reading teachers with continuing professional support in pedagogy, instructional material development and use. Thus there is need for the teachers in Kiambu County to get support and reflective sessions with COS and share feedback on the EGRA intervention for better outcomes.

According to Centre of Education Innovation (2015), monitoring and evaluation is a critical element of the EGRA interventions as the implementers recognize it as a literate process constantly reviewing what works and provide evidence that takes into account the cost and any options for policy. The EGRA secretariat came up with a nationwide tablet-based quality monitoring and feedback system (World Bank, 2018). The system provides support to teachers targeting their needs by integrating technology through the Tangerine App, which offer personalized data on classroom observation and student assessment results. According to Piper *et al*. (2017), the tablets were provided to a total number of 1200 instructional coaches. The coaches were also provided with data of the classroom that was used by the education ministry to monitor the quality of education. These programmes help coaches to enhance the quality of their instructional trainings to teachers, and also broaden the narrow accountability structures in Kenya's education system. Using data from a national survey, Piper *et al*. (2017) assessed the impact of *the* tablets in enhancing learning. The survey revealed that the tablets had enhanced accountability and academic performance. It was recommended that future ICT intervention should narrow their

focus to specific instructional aspects that have not been solvable using traditional instructional methods.

The EGRA M&E framework assesses the progress of teachers and learners through standardized assessment and continuous observation that seek to provide evidence on the abilities in the literacy level (RTI, 2018). The standardized assessment uses the Early Grade Reading Assessment tool designed to measure the foundational reading skills of students in grades 1-3. It is an internationally recognized tool used in developing countries to evaluate the reading proficiency of young learners. The EGRA assesses five critical components of reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension (Piper *et al*., 2017). It provides a snapshot of students' reading ability by assessing their current skill level, providing feedback to teachers so that they can tailor instruction accordingly. The EGRA is a simple and quick assessment that can be completed in approximately 20-30 minutes. It's designed to be administered one-on-one to students by trained evaluators who can accurately assess the student's reading proficiency (RTI, 2018). By administering the EGRA, teachers and researchers can identify students who may be at risk for reading failure and develop interventions to help them succeed.

The EGRA informal assessment method mainly entails classroom observation. The classroom observation role is largely assigned to the Curriculum Support Officers (CSOs) who are assisted by other stakeholders such as headteachers. The CSOs are trained based on the practical on the classroom based experiences. This is to help the teachers develop the skills in critical technical areas of phonetic awareness, reading, lesson planning and curriculum coverage (USAID, 2017). The CSO receive tablets to conduct classroom observation and learners assessments that enable the government

to evaluate the quality of the programme and assess the learners' outcomes. However, monitoring and evaluation need to be done internally by the headteachers and externally by CSO to ensure every stakeholder meets the assigned role in time (Uwezo, 2018). This information allows the decision maker to monitor and make important judgment where necessary on the reading programme (RTI, 2018).

The EGRA programme also has a component that supports the reimbursement of transport used by CSOs when visiting schools to conduct classroom observation (Wambari, 2019). This component is founded on the recognition that CSOs need to be facilitated to conduct the classroom observations. Makiya *et al*. (2022) noted that lack of transportation can be a significant barrier to effective classroom observations. Lack of transportation means that classroom observers may not be able to physically reach schools in time to observe instructional activities. This can limit the frequency of observations and the amount of data that can be collected. In some areas, lack of transportation may create a safety concern, particularly for female observers (Nevenglosky *et al.,* 2019). This can create a barrier to effective classroom observation, as observers may not feel comfortable traveling to and from schools alone. EGRA transport reimbursement is done through the mobile wallet platform Mpesa making it easy to process the transactions. Transport reimbursements were tied to the CSO uploading of classroom observation data. This arrangement ensured that no CSO is reimbursed without visiting a school, conducting classroom observations and uploading the data.

EGRA M&E assumes a coaching approach, which Robertson *et al*. (2019) described to be like counselling. These authors observed the use of the coaching approach in monitoring and evaluation of teaching practices creates the space for teachers to

initiate intentional instruction. They identified three facilitative coaching approaches that foster uptake of instructional ideas by teachers; joint problem identification, redirection and reinterpretation, and flipped initial-response-evaluation (IRE) framework. The joint problem identification approach entails the teacher working collaboratively with the supervisor in identifying teaching and learning behaviours that contribute to unsuccessful reading. They then use their observation to solve the problem. The redirection and reinterpretation approach entails the supervisor guiding the teacher in changing his or her teaching practices. The flipped IRE framework entails the teacher asking questions to the coach or instructional leaders as the teacher evaluates the responses as a learner. The study by Belbouah (2022) advices against the use of inspector or audit stance during the monitoring and evaluation of teaching practices.

In their survey, Belbouah (2022) found that 92% of teachers in Morocco felt anxious and stress during M&E exercises because instructional supervisors were high-handed and assumed a hardline control stance. This approach of M&E exercise led to fear and anxiety instead of promoting improvements in teaching. The study by Smiley *et al.* (2020), examined whether existing system actors such as school inspectors who have monitoring and supervisory duties can become effective literacy coach. The study entailed analysing secondary data from 374 early grade lesson observations covering 199 schools in Nigeria. Results showed that system actors are as effective at coaching and improving teacher performance as privately hired experts. This study gave credence to the use of Curriculum Support Offices (CSO) as coaches in the EGRA programme despite them become system actors that were hired by the government to take up supervisory responsibilities.

2.7 ICT Interventions and Learners' Reading Abilities

Teaching and learning are as old as humanity, however the way in which teaching and learning are executed have continually been shaped primarily by technology advancement and changing needs of society (Uwezo,2020). Information Communication Technology has become a critical part of the learning processes around the globe. Governments and other education stakeholders have invested millions to facilitate adoption of ICT in the education system. According to a survey conducted by the European Commission (2013), the use of laptops, tablets, and netbooks in European schools had become pervasive with the countries having an average student to computer ratio of 3 to 7 students per computer. In Asia, the integration of ICT in learning varies from country to country. According to UNESCO (2014), Malaysia had the highest application of ICT in primary education with an average of 11-20 ICT instructional hours per week. Thailand, Sri Lanka, Kazakhstan, Georgia, Azerbaijan, Iran and Bangladesh had an average of 1-5 ICT instructional hours per week while Mongolia and Myanmar had less than one hour.

Sub-Sahara Africa (SSA) lags behind the rest of the world in terms of ICT integration in education. A study by UNESCO (2015) found that integration of ICT in education in most SSA countries was hampered by lack of electricity connection. The study also found that application of ICT in education varied significantly from one country to another. For instance, 100% of grade six learners in Seychelles and Mauritius had computers in their schools as compared to 77% in South Africa, 62% in Botswana, 60% in Namibia, 55% in Swaziland, 23% in Zimbabwe, 11% in Kenya, and 4% in Tanzania . There were also discrepancies in internet access with 93% of the primary schools in Mauritius having an internet connection as compared to 6% in Zambia and

Rwanda, and less than 1% in Guinea, Niger, Burkina Faso, and Liberia (UNESCO, 2015).

Use of ICT in teaching and learning present various benefits. According to Konyana and Konyana (2013) spurs spontaneous interest more than traditional approaches of learning. Students using ICT concentrate more than those in traditional settings. ICT also promotes active learning, collaborative and cooperative learning, creative learning, integrative and evaluative learning. On the other hand, Trucano (2016) opines that teachers are key players in the education system regardless of the rise in the use of technology. Thus, there was need that teachers be given support as they plan lessons that utilize technology in a way that will yield the desired outcomes.

Being able to access technology is not a guarantee of success in teacher behaviour in case the teacher is not well trained on the whole concept of that technology (Mutambik, Lee & Foley, 2019). ICT can be stressful to teachers unless proper and enough training are offered to them prior to implementation. For the ease of teaching, the lower grade teacher must be trained on the technology being introduced prior to the learners. In Zambia, a Nyanja literacy game was introduced to lower primary students. A great success was recorded in areas where both teachers and students played together after the teachers were given a rigorous training on the game (Jere-Folotiya *et al.*, 2014). The intervention groups that had no teacher involvement did not record any significant success, a clear indication that teacher literacy plays a big role in implementation of reading programmes.

The study by Kong, Looi, Chan, and Huang (2017) found that teacher development was an essential ingredient in the integration of ICT in learning in Asian cities such a Hong Kong and Beijing. The study revealed that for ICT integration to deliver the

desired benefits, empowerment of teachers and school managing board was essential. In Singapore, peer-learning communities approach was utilized in enhancing practical learning and use of ICT by teachers for teaching learners (Kong *et al*., 2017). Hong Kong opted for encouraging teacher communities in order to observe, engage, and ponder on replacing school based e-learning programme with student centred programme.

The success of reading intervention programmes is directly dependent on teachers' knowledge. In a research done by Voogt & Mckenney (2017), it was deduced that the key barrier to use of technology for early literacy is the teachers' lack of knowledge concerning the use of the technology. The research was in line with previous findings by Enochson and Rizza (2009). Most of the teachers in the research were considered pre-novices as they were not conversant with early literacy's specific technology or novice as they had just heard or read somewhere about the technology. As Uwezo (2020) reported, technology advancement have accelerated in recent time with a wide ranging implication for education by way of agenda setting and direct impact on actual teaching and learning .Literacy is synonymous to digital literacy thus digital illiteracy is just as encumbering as illetracy. This fact has led the Kenyan government to invest in integrating ICT in education. Therefore, as Voogt & Mckenney (2017) opined, teachers need to be aware, well equipped with the technology and be able to design learning activities and relate that technology to early literacy for the integration of ICT to result in improved literacy outcomes

A major ICT tool that is being adopted in basic education set-up is the tablet. Piper *et al.* (2015) observed that the tablet is nowadays preferred over personal computers due to the durability of this hardware as well as their versatility. Tablets are also relatively

cheaper and more compatible with the daily activities of teachers, which increases the likelihood of teachers utilizing them more effectively. In addition, personal computers located in a locked gatekeeper controlled lab that is distant from the classroom have limited use particularly where classes are large and not easy to relocate. In most cases, personal computers in labs are used on special occasion; hence, learners view them as objects of mastery rather than enablers of learning. The study by Mwaniki (2018) found that portability of tablets had a positive effect on teachers' intension to use ICT in teaching and perceived behavioural control. The Digital Literacy Programme by the jubilee government was among the first programmes in country to express the intention to distribute tablets to primary school teachers and learners (Piper *et al*., 2015). Another programme is the PRIMR initiatives also by the government of Kenya.

Piper *et al.* (2015) examined the implementation of Primary Math and reading (PRIMR) programme where teachers, learners and CSOs were provided with the PRIMR, a NEXUS 7 Google enabled tablet and e-readers. The training however aimed at enhancing teachers' mastery of instructions and not mastery of ICT. The outcome proved to be time consuming and was so repetitive in order for the tutors and teachers to master the skills, for a successful implementation in the classroom. It was then realized that there is a need to train and familiarize the teachers with the ICT hardware, in order to ensure competency (Piper *et al.,* 2015). Thus policy framework should be expanded to accommodate capacity building for ICT implementation. Another study by Kerkhoff *et al.* (2020) established that although tablets had been distributed to primary schools learners through various programmes there is little utilization of these devices in teaching and learning because of lack of basic

infrastructure such as electricity and internet connection and inadequate teacher training.

The study by Heinrich et al. (2019) observed that integration of tablets and e-readers in classroom led to significant improvement in students' engagement and academic performance. Students taught using e-readers also exhibited a change in mindset that led to high levels of digital citizenship characterized by appreciation for technology and the role that it plays in society. The study focused on the Worldreader programme implemented in 2016 in North Kamagambo, Kenya and supported by the Lwala Community Alliance (LCA). Within the treatment schools, LCA gave 150 eReaders to class 6 learners with intent that each school had sufficient numbers. Pre-and post-test were administered to learners in both the treatment and control schools. A student survey was also administered and classroom observations conducted. However, the study was limited by the fact that the programme fell short of meeting the intended target of one-device-to-student ratio. This meant that learners had to share the devices, which limited the effectiveness as students did not have the freedom to use the devices at any time.

Another ICT tool that has become a common part of the modern classroom is the projector; a device to display images, videos or data from a computer onto a screen (Mwangi, 2022). Projectors make teaching easier, ensure better use of class time, make every lesson impactful, and place students at the centre of learning. Using data from 10 well-known colleges and university in the city of Dakar in Senegal, Amin *et al*. (2018) observed that projectors enable teachers to use pictures, videos, audio clips, and PowerPoint to teach Language. It breaks the monotony of using textbooks as the only source of language input. The use of content related videos help learners to

internalize thoughts and capture the actual concept of the subject matter. Videos also create stimuli for the learners, which enables them to understanding surrounding representations of the subject. Projectors also add a visual element in the delivery of English instructions, which makes the classroom more engaging. However, the study by Amin *et al*. (2018) focused on colleges and university. The extent of utilization of projectors in teaching early reading within the African context has not been captured.

The applicability of projectors in teaching language at secondary levels of education was demonstrated in the study by Eka (2019), which focused on junior secondary schools in Indonesia. The study utilized a pre-test and post-test experimental with control design. A sample of 64 students were grouped into the experimental (n=32) and control (n=32). A pre-test was given to students in both groups before they were taken through a lesson in the same subject. Students in the experiment group were taught using projector while those in the control were taught using the conventional lecture and textbook methods. The students taught using projectors had a mean score of 37.96 in reading comprehension against a mean score of 30.15 for students in the control group. The independent sample t-test determined that the difference in mean score was statistically meaningful. However, the study by Eka (2019) utilized an experimental design where the researcher introduced the projectors during the study. Therefore, the study did not capture the extent to which projectors were utilized in normal classroom setup within the junior secondary schools.

Despite evidence showing that projectors are effective tools for teaching language, the study by Murithi and Yoo (2021) showed that their adoption in public primary schools in Kenya is limited. The study aimed to investigate the use of ICT in the implementation of the competency based curriculum (CBC) within the public primary

schools. The study utilized the cross-sectional survey design where data was collected from 351 primary school teachers using an online questionnaire. About 70% of the teachers who were involved indicated that their school did not have a projector. On the other hand, 63% of teachers who participated in the study by Omboto *et al*. (2022) reported that their schools had projectors. However, the latter study focused on special public primary schools in Nairobi County while the study by Murithi and Yoo (2021) focused on all primary schools countrywide. This implied that availability and use of projectors is dependent on type and location of schools where schools located in urban setting being more likely to have projectors. Therefore there is need to carry out a study to determine the existing situation among public primary schools in Kiambu County.

Ensuring availability of projectors in public primary schools was not enough to guarantee their utilization in teaching early grade reading and other subjects. There was also a need to ensure that teachers have the skills and technical capacity to utilize this device effectively. The study by Mwangi (2022) observed that most teachers did not have the technical capacity to manipulate content taught using projectors. The teachers would just allow the content to run without offering much explanation or allowing learners to participate. The study by Mwangi (2022) in 16 extra-county public secondary schools in Nyeri County showed that the lack of mastery in using projectors limited the quality of learning using the projectors.

The internet is also a potent ICT tool that has been used to enhance teaching. The internet offers a wide variety of resources including texts, videos, databases, simulations, and music among others that can be used to enhance reading instructions. Omboto *et al*. (2022) opine that the use of internet based resources could make the

learning process meaningful and fulfilling. However, the application of the internet in teaching and learning within the developing countries was hampered by low internet connectivity. In the study by Mwangi (2022), 65% of students in extra county secondary schools in Nyeri acknowledged that their teachers mad e use of internet generated materials to teach English. However, only 17% of the sampled teachers reported that their school had internet connection. The rest of teachers reported that they always relied on their personal smart phones and modems that they connect to their computers to access the internet and download materials. The situation is even worse in public primary schools when it comes to internet connectivity. The study by Murithi and Yoo (2021) found 87% of the sampled schools do not have internet connectivity. This implied that teachers in most primary schools who would like to make use of the internet in teaching must rely on their own means. Thus there is need to carry out a study to determine the use of internet by the teachers in Kiambu County.

The study by Banda *et al*. (2022) found that the adoption of ICT in teaching literacy in primary schools in Kenya was hampered by inadequate resources and ICT infrastructure. ICT integration is also hampered by lack of locally developed software. Banda *et al*. (2022) noted that most of the education software in Kenya were developed in western countries. Consequently, their contents are not tailored to the situation in Kenya. Ogolla (2019) observed that the government had made various initiatives aimed at improving ICT resources and infrastructure in schools through the Digital Literacy Programme. However, these initiatives were not accompanied by the roll out of programmes aimed at training teachers on how to integrate ICT in the classroom.

The EGRA programme introduced four ICT resources for use in coaching and teaching of English. The first is the Tangerine App, which is an android based application containing lesson plan created to support the EGRA programme (World Bank, 2018). This application was used by the CSOs to assess learners after conducting a classroom observation. The application made suggestions to the coach key points that he or she would use to provide feedback to the teacher. The second ICT resource PDF versions of all EGRA designed books and materials. This made these materials accessible to both teachers and coaches. The third resource was a set of instruction videos in both English and Kiswahili that show how teachers can effectively teach specific components of the EGRA instructional approach.

The final resource was the Papaya App, which was letter sound application designed to train teachers and coaches on how to pronounce some English and Kiswahili words (Piper *et al.,* 2017). The Papaya application was founded on the recognition that teachers in Kenya hail from different language backgrounds, which affected how they pronounce some English and Kiswahili words. In 2021, EGRA began uploading the teaching and learning materials that the programme had developed to the Kenya Education Could (KEC). This intervention enabled learners, teachers, and parents to access the resources from anywhere in the world (USAID, 2022). In 2022, EGRA began developed levelled readers, an online programme containing reading materials, in partnership with Kenya Publishers' Association and KICD. Further, EGRA worked with KICD in the 2022 financial year to generate 60 videos modelling grade 3 English language activities lessons. Therefore the study sought to find out how these applications determine the reading abilities in Kiambu County.

2.8 Theoretical Framework

Theoretical framework refers to a set of theoretical concepts that guides a research study in determining what needs to be measured, what relationship to look for, the kind of data to collect, how to analyse the data, and how to interpret the data (Suter, 2012). The study was guided by Sociocultural Cognitive Development theory and the Theory of Literacy Development.

2.8.1 Vygotsky Sociocultural Cognitive Development Theory

The Sociocultural Cognitive Development theory by Lev Vygotsky (1978) suggests that cognitive abilities are socially guided and constructed. According to Vygosky, culture serves as a mediator for formation and development of specific abilities such as learning, memory, attention and problem solving. Vygotsky proposed that children learnt through their interaction with more knowledgeable peers or adults. His concept of Zone of Proximal Development (ZPD) differentiate between what a learner can do with assistance of the teacher and that which he/she cannot do alone (Porta *et al*., 2022). As Vygotsky noted, the learner received the instructions, the new information is stored in their existing mental schemes which help them to perform the task independently and with ease. This allows the teacher to know what the learner can achieve through support.

Vygotsky theory helped to interrogate the the relationship between EGRA teacher capacity building intervention and reading abilities of early grade learners. According to the theory, the learner need to interact with the teachers who are more conversant in literacy so that they can provide guidance and encouragement to the learner until the learner can get to the point of reading by themselves. Teachers thus need to be equipped with necessary skill, knowledge and pedagogy to enhance the reading

outcome. The capacity of teachers become a vital determinant of the reading abilities of learners. According to Vygotsky, teachers can foster the cognitive development of learners by engaging them in meaningful and challenging activities. Therefore, interventions that seek to improve early grade reading abilities should focus on enhancing the capacity of teachers to engage learners in challenging and meaningful improving early grade reading outcomes.

Vygotsky's Sociocultural Cognitive Development Theory was useful in interpreting the effect of teacher capacity building intervention on early grade reading by considering the social and cultural factors that impact students' reading abilities and skills. First, the theory suggests that learning occurs through social interaction and collaboration, so effective teacher training should focus on building teachers' ability to facilitate learning through group work, peer learning, and other social activities. Teachers should be trained to create an environment where learning is interactive and collaborative, rather than just passive learning. Secondly, the Zone of Proximal Development (ZPD) is important in early grade reading.

Teachers should be trained to identify the ZPD of their students, which represents the space between what a student can do independently and what they can do with the guidance and support of a teacher. By identifying the ZPD, teachers can then design learning activities and interventions that are challenging but not overwhelming for students. Thirdly, the cultural context of learning is important. Teachers should be trained to respect the cultural backgrounds of their students and incorporate culturally relevant materials into their teaching. This means considering the language, traditions, and social norms of the students when designing and implementing reading interventions. Finally, teachers should be trained to use different teaching strategies

and tools to promote reading skills. This can include the use of technology, visual aids, and group work. Teachers should also be trained to differentiate their teaching based on individual student needs and abilities.

Vygotsky theory stress the notion that effective teaching does not just happen; it is a result of adequate planning, presentation of well-thought content, and assessment. In the concept of Scaffolding where More Knowledgeable Others (MKO) gives support in the learning process, teachers need the teaching learning materials and use ICT skills to enhance reading. The leaners need reading material and use ICT skills to enable them practice what they have acquired through the learning processes. This will promote confidence and make them effective in reading. The material and ICT also turns learning into an active process in which learners are active participants and sense makers that seek to construct coherent and structured knowledge.

Vygotsky theory also aided the attainment of the second objective of the study. Vygotsky's concept of appropriation also explains how teaching and learning material contributes to literacy development among young learners. The concept of appropriation suggests that early grade learners appropriate language through meditation of test and modelling (Porta *et al*., 2022). This concept creates an understanding of how young learners internalize reading and writing skills through meditation and modelling. Modelling encourages the use of instructional approaches that focus on telling or demonstrating language firms and structures to the learners. On the other hand, text meditation encourages the use of text that allows learners to reflect on and transform their own thoughts when reading.

Vygotsky's Sociocultural Cognitive Development Theory suggests that effective teaching and learning materials should facilitate social interaction and collaboration

among students. For example, materials such as books, games, and audiovisual aids can be used to encourage students to work together, discuss, and share ideas. The theory also contends that effective teaching and learning materials should be designed to target the ZPD of students, providing challenges that are neither too easy nor too difficult. The materials should be designed to help students progress from their current level of understanding to the next level, with the support of teachers or peers. Thirdly, the theory advances that effective teaching and learning materials should take into account the cultural background and experiences of students. The materials should incorporate content that is relevant to students' lives and is reflective of their cultural norms and values. Finally, effective teaching and learning materials should use a range of teaching strategies and tools to promote reading skills. This can include materials that are visually engaging, interactive, and accessible. The materials should provide opportunities for students to apply their learning in different contexts and to learn from authentic texts that are relevant to their lives.

Vygotosky theory was also useful in address the third objective of the study by highlighting ways in which M&E system can enhance learning. A well-structured monitoring and evaluation schedule for successful interventions of EGRA is also essential for the feedback and improvement of the programme. Cognitive development in early years is advanced through interaction with other learners and teachers. Learners and the teachers form a relationship which facilitates social interaction to active participation in reading. Creating instructional approaches that are developmentally appropriate in vital to the education of early grade learners (Attah, 2021). The learners acquire the tasks of observation, listening and talking as they interact with teachers and learning materials.

Regarding instructional monitoring and evaluation, Vygotsky's Sociocultural Cognitive Development Theory suggests that instructional monitoring and evaluation should be designed to facilitate social interactions among students. For example, teachers can engage students in collaborative learning and peer discussion activities to promote reading comprehension and critical thinking. The theory also advances that the instructional monitoring and evaluation should be aligned with students' level of understanding and skills to support them as they move through different stages of learning. Appropriate use of formative assessments that accurately identify student's progress and challenges will help in designing appropriate interventions to meet their needs.

The theory further suggests that effective instructional monitoring and evaluation should take into account the cultural background and experiences of students. This includes incorporating culturally relevant and appropriate teaching materials and ensuring that the teaching styles are compatible with the learning needs of students from diverse backgrounds. Finally, effective instructional monitoring and evaluation should include a range of teaching strategies and tools. Teachers should use student-centered approaches such as small group work, differentiated instruction and inquiry-based learning. Educators should tailor the approaches used in monitoring and evaluation to their students' learning needs and preferences to enhance learning.

This theory allowed the researcher to understand the cognitive development process, which critical in the acquisition of reading skills in the early grades. This understanding gave the researcher a framework for assess the effectiveness of EGRA interventions in promoting early grade reading abilities. The theory asserts that any programme that seeks to enhance cognitive development like EGRA should focus on

enhancing the social interaction between the learner and the teachers. It should also enhance the knowledge base of teachers so as their interaction with learners can be meaningful. Such a programme should also create an environment that turns learners into active sense-makers rather passive recipients of information.

2.8.2 Theory of Literacy Development

Theory of Literacy Development was advanced in 1979 by D. Holdaway. The theory proposes that reading literacy development is a natural process that mimics a child's natural development of oral language skills (Holdaway, 1979). The theory asserts reading literacy development should start at an early age when a child is developing oral language skills. It identified four processes that are central to reading literacy development: demonstration, participation, practice, and performance (Kleeck & Schuele, 2010).

The demonstration component is founded on the premise that a child can develop reading literacy prowess by observing literacy behaviours such as seeing adults reading, being read to, and writing themselves (Saracho, 2017). This component highlights the importance of availing adequate learning and teaching resources to reading literacy development. It also advances a case for integration of ICT that will enhance demonstration of literacy skills. Holdaway (1979) also opined that children develop their literacy skills through meaningful and authentic experiences with print in their environment. This includes exposure to a variety of texts, opportunities to interact with print, and engagement in literacy activities that are relevant to their lives.

The participation component suggested that for a child to develop appropriate reading skills, he or she needs to interact with an individual that provides encouragement, motivation, and necessary help (Kleeck & Schuele, 2010). This component stresses

the need to develop teachers' capacity to provide the support that is requisite to reading literacy development. Reading literacy development programmes should focus on improving teachers' capacity to promote love for reading among learners and help learners to experience literature through guided instructions. Teachers must have a deep understanding of the reading process and how children learn to read in order to effectively support learners' literacy development.

This theory was relevant to first objective of the study. According to theory of literacy development, effective teacher capacity building programmes should focus on providing teachers with knowledge and skills in the areas of phonemic awareness, phonics, fluency, vocabulary, and comprehension (Kleeck & Schuele, 2010). These programmes should also provide opportunities for teachers to observe and reflect on effective literacy practices, and to engage in ongoing professional development to stay up-to-date with current research and best practices. In addition, teachers should also develop the capacity to create an encouraging and safe learning environment and literacy rich classroom (Kleeck & Schuele, 2010). Teachers should also develop classroom management style that fosters learners' self-regulation and independence that immerses learners in authentic language experiences. This aspect advanced the need for provision of adequate reading and learning resources. Holdaway theory proposes a wide range of instructional strategy including shared reading sessions, role-play, watching and listening to video/ audio files (Honchell & Schulz, 2012).

The theory of literacy development also aided the realization of the second objective of the study. The practice component suggest that reading literacy is best developed by allowing the learner to try out what has been taught in class alone and experiment without direction and supervision (Saracho, 2017). This component emphasizes the

importance of providing adequate learning resources that will enable learners to learn things on their own. It also supports the integration of technology and instructional approaches that increase the learner's level of involvement in the learning process. Learners should have access to reading material, read regularly, and watch others reading and writing in order for them to develop love for and knowledge about reading literacy. Holdaway (1979) recommended the labelling of items with the classroom so as to allow children to interact with meaningful literature rather than learn in abstraction. Teachers should model with big books during shared reading lessons to create a positive reading atmosphere.

The theory of literacy development also provided a framework for addressing the third objective of the study. The performance component posit that reading literacy can be easily attained by allowing the learner to showcase what he or she has learnt and provide him or her with the approval support, and encouragement (Kleeck & Schuele, 2010). This component of the theory marshals support for effective monitoring and evaluation of reading literacy development programme. According to the theory, the monitoring and evaluation approach should enable the learners to showcase the skills that they have acquired, recognize and endorse the progress that they have made, and provide feedback and support on areas that need improvement. Holdaway's theory emphasizes the establishing of M&E processes that are ongoing and that are used to inform and improve teaching practices (Honchell & Schulz, 2012). The theory also emphasizes the need for teachers to assess learners' reading skills on a regular basis to identify strengths and challenges. These assessments can help teachers to tailor instruction to meet the needs of individual students and to monitor progress over time.

Administrators or instructional coaches should periodically observe classroom instruction to provide feedback to teachers on their instructional practices, identify areas of growth, and help teachers to improve their teaching (Saracho, 2017). During the classroom observations, instructional coaches should give feedback to teachers regarding their instructional method. According to of literacy development, the classroom observations should pay attention on whether teaching practices are effective in creating an authentic learning experience for early grade learners. The observation should also affirm whether teachers are applying teaching and learning materials in a way that creates an authentic learning environment (Honchell & Schulz, 2012). In addition, teachers and administrators should regularly review student data and reflect on instructional practices to identify what is working and what needs to be improved. The instructional M&E process should not be used to punish or blame teachers but should be viewed as a critical component of ongoing professional development and improvement (Kleeck & Schuele, 2010).

The theory of literacy development also supports integration of ICT in early grade reading classes in line with the last objective of the study. The theory calls for the creation of authentic and interactive learning environment (Saracho, 2017). ICT can be used to enhance and support literacy experiences in the classroom. It can provide access to a wide range of digital texts, interactive learning activities, and opportunities for communication and collaboration with others. However, Holdaway cautions against the over-reliance on technology as a substitute for authentic literacy experiences (Honchell & Schulz, 2012). The use of ICT should be balanced with hands-on experiences with print and meaningful interactions with others.

2.9 Summary of Literature Review and Research Gap

The literature review higlights the importance of building the capacity of teachers in improving the reading abilities of early grade learners. Studies shows that building the skills, knowledge, and confidence of teachers has a positive impact on literacy outcomes of early grade learners. However, the reviewed studies focused on teacher capacity building of other programmes that have implemented in different context. Since programmes differ in terms of design and implementation, the findings may not accurately reflect the components of EGRA teacher capacity building interventions and their influence on the reading abilities of learners in public primary schools in Kiambu County.

The review also emphasizes the importance of providing appropriate learning materials in enhancing the reading abilities of early grade learners. Beside textbooks, the literature identifioes other materials like reading logs, flashcards, levelled readers, and educational games. The literature also points out that to be effective in enhancing reading ability, teaching and learning materials must be adequate, provide opportunity for practice, reinforce learning, and support the development of critical thinking. The resources must also be age-appropriate, engaging, and culturally-appropriate. There is gap in evidence on whether the resources provided by the EGRA programme were adequate and met most of the requirements needed to enhance learning. There is also a gap in evidence regarding how the EGRA teaching and learning resources have impacted reading among early grade learners.

The review further underscores the importance of M&E of pedagogical practices in early grade reading instruction to improving learning outcomes. The literature identifies features of effective M&E system including capacity to generate feedback

to teachers, learners, planners, and parents that will improve instruction. An effective system should also use multiple methods of assessment including informal assessment method. Some studies show that an effective instructional M&E system enhances early grade reading outcomes by identifying areas for improvement and reinforcing accountability. However, it was not evident whether the EGRA instructional M&E system possessed the basic features that define an effective system. The impact of EGRA M&E system on the reading abilities of early grade learners had also not been quantified. The study sought to fill these gaps.

In addition, the review had accentuated the importance of challenges of integrating ICT in early grade reading instructions. It discloses the varying levels of ICT integration in education systems across different regions with SSA lagging behind in terms of infrastructure and access. The review also highlights gaps in teacher training and capacity to utilize ICT in the classroom and challenges around the development of locally tailored education software. However, existing literature did not shed light on whether the EGRA ICT interventions had addressed these challenges that hinder ICT adoption within the context of public primary schools in Kiambu County. There was also little evidence on how the EGRA ICT intervention had impacted early grade reading outcomes. The study sought to address these gaps.

2.10 Conceptual Framework

A conceptual framework is a graphical illustration showing the relationship between variables of the study. The conceptual framework for examining the effect of interventions on EGRA on lower grades learners' reading abilities is presented in Figure 1.

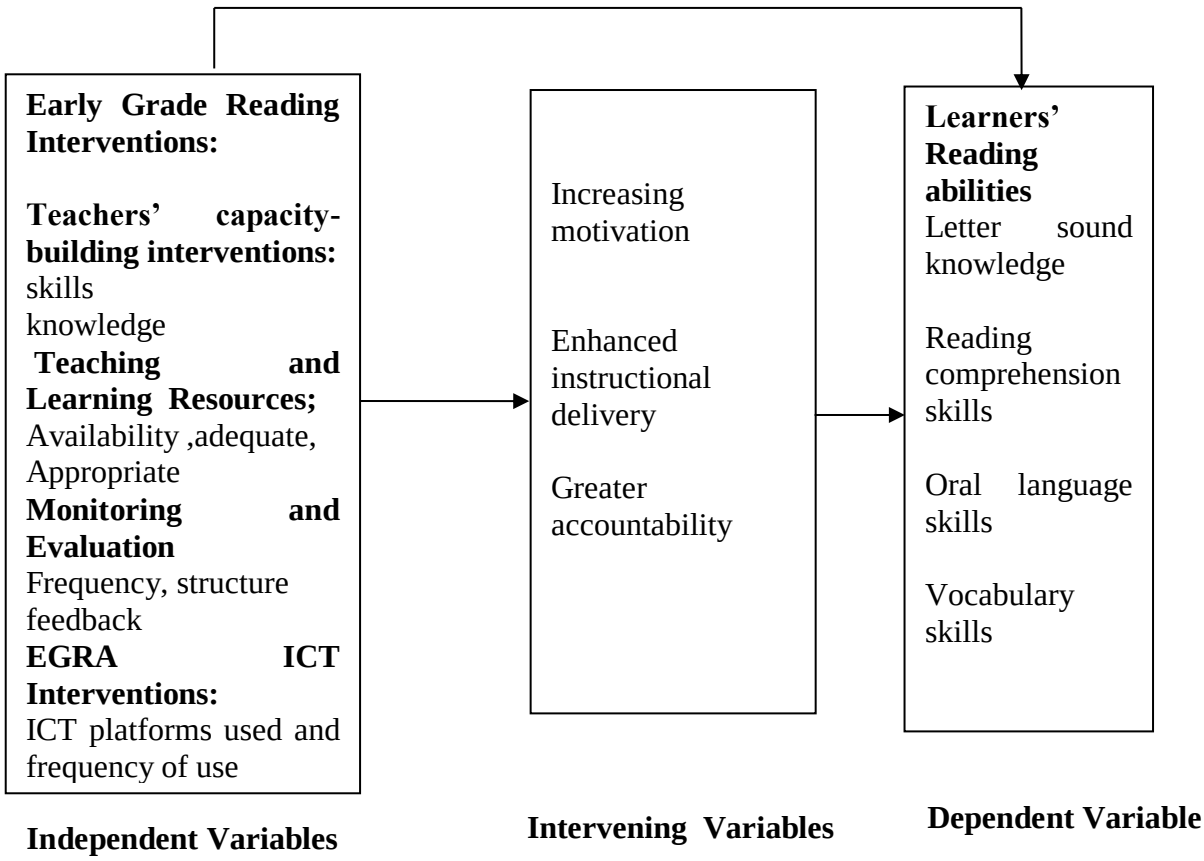

Figure 1: Interrelatedness of Study Variables

As Figure 1 illustrates, the study had four independent variables that represents the vital interventions under EGRA. These variables include teacher capacity- building, teaching and learning resources, monitoring and evaluation, and ICT use by teachers. For affective outcomes of literacy, various inputs must be put in place.

Improving teacher capacity to deliver instructions through training and coaching is one of the central elements of the EGRA Programme. This intervention was assessed

by obtaining teachers views regarding teachers' skills and knowledge in the reading subject, and instructional practices. This study advances that teachers must have the appropriate capacity and perception to enhance the learning outcomes in reading. They should be well prepared and equipped in content, skills and pedagogy for the EGRA interventions. Proper training improves knowledge of literacy and attitude in teaching. The study presumes that effective implementation of interventions aimed to improving the teacher capacity element of EGRA would improve learners' reading outcomes by creating intense effort, increasing motivation, and enhancing delivery of instructions.

Provision of teaching and learning resources is also a vital component of EGRA. The programme sought to ensure that all primary schools and other basic education institutions receive adequate learning and instructional materials such as books and teachers' guides. The intervention on this element was assessed by seeking teachers' views regarding the availability, adequacy, and appropriateness of learning and instructional materials. The study stresses that teaching and learning resources must be available, adequate and appropriate. There should be well-equipped support officers in knowledge and skills to train, monitor and evaluate the learning process to enhance good outcomes. The study theorizes that effective implementation of this element would translate to improved reading abilities by enhancing teachers' motivation and enhancing instructional delivery.

The third element of EGRA that was evaluated was EGRA monitoring and evaluation. The EGRA secretariat came up with a nationwide tablet-based quality monitoring and feedback system (Piper *et al*, 2017). The tablets were provided to a total number of 1200 instructional coaches. The trained coaches would visit schools and evaluate the quality of instruction using EGRA tools and protocols and key in their findings in the tablets. The tablet system enabled the secretariat at the national level to track the progress made in each part of the country on real time basis. The

instructional coaches would also use the results of the monitoring to provide feedback to teachers and school administrators on where they need to improve, and to help identify areas where instructional support may be needed. The study posits that effective implementation of the evaluation element of EGRA would improve reading abilities by ensuring that there is greater accountability and enhancing instruction delivery.

The final element of EGRA that was reviewed is EGRA ICT interventions. The EGRA programme introduces a variety of technology assisted tools to improve early grade reading instructions. These tools included digital libraries that featured a wide range of e-books and reading materials, the Tangerine App that contained EGRA developed lesson plans, PDF versions of all EGRA designed books and materials, instruction videos, and the Papaya App (USAID, 2022). This element was assessed by gathering teachers' views regarding the application of these tools in teaching and learning English. The study postulates that effective implementation of the ICT component of EGRA would improve learners' reading abilities by enhancing teachers' motivation and enhancing instructional delivery.

The dependent variable of the study is learners reading abilities. This variable was assessed by administering an achievement test among grade 3 learners in selected schools. The test examine various components of reading literacy including letter sound knowledge, reading comprehension, oral language skills, and vocabulary skills. The study presumed that interventions in EGRA programme interact to shape the reading ability of early grade learners in public primary schools in Kiambu County. The study proposed some mechanisms through which the EGRA interventions could improve early grade reading abilities including increasing motivation of teachers and learners, enhancing delivery of instructions, and increasing accountability.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter desribes the process of how the study was conducted. This includes; research design, target population, sample size and sampling techniques, research instruments, instrument validity and reliability, data collecting procedure, data analysis techniques and ethical considerations.

3.2 Research Design

The study adopted the descriptive survey research design. According to Mugenda and Mugenda (2003) descriptive survey research is a non-intervention research design that focuses on examining the variables without manipulating them in any way. In the current study, the design explored how the different observed reading abilities of learners relates to teacher capacity-building interventions, EGRA teaching and learning resources, EGRA monitoring and evaluation, and EGRA ICT use by teachers. This design is more consistent with the general objective of the study and perceived as authoritative for it allows the use of descriptive statistics in data analysis.

The descriptive survey research design was appropriate for the study as the researcher had no control over the study variables and it is an effective and efficient guide to collect data from a wide range of respondents (Kothari, 2023). The design was also effective in providing detailed accounts of the EGRA programme, including the interventions involved, how they were implemented in Kiambu County, and the outcome. Moreover, the descriptive research design allowed the researcher to understand the context in which the programme was implemented by interacting with various stakeholders of this programme.

3.3 Location of the Study

Kiambu County is located in the central region of Kenya and covers an area of 2,496.1 square kilometers. It has a population of 2,417,735, making it the second most populous county in the country. The county is known for its agriculture, with tea, coffee, and vegetables as the main cash crops. Additionally, Kiambu is dotted with tourist attraction sites such as Kiambethu Tea Estate, Karura Forest, and Limuru Golf and Country Club, among others. (Kenya National Bureau of Statistics, 2020). This study location was selected because the EGRA midline evaluation showed that it was ragging behind other counties in central region in terms of reading abilities. The midline evaluation conducted in 2017 showed that the proportion of Grade 3 learners in Kiambu who could do Grade 2 task was 39.5% as compared to 51.8% in Nyeri and 50.5% in Nairobi. In addition, Kiambu is a cosmopolitan area that both urban and rural population. Consequently, it provided insights into the effectiveness of EGRA interventions in different setting, ensuring applicability of findings to a wide range of learners.

3.4 Target Population

The population of the study were 26,156 respondents who consisted of teachers and learners in public primary schools. This population comprised 1408 lower grade teachers (grade 1-3), and 24,748 Grade three learners in all public primary schools in Kiambu County (Kiambu County Director of Education Office, 2019). Lower grade teachers were targeted because they were among the primary target of the EGRA Interventions and thus are in a position to provide first-hand information regarding the EGRA interventions as well as reading abilities of learners (USAID, 2017). The grade 3 learners were targeted because they had gone through the entire EGRA course and

thus were better placed to provide accurate information regarding the impact of the intervention.

The focus on public school was informed by the rationale that they are the most common type of schools in Kenya and mostly provide education to the majority of Kenyan children. According to Kenya Bureau of Statistics (2022), there were 23,631 public primary schools out of the total of 32,469 public primary schools that were operating in the country in 2022. This implies that public primary schools made up 72.8% of all primary schools in the country. Also, public primary schools in Kenya serve vulnerable populations, including children from low-income families (Malenya & Ohba, 2023). Consequently, these schools we more likely to struggle with challenges like inadequate teaching and learning resources and thus the effect of EGRA programme would be more visible in these schools. In addition, all public primary schools in Kenya follow the national curriculum unlike some private schools that offer curriculums from other countries (Zuilkowski *et al.,* 2018). Focus on public school allowed the study to make a fair comparison of learners reading abilities across schools.

3.5 Sample Size and Sampling Procedure

Jwan (2010), points out that when samples are studied, the ultimate interest is learning about the population from which these samples are drawn. The larger the sample the more likely is the mean and the standard deviation to be representative of the population. Wiersma (1995) observed that a sample should be large enough so that the researcher can work with confidence. The sample size was determined using the Slovin sample size formula (Rivera, 2007).

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

Source: Rivera (2007)

Where:

n = sample size

N = Total population (in this case, 26,156)

e = Margin of error (in this case 0.03)

The sample size will thus be determined as:

$$n = \frac{26{,}156}{1 + 26{,}156(0.03)^2}$$

$$n = 1065.83 \approx 1066 \text{ individuals}$$

The Slovin sample size formula was preferred because it provides a more accurate estimate of the sample size required for a given population, compared to other sample size formulas that do not take the population size into consideration (Susanti *et al*., 2019). Also, the formula is relatively easy to use and does not require advanced statistical knowledge. In addition, this formula minimizes oversampling by taking into consideration both the population size (N) and the desired level of precision (e) (Tabuena et al., 2021). Minimizing oversampling made the data collection exercise cost effective. The 1066 individuals that formed the sample for this study were proportionally allocated to the two categories of respondents.This included the grade 1-3 teacher and grade 3 learners as shown in Table 1.

Table 1: Distribution of Sample across the two Categories of Respondents

Category	Population (N)	Proportion of N (%)	Sample Size
Grade one to three teachers	1,408	5.38	57
Grade 3 learners	24,748	94.62	1009
Total	**26,156**	**100.00**	**1066**

As Table 1 illustrates, a total of 57 teachers and 1009 grade 3 learners were selected from the target population. Proportionate sampling is a technique used in research to select a representative sample from a population in such a way that the proportion of selected participants from each stratum of the population is proportional to the overall distribution of the population. The proportions help to ensure that each category of respondents gets a sample that is proportional to the size of their population. In this case, since learners are more than teachers in the study populations, calculating the proportions ensured that the learners are highly represented in the study sample. By selecting a sample that reflects the distribution of the population, proportionate sampling increased the representativeness of the sample (Howell *et al*., 2020). This means that the results of the study were generalizable to the population that was being studied.

Proportionate sampling also reduced sampling error by ensuring that each stratum of the population is represented appropriately in the sample (D'Exelle, 2014). This reduced the margin of error and increased the reliability of the research results. Proportionate sampling also provided greater precision in the final estimates (Howell *et al*., 2020). By taking into account the variability of the population, proportionate

sampling ensured that the sample is as representative as possible. Using proportionate sampling was also an ethical approach to this research that ensured the fair representation of learners and teachers within the sample.

3.5.1 Sampling Procedure

The study adopted the clustered random sampling method to select the 1066 individuals from the target population. According to Suter (2012), clustered sampling entails sub-dividing the population into clusters and then selecting respondents from a few clusters. This technique is used where the population is spread over a wide geographical area making it difficult to select units scattered from all parts of the population. Clustered sampling has been used in various studies in the education field including the Trends in International Mathematics and Science Study (TIMSS) by the United States National Centre for Education Statistics (Guhn et al., 2014). It has also been applied in the Programme for International Student Assessment (PISA) by the OECD and the Early Grade Mathematic Assessment (EGMA) by USAID and RTI (Fontainha, 2014; Platas *et al.*, 2016).

According to Guhn *et al*. (2014), clustered sampling enabled the identification of smaller, more manageable clusters that are still representative of the population of interest. In the current study, the target population was clustered according to the 12 sub-counties that make-up Kiambu County. Four sub-counties were then selected randomly from the 12 sub-counties. The names of all the 12 sub-counties were written on small pieces of papers, folded, placed into a container, and shuffled, and a third party asked to pick four pieces randomly. The names of the sub-counties contained in the four pieces of paper were included in the study. The number of schools that were selected from each of the four sub-counties was proportional to the population of

schools in the sub-counties. The sampling plan for schools was summarized in Table 2.

Table 2: School Sampling Plan

Sub-County	No. of Schools (N)	Proportion of N (%)	Sample Size
Kabete	26	24.5	6
Kiambu	21	19.8	5
Kiambaa	23	21.7	5
Thika	36	34.0	7
Total	**106**	**100**	**23**

Source: Author (2022)

The required number of schools in each of the four sub-counties was also selected using the random method. For instance, in Kabete Sub-County, the names of all the 26 schools were written on small pieces of paper, folded, placed in a container, shuffled, and a third party asked to pick six pieces. The names of the schools contained in the six pieces were included in the study. The same process was repeated in the other three sub-counties.

The required sample of 57 lower grade teachers was selected randomly from the 23 schools that were identified in line with the plan in Table 2. A total of three lower grade teachers were selected randomly from 10 schools with high number of teachers while two lower grade teachers were selected randomly from the remaining 13 schools.

To make up the sample of 1,009 grade-3 learners, a total of 44 grade-3 learners were selected randomly from each of the 23 schools. Small pieces of numbered papers were

folded, placed in a container, shuffled, and learners asked to pick. The learners who picked the papers numbered 1-44 in each school were included in the study.

3.6 Research Instruments

The study used the following instruments: teachers' questionnaires and achievement test for learners.

3.6.1 Teachers' Questionnaire

The study used the questionnaire for the teachers to gather teachers' views regarding the implementation of EGRA intervention in their workstations and its impact of learners reading outcomes. The Questionnaire for the Teachers contained closed-ended Likert type questions in order to facilitate comparison using statistical methods. Respondents were presented with a set of statements and asked to indicate their agreement with each on five point scale (5= Strongly Agree, 4: Agree, 3= Not Sure, 2= Disagree, and 1= Strongly Disagree). Kothari (2013) emphasises that the closed-ended questionnaires facilitate statistical comparison by limiting participants' responses to predetermined choices that can easily be coded and converted into numerical form. Jebb *et al.* (2021) adds that Likert type scale is easy to understand because they are universal data collection methods. They also make it easy to draw conclusion and report findings. Questionnaires had the ability to collect a large number of information in a reasonable quick space of time and also saves on time as a large number of people are involved and the questions can easily be analysed. Section A dealt with a general overview of the academic and professional qualification of the respondents. Section B dealt with the objectives of the study (Appendix II).

3.6.2 Achievement Tests for Learners

An achievement test was administered to the grade three learners with the aim of assessing their reading skills in the sampled schools. An achievement test has consistency and uniform procedures for administering, scoring and interpreting the behaviour of the subjects (Mugenda and Mugenda, 2003). The achievement test assessed the learners' English reading skills including passage comprehension, reading fluency, sight recognition, and word attack skills, and letter identification (Appendix III). It was marked out of a highest possible score of 44 points. The reliability of the achievement test was examined using the test retest method. Results are presented in section 3.6.2.

The achievement test was adapted from the Uwezo 2016 English reading achievement test. The Uwezo English test is a large-scale assessment tool designed to measure children's reading skills and comprehension in East Africa, including Kenya (Anyiendah *et al.*, 2019). The test is used to monitor progress in reading abilities over time and to inform policy and programmatic interventions aimed at improving literacy outcomes. The test consists of a series of reading tasks that are designed to measure a range of skills, including phonetic awareness, fluency, vocabulary, and comprehension.

3.7 Pilot of the Research Instruments

The purpose of pilot testing is to determine the reliability and validity of the data collection instrument and familiarize to with collection procedures of the study.The instruments includes;Teachers' Questionner and the Achievement Test for the learners

Borg and Gall (1996) recommended that researchers pilot 5% to 10% of the final sample while Mugenda (2003) recommended 1% to 10% of sample. The researcher carried out the pilot test using 107 respondents representing 10% of the sample size. A pilot study was conducted in Ruiru Sub-County, which was selected randomly using the lottery method and involved two schools also selected randomly. The pilot sample comprised of eight teachers (four from each school) and 98 learners (49 from each school).

The researcher sought the input of the teachers in selecting the 98 learners and administering the achievement test. After three weeks, the researcher also sought the input of the teachers to readminister the same test to the same learners. The three weeks interval was in line with Reynolds *et al.* (2021) recommendation that the test retest method should allow sufficient time to elapse so that the learner is not likely to remember his or her answers in the first wave of data collection. When the teachers were done with administering the second wave of reading test, they were request to complete the questionnaire. Ruiru sub-county was left out during the selection of the four sub-counties that would participate in the main study.

3.7.1 Validity of the Research Instruments

According to Fraenkel & Wallen (2000), validity is the quality attributed to proposition or measures to the degree to which the instruments conform to establish knowledge or truth. Validity, therefore, refers to the extent to which an instrument can measure what it ought to measure. It therefore refers to the extent to which an instrument asks the right questions in terms of accuracy.

Content validity of the questionnaire was enhanced by performing a thorough review of existing literature on the constructs of teacher capacity building, teaching and

learning resources for early grade reading, instructional monitoring and evaluation, and integration of ICT in early grade reading. The researcher ensured that the the questionnaire was written in clear, concise, and unambiguous language. The questionnaire was also divided into sections that correspond to each study variable thus ensuring that all variables are adequately covered. Using Likert scales with multiple response options also ensured that the questionnaire adequately captured the range and nuances of responses.

Validity was ensured by discussing the instruments with the Maasai Mara University supervisors who are experts in the field. The supervisors gave various recommendations on how the validity of the tools can be enhanced. The researcher then followed the advice to improve the instrument. Content validity index (CVI) was then used to measure if the questionnaire and the achievement test provide adequate coverage of the variables of the study (Yusoff, 2019). The researcher asked five experts to rate the content in each of the four Likert scales in the questionnaire as well the achievement the achievement test on a scale of 1 to 4, indicating the degree to which they believe the item measures the construct. The proportion of agreement was calculated for each item by dividing the total number of experts who gave the item a rating of 3 or 4 (indicating agreement) by the total number of experts who rated the item. Table 3 presents the rating outcomes.

Table 3: Construct Validity Index

Construct	Validity Index
EGRA Teacher capacity building	80%
EGRA teaching and learning resource	60%
EGRA monitoring and evaluation	80%
EGRA ICT interventions	80%
English reading achievement test	100%

Table 3 shows that Likert scales for EGRA teacher capacity building, monitoring an evaluation, and ICT interventions had validity indices of 80%. These indices indicate that 4 out of the 5 experts gave these Likert scale a rating of 3 or 4. Consequently, the researcher concluded that these items were valid. Similarly, the English reading achievement test had an index of 100% suggest that all the 5 experts gave this test a rating of 3 or 4. However, the EGRA teaching and learning resource scale had an index of 60% suggesting that 3 out of the 5 expert gave it a rating of 3 or 4. This showed that the item needed some improvement, which the researcher did in consultation with the experts.

Pilot study was also used to identify other problems in the questionnaires and adjustments were done to ensure validity of the instruments. The data allowed the researcher to assess the clarity, comprehensibility, and relevance of the questions in the questionnaires. Feedback from pilot testing highlighted issues in wording, instructions, or item responses that needed to be revised or clarified. The pilot test data from the achievement test also helped to identify potential problems in the test structure or items and provides an opportunity to revise and refine the test accordingly. Construct validity index was used to measure the degree to which data obtained from the instrument meaningfully and accurately reflected the theoretical concepts being studied (Mugenda &Mugenda, 2003).

3.7.2 Reliability of the Research Instruments

According to Kothari (2013), reliability refers to the extent to which an instrument can give similar results when used to measure the same items in the same circumstance. The data collected using the pilot study was used to assess the reliability of the study instruments. The researcher analysed the pilot test data from

the questionnaire using the Cronbach alpha method. This method computes an alpha that ranges between 0 and 1, which was compared to the threshold of 0.7 set for this study (Kara & Celikler, 2015). The Statistical Packages for Social Sciences (SPSS) software was used to conduct this analysis. Table 3.3 presents the results of the test:

Table 4: Cronbach Alpha Test Results

Scale	N of Items	Cronbach α	Verdict
Teacher capacity intervention	7	0.876	Reliable
Teaching and learning resource	7	0.916	Reliable
Evaluation	7	0.856	Reliable
Use of ICT in teaching	7	0.865	Reliable

Results in Table 4 showed that all the four Likert scales measuring the four independent variables of the study had Cronbach alpha that were greater than the 0.7 threshold. A high Cronbach's alpha signifies that the items or questions in a test or survey are highly correlated with each other (Taber, 2018). In other words, a high alpha indicates that the items in the test or survey are measuring the same underlying construct. Specifically, Cronbach's alpha is a measure of internal consistency reliability, which reflects the degree to which the different items in a test or scale measure the same thing. An alpha value of 0.7 or higher is generally considered to indicate good internal reliability, with values of 0.8 or higher indicating very good reliability. Since all the scales measuring the independent variables of the study had alphas that were greater than 0.8, the researcher concluded that the scales were internally consistent and reliable.

The reliability of the achievement test was tested using the test retest method. This method entails comparing the learners reading scores in two assessments that were

administered three weeks apart using the Pearson correlation coefficient method. The analysis concluded that the reading achievement test was highly reliable with a reliability index of 0.896. According to Leon and Collahua (2015), a reliability of index that is greater than 0.7 signifies that a test has high level of reliability. In the context of test-retest reliability, a high Pearson correlation coefficient indicates that the test or measurement instrument is reliable and consistent over time. A coefficient of 0.896 indicates that the reading achievement test produced highly similar or identical results on two separate occasions, giving us confidence in the stability and consistency of the test.

3.8 Data Collection Procedure

The researcher acquired clearance letter from the Maasai Mara University. Then a research authorization permit was obtained from the National Commission for Science, Technology and Innovation (NACOSTI). Subsequent clearance to carry out the study was obtained from The Director of Education and County Commissioner Kiambu County. Then the researcher consulted various heads of the sub-counties and got an appointment for the purpose of creating rapport, confidence and removing any suspicion by assurance of confidentiality to access their schools. The researcher distributed questionnaire to the sampled respondents in person and afterwards requested the grade 3 teachers to assist in administering the reading achievement test to the learners. The researcher trained the grade 3 teachers on how to select the sample of learners and how to administer the reading achievement test.

A period of one week was agreed upon for completing questionnaires and for the test results to be ready for collection. Leaving the questionnaire and achievement test with participants to complete at their own time was convenient for both the researcher and the participant. Specifically, the researcher considered the fact that schools operate on very tight schedules and therefore flexibility was needed in the

administering of the instruments. Teachers were free to choose when and where to complete the questionnaire and administer the test, which led to higher response rates. In addition, the flexibility to complete the questionnaire and test at their own pace, allowed the participants to give more thoughtful responses. This resulted in a more accurate and honest responses and reduced the potential of response bias.

3.9 Data Analysis

The researcher collected all the filled in questionnaires and assessed them for completeness; questionnaires that had many unanswered questions were left out of the analysis. The researcher then numbered the questionnaire in a systematic way, with questionnaires from each school being given a unique school code to enable matching of the questionnaire data and learners English test achievement data for the school. The questionnaire was coded into the SPSS version 25 software. Coding entailed assigning numerical values to each response option to facilitate quantitative analysis. It entailed converting the text responses into numerical data to enable the use of statistical analytical methods. For instance, on the gender question, male respondents were coded as 1 while female were coded as 2.

After coding, responses in each questionnaire were entered into the SPSS software. Results of the achievement test were sorted and entered into the software. The test results were not coded because the data was already in a numerical format. Descriptive statistics were used to summarize the quantitative data on each of the variables essential to the study. Descriptive statistics that were used include frequencies, percentages, and means. The multiple linear regression technique was used to conduct the inferential analysis. The following model guided the analysis.

$$Y= \beta_0+ \beta_1X_1+ \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e$$

Source: Author (2019)

Where, Y= lower grade learners reading outcomes, β_0 = constant, β_1, β_2, β_3, and β_4= Beta coefficients, X_1 = Teacher capacity, X_2 = Teaching and learning resources, X_3 = Evaluation, X_4 = ICT interventions, e= error term.

Multiple linear regression was appropriate because the study had a set of four independent variables that were presumed to be related to the single dependent variables of the study, learners reading ability (Sarker, 2021). The multiple regression analysis enabled the researcher to assess the relationship between reading abilities and the multiple variables representing the interventions of the EGRA programme simultaneously. Results of the analyses are presented using descriptive, explanatory accounts as well as tables. Multiple linear regression helped to identify the EGRA interventions that had the greatest impact on learners reading abilities. It allowed the researcher to quantify the impact of each intervention on the learners reading ability when all other interventions are controlled. Table 3.5 presents a summary of the statistical method used to test each study hypothesis.

Table 5: Summary of Statistical Methods Used

Hypothesis	Independent Variable	Dependent Variable	Statistical Test
H_{01} : There is no statistically significant influence of EGRA teachers' capacity-building interventions on the reading abilities of early grade learners in public primary schools in Kiambu County.	EGRA teachers' capacity-building interventions	Reading abilities of early grade learners in public primary schools	Linear regression Beta coefficient and t-test
H_{02} : There is no statistically significant influence of EGRA teaching and learning resources on the reading abilities of early grade learners in public primary schools in Kiambu County.	EGRA teaching and learning resources	Reading abilities of early grade learners in public primary schools	Linear regression Beta coefficient and t-test
H_{03} : There is no statistically significant influence of EGRA monitoring and evaluation on the reading abilities of early grade learners in public primary schools in Kiambu County.	EGRA monitoring and evaluation	Reading abilities of early grade learners in public primary schools	Linear regression Beta coefficient and t-test
H_{04} : There is no statistically significant influence of EGRA ICT interventions on the reading abilities of early grade learner in public primary schools at Kiambu County.	EGRA ICT interventions	Reading abilities of early grade learners in public primary schools	Linear regression Beta coefficient and t-test

3.10 Ethical and Logistical Consideration

The researcher sought clearance letters from the University, Ministry of Education and the County Director of Kiambu. The researcher also sought authorization from the administration of each of the public primary school where data was collected. In this study, the schools' administration were important gatekeepers who had control

over the researcher's access to potential participants. Building rapport with this gatekeepers was a vital logistical issue. The researcher communicated the study to the administration explaining its importance and benefits to gain their trust. The researcher assured the administration that the data would only be used for academic purpose and that the study would not interfere with normal school operations.

The researcher also informed the teachers about the study, its purpose, and their role in the study in line with the principle of informed consent (Bassey & Owan, 2019). The researcher also requested the grade-3 teachers to explain the study to the learner before administering the English achievement test. The researcher emphasized that participation was voluntary and that the learner should be free to decide whether to participate or not. The researcher assured the teachers that there will not be any physical or psychological risk involved from the data collected in line with the do-no-harm principle (Crane & Broome, 2017). The learners were issued with consent forms explaining the study for the parents/ guardians to sign. The teachers were also asked to sign a written consent form before completing the questionnaires.

The teachers were assured of anonymity and confidentiality of the responses and were advised not to write their names, employment number, or any other detail that could lead to their identification on the instruments. The teachers were also advised not to write the names of the learners, admission number or any other detail that could disclose the identity of the learners. The completed instruments were kept under lock and key and destroyed after the acceptance of the research report.

All grade-3 learners in the sampled schools were given equal opportunity to participate in the study in line with the ethical principal of equity and fairness. The sample of learners was picked randomly without consideration of the learners' gender,

race, ethnicity, or any other characteristics. The researcher also promised to provide feedback about the findings of the study to the teachers and school administration once the analysis and reporting is complete. Providing feedback not only demonstrated respect and gratitude to the participants, but also gives them the opportunity to benefit from the study by acting on the findings and recommendations of the study. Pillay (2014) observed that one of the ethical issue raised against education research in South Africa is the failure to provide feedback to participants. This practice leaves the participants feeling that the researchers use them for their selfish interests.

The researcher was also transparent regarding the methods used in data collection and analysis. Objectivity was also maintained during analysis and interpretation of data to ensure that the results produced are accurate and valid. Similarly, the researcher reported the results of the study transparently and honestly, avoiding any biases or selective reporting. The researcher prepared a budget for various expenses such as equipment, materials, travel and other logistics to ensure smooth implementation of the study. The researcher forecasted the material and resources needed to complete the study and prepared the budget based on the forecast.

The researcher also prepared a workplan with clear timelines and deadline for different phases of the research project. The workplan was crucial in organizing various logistical issues and ensuring that the study is completed on timely manner. The workplan also enabled the researcher to anticipate factors that may impact the project timeline. another important logistical issue entailed administering the research instrument.The researcher acquired a clearance letter fom the University and obtained a permit from NACOSTI.The researcher sought clearance from the County Director

of Education and County Commissioner of Kiambu.The researcher consulted the heads of subcounties and heads of instution to get appointments to visit the schools.The researcher created a rapport with the early grade teachers with the assistance of the administration of the schools. The study was explained to the teacher who then requested to complete the questionnaire. The researcher also sought the input of the teachers in administering the achievement test to the learners and marking.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This study aimed to investigate the influence of the interventions in the Early Grade Reading Activities programme on the reading abilities of learners in public primary schools in Kiambu County. This chapter presents the data, analyses and discusses its implication in relation to previous studies. The chapter is organized into four main sections including the response rate, respondents profile, descriptive analysis and regression analysis.

The following null hypotheses were tested:

H_{01}: There is no statistically significant influence of EGRA teachers' capacity-building interventions on the reading abilities of early grade learners in public primary schools in Kiambu County.

H_{02}: There is no statistically significant influence of EGRA teaching and learning resources on the reading abilities of early grade learners in public primary schools in Kiambu County..

H_{03}: There is no statistically significant influence of EGRA monitoring and evaluation on the reading abilities of early grade learners in public primary schools in Kiambu County..

H_{04}: There is no statistically significant influence of EGRA ICT interventions on the reading abilities of early grade learner in public primary schools at Kiambu County.

4.2 Response Rate

A total of 56 out of 57 questionnaires were returned to the researcher making a response rate of 98%. However, three questionnaires had quite a number of questions left blank and thus these questionnaires excluded from the analysis. Consequently, the teacher sample was reduced to 53 respondents. The sample size for learner also reduced from 1009 to 961 because some schools had less than 44 grade-3 learners. However, all the 961 learners were approached manage to complete the study. Since the drop in numbers was not due to respondents' refusal to participate or them dropping out, the risk for non-response bias was substantial reduced. According to Duszynski *et al.* (2022), non-response bias occur when those who fail to respond differ significantly from those who respond in terms of characteristics that are essential to the study such as learner reading abilities. In this study, the risk that some learners could have dropped out of the study or refused to participate because they have low reading abilities was substantially reduced because all the learners who were approached agreed to participate.

4.3 Respondents Profile

The study sought to describe the profile of teachers in terms of their gender, age, and number of years that they have been teaching. According to Hammer (2011), reporting the profile of study participants help the researcher to demonstrate the representative of the study sample. This information also helps the research readers to evaluate whether the findings of the study can be generalized to their own settings. Table 6 summarizes this information:

Table 6: Respondents' Demographic Profile

Variable	Categories	Frequency	Percent
Teachers' Gender	Male	4	7.5
	Female	49	92.5
Age brackets	Below 23 years	2	3.8
	24-33	15	28.3
	34-43	20	37.7
	44-53	13	24.5
	Over 54	3	5.7
Teaching experience	Below 5 years	7	13.2
	6-10 years	10	18.9
	11-15 years	17	32.1
	16-20 years	12	22.6
	Over 20 years	7	13.2

Results in Table 6 shows that 92.5% of the sampled teachers were female. This finding is congruent with Duflo *et al*. (2014), who also found that female teachers were disproportionately assigned to lower grades. The proportional of female teachers in their sample of lower grade teachers was 98.3%. These results suggest that sample for the this study was representative of the teaching workforce in the lower primary sections of most public primary schools in the country. However, the study by Koki (2021) established that lack of teacher-student gender matching in primary school does not have an impact on learners test scores. Consequently, it is not expected that over representation of female teachers in lower primary schools in Kiambu would have an impact on learners reading ability.

Results in Table 6 also show that the teachers were distributed across all the five age groups with the largest segment (37.7%) being in 34-43 age bracket. The data show that the teaching workforce within lower primary section of public primary in Kiambu is diverse in terms of age. The findings are consistent with Duflo *et al*. (2014), who also found that the teaching workforce in primary schools has a lot of age diversity. Consequently, the finding implies that the sample for the current study is a close representation of the population of lower grade teachers in most public primary schools in Kenya.

Results in Table 6 further shows that the sampled teachers were also distributed across all the five categories of teaching experience. This implies that the sample comprised of a mix of experienced and inexperienced teachers. The finding is congruent with Koki (2021), which also show that the teaching workforce in lower grades of public primary school in Kenyan is diverse when it comes to teaching experience. The link between teaching experience and learner outcomes is not clear. Calisle *et al*. (2011) found that learners taught by more experienced teachers were likely to record higher reading achievement while Muya (2019) found that less experienced teachers posted better results than those who had been on the job for longer. The argument advanced in favour of experience is that longer teaching experience sharpens and refines the teacher's skills of content delivery. Argument advanced in against experience is that longer teacher experience make teacher conform to conventional teaching method making them less receptive to interventions that seek to adjust content delivery methods and techniques.

4.4 Descriptive Analysis of Study Variables

This section presents the descriptive analysis that is aimed at identifying patterns in the implementation of teacher capacity interventions, EGRA teaching and learning resources, EGRA evaluation, and use of ICT in teaching within the public primary school. The section also analyses patterns of learners reading achievement within the schools. These were the variables of the study. Descriptive analysis summarizes data on each of these variables before the study embarks on inferential analysis that tests the relationship between the variables.

4.4.1 EGRA Teacher Capacity-Building Interventions in Kiambu County

Teacher capacity-building interventions was the first independent variable of the study. The study sought to establish how effective these interventions have been implemented within the public primary schools in Kiambu County. Teachers were presented with a set of seven statements related to teacher capacity-building interventions and asked to indicate their level of agreement with each on a five point scale (1=strongly disagree to 5 = strongly agree).

Results in Table 4.2 show that 79.3% of the respondents either agreed or strongly agreed with statement TCI, which alleged that all lower grade teachers in their schools have gone through induction training on the implementation of EGRA. About 13.2% of the respondents were not sure while 7.5 refuted the claim. This finding suggests most of lower grade teachers in public primary schools in Kiambu have received induction training on EGRA implementation. Particularly, findings suggest that over three-quarters of the public primary schools in Kiambu County have received the induction training. The purpose of induction training is usually to introduce the EGRA programme to the teachers including enlightening them about its goals and

benefits, activities and methodologies. Mwoma (2017) observed that effective induction training helps the teachers to understand EGRA and buy-in the concept of the programme leading to high level of support.

Table 7: Respondents view on Teacher Capacity-Building Interventions

S/N	Statement	1	2	3	4	5	Mean	S.D.
TC1	All lower grade teachers in my schools have gone through an induction training on the implementation of EGRA	0	7.5	13.2	49.1	30.2	4.02	.886
TC2	The lower grade teachers in my school have undergone termly coaching on how to improve reading instructional delivery	1.9	26.4	5.7	45.3	20.8	3.57	1.152
TC3	The training and coaching provided under EGRA is more practical than theoretical	0	11.3	18.9	49.1	20.8	3.79	.906
TC4	The teacher development aspect of EGRA has created new expectation for teachers when it comes to learners' reading abilities	0	0	17.0	56.6	26.4	4.09	.658
TC5	Most lower grade teachers in my school are now meeting reading instruction expectations	0	3.8	22.6	49.1	24.5	3.94	.795
TC6	Most lower grader teachers are now adhering to the sequence of lessons in the EGRA teachers' guide	0	0	24.5	52.8	22.6	3.98	.693
TC7	The reading instructional practices of lower grade teachers have improved substantially after the onset of EGRA.	0	3.8	17.0	58.5	20.8	3.96	.733

Current findings suggest that most early grade teachers in public primary schools in Kiambu had received the induction training. The finding is congruent with EGRA 2022 annual progress report, which indicated that the programme provided induction training to newly appointed teachers and CSOs who had not been trained on EGRA early literacy instructional approaches (USAID, 2022). The survey leading to the development of progress report also indicated that most teachers who took place in the induction training believed that the workshops were well planned and relevant.

Similarly, 66.1% of the respondents either agreed or strongly agreed with statement TC2, which claimed that the lower grade teachers in their school have undergone termly coaching on how to improve reading instruction delivery. About 5.7% of the respondents were not sure while 26.4% refuted this claim. These results imply that lower grade teachers in over two-thirds of primary schools in Kiambu County had received termly EGRA coaching. Coaching is a method of professional development that assists teachers to develop their skills. EGRA coaching is an interactive process that assists teachers to set goals, enhance classroom practices, overcome challenges, and celebrate successes (World Bank, 2018). It used a student centred approach that helps classrooms to transition from having learners who are passive recipient of information to having learners who are active participants in their own learning. The fact that most teachers now have access to this coaching suggests that there should be observable improvement in reading outcomes. In 2022, MoE gave senior teacher the role of mentoring new teachers as a strategy of overcoming the shortage of CSO staffing (USAID, 2022). This move made coaching available to many teachers. According to Piper *et al*. (2017), teacher coaching programmes reinforce weak pre-service training for teachers leading to improved learning outcomes.

In addition, 69.9% of the respondents either agreed or strongly agreed with item TC3, which alleged that the training and coaching provided under EGRA was more practical than theoretical. This finding implies that more than two-thirds of lower grade teachers in public primary schools in Kiambu find the EGRA training and coaching method to be more practical than theoretical. This finding is congruent with EGRA guidelines, which stipulates that the programme uses a coaching model that is more practical and focused on key promoting instructions in key reading areas (World Bank, 2018). According to Kraft *et al*. (2018), coaching programmes that ignore the

practical aspects of implementation often fails to deliver meaningful benefits. A practical-oriented capacity building programme helps teachers to develop practical skills, build critical thinking skills, and become more confident in their ability to teach. A practical-oriented capacity building programmes also provide teachers with practical strategies for scaffolding children's learning, such as guided reading and writing, shared reading and writing, and interactive read-alouds in line with the Holdaway theory of literacy development (Holdaway, 1979).

Moreover, 83% of the respondents either agreed or strongly agreed with item TC4, which advanced that the teacher development aspect of EGRA has created new expectation for teachers when it comes to learners' reading abilities. These findings implies that 4 out of every 5 lower grade teacher in public primary schools is positive that the teacher development aspect of EGRA has created new expectation for teachers regarding their learners reading abilities. A study by Rosenthal and Jaconson (1992) revealed that the expectations that teachers have towards their learners affect the interaction between the teacher and the learners. Teachers tend to dedicate more time to learners whom they expect to succeed, give them more specific feedback, and greater approval. This kind of positive interaction has a reinforcing impact on the learner's academic outcomes. Resethal and Jaconson referred to this phenomenon as the Pygmalion effect. Current findings suggest that the EGRA coaching has changed the expectation of lower grade teachers regarding the reading abilities of their learners. As a result, it is expected that the interaction between the teachers and the learners would improve leading to enhanced reading outcomes.

In addition, 73.6% of the respondents also agreed or strongly agreed with item TC5, which stated that lower grade teachers in their school were meeting reading

instruction expectations. This finding implies that close to three quarters of lower grade teachers in public primary schools in Kiambu County believe that they are meeting reading instruction expectations. It suggests that the teacher capacity building interventions have been fairly effective in helping teachers to meet reading instruction expectations. The EGRA teacher capacity-building interventions sought to align early grade teachers' skills and knowledge with purposes and principles of early grade reading (Piper *et al.*, 2017). The interventions sought to enhance teachers' skills in areas like alphabetic principle, phonological awareness, oral fluency, reading comprehension, phonemic awareness and vocabulary. They also sought to train teachers on how to provide differentiated instructions; instructions that are responsive to specific need of every child based on continuous assessment.

Also, 75.4% of the respondents either agreed or strongly agreed with item TC6, which asserted that lower grader teachers were adhering to the sequence of lessons in the EGRA teachers' guide. This finding also implies that over three quarters of lower grade teachers in public primary schools in Kiambu County are confident that they were observing the sequence of lessons in the EGRA teachers' guide. It implies that the EGRA teacher capacity-building component has been quite effective in promoting adherence to teachers' guide. The EGRA programme is very structured in that it encompasses guided lesson for teachers and prescribes specific instructional strategies and materials to be used at each stage. However, the programme can only have an impact if teachers are adequately trained to adhere to these guidelines. Current findings suggest that most early grade teachers in public primary schools have been adequately trained to follow the EGRA lessons.

Lastly, 79.3% of the respondents either agreed or strongly agreed with item TC7, which stressed that reading instructional practices of lower grade teachers have improved substantially after the onset of EGRA. This finding indicates that over three quarters of lower grade teachers in public primary schools in Kiambu are positive that the EGRA programme has led to notable improvement in reading instructional practices. The ultimate goal of the EGRA teachers' capacity building interventions was to improve the reading instructional practices of lower grade teachers (World Bank, 2018). Current findings suggest that this goal has largely been attained in most of the public primary schools in Kiambu County. This finding is congruent with EGRA 2022 annual progress report, which indicates that most of the teachers participating in the programme had acquired the skills that they needed to implement instructional changes leading to improved learners' reading outcomes.

4.4.2 EGRA Teaching and Learning Resources in Kiambu County

The second independent variable of the study was EGRA teaching and learning resources. This element of the EGRA programme focuses on developing teaching and learning resources and making them accessible to public primary schools. To examine how effectively this component of EGRA has been implemented in public primary schools in Kiambu, respondents were given a set of seven statements and asked to indicate their agreement with each on five point scale (1=strongly disagree to 5 = strongly agree).

Table 8 shows that 86.8% of the respondents agreed with statement TL1, which alleged that their school had received students' books aimed at improving lower grade learners reading abilities. Distribution of students' books was one of the components of EGRA interventions World Bank, 2018). Current finding suggest that over 85% of

the primary schools in Kiambu County have received books for teaching early grade reading from the EGRA programme. This finding is consistent with Cherobon and Chepsiror (2022), who also found that the EGRA programme had enhanced access to text books by learners in public primary schools in Nandi County. Providing early grade learners with textbooks improves their reading skills by giving them access to a wide variety of texts and encouraging them to read more often and extensively. Textbooks provide examples of structured language, vocabulary, and syntax that can help learners to develop their reading and writing skills. Textbooks provide access to a wide variety of words, both within the text and through glossaries and other supplementary materials (World Bank, 2018). This exposure to new vocabulary can help early grade learners expand their vocabulary and improve their reading comprehension.

Table 8: Respondents views on EGRA Teaching and Learning Resources

S/N	Statement	1	2	3	4	5	Mean	S.D
TL1	The school has received students' books aimed at improving lower grade learners' reading abilities	1.9	3.8	7.5	45.3	41.5	4.21	.885
TL2	The school has received teachers' guides aimed at improving delivery of reading instructions by lower grade teachers	1.9	1.9	9.4	37.7	49.1	4.30	.868
TL3	The students' books supplied to the school are sufficient to allow every child to hold and use their own book	11.3	13.2	11.3	28.3	35.8	3.62	1.417
TL4	The teachers' guides provided are sufficient to allow each teacher to use own guide	3.8	7.5	5.7	39.6	43.4	4.08	.858
TL5	The books and materials provided are relevant in promoting reading literacy	1.9	3.8	3.8	52.8	37.7	4.19	.900
TL6	The material provided to the schools are of good quality	0	3.8	7.5	49.1	39.6	4.21	.885
TL7	Teacher make use of the books and guides provided in delivering reading instructions	0	1.9	3.8	39.6	54.7	4.45	.748

The majority of the respondents (86.8%) agreed or strongly agreed with item TL2, which claimed that their school had received teachers' guides aimed at improving delivery of reading instructions by lower grade teachers. Apart from distributing students' books and other reading materials, the EGRA programme also entailed distributing of guides for assisting teachers to im prove instructional practices for teaching specific reading skills. Current finding suggests that over 86% of the public primary schools in Kiambu County have received the teachers' guides. This proportion is slightly higher than the 61% recorded in EGRA 2022 annual report (USAID, 2022). However, the disparity is probably due to the fact the EGRA annual report had countrywide geographic scope and consequently had covered regions like the Arid and Semi-Arid Lands (ASAL) counties. Having access to a teachers' guide helps teachers to plan and deliver effective lessons that are aligned with learning outcomes and standards (Clasen, 2021). This, in turn, helps early grade learners to understand and focus on the important concepts related to reading. Teachers' guides also improve lesson delivery by helping teachers to plan an engaging and interactive classroom environment and use appropriate teaching strategies to enhance reading skills

However, relatively fewer respondents (64.1%) agreed with item TL3, which asserted that students' books supplied to their school were sufficient to allow every child to hold and use their own book. One of the targets of the EGRA programme is to reduce the textbook-to-learners ratio of 1:1. This implies that the programme sought to ensure that every learner has his or her own books and reading materials. Current findings suggest that more than a third of public primary schools in Kiambu County

do not have adequate early grade reading materials. It implies that the EGRA programme has fallen short of its target in these schools. This finding is congruent with the study by Ngure (2019), where 28.6% of grade three teachers reported that there were inadequate age-appropriate reading books in their schools. About 32% of the teachers also reported that there were no charts on walls for reading. The findings are also congruent with EGRA 2022 annual report, which revealed that some schools were reported shortage of reading course books and other materials occasioned by increased learner enrolment and worn-out (USAID, 2022). Shortages were also recorded in newly registered schools particularly in the ASAL areas. Failure to meeting the textbook-learner ratio of 1:1 hampers learning as most learners do not get the opportunity to use the textbook as much as they need, leading to less support for their reading abilities. Sharing textbooks also deny learners the opportunity to read independently, which is crucial for self-directed learning and authentic learning. Self-directed learning allows learners to take responsibility for their own learning by actively seeking out resources that can improve their reading skills (Haland *et al.,* 2021). Without textbooks at their disposal, learners may struggle to take full responsibility for their own learning.

On the other hand, 83% of the respondents agreed or strongly agreed with item TL4, which declared that teachers' guides provided are sufficient to allow each teacher to use own guide. Apart from providing learning materials for learners, EGRA also develop and distribute guides for teachers (USAID, 2022). The guides aim to ensure that teachers have adequate support to enable them to implement EGRA literacy approaches effectively. Current findings suggest that over 80% of teachers in public primary schools have adequate access to teachers guide. The findings also suggest that there is greater access to teachers' guide when compared to learners' materials.

This may be attributed to the fact that there are few teachers when compared to learners and thus developing and distributing materials for teachers is much easier. In addition, teachers have greater access to ICT than learner, which enable them to access the EGRA teaching materials through digital platforms. These findings create a case for fast-tracking the integration of ICT in early grade classroom as a strategy for enhancing learners' access to digital text. Digital textbooks can be distributed to all learners in a classroom or school without significant additional cost. This eliminates the need for printing and distribution costs associated with physical textbooks, which often constitute a significant portion of textbook costs. The digital textbooks will also ensure that learners have access to reading materials regardless of where they are located.

In addition, 90.5% of the respondents agreed or strongly agreed with statement TL5, which stated that the books and materials provided are relevant in promoting reading literacy. The EGRA programme was not limited to distribution of reading material only but also involved development of evidence-based reading materials. This component of the programme aimed to ensure that learners and teachers in primary schools have access to materials that are relevant and exciting. Within the 7-year period that the programme has been in place, EGRA has also been revising the materials to ensure that they remain relevant to changing times and learners' realities (USAID, 2022). The latest revision for grade 1-3 English and Kiswahili course books were done in 2021 and adopted by the MoE and KICD, with EGRA supporting the procurement of the revised materials as well as their distribution in 2022. Current finding suggest that most of public primary schools are satisfied with the interventions that EGRA has put in place to ensure that reading materials remain relevant. Relevance of textbooks and supplementary reading materials promotes learners'

reading abilities by encouraging reading. Early-grade learners are more likely to read when the content resonates with their interests and experiences (Vuzo, 2022). If the reading materials are not relevant to the learners, they may not be motivated to read them, which can hinder their progress in reading. Relevance of materials also enhances learners' prediction and inference skills reading to enhanced comprehension (Cevoli *et al*., 2022).

Furthermore, 88.7% of the respondents agreed with item TL6, which specified that the material provided to the schools are of good quality. This finding implies that most of the materials that EGRA provided to public primary schools in Kiambu County are of good quality. This finding is congruent with EGRA 2022 annual report, which indicated that EGRA revise reading materials on a regular basis with the most recent revision conducted in 2021 (USAID, 2022). As educational standards and social norms change, texts used to teach reading may become out-dated or misrepresented. Regularly reviewing and updating texts can help ensure that they accurately reflect current knowledge and perspectives. Regularly reviewing and updating texts can also help ensure that they are culturally sensitive and relevant to the learners' backgrounds. Early-grade learners in Kiambu County come from diverse cultural backgrounds, and culturally relevant materials show that their heritage and culture are valued and respected. This helps to reinforce their cultural identity, which is critical for their overall development as individuals (Milankov *et al.,* 2021). Culturally sensitive and relevant materials are also more likely to engage learners compared to those that do not. These materials are more likely to capture the students' interests and maintain their attention, making learning easier and more enjoyable.

Lastly, 94.3% of the respondents agreed with statement TL7, which detailed that teachers in their school make use of the books and guides provided by EGRA in delivering reading instructions. It is not enough to take teaching and learning material to schools. These teaching and learning materials must be put into use for there to be observable improvement in learners' reading abilities. According to Wawire (2020), adoption of new teaching and learning material is highly dependent on teachers' attitude and sense of self-efficacy. Consequently, an interventions that seek to deliver teaching and learning resources to schools must be accompanied by an intervention that seek to change teachers attitude and sense of self-efficacy. According to USAID (2022), the EGRA programme encompasses a teacher training and coaching component that seek to change teaching practices by empowering teachers with skills needed to implement new instruction and changing their expectations and attitude. These findings highlight the importance of integrating the teaching and learning resource intervention with a teacher-capacity building intervention within the EGRA programme. The two interventions reinforced each other with the capacity-building intervention providing teachers with the skills and know-how needed to make use of the resources provided by the programme.

4.4.3 EGRA Instructional Monitoring and Evaluation in Kiambu County

The third independent variable of the study was EGRA monitoring and evaluation (M&E). The study sought to determine the effectiveness of public primary schools in implementing EGRA approaches for monitoring and evaluating learning progress. Respondents were provided with a list of seven statement related to this variable and asked to indicate their level of agreement with each on five point scale (1=strongly disagree to 5 = strongly agree). Table 4.4 presents the findings.

Table 9: Respondents' view on EGRA Monitoring and Evaluation

S/N	Statement	1	2	3	4	5	Mean	SD
ME1	CSO regular visit school to conduct classroom observation	0	0	1.9	50.9	47.2	4.45	.539
ME2	The CSO conduct their classroom observation in a structured manner	0	0	9.4	49.1	41.5	4.32	.644
ME3	CSO provide structured feedback to lower grade teachers regarding their instructional practice	0	0	9.4	47.2	43.4	4.34	.649
ME4	The data collected during classroom observation and other evaluation activities are used to advice teachers on areas to improve.	0	0	1.9	45.3	43.4	4.30	.723
ME5	The CSOs assume a coaching attitude rather than the supervisory/inspectorate stance when conducting evaluations	0	11.3	11.3	41.5	35.8	4.02	.971
ME6	The CSOs make use of the tablets to conduct classroom assessment and manager evaluation data	0	5.7	15.1	49.1	30.2	4.04	.831
ME7	The monitoring and evaluation activities have helped to change the instructional practices of lower grade teachers	0	1.9	5.7	52.8	39.6	4.30	.668

Table 9 shows that 98.1% of the respondents agreed or strongly agreed that CSOs conduct regular visit to their school to conduct classroom observations. This implies that most public primary schools receive visits from CSOs for purposes of conducting classroom observation. The EGRA programme uses the CSOs as pedagogical leaders and coach. Their role in the programme is to visit the primary schools at least once a month, conduct classroom observation, and provide feedback to teachers on areas that they need to improve (Piper *et al.,* 2017). The findings of this study suggest that this component of the EGRA programme is being implemented effectively in Kiambu Sub-County. This is contrary to EGRA 2022 progress report which cited inadequate

CSO staffing as one of the challenges hampering the implementation of the programme (USAID, 2022). The study by Matete (2021) also found that the monitoring and evaluation (M&E) of learning in developing countries was hampered by lack of allowances for facilitating transport and school visits by the supervisors or inspectors. Current finding suggest that these problems do not affect Kiambu County.

Also 90.6% of the respondents were of the view that CSOs who visit their school conduct classroom observations in a structured manner. The EGRA programme has an elaborate monitoring and evaluation system that make use of digital assessment tools and digital observation tools such as the Tangerine App (Olubendi, 2019). The digital assessment tools direct the CSO on things to observe during lesson. They also enable the CSO to input data and get prompts on feedback areas that they should give to teachers. Current findings suggest that the CSOs in Kiambu County are making good use of these assessment tools. Similarly, current finding indicate that 90.6% of the respondents were of the view that CSO provide structured feedback to lower grade teachers regarding their instructional practice. This finding is also in line with EGRA monitoring and evaluation system that guide CSO in feedback to provide based on data that the CSO feed into the system. Structured observations are designed to be objective, with pre-determined criteria for observation and data collection (Matara *et al*., 2022). This reduces the risk of observer bias, provides consistency in data collection, and ensures that observations are based on evidence rather than subjective judgments. Use of the EGRA evidence-based tool in the classroom observation also ensured the data collected is valid and relevant to the instructional goals being assessed.

In addition, 88.7% of the respondents were in agreement that the data collected during classroom observation and other evaluation activities are used to advice teachers on areas to improve. As Oseko (2021) explain, the main aim of monitoring and evaluation is collection of data regarding the progress of programmes activities as well as its outcome. However, the value of this exercise is only realized when the data collected is used to improve current and future programme. The EGRA monitoring and evaluation system was design to capture data on teachers reading instructional practices as well as learners' reading outcomes and use it to further improve reading instructional practices. Current findings suggest that this is being done in most public primary schools in Kiambu County. The implication of using M&E data to provide feedback to teachers is the promotion of continuous improvement. This feedback will help teachers to reflect on their practices, identify areas that need improvement, develop and apply an improvement plan (Nash, 2021). The feedback also enables teachers to develop appropriate instructional techniques that are effective in the learning process.

On the other hand, 77.3% of the respondents affirmed that the CSOs who visit their school assume a coaching attitude rather than the supervisory/inspectorate stance when conducting evaluations. About 11.3% of the early grade teachers in public primary schools feel that CSOs assume a supervisory/ inspectorate stance contrary to the philosophy of the EGRA programme. The study by Belbouah (2022) observed that teachers in Morocco were dissatisfied with the pedagogical supervision system because most education supervisors were adopting a hardline control stance rather than focusing on improving teaching practices. The study found the education supervisors had become aloof and imposing. Instead of the supervision becoming a source of improvement, it became a source anxiety and stress for teachers.

Robertson *et al*. (2019) describe that coaching is like counselling; a person-centred approach of promoting the acquisition of new knowledge or skills. The coaching approach encourages teachers to reflect on their own teaching practices, which has a positive effect on the teachers' knowledge and beliefs and leads to voluntary adoption of improved instructional practices. The results of the current study also reinforce those of the study by Conn (2017), who found that interventions that sought to improve teachers' pedagogical practices through coach had the greatest effect among all educational interventions implemented in SSA region.

About 79.3% of the respondents agreed that CSOs make use of the tablets to conduct classroom assessment and manager evaluation data. This implies that CSOs conducting M&E in most of the public primary schools in Kiambu make use of ICT tools availed through the EGRA programme. The programme has provided a number of ICT tools for aiding the M&E process including the tablets installed with the Tangerine and Papaya Applications (USAID, 2022). Current findings suggest that these ICT tools are being utilized in most public primary schools in Kiambu. The finding is congruent with Olubendi (2019), where 91.1% of the CSO from Bungoma, Uasin Gishu and Busia reported the use of ICT in M&E learning. The study also found that the use of ICT was a function of availability of the ICT tools, the internet, and the CSO ICT skills. Current findings thus suggest that most CSOs in Kiambu County are competent in ICT use and have access to the internet. Current findings are also congruent with Piper *et al*. (2017), who found that frequent usage of ICT resources by CSOs was highest for 88% the Tangerine App where 88% of CSO recorded frequent use followed by PDF materials at 84.8%, the Papaya App (78.3%) and lastly instructional videos (76.7%).

Lastly, 92.4% of the respondents were on the view that the M&E activities of the EGRA programme have helped to change the instructional practices of lower grade teachers. According to Belbouah (2022), the purpose of M&E of teaching practices is to improve teaching practices in order to attain major instructional goals. The first goal of M&E is to maintain the effectiveness of teachers who are already effective while the second objective is to improve the effectiveness of those who are struggling. The M&E process should lead to better learning experiences for learners. Current finding suggest that the M&E of the EGRA programme have been effective in improving the instructional practices of early grade teachers in most of the public primary schools in Kiambu County.

4.4.4 EGRA ICT Interventions in Kiambu Public Primary Schools

The final independent variable of the study was ICT use by teachers. The EGRA programme leverages on ICT tools to enhance the delivery of reading instructions. Some of the ICT initiatives implemented through the programme include tablets for teachers and e-readers for learners. This study sought to examine how well the ICT initiatives have been implemented in teaching reading in Kiambu County. Table 10 presents the findings.

Table 10: Respondents view on Use of ICT in Teaching

S/N	Statement	1	2	3	4	5	Mean	S.D.
IC1	Lower grade teachers in the school make use of tablets to deliver reading instructions	3.8	30.2	15.1	41.5	9.4	4.45	.539
IC2	Lower grade teachers in the school make use of projectors to deliver reading instruction	7.5	37.7	28.3	22.6	3.8	4.32	.644
IC3	Lower grade teachers in the school make use of the internet to obtain and develop instructional materials and content	7.5	24.5	11.3	39.6	17.0	4.34	.649
IC4	Lower grade teachers make use of videos and audios platforms to deliver reading instructions to learners	1.9	20.8	7.5	60.4	9.4	4.30	.723
IC5	The school has adequate teaching digital devices for lower grade teachers	17.0	17.0	17.0	45.3	3.8	4.02	.971
IC6	The school has adequate learning digital devices for lower grade learners	15.1	24.5	15.1	41.5	3.8	4.04	.831
IC7	The use of ICT has improved reading instructional practices in the school	7.5	15.1	18.9	52.8	5.7	4.30	.668

Table 10 shows that 50.9% of the respondents agreed that lower grade teachers in their school make use of tablets to deliver reading instructions. On the other hand, 34% of the respondents disagreed with claim while 15.1% were not sure. This findings implies that the used of tablets in delivering instructions by early grade teachers takes place in about half of the public primary schools in Kiambu County. The findings is consistent with Kerhoff *et al*. (2020), which found not all public primary schools in Transnzoia County had tablets despite the implementation of several tablet initiatives including EGRA and the Digital Literacy Programme. Most of the schools without tablets were in the rural areas that lack critical infrastructure to

support ICT such as electricity and internet connectivity. The study by Piper *et al.* (2015) also found that even in schools that had tablets, their use in teaching was hampered by low ICT skills and low confidence among teachers. Most schools had tablets for learners but lack technicians to maintain those tablets and had inadequately trained teachers. Current finding suggests that the situation in the country regarding integration of tablets in classroom has not changed significantly as evidence shows that nearly half the public primary schools in Kiambu County do not make use of tablets to teach reading.

Similarly, Table 10 illustrates that only 26.4% of the respondents agreed with the statement that lower grade teachers in the school make use of projectors to deliver reading instruction. On the contrary, 45.2% of the respondents refuted this claim while 28.3% were not sure. These findings suggest that the use of projector in delivering reading instruction is not a popular practice among public primary schools in Kiambu County. These finding are congruent with the study by Murithi and Yoo (2021) where 70% of the sampled teachers reported that their schools did not have a projector. It is probable that the reason for low utilization of projectors in teaching early grade reading in most public primary schools in Kiambu could be attributed to unavailability of these devices. It could also be attributed to lack of technical capacity on the part of teachers to utilize the projectors as observed in the study by Mwangi (2022), where it was observed that most teachers lacked the technical capacity to manipulate content taught using projectors. By failing to incorporate projects in early grade reading classes, most primary school in Kiambu miss the opportunity to enhance learners' engagement. Using projectors with interactive educational software and videos helps to keep learners engaged and interested in the content being taught.

Without projectors, teachers must rely on smaller visual aids such as posters or hand-outs, which may not be as effective.

Equally, Table 10 shows that 56.6% of the respondents agreed that lower grade teachers in their school make use of the internet to obtain and develop instructional materials and content. On the other hand, 32% of the respondents were categorical that lower grade teachers in their school do not make use of the internet to obtain and develop instructional materials and content while 11.3% were not sure. The finding is congruent with Murithi and Yoo (2021) who found that 87.7% of public primary schools in Kenya do not have internet connection. This implies that teachers who want to use the internet to obtain and develop instructional materials have to rely on their own means to access the internet. This could explain why a significant section of the lower grade teachers in Kiambu County do not make use of the internet to obtain and develop instructional materials. The findings are congruent with Anyiendah et al. (2020), who observed that lower grade teachers in Vihiga County were over relying on pictures and photos contained in the official textbooks and did not exert extra effort to find supplementary images. Overreliance on textbook images could be linked to the lack of internet infrastructures in public primary schools in Kenya, which makes it difficult for teachers to source additional materials.

In addition, Table 10 reveals that 69.8% of the respondents agreed that lower grade teachers make use of videos and audios platforms to deliver reading instructions to learners. However, 22.7 of the respondents disagreed with this claim while 7.5% were not sure. These findings imply that videos and audio platforms are being utilized in almost 70% of the public primary schools to deliver reading instructions to learners. The findings is congruent with Piper *et al.* (2017) who observed that the EGRA

tablets given to teachers contain instruction videos in both English and Kiswahili that show how teachers can effectively teach specific components of the EGRA instructional approach. This implies teachers in public primary schools use video and audio files to learn how to implement EGRA instructional approaches rather than using them as means of delivering instructions to learners. The use of video and audio file to deliver instruction can be promoted through enhancing the availability of students' tablets, projectors, and internet connection. Through the use of video and audio files, learners have the opportunity to improve their listening skills, which are essential for developing comprehension skills. In addition, video and audio files make the learning experience more engaging and exciting for learners. They can also provide a more interactive learning experience that encourages student participation and interest.

Moreover, Table 10 displays that 49.1% of the respondents agreed that their school has adequate teaching digital devices for lower grade teachers. Likewise, 45.3% of the respondents agreed that their school has adequate learning digital devices for lower grade learners. These findings suggest that less than 50% of public primary schools in Kiambu County have adequate teaching and learning digital devices. The term digital refers to all electronic resources including videos, software, websites, programmes, and graphic among others. The two items discussed in this paragraph assess the adequacy of these resources rather than their availability. Current finding suggest that although these resources may be available in most public primary schools in Kiambu they may not be adequate in most of the schools. This finding is congruent with Mwangi (2022) who found that although schools have made progress in terms of acquiring digital resources for teaching English, these resources are not adequate for all teachers to use.

Lastly, Table 10 shows that 58.5% of the respondents were of the view that the use of ICT has improved reading instructional practices in the school. This finding implies that in schools where ICT has been used to support early grade instructions, more than 50% of the teachers have noted some improvement. The finding is congruent with Murithi and Yoo (2021) who found that integration of ICT into the competency based curriculum enhances instructional practices by making the classroom more engaging to learners and more interactive. The findings are also congruent with Konyana and Konyana (2013), who observed that use of ICT in teaching spurs spontaneous interest more than traditional approaches of learning.

4.4.5 Learners' Reading Abilities in Public Primary Schools in Kiambu County

The dependent variable of the study was learners' reading abilities. This variable was measured by giving a short achievement test to grade-3 learners that sought to assess their reading skills. Particular, the students were assessed for word recognition, reading accuracy, story reading and comprehension. The test was adopted from Uwezo (2016) and was marked out of a possible highest score of 44 marks. The marks were then converted into percentage scores to facilitate comparison with performance of learners in other studies. Table 11 present a summary of the learners' performance on the test.

Table 11: Summary of Learners Performance in the Reading Test

N	Valid	961
	Missing	0
Mean		89.21
Minimum		0
Maximum		100

Table 11 shows that a total of 961 learners completed the test and that their mean score was 39.25 out of a possible highest score of 44. This mean score is lower than

the 97.14% that the study by Cherobon and Chepsiror (2022), recorded among primary school learners in Nandi County. However, the discrepancy could be attributed to the fact that Cherobon and Chepsiror involved grade six and grade seven learners while the current study involved grade three learners. To further make sense of the data, the scores were classified into three categories: marks above 70% were classified as good; 50-69% were rated as fair, and below 50% were classified as below average. Table 12 presents this data.

Table 12: Learners Distribution across Reading Abilities Category

Reading Abilities Category	Frequency	Percent
Below Average	45	4.7
Fair	48	5.0
Good	868	90.3
Total	**961**	**100.0**

Table 12 shows that 90.3% of the learners scored 70% or above and thus were categorized as having good reading abilities. This proportion is significantly higher than the 35% that was recorded by Uwezo (2016), when they administered the test countrywide. It is also higher than the 61% recorded by Uwezo (2016) in Kiambu County. The results suggest that there is a notable growth in the number of grade 3 learners who can read grade 3 English story. At first value, this finding could be interpreted to mean that the EGRA interventions have worked effectively in improving the reading abilities of learners in public primary schools in Kiambu County. However, Table 12 shows that there is still about 5% of learners in public primary schools with reading abilities that are below average. It is paramount to ensure that these learners are not left behind.

4.5 Regression Analysis

Regression analysis was meant to test the relationship between the independent variables of the study and learners reading abilities. To conduct this analysis, composite scores were computed for teacher capacity-building interventions, EGRA teaching and learning resources, EGRA monitoring and evaluation, and use of ICT in teaching using the Likert scale data. The composite score were obtained by averaging the values of responses in each Likert scale with the assumption that each item in the scales contributes equally towards the variable being measured. This computation resulted in scores that are measured at the interval level of measurement. The corresponding data was obtained by computing the mean score for each of the 23 schools in which the reading test was administered. The mean score for a given school was then assigned to the teachers recruited from that school. The data set therefore became complete with each teacher having composite score for each independent variable and reading test mean score for the school. Table 13 presents the findings:

Table 13: Multiple Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	24.209	.834		29.039	.000
	Teacher Capacity-Building	2.137	.527	.474	4.055	.000
	EGRA T&L Resources	.913	.403	.209	2.263	.028
	EGRA M&E	.946	.412	.231	2.295	.026
	ICT use by Teachers	.390	.418	.089	.933	.356

a. Dependent Variable: School English test mean score

4.5.1 EGRA Teacher Capacity-Building Interventions and Learners' Reading Abilities

Results in Table 13 show that the standardized beta coefficient for EGRA teacher capacity-building interventions is 0.474. Since the coefficient is positive, it implies that there is a reinforcing relationship between EGRA teacher capacity-building interventions and learners reading abilities. Specifically, the beta coefficient means that when the implementation of EGRA teacher capacity-building intervention is improved by 1 unit, the reading abilities of learner improves by 0.474 units. The t-test yielded a p-value (t=4.055, p= .000) that is less than the 0.05 level of significance, which leads to the rejection of the first hypotheses of the study, which stated that EGRA teacher capacity-building interventions do not have a statistically significant influence on the reading abilities of early grade learners in public primary schools in Kiambu County. The findings infer that EGRA teacher capacity-building interventions have a positive and statistically influence on the reading abilities of these learners.

This finding is congruent with Adhikari (2021), who noted that teachers' pedagogy, classroom management strategies and interaction with learners at classroom level can determines how much is learned. Consequently, improving the teachers' pedagogical practices and classroom management strategies is bound to have a positive and noteworthy effect on learner's reading abilities. Current findings are also congruent with Jaffe et al. (2019), who observed that learning outcome is contingent on the teachers' ability to create and sustain optimal learning environment. Consequently, interventions that are successful in enhancing teachers' ability to create and sustain an optimal learning environment are bound to have a positive effect on learners' outcomes including their ability to read. Similarly, currents findings agree with Yorke

and Knight (2006), who found that teachers who have good masterly of content, required knowledge and skills to perform ensure quality of outcome is maintained in literacy.

A statistically significant relationship between teacher capacity building intervention and reading abilities of early grade learners suggests that the intervention has a positive impact on student learning outcomes. The capacity building intervention may have helped teachers to develop new skills and strategies for teaching early grade reading. This would make them more effective teachers and better able to meet the needs of their learners, resulting in improved learning outcomes. The success of the intervention suggests that on-going capacity building and professional development for teachers is important for improving learners' outcomes and reading abilities. This highlights the need for on-going investment in professional development programmes for teachers. Current findings create a case for expansion of EGRA teacher capacity building interventions to other jurisdiction and subjects. This could be an opportunity to scale up effective practices and improve learning outcomes in a wider population of learners.

The significant relationship between EGRA capacity building interventions and reading abilities of early grade learners also reinforce Vygotsky sociocultural cognitive development theory. Vygotsky emphasized the importance of the teacher in mediating learning experiences for learners. Vygotsky ZPD concept suggests that learners achieve higher levels of learning with the help of a teacher or more experienced peer. The success of EGRA capacity building intervention give credence to the role that teachers play in the developing of reading skills among early grade learners. The success of the teacher capacity building intervention suggests that

teacher training and professional development are critical for creating a supportive learning environment that promotes cognitive development, particularly in the area of reading.

Current findings also underpin the participation component of Holdaway's theory of literacy development. This component suggests that for a child to develop appropriate reading skills, he or she needs to interact with an individual that provides encouragement, motivation, and necessary help (Kleeck & Schuele, 2010). To promote authentic participation, teachers must have a deep understanding of the reading process and how children learn to read in order to effectively support learners' literacy development. The EGRA teacher capacity building intervention likely provided teachers with the skills and knowledge necessary to promote effective classroom participation by early grade learners, which may have contributed to the improved reading abilities. Also, the teacher capacity building intervention may have provided teachers with strategies for differentiated instruction in reading, which could have led to improved reading abilities for students who were struggling.

4.5.2 EGRA Teaching and Learning Resources and Learners Reading Abilities

Results in Table 4.8 also show that EGRA teaching and learning resources had a standardized beta coefficient of 0.209. This coefficient is also positive suggesting the existence of a positive link between EGRA teaching and learning resources and learners' reading abilities. In particular, the coefficient implies that when the implementation of EGRA teaching and learning resources component is improved by 1 unit, the learners' reading abilities would improve by 0.209 units. The t-test shows yieled a p-value ($t=2.263$, $p= .028$) that is less than 0.05, which led to the rejection of the second hypothesis of the study, which stated that EGRA teaching and learning

resources do not have a statistically significant influence on the reading abilities of learners in public primary schools in Kiambu County. The findings affirmed that EGRA teaching and learning resources have a positive and statistically significant influence on the reading abilities of these learners.

This finding is congruent with Ngure (2019), who argues that learners require age appropriate and captivating books in addition to instructions that teachers offer in order to develop reading skills. Textbooks and other reading materials enable learners to establish a crucial link between reading skills acquisition and application of these skills. Current findings are also consistent with Khamis (2009), who found a significant direct relationship between availability of learning resources in a classroom and academic achievement of learners. In addition current findings are in line with Anyienda et al. (2020), who pointed out that lack of teaching materials and facilities has made it hard to use learners' centred methods of teaching to improve the outcomes in reading. Teaching and learning materials form the medium through which teaching is carried out. Current findings also agree with Gathumbi (2013), who noted that availability of materials is powerful and consistent determinant of learning achievement. There is need for appropriate pedagogy skills but also a need for ``addition, there is need to use text books with adequate and appropriately graded reading text and supplementary readers for learners to practice.

The statistically significant relationship between EGRA teaching and learning resources and reading abilities of early grade learners highlights the importance of resources. The EGRA intervention focused on providing sufficient teaching and learning resources, which were lacking before such as textbooks and teachers' guides. In particular, the findings highlight the different resources that are effective in

improving the reading abilities of learners. The EGRA intervention encompassed distribution of textbooks, supplementary reading materials, teachers' guide, and EGRA developed lesson plans. The findings also underpin the importance of having well-design teaching and learning materials in improving early grade reading outcomes. The EGRA materials were carefully designed by experts following evidence and best practices. The materials particularly the course text was reviewed on a regular basis to ensure it remain relevant and in tandem with emerging trends.

In addition, the success of EGRA teacher and learning resources intervention showcase the importance of an efficient resource allocation and distribution system. The EGRA secretariat develops a logistic system for ensuring teaching and learning resources are distributed in line with demand (USAID, 2022). Although finding show that the programme missed the target of delivering one textbook per learner, the interventions have significantly enhanced access to textbooks within the public primary schools.

Current findings reinforce Vygotsky's sociocultural cognitive development theory proposition that cognitive development of children is primarily driven by social interactions and cultural tools such as language and literacy material (Porta *et al*., 2022). Results in this section showcases that by improving the quality and quantity of teaching and learning resources, the EGRA programme has provided learners with the necessary cultural tools to support their cognitive development. Therefore, current findings support Vygotsky's theory that social and cultural factors play a crucial role in cognitive development. The findings also suggest that providing children with appropriate resources can help promote their cognitive development and lead to improved learning outcomes.

In addition, the findings support Holdaway's theory of literacy development, which emphasizes the importance of creating meaningful experiences for children with books in order to promote literacy development (Saracho, 2017). Holdaway (1979) suggests that children develop literacy skills through meaningful experiences with books where they are engaged in the story and can connect it to their own lives. Access to high-quality teaching and learning resources that are developmentally appropriate and engaging can create these meaningful experiences for children. Current findings have proven that this proposition is true. The finding shows that schools were the EGRA programme has managed to deliver its teaching and learning materials had better reading outcomes that their counterparts. The findings also imply that the creation of engaging and meaningful literacy experiences is critical for children's literacy development.

4.5.3 EGRA Monitoring and Evaluation and Learners' Reading Abilities

Results in Table 4.8 further reveals that EGRA Monitoring and evaluation (M&E) has a beta coefficient of 0.231. Since this coefficient is also positive, it signifies the existence of reinforcing association between EGRA M&E and learners' reading abilities. In particularly, the coefficient suggests that when the implementation of EGRA M&E approach is enhanced by 1 unit, the reading abilities of learners would improve by 0.231 units. The t-test yielded a p-value (t= 2.295, p= .026) that is less than 0.05, which led to the rejection of the third hypothesis of the study, which stated that EGRA M&E has no statistically significant influence of the reading abilities of early grade learners in public primary schools in Kiambu County. These results imply that EGRA M&E has a positive and statistically significant influence of the reading abilities of early grade learners.

These findings are congruent with the study by Olubendi (2019), which found that the frequency of lessons observed by CSOs was positively and significantly connected with learners reading scores. Consequently, improving the frequency of observation is bound to increase learners' reading scores. The EGRA M&E approach enhances frequency of observation by reimbursing the transportation cost incurred by CSO and leveraging on GPS technology that shows the CSO location when keying-in classroom observation data. Current findings are consistent with a national survey conducted by Piper *et al.* (2017), to assess the impact of *tablets* assigned to CSOs in enhancing learning. The survey revealed that the tablets had enhanced accountability and academic performance. Current study reinforces the findings of Piper *et al*. By incorporating other aspects of EGRA M&E approach in the analysis besides the tablet such as the use of the coaching approach when providing feedback to teachers.

The findings in this section imply that monitoring and evaluating instructional practices impacts early grade learners' ability to read. EGRA instructional M&E interventions involved observing and assessing how teachers teach and how students are learning. This was done to create a better understanding of what works and what does not in the classroom and to identify areas for improvement. Findings indicate that regular M&E of instructional practices can lead to effective teaching strategies that improve students' reading abilities. The findings also suggest that teachers who receive on-going feedback and support are more likely to use effective instructional practices and improve their learners' literacy skills. Furthermore, the results imply that instructional M&E can help identify the strengths and weaknesses of both teachers and learners, which can lead to targeted interventions and support where needed.

Current findings can be interpreted in the context of Vygotsky sociocultural cognitive development theory, which emphasizes the importance of social interaction and cultural context in promoting cognitive development. Vygotsky's theory argues that learning takes place through collaboration and social interaction with more knowledgeable others, such as teachers and peers (Porta *et al*., 2022). It is probable that EGRA Instructional M&E interventions were effective in improving learners' reading abilities by improving the social interaction between learners and teachers. The EGRA instructional M&E involved on-going feedback and support between teachers and instructional coaches aimed at providing feedback to teachers on how to improve their instructional strategies and the learning environment.

The findings can also be explained from the perspective of Holdaway's theory of literacy development, which stresses the importance of exposure to print-rich environments and meaningful reading experiences to children's literacy development (Saracho, 2017). It is probable that on-going feedback and support provided by the EGRA instructional M&E intervention could have provided teachers with opportunity to enhance their learners' engagement. Enhanced engagement with print could have in turn, promoted psycholinguistic development, and creating essential foundations for reading comprehension. It is probable that the feedback and support process could have aided the teachers in creating a more authentic learning environment by refining their teaching techniques and practices.

4.4.4 ICT Use by Teachers and Learner's Reading Abilities

Lastly, Results in Table 4.8 show that ICT use by teachers has a standardized beta coefficient of 0.089. The coefficient is positive suggesting the existence of a positive relationship between use of ICT in teaching and learners' reading abilities. In

particular, the coefficient implies that enhancing the use of ICT in teaching by 1 unit would improve learners' reading abilities by 0.089. However, the t-test yielded a p-value (t=0.993, *p*= .356) that is greater than the 0.05 level of significance, which meant that there was no sufficient evidence to reject the last hypothesis of the study, which stated that EGRA ICT interventions do not have a statistically significant influence of the reading abilities of learners in public primary schools in Kiambu County. This results implies that EGRA ICT interventions do not have a significant influence on the reading abilities of early grade leaders in public primary schools in Kiambu County.

Current findings are consistent with the study by Piper *et al*. (2017), who also found that the Digital Literacy Programme implemented by the government of Kenya that introduced tablets to early grade teachers and learners did not improve reading outcomes among the learners. This led to the conclusion that the use of ICT on its own does not improve the learning of reading. Consequently, the introduction of ICT in teaching early grade reading should be accompanied by other interventions aimed at enhancing learning. Luckily, the EGRA programme has a wide range of other intervention including teacher capacity-building, development and distribution of teaching and learning resources, and curriculum monitoring and evaluation. However, the multiple regression analysis held these factors constant when assessing the link between use of ICT in teaching and learners reading abilities hence the insignificant finding.

These findings imply that the use of ICT tools in teaching reading skills may not have a considerable impact on the reading abilities of young children. This finding suggests that other factors or methods may be more effective in improving reading skills in

early grade learners. The findings could also imply that there may be issues with how EGRA ICT interventions were designed and implemented. It could mean that the choice of the technologies and how they were integrated into the existing curriculum did not effectively support the development of early literacy skills.

Another probable reason that could explain the insignificant influence is a lack of alignment between the ICT intervention and the broader curriculum. The insignificant relationship could also be explained by a lack of support for teachers or students in using the technology effectively. Other factors such as limited access to technology or inadequate support for the technology may also play in diminishing the influence of ICT intervention on reading abilities of early grade learners. All these reasons emphasize the need for further research to explore the appropriate role of technology in improving learning outcomes.

The findings are congruent with Vygotsky's theory, which suggests that the use of technology alone may not be sufficient to support cognitive development in young children (Porta *et al*., 2022). Instead, a collaborative, socially-mediated approach to learning may be more effective in improving reading abilities. This could involve a range of strategies, such as incorporating ICT into collaborative group work, utilizing interactive digital resources that encourage discussion and problem-solving and providing opportunities for learners to engage in meaningful, real-world activities that incorporate reading and writing.

Similarly, Holdaway's theory suggests that the use of technology alone may not be sufficient to support early literacy development in young children (Saracho, 2017). Instead, literacy development may be better supported through rich and meaningful language experiences that involve social interaction, exploration, and

experimentation. This could involve a range of strategies such as engaging children in shared book reading experiences with adults and peers, providing opportunities for children to engage in storytelling and dramatic play, and providing access to a variety of print and digital resources that encourage exploration and experimentation with language.

4.4.5 Joint influence of EGRA Teacher Capacity Building, T&L Resources, M&E, and EGRA ICT interventions on Learners' Reading Abilities

The study sought to establish overall impact of the EGRA programme on reading ability by assessing the joint influence of the four main interventions of the programme on learners reading ability. This assessment was also enabled through the multiple regression analysis of the model that comprised all the four EGRA interventions as the predictor variables. Table 14 presents the summary of the model.

Table 14: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.937[a]	.878	.868	1.29490

a. Predictors: (Constant), Teacher capacity-building, EGRA T&L resources, M&E, use of ICT in teaching

Table 14 shows that the model comprising the four EGRA interventions had an r-square of 0.868. This implies that the four EGRA interventions explained 86.8% of the variances observed in the reading abilities of learners. Ozili (2023) explains that in social sciences, r-square of less than 0.1 should be rejected because it shows that the predictive power of the model is too low while r-square of 0.1- 0.5 should be accepted if some or most of the explanatory variables are statistically significant. On the other hand, r-square of 0.5- 0.99 are acceptable especially when most of the predictors are

statistically significant. This explanation means that the r-square of 0.868 obtained in the current study is acceptable because 3 out four of the predictors were statistically significant. The fitness of the model was tested using the ANOVA statistics presented in Table 15.

Table 15: Model Fitness Analysis

Model		Sum of Squares	d.f.	Mean Square	F	Sig.
1	Regression	580.588	4	145.147	86.563	.000[b]
	Residual	80.485	48	1.677		
	Total	661.073	52			

a. Dependent Variable: School English test mean score

b. Predictors: (Constant), Teacher capacity-building, EGRA T&L resources, M&E, use of ICT in teaching

Results in Table 15 shows that the model was statistically significant at the 0.01 level of significance [F (4, 48) = 86.563, p<.001). According to Ozili (2023), the model fitness analysis shows how well the model, with estimated parameters, fit the data. Current findings suggest that model comprising the four EGRA interventions provides a good fit for the collected data. Based on the beta coefficients, the solved regression equation is as follows

$$Y= 0.474 X_1 + 0.209X_2 + 0.231X_3 + 0.089X_4$$

Where Y= grade 3 learners reading outcomes, X_1 = Teacher capacity-building, X_2 = EGRA Teaching and learning resources, X_3 = EGRA M&E, and X_4 = ICT use by teachers.

The regression equation shows that teacher capacity (X1) has the largest influence on learner's reading abilities because a unit increase in this variable leads to the highest improvement in learners' reading abilities. This implies that programmes that want to improve reading abilities of primary school children should place more emphasis on improving teacher capacity. EGRA M&E had the second largest influence on learners reading abilities followed by EGRA teaching and learning resources. Use of ICT in teaching had minimal impacts.

A significant joint effect of all the four interventions in the EGRA programme emphasizes the importance of a comprehensive approach to improving early grade reading instructions. The joint effect indicate the interventions in four areas were compatible and complementing each other. The findings suggest that the four components are aligned with each other and support a coherent approach to early grade reading instruction. They shows that all interventions are compatible and do not conflict with each other leading to confusion and reducing the effectiveness of the programme. The joint effect also suggests that the interventions reinforce each other, meaning that they work together to improve pupil's reading abilities.

4.5 Summary of Findings

Table 16 presents the summary of the research findings:

Table 16: Summary of Findings

Hypothesis	Relationship	Beta (p-value)	Verdict
H_{01}	EGRA teacher capacity building → Learners' reading abilities	.474 (.000)	Reject H_{01}
H_{02}	EGRA teaching and learning resources → Learners' reading abilities	.209 (.028)	Reject H_{02}
H_{03}	EGRA M&E → Learners' reading abilities	.231 (.026)	Reject H_{03}
H_{04}	EGRA ICT interventions → Learners' reading abilities	.089 (.356)	Fail to reject H_{04}

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of this study was to investigate the EGRA interventions on Grade one to three Reading Activities and its influence on learners' reading abilities. This chapter presents a summary of key findings, conclusions of the study, recommendations of the study, and suggestion for other studies.

5.2 Summary of Findings

The study focused on four EGRA interventions: EGRA teacher capacity-building, EGRA teaching and learning (T&L) resources, EGRA M&E, and EGRA ICT tools. Data on these interventions was collected through a survey with 53 teachers while data on learners reading abilities was collected by administering an achievement test to 961 grade-3 learners. The following are the key findings:

The first objective was to examine the influence of teachers' capacity-building interventions on learners' reading abilities at lower primary in public primary schools in Kiambu County. Descriptive analysis showed that the EGRA teacher capacity-building intervention was being implemented effectively in most of the public primary schools in Kiambu County. More than 50% of the sampled teachers affirmed that lower grade teachers in their schools have gone through an induction training on the implementation of EGRA instructions, had undergone termly coaching on how to improve reading instructional delivery, have developed new expectation when it comes to learners' reading abilities, and were meeting reading instruction expectations. Regression analysis showed EGRA teacher capacity-building has a

positive and statistically significant influence on the learners' reading abilities (β= 0.474, t= 4.055, *p*= .000).

These findings highlight importance of investing in the professional development of teachers. The findings suggest that on-going support for teachers can improve their teaching quality and, in turn, enhance the reading outcomes of their learners. The findings also showcase the crucial role that teachers play in the reading progress of early grade learners. This position is congruent with Vygotsky theory, which proposed that learners acquire skills and develop cognitive abilities by interacting with knowledgeable others. In this case, the teacher-capacity building intervention enhances the subject knowledge of teachers reading to an impactful interaction with learners. Current findings also reinforce the position that teacher professional development programme must be on going. The EGRA teacher capacity building programme was typified by the provision of continuous support to teachers through regular visits by instructional coaches. Continuous training helps teachers to keep abreast with new evidence-based instructional practices and deliver robust reading instructions.

The second objective of the study was to establish the influence of EGRA teaching and learning resources on learners' reading abilities in public primary schools in Kiambu County. Descriptive analysis showed that most of the EGRA T&L resources components have been implemented effectively in most of the public primary schools in Kiambu County. These components include delivering text books to schools, delivering teachers' guides, and reviewing books on a regular basis to ensure they remain relevant and of good quality. However, EGRA failed to meet its target of proving one book per learner in about 25% of the primary schools meaning that

learners in the schools are compelled to share textbooks. Regression analysis revealed that EGRA T&L resources have a positive and statistically significant influence on learners' reading abilities (β= 0.209, t= 2.263, *p*= .028).

These findings imply that the use of teaching and learning resources may have a positive impact on the reading abilities of early grade learners. This could suggest that providing high-quality teaching and learning resources can aid in improving the literacy skills of young learners. The result could be particularly significant for children who may have limited access to resources outside of school, such as books or technology. These findings support the proposition by Holdaway's theory of literacy development that exposure to print-rich environments and meaningful reading experiences positively impacts a child's literacy development. From the perspective of Holdaway's theory, the findings suggest that EGRA teaching and learning resources interventions have provided a more print-rich environment and meaningful reading experiences in which learners can engage.

The third objective of the study was to establish the influence of EGRA monitoring and evaluation on learners' reading abilities in public primary schools in Kiambu County. Descriptive analysis showed that most aspects of the EGRA M&E approach are being implemented effectively in the majority of the public primary schools in Kiambu County. These aspects include regular visit to schools' by CSOs, conducting classroom observations in a structured manner, providing structured feedback to lower grade teachers, use of the coaching attitude rather than the supervisory/inspectorate stance when conducting evaluations, and deploying ICT tools such as tablets and the tangerine application. Regression analysis shows that

EGRA M&E has a positive and statistically significant influence on learners reading abilities (β= 0.231, t= 2.295, *p*=. 026).

These findings highlight the importance of using data to inform instructional decisions. Thus, educational planners and stakeholders should invest in developing robust monitoring and evaluation systems that help teachers and policymakers identify gaps in instructional practices and intervene promptly to improve them. A statistically significant relationship between instructional monitoring and evaluation interventions and reading abilities of early grade learners would be a manifestation of Vygotsky's sociocultural cognitive development theory. The findings indicate that on-going feedback and support between teachers and instructional coaches, which is a key aspect of instructional monitoring and evaluation promotes and encourages social interaction and collaboration in the early grade reading classrooms. This type of interaction facilitates the acquisition of new skills, such as reading, through engagement in joint activities.

The fourth objective of the study was to establish the influence of ICT use by teachers on learners' reading abilities at lower primary in public primary schools at Kiambu County. Descriptive analysis shows that there is limited ICT use by early grade teachers in public primary schools in Kiambu. Less than 50% of the public primary schools make use of tablets or projectors to deliver reading instructions. Similarly, less than 50% of the respondents agreed that their schools have adequate digital devices for use in teaching and learning within the lower grade classes. Regression analysis revealed that Use of ICT by teachers does not have a statistically significant influence on the reading abilities of learners (β=0.089, t=0.933, *p*= 0.356).

Overall, an insignificant relationship between EGRA ICT intervention and reading abilities of early grade learners highlights the importance of considering broader sociocultural factors in designing effective educational interventions. The findings suggests that early literacy development may best be supported through rich and meaningful language experiences that integrate technology as a tool to supplement, rather than replace, traditional methods of literacy instruction. The findings may also suggest that how ICT was integrated in early grade reading classroom was not optimal. The findings thus underscore the need for further research to explore effective approaches of integrating ICT in the Early Grade Reading interventions.

5.3 Conclusions of the Study

Based on the findings, the study concluded that teacher capacity-building interventions have a positive and statistically significant influence on the reading abilities of lower grade learners. In particular, the study concludes that interventions that focus on improving the instructional practices of teachers using a coaching approach are effective in improving the reading abilities of learners in the early grades. If teachers have the knowledge, skills, and confidence to teach reading effectively, learners are more likely to acquire better reading skills. Teacher training may improve teaching techniques for phonics, vocabulary, fluency, or comprehension, which impacted the students' reading abilities positively. Teacher capacity building interventions could also improve teachers' ability to create engaging and supportive learning environments, which may have a further positive impact on student reading abilities.

The study also concludes that teaching and learning resource interventions have a positive and statistically significant influence on the reading abilities of learners at the

early grade levels. Specifically, the study concludes that interventions that seek to develop relevant and high quality teaching and learning resources as well as making these resources accessible to teachers and learners are effective in improving the reading abilities of learners in early grades. This implies that for any intervention focusing on improving reading abilities of early grade learners to be effective, it must ensure sufficient resources are provided. The intervention must also ensure that the teaching and learning resources being distributed are well designed using evidence and best practices. The resources should also be reviewed on a regular basis to ensure that they remain relevant.

The study further concludes that curriculum monitoring and evaluation interventions have a positive and statistically significant influence on the reading abilities of learners at the early grade levels. Precisely, the study concludes that interventions that seek to improve the monitoring and evaluation of curriculum implementation by facilitating regular visits by supervisors, empowering supervisors to use a coaching approach, providing feedback to teachers, and leverage on ICT to capture and process data are effective in improving reading abilities of learners in the early grades. Findings suggests that it is important to monitor and evaluate how well the reading instructions are being implemented and whether it is leading to desired outcomes, such as reading proficiency. By doing so, educators can identify areas that need improvement and make necessary adjustments to the curriculum. Instructional M&E may have led to changes in instructional practices, including modifications to the delivery of content, pedagogy, and assessment strategies. The evaluation of student progress may have enabled teachers to adjust their instruction according to individual student needs, which may have enhanced reading abilities.

Lastly, the study concludes that ICT use by teachers does not have a statistically significant influence on the reading abilities of learners at the early grade levels. ICT use must be accompanied by other interventions in order for it to have a notable effect on learners' reading outcomes. The study also concludes that there is limited use of ICT tools by teachers to deliver instructions in public primary schools. It is also possible that the EGRA ICT interventions were not implemented effectively in public primary schools in Kiambu, or that other factors, such as quality of teaching, learning materials, or student motivation, were more influential in determining reading abilities. Additionally, the quality and content of the ICT interventions may not have been sufficient in addressing the specific needs of the early-grade learners in public primary schools in Kiambu to improve their reading abilities.

5.4 Recommendations of the Study

I. The findings suggest that teacher capacity building is a crucial component of effective early grade reading instruction. Therefore, educational planners and stakeholders need to invest more resources in designing and implementing high-quality teacher training programmes that focus on evidence-based instructional practices and provide on-going support to teachers to improve teaching quality and promote early grade reading skills.

II. The MoE should prioritize building the capacity of teachers in order to improve early grade reading abilities. The ministry should enhance the training curriculum to incorporate the instructional practices captured in the EGRA programme. This will ensure that newly trained teachers will exit college having been equipped with requisite skills and capacity to teach early grade reading.

III. Findings of the study highlight the importance of developing high-quality, evidence-based teaching and learning resources for early grade reading instruction. Therefore, educational planners and stakeholders should invest in the development of high-quality teaching and learning resources that align with the curriculum and support evidence-based instructional practices.The MoE should also sustain the development and provision of teaching and learning resources for teaching reading to early grade learners. The EGRA programme should enhance the distribution of more books to ensure that its target of having one book per learners is attained.

IV. The MoE should also sustain the EGRA approach of curriculum monitoring and evaluation as evidence show that this approach has been effective in improving reading abilities. The EGRA M&E approach should also be scaled to higher grades and for other subjects so as to enhance learning in other areas.

V. An insignificant relationship between EGRA ICT interventions and reading abilities of early grade learners suggests that there may be issues with the programme that need to be addressed. Planners and stakeholders of the EGRA programme must re-evaluate the program's goals, implementation strategies, and outcomes to determine why the ICT interventions did not result in significant improvements in early grade reading abilities.The study suggests that to design and implement ICT interventions that are effective in improve early grade reading, it is essential that educators and policymakers critically evaluate the relevance and effectiveness of the technologies they plan to introduce.The learners should have equal access to resources and support ,while providing

effective training and professional development for teachers to ensure that the ICT intervention is consistently integrated into the curriculum.

VI. Therefore, planners and stakeholders of future learning improvement programmes must ensure that all interventions that they incorporate into their programmes are compatible and do not conflict with each other to avoid confusion and reduce the effectiveness of the programme.

5.5 Suggestions for Further Studies

I. The researcher suggests that from this study several avenues for further study will be opened, broadening the area of research in early grade reading activities and reading outcomes. This study focused on Kiambu County which allows room for replication in other counties to come up with generalization of the findings on the reading to enhance reading abilities outcomes.

II. In addition, current study has established that EGRA ICT intervention has an insignificant influence on the reading abilities of learners. Several reason could explain this results including that the EGRA ICT intervention were not implemented effectively or that the ICT tools selected were not compatible to the needs of learners in public primary schools in Kiambu. Future studies should establish the actual reason behind the insignificant effect of the ICT interventions. The programme has since introduced other components and thus future studies should examine the effect that these components have on learners reading outcomes.

III. Further studies should examine the effectiveness of EGRA teacher capacity-building approaches, teaching and learning resource approach, and M&E approach in enhancing outcomes in other subject areas in higher grades.

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APPENDICES

Appendix I: Letter of the Respondents

MAASAI MARA UNIVERSITY

SCHOOLOF EDUCATION

DEPARTMENT OFCURRICULUM AND EDUCATIONAL MANAGEMENT

P.O BOX 861-20500,

NAROK.

Dear Respondent,

REF: PARTICIPATION IN RESEARCH

I am a PhD student of Maasai Mara University currently carrying out a study on "Intervention of EGRA and Learners' Reading Abilities in Public Primary Schools in Kiambu County".

I kindly request you to respond to the questionnaire items as honestly as possible. The information you provide will be treated with absolute confidentiality. Neither your name nor your school will be recorded.

Thank you for your co-operation.

Yours sincerely

Zipporah W. Thuo

Appendix II: Teachers' Questionnaire

Please respond to all the questions appropriately.

Section A: Background Information

1. Please indicate your gender. Male □ Female □

2. Kindly tick your age bracket in years. Below 23 □ 24 - 33□ 34 - 43□ 44 - 53 □ Over54□

3. For how long have you been a teacher? Below 5 years □ 6 – 10 years 11 – 15 years □

16 – 20 years□ Over 20 years □

Section B: Information Related to Research Objectives

I. Teacher's Capacity

The statements given below refer to teacher's capacity on reading instructions developed under the EGRA intervention. Using a tick (v), indicate the extent to which you agree with each statement in respect to your school. Use the following scale: 5= Strongly Agree, 4: Agree, 3= Not Sure, 2= Disagree, and 1= Strongly Disagree

S/N	Statement	1	2	3	4	5
TC1	All lower grade teachers in my schools have gone through an induction training on the implementation of EGRA					
TC2	The lower grade teachers in my school have undergone termly coach on how to improve reading instructional delivery					
TC3	The training and coaching provided under is EGRA more practical than theoretical					
TC4	The teacher development aspect of EGRA has created new expectation for teachers when it comes to learners' reading abilities					
TC5	Most lower grade teachers in my school are now meeting reading instructional expectations					
TC6	Most lower grader teachers are now adhering to the sequence of lessons in the EGRA teachers' guide					
TC7	The reading instructional practices of lower grade teachers have improved substantially after the onset of EGRA.					

II. Teaching and Learning Resources

The statements given below refer to teaching and learning resources provided under the EGRA Intervention .Using a tick (v); indicate the extent to which you agree with each statement in respect to your school. Use the following scale: 5= Strongly Agree, 4: Agree, 3= Not Sure, 2= Disagree, and 1= Strongly Disagree

S/N	Statement	1	2	3	4	5
TL1	The school has received students books aimed at improving lower grade learners' reading abilities					
TL2	The school has received teachers guides aimed at improving delivery of reading instructions by lower grade teachers					
TL3	The students books supplied to the school are sufficient to allow every child to hold and use their own book					
TL4	The teacher guides provided are sufficient to allow each teacher to use own guide					
TL5	The books and materials provided are relevant in promoting reading literacy					
TL6	The material provided to the schools are of good quality					
TL7	Teacher make use of the books and guides provided in delivering reading instructions					

III. Monitoring and Evaluation

The statements given below refer to monitoring and evaluation implemented under the EGRA Intervention. Using a tick (v), indicate the extent to which you agree with each statement in respect to your school. Use the following scale: 5= Strongly Agree, 4: Agree, 3= Not Sure, 2= Disagree, and 1= Strongly Disagree

S/N	Statement	1	2	3	4	5
ME1	CSO conduct regular visit to the school to conduct classroom observations					
ME2	The CSO conduct their classroom observations in a structured manner					
ME3	CSO provide structured feedback to lower grade teachers regarding their instructional practice					
ME4	The data collected during classroom observation and other evaluation activities are used to advice teachers on areas to improve.					
ME5	The CSOs assume a coaching attitude rather than the supervisory/inspectorate stance when conducting evaluations					
ME6	The CSOs make use of the tablets to conduct classroom assessment and manager evaluation data					
ME7	The monitoring and evaluation activities have helped to change the instructional practices of lower grade teachers					

IV. Use of ICT by Teachers

The statements given below refer to use of ICT by teachers under the EGRA intervetion. Using a tick (√), indicate the extent to which you agree with each statement in respect to your school. Use the following scale: 5= Strongly Agree, 4: Agree, 3= Not Sure, 2= Disagree, and 1= Strongly Disagree

S/N	Statement	1	2	3	4	5
IC1	Lower grade teachers in the school make use of tablets to deliver reading instructions					
IC2	Lower grade teachers in the school make use of projectors to deliver reading instruction					
IC3	Lower grade teachers in the school make use of the internet to obtain and develop instructional materials and content					
IC4	Lower grade teachers make use of videos and audios platforms to deliver reading instructions to learners					
IC5	The school has adequate teaching digital devices for lower grade teachers					
IC6	The school has adequate learning digital devices for lower grade learners					
IC7	The use of ICT has improved reading instructional practices in the school					

Source: Author (2019)

Appendix III: Achievement Test for Learners

ENGLISH TEST

Read the following;

Mary has a very big garden. Her friend gave it to her. She has grown flowers on it. The flowers look good. John is not feeling well. He will miss school today. His father gave him medicine. He will get well soon.

STORY

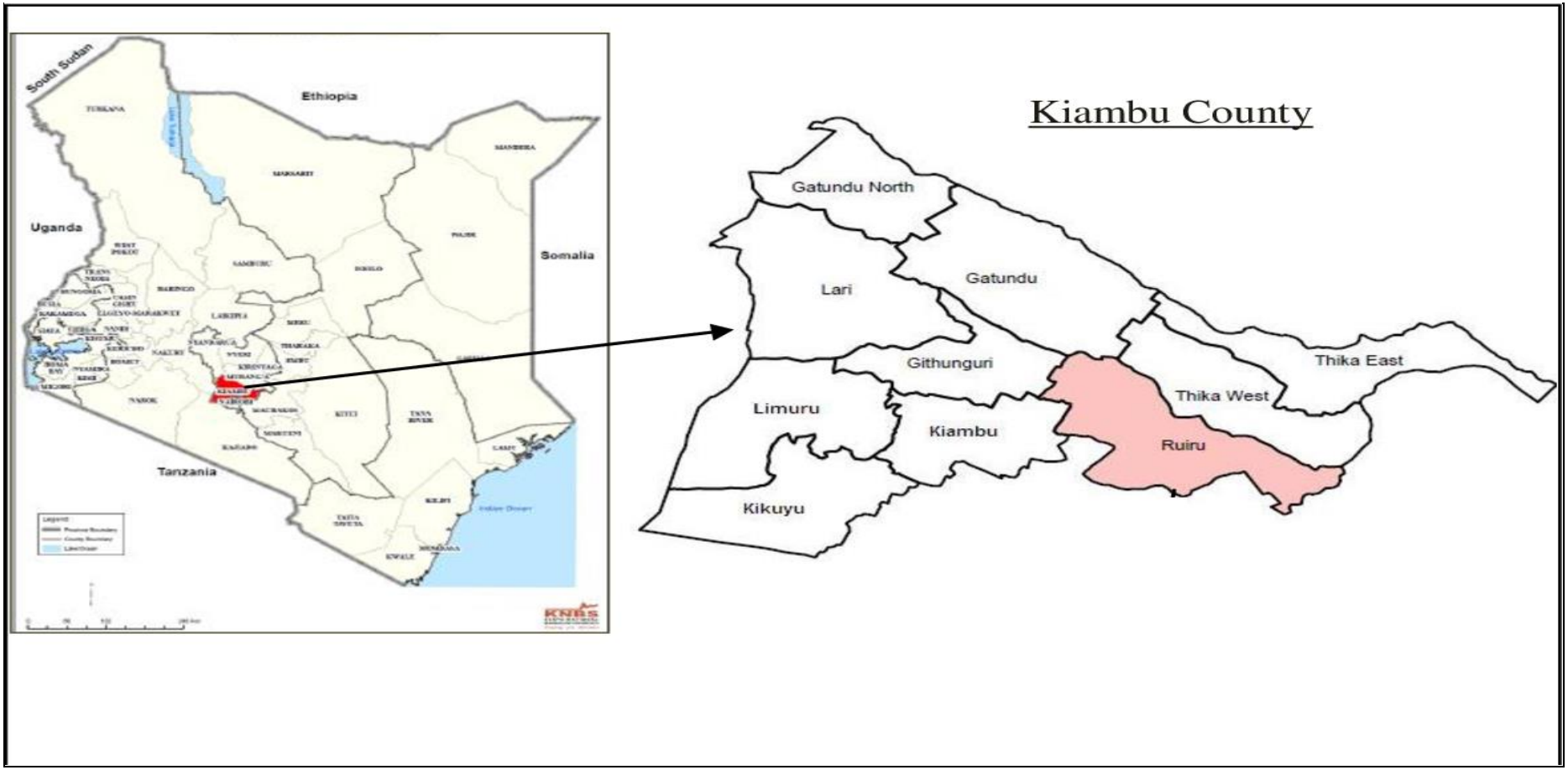
Martin had seven white chicks. An eagle ate five of the chicks. Martin was very angry. He wanted to trap the eagle. He did not know how to trap it. His friend Tom suggested they could use a rat. They saw one entering a hole. They dug deep into the hole. A big snake came out of the hole. The boys ran away screaming loudly. They did not trap the eagle.

1. Why was Martin angry?

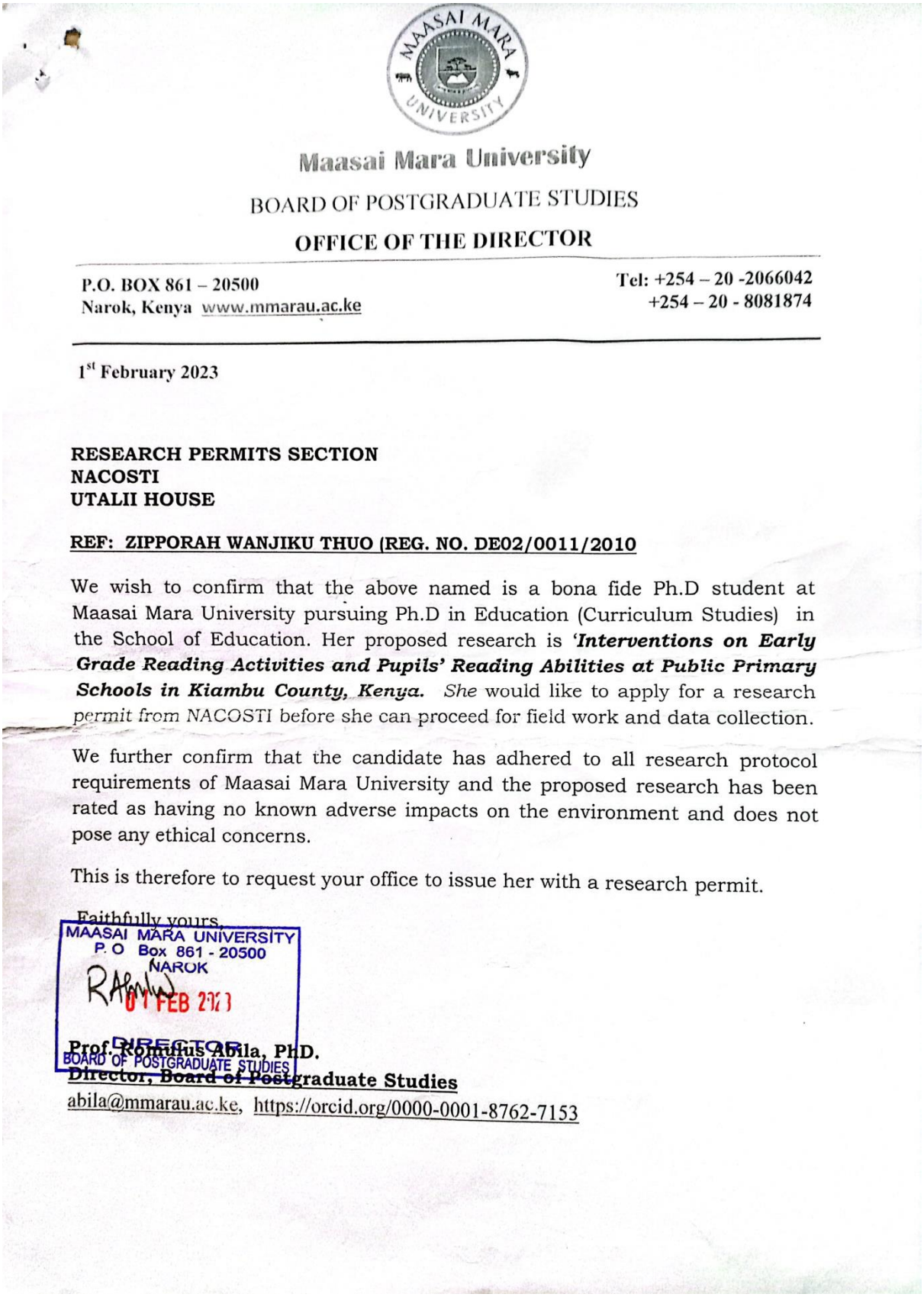
2. Why were the boys digging in to the hole?

(Adapted from Uwezo 2016)

Appendix IV: Map of Kiambu County



Appendix V: Letter From The University



Maasai Mara University

BOARD OF POSTGRADUATE STUDIES

OFFICE OF THE DIRECTOR

P.O. BOX 861 – 20500
Narok, Kenya www.mmarau.ac.ke

Tel: +254 – 20 -2066042
+254 – 20 - 8081874

1st February 2023

RESEARCH PERMITS SECTION
NACOSTI
UTALII HOUSE

REF: ZIPPORAH WANJIKU THUO (REG. NO. DE02/0011/2010

We wish to confirm that the above named is a bona fide Ph.D student at Maasai Mara University pursuing Ph.D in Education (Curriculum Studies) in the School of Education. Her proposed research is '***Interventions on Early Grade Reading Activities and Pupils' Reading Abilities at Public Primary Schools in Kiambu County, Kenya.*** *She* would like to apply for a research permit from NACOSTI before she can proceed for field work and data collection.

We further confirm that the candidate has adhered to all research protocol requirements of Maasai Mara University and the proposed research has been rated as having no known adverse impacts on the environment and does not pose any ethical concerns.

This is therefore to request your office to issue her with a research permit.

Faithfully yours,

MAASAI MARA UNIVERSITY
P. O Box 861 - 20500
NAROK
01 FEB 2023
DIRECTOR
BOARD OF POSTGRADUATE STUDIES

Prof. Romulus Abila, PhD.
Director, Board of Postgraduate Studies
abila@mmarau.ac.ke, https://orcid.org/0000-0001-8762-7153

Appendix VI: Research Permit From NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **586674**

Date of Issue: **21/February/2023**

RESEARCH LICENSE

This is to Certify that Ms.. Zipporah Wanjiku Thuo of , has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kiambu on the topic: Interventions on early grade reading activities and pupils\' reading abilities at public primary schools in Kiambu county, Kenya for the period ending : 21/February/2024.

License No: **NACOSTI/P/23/23761**

586674

Applicant Identification Number

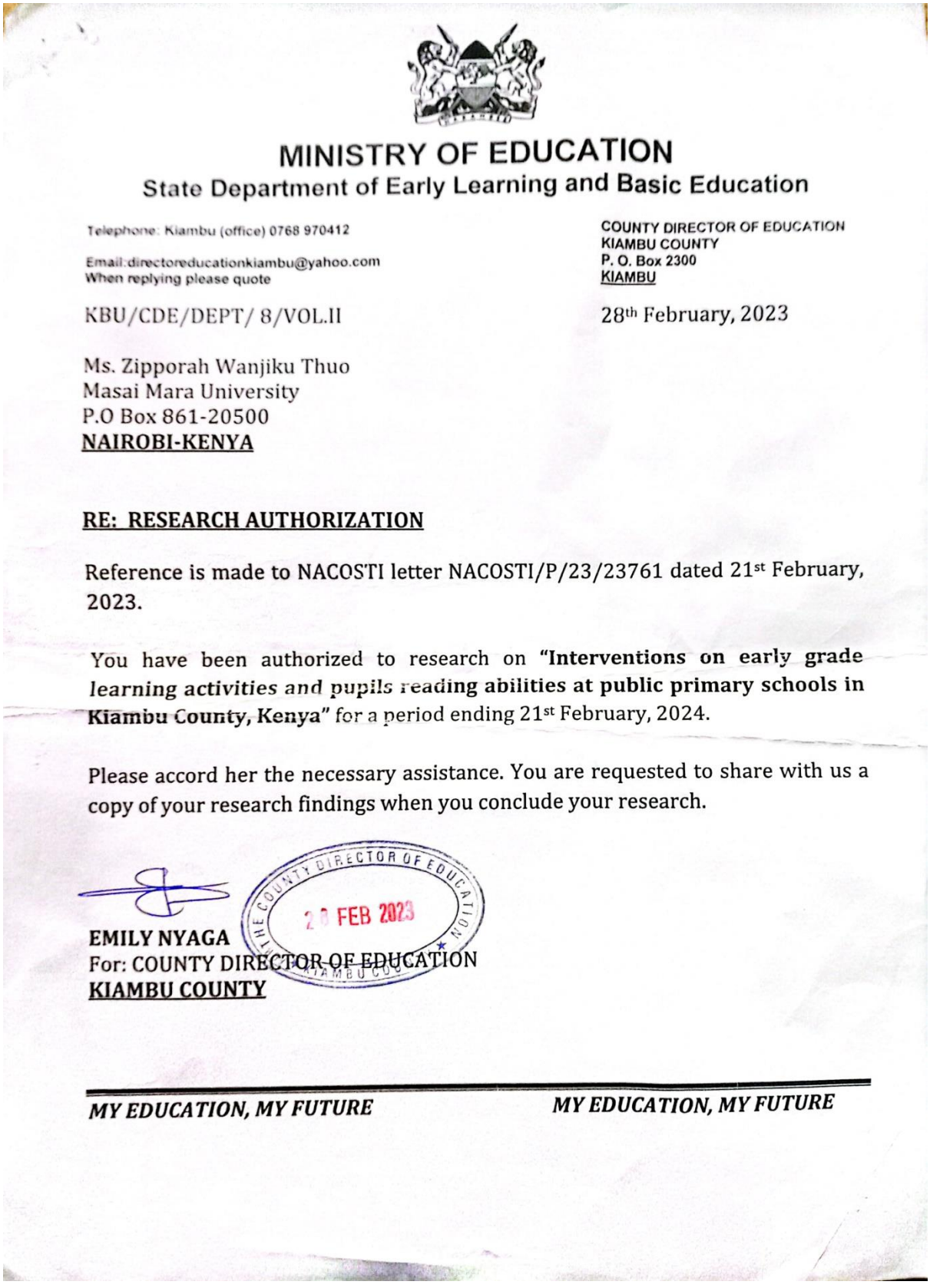
Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix VII: Letter From The County Director of Education



MINISTRY OF EDUCATION
State Department of Early Learning and Basic Education

Telephone: Kiambu (office) 0768 970412

Email:directoreducationkiambu@yahoo.com
When replying please quote

COUNTY DIRECTOR OF EDUCATION
KIAMBU COUNTY
P. O. Box 2300
KIAMBU

KBU/CDE/DEPT/ 8/VOL.II

28th February, 2023

Ms. Zipporah Wanjiku Thuo
Masai Mara University
P.O Box 861-20500
NAIROBI-KENYA

RE: RESEARCH AUTHORIZATION

Reference is made to NACOSTI letter NACOSTI/P/23/23761 dated 21st February, 2023.

You have been authorized to research on **"Interventions on early grade learning activities and pupils reading abilities at public primary schools in Kiambu County, Kenya"** for a period ending 21st February, 2024.

Please accord her the necessary assistance. You are requested to share with us a copy of your research findings when you conclude your research.

THE COUNTY DIRECTOR OF EDUCATION
2 FEB 2023
KIAMBU COUNTY

EMILY NYAGA
For: COUNTY DIRECTOR OF EDUCATION
KIAMBU COUNTY

MY EDUCATION, MY FUTURE ***MY EDUCATION, MY FUTURE***

Appendix VIII: Letter From The County Commissioner

OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION
COUNTY COMMISSIONER, KIAMBU

Telephone: 066-2022709
Fax: 066-2022644
E-mail: countycommkiambu@yahoo.com
When replying please quote

County Commissioner
Kiambu County
P.O. Box 32-00900
KIAMBU

Ref.No: **ED.12/1(A)/VOL.V/14**

28th February, 2023

Zippora Wanjiku Thuo,
Maasai Mara University
P.O Box 861-20500
NAIROBI, KENYA

RE: RESEARCH AUTHORIZATION

Reference is made to National Commission for Science, Technology and Innovation Letter Ref No. **NACOSTI/P/23/23761** dated **21st February, 2023**.

You have been authorized to conduct research on ***"INTERVENTION ON EARLY GRADE READING ACTIVITIES AND PUPILS READING ABILITIES AT PUBLIC PRIMARY SCHOOLS IN KIAMBU COUNTY"*** The data collection will be carried out in ***Kiambu County*** for a period ending **21st February, 2024.**

You are requested to share your findings with the County Education Office upon completion of your research.

PP

Festus Kimeu
FOR: COUNTY COMMISSIONER
KIAMBU COUNTY

Cc National Commission for Science, Technology and Innovation
P.O. Box 30623-00100
NAIROBI

County Director of Education
KIAMBU COUNTY

Deputy County Commissioner
KIAMBU COUNTY

"Our Youth our Future. Join us for a Drug and Substance free County".