EFFECT OF INTERACTIVE APPROACH INSTRUCTION ON STANDARD SIX LEARNERS' ACHIEVEMENT IN READING COMPREHENSION IN PRIMARY SCHOOLS IN VIHIGA COUNTY, KENYA

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DECLARATION

This Thesis is my original work and has not been presented for award of degree in any other college or university.

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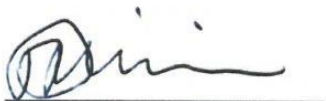This Thesis has been submitted for examination with our approval as University Supervisors.

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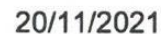
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DEDICATION

I dedicate this thesis to my Grand Mother, Phanice Amimo Joshua for her encouragement and continuous support from my youth to adulthood and attainment of all credentials during my life. Phaniceassisted me to overcome difficulties and to excel in my academic life. May Amimo live to see her great grandchildren's.

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ABBREVIATIONS AND ACRONYMS

ANOVA	One-way Analysis of Variance
CVI	Content Validation Index
ESL	English as a Second Language
ICT	Information and Communication Technology
KCPE	Kenya Certificate of Primary Examination
KICD	Kenya Institute of Curriculum Development
KIIs	Key Informant Interviews
KNEC	Kenya National Examination Council
KWL	Know, Want and Learn
NACOSTI	National Commission for Science, Technology and Innovation
NICHD	National Institute of Child Health and Human Development
QAR	Question Answer Relationship
SPSS	Statistical Package for the Social Science
TSC	Teachers Service Commission
UNISA	University of South Africa

ABSTRACT

Learners' achievement in reading comprehension is a function of the instructional methods applied by teachers. Extant literature hypes the interactive approach instruction as an effective approach for improving learners' achievement in reading comprehension. In Vihiga County, learners' performance in English paper of the Kenya Certificate of Primary Education (KCPE) has been lower than that of neighbouring counties, as well as poorer in the comprehension section. Although a number of studies have investigated the nexus between instructional methods and performance in national examinations in Kenya, none has targeted Vihiga County; thereby, leading to paucity of information that would support necessary interventions. This study was intended to determine effect of the interactive approach instruction on standard six learners' achievement in reading comprehension, with a view to generating information that would support policy development, teacher training programmes, as well as spur further research in developing countries. In this regard, the interactive approach instruction was operationalised in terms of background knowledge, learner-generated questions, summary telling skills, prediction skills, and word recognition skills, each of which formed an objective. Learners' achievement in reading comprehension was measured in terms of test scores. A quasi-experiment involving the Solomon Four-Group Design guided the research process. Foursub-counties were involved in the study. From each sub-county, 2 public primary schools were purposively sampled; thereby, yielding a sample of 8 schools. From each school, an average of 35 learners and 1 teacher of English language were also sampled purposively. Primary data were sourced between May and August 2017 from 279 learners, including 142 (50.9%) in the experimental group and 137 (49.1%) in the control group. Primary data were also sourced from 8 teachers. In the experimental group, teachers were trained on how to correctly apply the interactive approach instruction. Inferential analysis techniques included independent samples t-test of variance, which determined variance in the means scores obtained by learners in both groups; cross-tabulation with Chi-square tests, which established the significance of association between learners' achievement in reading comprehension and various aspects; as well as multiple linear regression analysis, which estimated effect of the interactive approach instruction on leaners' achievement in reading comprehension. The latter generated two models, one for the experimental group (Model 1) and one for the control group (Model 2). Each model incorporated the independent variables and learners' attributes, as moderating variables. In both models, the study established a significant difference between learners taught reading comprehension using the interactive approach and those taught using alternative methods; thereby, leading to rejection of null hypotheses. This implies that trained teachers were more effective than their untrained colleagues in applying the interactive approach instruction in teaching comprehension reading. In addition, Model 1 accounted for 41.5% of variation in learners' achievement in reading comprehension, while Model 2 explained 34.1% of the same. This suggests that Model 1 was stronger in explaining learners' achievement in reading comprehension than Model 2. Having considered the effect of moderating variables, it's valid to conclude that the interactive approach instruction, when applied correctly, is likely to improve learners' achievement in reading comprehension. In view of this, the study amplified the need for: continuous professional development and instructional resources; as well as more teachers to reduce workload; thereby, improve application of the interactive approach instruction when teaching comprehension reading.

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter describes salient elements, including background information, statement of the problem, purpose and objectives of the study. Also outlined in this chapter is justification, significance, scope, assumptions, limitation and delimitations of the study. The chapter concludes with definitions of significance terms used.

1.1 Background of the Study

English, as the basic language of teaching in Kenyan primary education, is critical to students' success in all non-linguistic courses. Effective reading of English comprehension texts, in particular, aids learners in developing critical abilities such as detecting facts, assessing and interpreting information, linking content to contexts, and providing accurate responses to examination questions. Nevertheless, the instructional methods used by teachers, particularly the interactive approach, have an effect on students' reading and comprehension skills. This study examined causal relationship amongst interactive approach instruction and reading comprehension achievement.

The interactive approach is an instructional method for activating learners' skills on how to read comprehensions and make meaning of written texts, by recognising words, phrases and sentences, in isolation and in contexts; as well as by activating background knowledge regarding the subject being read (Nur & Ahmad, 2017; Gebhard, 2006). The interactive approach instruction is known to improve learners' reading skills including guessing, predicting, checking, summarising and asking oneself questions; which in turn, shapes thinking and reading practices (Palani, 2012). Based on this, the interactive approach instruction makes reading an active process, in which learners interact with texts, and invoke cumulative knowledge and experiences on the topics being read (Amartha, 2013).

1.1.1 Emergence of interactive approach instruction

Interactive approach to reading education was created in the 1970s to overcome the limitations of previous approaches to reading, especially the traditional bottom-up and top-down techniques (Nur & Ahmad, 2017; O'Connor, 2007; Yan, 2002).Application of the bottom-up technique to teaching learners how to read comprehensions begins with recognition of textual content words and decoding the

meaning of each word, as mentioned by O'Connor (2007). To develop a reaction in mental capabilities, the recognition and decoding processes proceed to larger components such as sentences and paragraphs.

Recognizing and decoding the meaning of words, phrases, and paragraphs is important, but it is not enough to enhance reading ability. Based on this realization, Woods and Connelly (2009) pointed out that if bottom up instructional strategy is used alone, it tends to under value the significance of adoption of prior knowledge and sentence-context during the reading process. Edwards (2009) voiced similar sentiments, stating that decoding words in a text and deciding their meaning for understanding are two different things. As a result, Finney (2013) suggests that learners should use the bottom-up technique as a foundation for reading, but that be aided in moving beyond word identification by acquiring advanced reading comprehension skills.

The ensuing debate culminated to a radically different approach to reading comprehensions, namely, the top-down approach, which was propounded to offset weaknesses of the bottom-up approach, by developing skills that transcend beyond recognition and decoding the meaning of words. This implies that the top-down approach recognises that information brought to the text by learners is critical for effective reading of comprehensions. In this regard, learners compare text information with cumulated knowledge to understand written messages. Based on these views, comprehension begins when a learner guesses the meaning of words, and later validates such guesses by working down to the written text; thereby, making reading a psycholinguistic guessing game, according to Goodman (1967), and reiterated by Sharpe (2013).

1.1.2 Justification for the interactive approach instruction

Even though teachers have the discretion to choose instructional methods for teaching reading comprehensions, no one approach when used independently, can lead to effective reading of comprehensions (Goouch, 2010), because none can take full responsibility for all of the requisite skills by learners to make sense of texts and thus become competent readers (Hudson, 2007).On the other hand, learners struggle with reading since neither of the two ways is sufficient to improve all of the skills required for reading comprehension (Willows, 2012).

This condition served as the foundation for the interactive approach training, which entails a simultaneous interaction of abilities learned through bottom-up and top

down procedures (Rumelhart, 1977; Sharpe, 2013).In light of this, McCormack (2010) claimed that interactive method training aids learners in accounting for linguistic defects found when processing a text for comprehension utilizing either bottom-up or top-down skills. While promoting the interactive method to instruction, Abraham (2002) pointed out that the two approaches work together to counteract one other's flaws, making the interactive approach more effective in boosting learners' reading skills.

More than just decoding the meaning of written words is required for reading comprehension. It requires learners to read between the lines by inference, have a good grasp of main ideas and supporting details, and draw conclusions, according to Hudson (2007), while Robbins (2010) believes it requires adequate interaction between the text and what is brought to it using skills inherent in both the top-down and bottom-up processes. Reading comprehension also includes assessing and evaluating texts, as well as synthesizing information from a variety of sources. Learners can gain these skills by practicing interactive approach skills, which include enhancing background knowledge, learner-generated questions, summary narration, prediction, and word recognition (Nur &Ahmad, 2017; Palani, 2012; Hudson, 2007).

1.1.3 Interactive approach skills for reading comprehensions

Previously learned abilities are critical for boosting learners' reading comprehension achievement. Yuko (2009) supported this claim by asserting that humans learn through linking new information and experiences to previously acquired knowledge. As a result, when teaching reading comprehension, Edwards (2009) emphasized the need of teachers assisting students in bridging new material with their existing knowledge of the subject. Learners have a better probability of decoding and comprehending messages given by texts when the bridge is done well, independent of innate vocabularies.

Learner-generated questions skills are also fundamental for improving achievement in reading comprehension. The strategy entails teaching learners how to pose questions regarding the subject of a text, and seeking appropriate answers, when interacting with the text. Such questions can be generated at any phase of the reading process, including the pre-reading, during reading or post-reading (Alfassi, 2004). Regardless of the phase, such questions are vital for improving achievement in reading comprehension. Summary telling skills are also important for achievement in reading comprehension; by obligating learners to condense texts to shorter versions

without altering the meaning (Schleppegrell, 2004). In this regard, achievement in reading comprehension manifests when a learner creates a story's shorter version without losing the original meaning. This, according to Tierney (2005), demonstrates that a learner has interacted with a text.

Prediction skills are also necessary in facilitating achievement in reading comprehension. Learners exhibit such skills when combining extant knowledge about a topic with new materials contained in a text. Kate (2004) pointed out that when this is achieved, learners develop a sense of the text structure increasing their comprehension. Lastly, word recognition skills enhance achievement in reading comprehension. According to Adekola (2007) learners apply word recognition skills to decode the sounding of words. Word recognition skills are basic building blocks intrinsic in the bottom-up approach that all learners need to improve achievement in reading comprehension.

The foregoing paragraphs suggest that achievement in reading comprehension is an outcome that requires consistent interaction of the cited skills, including background knowledge, learner-generated questions, summary telling, prediction and word recognition. In view of this, teachers should understand that neither the bottom-up nor the top-down approach is sufficient for enhancing achievement in reading comprehension. The causal linkage between the interactive approach instruction and leaners' academic achievement is a subject that has attracted empirical studies in various geopolitical contexts.

1.1.4 Interactive approach instruction & academic achievement: empirical evidence

The relationship between the interactive approach instruction and learners' achievement in reading comprehension has been investigated widely across the globe. For instance, Vries (2011) established that the interactive approach instruction influences achievement in reading comprehension not only in the English language, but also in other subjects offered in the school curriculum; while Cox (2009) explains that learners who are exposed to appropriate instruction on comprehension reading often become proficient readers and top performers in other subjects.

Hiskes (2007) also discovered that learners who get interactive reading comprehension teaching generally attain academic success, whereas those who get alternative instruction fail to cope with reading demands in all disciplines, resulting in poor performance. As a result, Lei (2010) encouraged teachers and students to pay closer attention to interactive approach instruction, which increases students' ability

to create the meaning of authors' intended messages. An effective reading process and strong academic performance are defined by the ability to make sense of texts on one's own (Nur & Ahmad, 2017).

Furthermore, according to Alyousef (2006), a good reading process can be achieved by offering appropriate and sufficient teaching in an interactive manner, which increases learners' comprehension of written materials and ensures academic achievement. Finney (2013) also claimed that using the interactive approach to teach reading comprehension at all levels of education has resulted in independent readers who excel in all subjects, while McCormack (2010) claimed that the interactive approach has been critical in teaching reading comprehension and improving academic achievement, especially in jurisdictions where English is not the first language of instruction. Pardhan and Juma (2011) found a link between the use of the interactive approach to instruction and the academic success of students in their study. Learners are taught techniques that make it easier to read with comprehension, resulting in better comprehension of written texts.

In Kenya, a number of studies have examined the academic performance of primary school learners *vis-à-vis* underlying factors at various levels, including institutional, sub-county, county and national (Ongatoh, 2017; Kathuri, 2014; Uwezo, 2012; Isutsa, 2011). For instance, the study conducted by Uwezo (2012) reported that only 32% of standard six learners could read a standard-two-level passage in English; thus, implying that nearly two-thirds of the learners lacked essential reading skills. The study singled out the use of ineffective instructional methods right from early stages of learning, as the key factor that contributed to the low achievement in reading comprehension (Uwezo, 2012). The study, which had a national scope, provided general findings that make it hard to fathom the extent to which Kenyan teachers apply the interactive approach instruction when teaching reading, and how such may have influenced learners' achievement in reading comprehension.

Isutsa (2011) and Ongatoh (2017) identified the use of ineffective instructional methods to teach reading in primary schools as a key factor contributing to poor performance in English language examinations, such as the Kenya Certificate of Primary Examination (KCPE), in Kwale and Kakamega Counties, respectively. However, neither of the two studies looked into how teachers' use of the interactive style to instruction affected students' reading comprehension scores. In connection to this, annual reports compiled by the Kenya National Examination Council (KNEC)

reveal that learners' performance in KCPE examinations has been lower in the comprehension than the grammar section of the English paper, as illustrated by Figure 1.1.
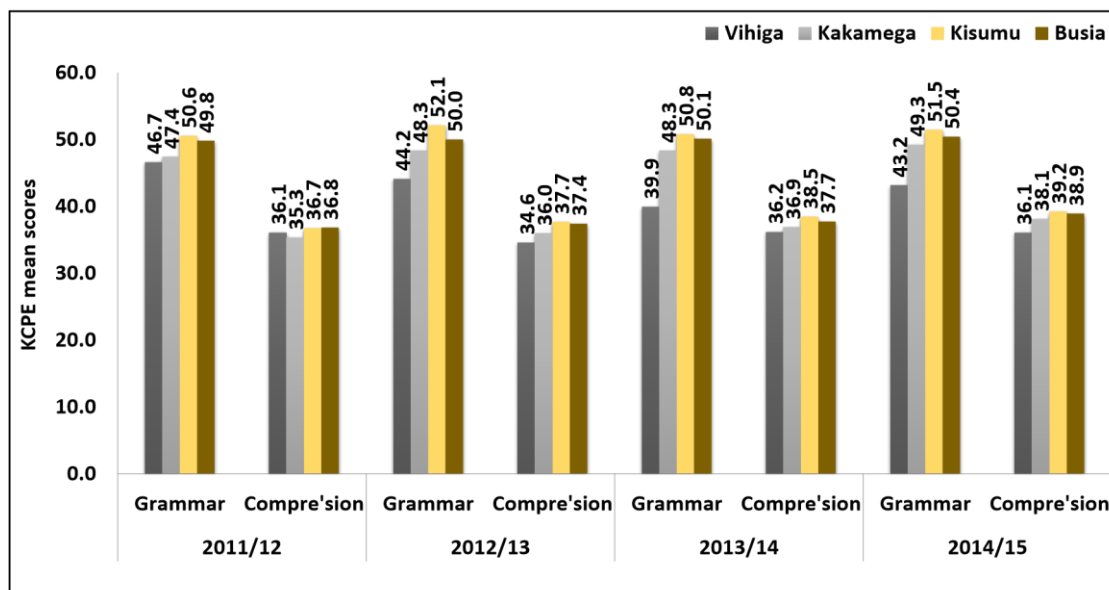
Source: Kenya National Examination Council Annual Reports, 2011-2014

Figure 1.1: Learners' performance in the KCPE English language (2011 – 2014)

The KNEC reports further reveal significant variation in the performance of learners in Vihiga County and that of counterparts in the neighbouring counties of Kisumu, Kakamega and Busia. Inevitably, the variation suggests that learners' achievement in the English language examinations, in Vihiga County, deserves a concerted attention from education practitioners, policy makers and researchers. More still, studies conducted by Ongatoh (2017) in Kakamega County and Kathuri (2014) in Embu County, reported significant relationships between performance in KCPE examinations and factors such as management support to teachers, continuous professional development, physical resources, participation of parents, and instructional resources, among others. However, none of the studies focused on the causal relationship between the instructional methods applied by teachers and learners' performance; thereby, exacerbating the scarcity of information on the subject. Undoubtedly, the shortage of such information affects various factors related to teachers' continuous professional development, including budgetary allocation and support programmes. With limited or no training, teachers cannot be expected to correctly apply the interactive approach instruction to equip learners' with skills that are necessary for optimal achievement in reading comprehension.

1.2 Statement of the Problem

The interactive approach to instruction, which combines bottom-up and top-down instructional approaches, is seen to be a good way to improve students' reading comprehension. Furthermore, success in reading comprehension is a necessary ability for students because it improves performance in all of the disciplines covered in the school curriculum. Learners with low reading comprehension scores find it difficult to cope with reading demands in all disciplines, resulting in poor performance. Those that excel at reading comprehension, on the other hand, often become independent readers, resulting in academic success.

In Vihiga County, the persistently low performance in the KCPE English language paper has engrossed the attention of stakeholders, including education researchers. Available KNEC statistics for the period 2011 to 2014 show that learners in Vihiga County have been achieving the lowest mean scores in the English language paper, compared to their counterparts in the neighbouring counties of Kakamega, Kisumu and Busia. An equally weighty issue is that performance has been relatively lower in the comprehension section than in the grammar section of the paper (see Figure 1.1). Based on the premise that achievement in reading comprehension influences performance in other subjects, it's reasonable to hypothesise that the low mean scores, revealed by the KNEC reports, have contributed to the County's below average performance in the KCPE.

In response to the challenge, the Ministry of Education has taken various measures to improve learners' achievement in reading comprehension, including the introduction of radio educational programs for learners and teachers, allocation of resources for English language teachers to access in-service training, distributing learning materials to schools; as well as creating a resource site on the website of Kenya Institute of Curriculum Development (KICD), where teachers and learners can access information on instructional methods.

Studies conducted at the institutional, sub-county, county and national levels in Kenya, have targeted learners' general performance in examinations in relation to the underlying contributory factors. Only a few studies, such as Ongatoh (2017) and Isutsa (2011), have endeavoured to determine the linkage between instructional methods applied by teachers and learners' performance in English language examinations. Notably though, none of the local studies has exclusively determined the causal relationship between the interactive approach instruction and learners'

achievement in reading comprehension. The resulting information gap motivated the researcher to conduct this study.

1.3 Purpose of the Study

The study was intended to determine effect of the interactive approach instruction on standard six learners' achievement in reading comprehension in Vihiga County. Consequently, learners' background knowledge, learner-generated questions, summary telling abilities, prediction skills, and word recognition skills were used to operationalize the interactive method instruction, while reading comprehension achievement was tested using post-test scores. The goal of the study was to provide data that could be used to assist policy interventions, teacher training and support programs, and academic research in Kenya and other developing nations.

1.4 Objectives of the Study

The study aimed at determining effect of the interactive approach instruction on standard six learners' achievement in reading comprehension in Vihiga County. Its specific objectives were designed around interactive approach instruction variables cited under section 1.4: -

1. Determine the effect of background knowledge on learners' achievement in reading comprehension.
2. Examine the effect of learner-generated questions on achievement in reading comprehension.
3. Determine the effect of summary telling skills on learners' achievement in reading comprehension.
4. Examine the effect of prediction skills on learners' achievement in reading comprehension.
5. Assess the effect of word recognition skills on learners' achievement in reading comprehension.

1.5 Null Hypotheses

H_01: Background knowledge has no significant effect on standard six learners' achievement in reading comprehension.

H_02: Learner-generated questions have no significant effect on standard six learners' achievement in reading comprehension.

H_03: Summary telling skills have no significant effect on standard six learners' achievement in reading comprehension.

H₀4: Prediction skills have no significant effect on standard six learners' achievement in reading comprehension.

H₀5: Word recognition skills have no significant effect on standard six learners' achievement in reading comprehension.

1.6 Justification of the Study

Providing quality education and training is one of the strategies that is deeply embedded in Kenya's journey to become a newly industrialising middle-income country, providing a high quality life to all citizens by the year 2030 (Government of Kenya, 2008). English language is a core subject at the primary and secondary tiers of the education system, upon which all other non-lingual subjects revolve; meaning that learners' performance in such subjects depends on performance in English language (Finney, 2013; Vries, 2011; Lei, 2010). Notably though, learners' achievement in reading comprehension marks the cradle of performance in English language examinations. Therefore, learners with low achievement in reading comprehension, often struggle with reading requirements in other subjects, in most cases, affecting performance. Contrastingly, learners with high achievement in reading comprehension often surmount reading challenges in other subjects; thereby, leading to academic success (Vries, 2011; Lei, 2010; Cox, 2009; Hikes, 2007).

High scores at the primary level, means a high chance of transition to secondary schools, and possibly, a greater academic success going forward. Hence, achievement in reading comprehension in primary schools influences the career paths of many people. In the same vein, Dadzie (2008) points out that the purpose of reading comprehension goes beyond academic success to include utilisation of knowledge gained for personal development. Coming down to the context of this study, the perpetually low achievement in reading comprehension in Vihiga County contributes to proportionately low performance in other subjects, albeit with farreaching economic implications, in terms of availability of skilled manpower and economic growth at the county and national levels (Isutsa, 2011).

Drawing from this position, reading comprehension provides a critical window of opportunity for interventions aimed at improving learners' academic success and career development. However, effective interventions require quality empirical data to inform stakeholders, stimulate and inform policy deliberations, influence the

direction of policy decisions, as well as guide the design of interventions, which in this study may include continuous professional development, provision of instructional resources, sensitisation of teachers on pertinent issues, supervisory support, collaboration, and curriculum improvement, among others. The policy and programmatic actions inspired by this study would go a long way in improving the quality of training and support for teachers, the quality of teaching, academic success, which in turn, will contribute to the Kenya's aspirations of achieving economic development, in line Vision 2030.

1.7 Significance of the Study

The findings and recommendations of this study should inform various stakeholders, stimulate policy engagements, influence policy decisions, as well as inform the design of appropriate response interventions, aimed at improving the application of interactive approach instruction, as well as achievement in reading comprehension among learners in Vihiga County. More specifically, the information should support Ministry of Education in policy processes concerning in-service training, innovation, resource allocation to schools and instructional resources. To KICD, the findings of this study should justify curriculum improvement for the training of English language teachers, as well as development of appropriate online and radio capacity building programs.

To Teachers Service Commission (TSC), the findings of this study should inform policies on the recruitment and deployment of English language teachers. The findings of this study should further inform teacher training institutions about training curriculum's content and instructional methods to be propagated in schools for better learning achievement. The findings should also support school administrations in developing comprehensive administrative and facilitative support to teachers of English language, with a view to changing issues preventing teachers from applying interactive approach instruction. Lastly, the information generated by the study should boost the extant body of literature; thereby, serving as a resource material for teachers, education scholars, researchers and interest groups such as non-governmental organisations.

1.8 Limitations of the Study

During the three months of training and observation, the investigator noted some limitations, which might have influenced robustness of the results. Being a busy term of the year, the period between May and August is usually packed with many curricular and co-curricular activities. This means that data collection process

competed with various activities scheduled in school calendars. The involvement of targeted teachers in such activities affected availability and consistent participation in study, as well as application of the acquired skills in comprehension reading lessons. The investigator coped with the challenge by making multiple visits to schools, as well as re-booking failed appointments for interviews and observations.

1.9 Delimitations of the Study

Low achievement in reading comprehension is a challenge that is not unique to Vihiga County; it characterises many public primary schools in other counties, in varied proportions. However, the geographical scope of this study was delimited by the investigator's desire to influence policy decisions and interventions aimed at improving achievement in reading in her native county of Vihiga, as an indispensable antecedent to improving achievement in national examinations, which delimits generalizability of the findings to the said county.

The scope of the study was also delimited to public primary schools because improving learners' access to quality education is a public function, which occupies a central place in the government's national policy and legal frameworks on education. Within the schools, the scope of the study was delimited to standard six learners and teachers of English language, because standard six marks a critical level where learners start preparing for KCPE. Lastly, the scope of this study's content was delimited by the five interactive approach skills inherent in the bottom-up and top-down approaches, namely, background knowledge, learner-generated questions, summary telling skills, prediction skills and word recognition skills.

1.10 Assumptions of the Study

The study assumed that standard six teachers of English language in the experimental and control group were homogenous in terms of the level of professional training; access to continuous professional development opportunities, as well as the duration of professional experience in teaching reading comprehension. The study also assumed that the training provided as the intervention to teachers in the experimental group served as a refresher course; and that teachers exposed to the training would adopt and apply the skills acquired from such training to improve teaching and learners reading skills. Lastly, the study assumed that learners who strongly agreed with perception statements were 'very consistent' in applying interactive approach skills in reading, while those who 'strongly disagreed' were 'very inconsistent in applying the same.

1.11 Definition of Key Terms

Achievement in reading comprehension: Learners' improvement in reading comprehension passages, and understanding content. The latter was demonstrated in terms of average marks scored by learners in the post-intervention test.

Background knowledge: The information, skills and experiences on particular subjects or aspects, which learners have accumulated over time from social, economic, political and natural environments. Achievement in reading comprehension improves where a learner is able to connect such background knowledge with the content of passages, to facilitate the meaning-making process.

Effect: The proportionate unit change in learners' achievement in reading comprehension in response to a unit change in the application of the interactive approach instructional method by teachers.

Interactive approach: An instructional approach used by teachers to activate learners' reading skills. The approach recognises the simultaneous interplay between the bottom-up and top-down processes during the reading process. In this study, the interactive approach incorporated five streams of comprehension reading skills, including background knowledge, learner-generated questions, summary telling, prediction and word recognition.

Learner-generated questions skills: The ability of learners to generate questions about the subjects of comprehension passages being read.

Answers to such questions are sought from texts through the reading process. The process of seeking answers to such questions prompt learners to interact with texts; thereby, improving the comprehension of messages communicated by authors.

Prediction skills: The ability of learners to make guesses or form hypotheses on the text prior to the reading process and later compare such guesses after interacting with such texts. The accuracy of such predictions signifies achievement in reading comprehension.

Reading comprehension: The interplay of skills such as recognition of words, inferring meaning, critiquing texts, evaluating text and synthesising information from texts to understand authors' intended messages.

Summary telling skills: The ability of learners to determine important information from text passages during reading and compress the same information into shorter versions without altering the meaning.

Word recognition skills: The ability of learners to decode the sounding and the meaning of words in text passages.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the empirical and theoretical literature on the interactive approach instruction and its relationship to learners' achievement in reading comprehension, in various contexts. The chapter also describes the theoretical framework upon which the study is grounded. Further analysis of the two sets of literature culminates to a conceptual framework, which shows the hypothesised relationship between concepts. Each concept is operationalized into variables that were measured by the study.

2.2 Interactive Approach Instruction & Achievement in Reading Comprehension

Reading comprehension is a process that involves identifying, extracting and constructing the meaning of written symbols or language (Amartha, 2013). This is achieved when readers interact with the written matter, bringing into the process personal knowledge and experience; and connecting such to the subject of comprehension passages. Palani (2012) concurs that reading is an active process that goes beyond identification of written symbols and words, to establish the meaning of such in isolation and in context; while Amartha (2013) explains that the activeness of reading encapsulates the deployment of various skills, including evaluation, judgement, prediction, imagination, problem-solving, among others in order to make the meaning of comprehension passages.

Even though such skills are innate in all learners, successful deployment in the reading process depends on the activation methods used by teachers. Based on this, Sencibaugh (2007) implicitly argues that whereas good teaching methods promote reading comprehension, bad methods may result to low retention of messages, which inevitably, leads to poor achievement in reading. Contrastingly, authors such as Vries (2011) and Carell (1988) identify the interactive approach instruction as an effective method for activating and improving learners' requisite skills for reading proficiency; while Catherine (2002) notes that the reading process requires three elements to be complete, namely, the reader, the text, and the activity of which comprehension is a part. How well the three elements interact to make accurate meaning of written language or symbols is what constitutes a reader's proficiency.

The interactive approach is a method that enables learners to have a better understanding of comprehension passages by enabling readers to use prediction

(topdown model) and word recognition exercises. Grabe (2007) expounds the two concepts by asserting that achievement in reading comprehension is realised when readers combine bottom-up processes, such as the ability to decode and organise words, with top-down processes such as the ability to predict and confirm the meaning of texts. On the same note, Goouch (2010) explains that the interactive approach requires learners to interact with texts in order to make sense out of it because mental processes function jointly at different levels, in the process of distinguishing what good readers do and what poor readers lack.

The relationship between the interactive approach instruction and learners' achievement in reading comprehension has attracted the attention of researchers in various countries across the globe, albeit in varying proportions. A closer examination of such studies reveals that whereas some have examined influence of the interactive approach instruction on learners' academic performance, others have gone a step further to examine relationship between each component of the interactive approach instruction and learners' learners' academic performance, including achievement in reading comprehension. More particularly, the review focused on five archetypal components of the interactive approach instruction, including learners' background knowledge, learner-generated questions, summary telling skills, prediction skills and word recognition skills, in line with objectives of the study. Details are contained in the following sub-sections.

2.3 Background Knowledge and Achievement in Reading Comprehension

Activating learners' background knowledge on various subjects is vital for higher achievement in reading comprehension, particularly because people often assess own understanding using meta-cognition skills, and learn by connecting prior knowledge about the subject of a text passage to new knowledge gained from the reading process (O'Connor & Snow, 2013). Thus, when reading, teachers should guide learners on how to bridge the known and the unknown in order to understand the subject of text passages. That understanding is the hallmark of achievement in reading comprehension (O'Connor & Snow, 2013). Extant literature reveals a number of strategies that teachers apply to activate learners' background knowledge in the reading process, including carousal brainstorming, pre-teaching vocabulary, analogy, as well as the Know, Want and Learn (KWL) (O'Connor & Snow, 2013; Ngwaru & Opoku-Amankwa, 2010).

Carousel brainstorming is a cooperative learning strategy that enables learners to discover and discuss background knowledge prior to studying a new topic. The

strategy entails writing on charts key statements relating to the subject of text passages. The charts are then placed at different stations within classrooms to be read, discussed and interpreted by learners, who are organised into small groups of 5 to 6 members. The purpose of such charts is to stimulate learners' thoughts, imaginations and reflection about upcoming reading lessons, as well as facilitate connection of prior knowledge with new understanding (Dube & Bessette, 2013; O'Connor & Snow, 2013). Carousel brainstorming also makes the reading process learner-centred by using group collective background knowledge to further individual learner's understanding; thereby, motivating all learners to participate in reflections; breaking learner isolation, and creating opportunity for cooperative learning (Anyiendah & Odundo, 2017; Dube & Bessette, 2013).

Pre-teaching vocabulary is an essential strategy for activating learners' background knowledge by enabling the understanding of new and/or difficult words used in text passages. The strategy entails guiding learners in exploring the meaning of such words prior to encountering the same when reading passages. The strategy is known to activate and increase background knowledge, as well as aid learners to connect text passages and cumulative knowledge about the subject at hand (National Reading Panel, 2013; Jenkins, Pany & Schreck, 2013; Sadoski, 2006). As noted by Sadoski (2006), creating the linkage between background knowledge and the subject of text passages form the genesis of comprehension.

A number of studies have examined the relationship between learners' background knowledge and academic achievement, including achievement in reading comprehension. In the United States, Warner and Dupuy (2018) investigated the effect of relevant background knowledge on the achievement in reading comprehension among high school learners of Spanish as a Foreign Language. The study found that background knowledge caused a significant effect on learners' achievement in reading comprehension. Similar findings were reported by Priebe, Keenan and Miller (2011) who examined how prior knowledge of a passage topic affects achievement in reading comprehension among high school learners in Michigan, United States. The study, which targeted good and poor readers, established that prior knowledge of the passage topic significantly increased achievement in reading comprehension, which was measured in terms of reading fluency and reduction of reading errors.

Unlike Warner and Dupuy (2018), as well as Priebe *et al.* (2011), Sadoski and Willson (2006) attributed achievements in reading achievement to two strategies,

namely, pre-teaching vocabulary and analogy. Based on this position, exploring the meaning of difficult words with leaners and creating relevant analogies prior to reading were noted to make a big difference in activating learners' background knowledge; which in turn, improved scores in post-reading tests. Even though the study hypes pre-teaching vocabulary as an effective strategy for improving learners' background knowledge, its main purpose is to enable learners understand the meaning of difficult words, which though important, is not sufficient for achievement in reading comprehension (National Reading Panel, 2013). Consequently, learners require more interactive skills to effectively connect background knowledge and information contained in text passages, in order to synergise achievement in reading comprehension.

In Illinois, United States, Fabrikant, Siekierski and Williams (1999) examined the relationship between brainstorming of prior knowledge and its effect on the reading comprehension skills of third, fourth and fifth grade learners with poor literal and inferential comprehension skills. Among other findings, the study reported that brainstorming of prior knowledge caused a significant improvement in learners' intrinsic motivation to read as well as the ability to read fluently and make valid inferences from comprehension passages. The motivation to read, fluency in reading and the validity of inferences are primary indicators of achievement in reading comprehension.

While reviewing the findings of the study conducted by Fabrikant *et al.* (1999), Dube and Bessette (2013), as well as Woolley (2011) describe brainstorming as an effective strategy for activating learners' background knowledge. Despite this, Dube and Bessette (2013) identify shortage of instructional materials and tediousness of the instructional process as key factors preventing teachers from brainstorming learners' background knowledge. More explicitly, developing charts with key statements touching the subject of text passages for every comprehension reading session is not only demanding time from teachers, but also consumes resources such as paper sheets. Consequently, the more the comprehension topics to be read, the more the instructional resources and time required to brainstorm learners' background knowledge. Drawing from this position, application of the brainstorming strategy in the reading process remains below average in both developed and developing countries (Dube & Bessette, 2013; Wooley 2010).

In Indonesia, Nur and Ahmad (2017) found a significant relationship between learners' background knowledge and performance in comprehension questions.

Notably though, having some background knowledge doesn't necessarily mean that learners will apply the same to reading processes. Thus, learners need essential skills to connect such background knowledge and experience to new information contained in texts. This nexus brings to the fore the need for learners to access guidance on how to correctly apply background knowledge to improve comprehension reading.

In Sudan, Alfaki (2013) examined the influence of learners' background knowledge on reading comprehension through text previewing. More particularly, the study tested the hypothesis holding that learners who preview a text before reading it are likely to understand its content better. The study found that activating learners' background knowledge using text previews significantly correlated with achievement in reading comprehension; thereby, prompting rejection of the null hypothesis. The study concluded by stating that previewing a text, as prior knowledge activator, is vital for improving achievement in reading comprehension.

Notably though, the study didn't examine the effect of other strategies for activating learners' background knowledge, which may have yielded similar or more robust results, in terms of achievement in reading comprehension.

In Zimbabwe, Ngwaru and Opoku-Amankwa (2010) examined school and literacy practices in connection to learners' academic performance. Among other findings, the study reported a high level of correlation between readers' prior knowledge and achievement in reading comprehension. Based on this, the authors recommended that teachers should activate learners' prior knowledge using various strategies, including KWL, carousal brainstorming, pre-teaching vocabulary and analogy, before engaging in reading comprehension.

2.4 Learner-Generated Questions and Achievement in Reading Comprehension

Questions generated by learners regarding the subject of text passages, are essential for improving awareness, knowledge and comprehension of such passages. More specifically, Alfassi (2004) avers that self-generated questions enable learners to connect previous information with new knowledge contained in comprehension passages; while Hirsch (2006) observes that as learners question the content of passages and seek answers, they interact with texts, which is the essence of the interactive approach instruction.

More still, Pressley (2006) commends the learner-generated questions for enabling learners to interact with texts in bid to seek answers to pertinent questions. Based on this realization, the method makes the reading process active and learner-centred,

which is not only vital for improving achievement in reading comprehension, but also for developing learners who are self-reliant. Lessing dependency on teachers is crucial for preparing learners for academic excellence. Pressley singles out the inserted questions as an essential strategy that make learner-generated questions effective in enhancing achievement in reading comprehension.

The relationship between learner-generated questions and achievement in reading comprehension is a matter that has been investigated in a few countries across the globe, with results that are fairly homogenous. For instance, in the United States, Zwiers (2014) investigated the effects of self-questioning as a prose learning strategy and reported that learners who were trained by English language teachers to ask questions performed better in comprehension questions than those who were not trained. The study concluded by emphasising the need to train learners on how to generate meaningful questions at different stages of reading for better comprehension. However, the quality of training accessed by learners depends on how well teachers are trained, supported and facilitated with necessary instructional materials. The premise postulates that application of the learner-generated questions is likely to be emasculated in resource-poor contexts where teachers lack continuous professional development opportunities, instructional resources, motivation and continuous supervisory guidance.

Sears, Carpenter, and Burstein (1994) investigated the link between questioning approach use and reading comprehension success among eighth grade special needs students. The study found that learners who consistently used a technique for questioning text passages and seeking acceptable solutions from the reading process improved their post-reading exam results significantly. Learners used post-reading questions, inserted questions, self-questioning, and pre-reading questions as questioning tactics.

Tancock (1994), a researcher from the United States, looked at the impact of prereading activities on students' reading comprehension ability in a study that focused on students with reading difficulties. One of the pre-reading tasks on which the study focused was 'learner-generated questions.' The results showed that these students' reading skills had significantly improved. On the same point, Fabrikant et al. (1999) found that using the self-monitoring questions method improved learners' intrinsic motivation to read as well as their literal and inferential comprehension skills. The study investigated the connection between various reading strategies, including brainstorming of prior knowledge, Question Answer Relationship (QAR),

selfmonitoring questions and literature circles, and the reading comprehension skills among the third, fourth and fifth grade students with poor literal and inferential comprehension skills. The ability of learners to generate self-monitoring questions and seeking appropriate answers to such questions was key to understanding of comprehension passages. Even though the study recognised the important role of teachers in aiding learners to develop effective questioning skills, it identified shortage of instructional materials, low motivation and negative cultures as key factors preventing teachers from developing learners' questioning skills.

A little earlier, McDonald (1986) assessed how training can improve the causal relationship between self-generated questions and reading recall in the Texas, United States. The study achieved its goal by comparing trained junior high school learners with untrained colleagues in terms of ability to ask relevant and substantial questions during the reading process. Among other findings, the study reported that training improved learners' ability to construct quality questions and performance in postreading tests, which assessed the ability to recall messages conveyed by texts. Nonetheless, improvements in the question quality had a direct effect on improvements in reading recall. Thus, the study reiterates the call for teachers to encourage learners to ask questions when reading to improve comprehension and recall. Equally important is the need for teachers to gain necessary skills which can improve effectiveness in activating learners' self-questioning skills; which requires the involvement of all stakeholders in financing, coordinating, and providing continuous professional support.

Donggil (2016) conducted a study in the United States that analysed existing literature on learner-generated inquiry and question quality. The study's goal was to uncover fundamental flaws in this field of research and give a recommendation for future direction based on an analysis of empirical research. Learner questioning is a crucial instructional method that is at the heart of increasing learners' reading and performance, according to the study. Learner-generated inquiry, according to the author, is an approach that requires students to ask substantive questions about the subject of comprehension passages before, during, or after reading.

In this study, which investigated the influence of post-reading questions strategy on learners' achievement in reading comprehension, Jenkins, Pany and Schreck (2013), found a significant and positive correlation between the frequency with which teachers applied the strategy when teaching and learners' performance in postreading tests. In this regard, the higher the frequency of using post-reading questions the

higher the scores achieved in the follow-up tests. Despite the positive outcome, Jenkins *et al.* (2013), noted that the strategy entailed passive reading; which in turn, limited learners' interaction with passages, a challenge which kerbed the strategy's effectiveness in creating active and independent readers, who can tackle reading challenges under diverse contexts. While reviewing the study conducted by Jenkins *et al.* (2013), Chapman and Tunmer (2015) noted that on its own, post-reading questions strategy cannot cause significant improvement in learners' achievement in reading comprehension; unless supported by other strategies. In his review of the same study, Dubin (2016) observes that even though the post-reading strategy enables learners to understand comprehension passages at the end of reading, it prevents active participation during reading; thereby, making it unsuitable when reading lengthy text passages.

In the United Kingdom, Chin and Osborne (2008) conducted research on learners' questioning skills and its effect on achievement in reading scientific text passages, with a view to exploring ways of advancing performance. The study found that learners' questioning skills significantly associated with higher scores in comprehension tests; which means that searching for answers to the questions when reading helped improve learners' understanding of text passages. The study acknowledges that learner questions are a potential resource for enhancing comprehension and recalling authors' messages. However, its effectiveness depends on the availability of necessary instructional resources and the effectiveness of teachers in activating learners' skills and providing continuous support.

In Scotland, Farrell (2011) also established that consistent application of pre-reading questions to activate learners' questioning skills contributed significantly to the improvement of performance in comprehension lessons. While commenting on the results, the author argued that guiding learners to generate questions on the comprehension subject facilitated the understanding of passages prior to reading. This creates opportunity for learners to actively interact with text passages, which according to Hedge (2016), is essential for understanding of content and for improving overall achievement in reading comprehension, particularly among slow learners.

Similar findings were revealed by a study conducted by Hedge (2016) in the United Kingdom, which underscored the effectiveness of pre-reading questions in improving learners' understanding of comprehension passages, particularly by enhancing awareness regarding the nature, context, content and significance of the subjects to

be read. The effectiveness of pre-reading questions strategy on the achievement in reading comprehension was also documented by Jenkins *et al.* (2013), as well as Jackson and Dizney (2011), who commended it for evoking learners' awareness, knowledge and motivation to read a particular subject.

Extant studies further reveal that inserted questions and self-questioning strategies also have a significant influence on learners' achievement in reading comprehension. This has been demonstrated in Australia by O'Malley, Chamot, Stewner-Manzanares, Kupper and Russo (1985) in a study that investigated the learning strategies used by beginning and intermediate learners of English as a Second Language (ESL). While explaining the results, the author asserted that the strategy enabled learners to actively interact with text passages; thereby, improving awareness and understanding of the comprehension subject, which eventually elicited accurate responses to comprehension test questions.

In relation to the self-questioning strategy, a positive correlation with learners' achievement in reading has been reported by various studies, including the study conducted by Macaro (2006) in Italy. Through self-questioning, learners gain opportunity to interact with texts, which is essential for improving prior knowledge on comprehension subjects, as well as understanding text passages.

2.5 Summary Telling Skills and Achievement in Reading Comprehension
Summary telling is a cognitive strategy in which a learner determines vital information at the post-reading phase, particularly by compressing the same information in a shorter version of the text without altering the meaning (Schleppegrell, 2004). When using the summary telling method, teachers and learners apply various strategies to enhance the understanding of comprehension passages. For instance, Alderson (2005) identified the *main idea sort* strategy, in which teachers record phrases from passages on cards for learners to arrange and create outlines of texts in terms of title, body and conclusions. Learners may also be challenged to condense a text into a given number of words - a skill known as *66 words*.

Furthermore, Grabe (2007) noted that training learners on how to make oral summaries and reciprocal retells is vital for improving comprehension abilities. When applying oral summaries, teachers of English language identify specific sections of comprehension passages and request learners to read silently and then collectively, before generating oral summaries. Similarly, in reciprocal retells learners are clustered into small groups of about five people and each group assigned

specific events in passages. Each group is then required to identify and retell main points in a way that summarises text passages. Kate (2004) applauded the strategy for making learners more judicious in choosing words, which signifies text comprehension.

Studies that demonstrate the causal relationship between summary telling skills and learners' achievement in reading comprehension have been conducted in various parts of the world. For instance, Choo, Eng and Ahmad (2011) investigated the effect of summarisation strategy on learners' achievement in reading among fifth grade learners in Taiwan; and established that summarisation of texts improved learners' comprehension abilities by deepening their understanding of texts and enabling derivation of valid conclusions. Based on the finding, the study concluded that summary telling skills is essential for improving learners' participation in the reading process, proficiency in reading comprehension passages, as well as achievement in reading.

Similar findings were reported by Sears *et al.* (1994), who investigated the effect of learners' summarisation skills on reading achievement among eighth graders with special needs. More overtly, the study reported a measurable gain in reading achievement among learners who were able to apply summarisation skills in order to understand passages, with favourite summarisation strategies being story maps, drawing pictures and main idea sort.

In Maryland, United States, Afflerbach and Cho (2009) conducted a study which aimed at identifying and describing constructively responsive comprehension strategies in new and traditional forms of reading. Among other findings, the study revealed a direct and significant correlation between summary telling skills and learners' performance in reading comprehension. More specifically, the study established that the effect of the main idea sort strategy on the performance in reading comprehension was also significant. In explaining the results, Afflerbach and Cho (2009) observed that the main idea was the primary strategy applied by English language teachers and learners when reading text passages, in order to understand the content. Similar findings were reported in later studies including Paris and Stahl (2015) in Germany, and Johnson (2015) in the United States. Notably, Paris and Stahl (2015) found that performance in comprehension questions was higher among learners whose teachers applied the main idea sort strategy frequently than among those who applied the strategy occasionally. The main idea sort enabled learners to accurately identify and consolidate important information from text passages without

changing the meaning. On his part, Johnson (2015) acknowledged that the main idea sort strategy occupies a central position for learners' achievement in reading comprehension, particularly because learners taught on the strategy are likely to interact with text passages actively, because accurate summarisation requires thorough understanding of the comprehension subject.

The effect of reciprocal-retells on learners' achievement in reading comprehension was examined by a study conducted in Georgia, United States by Cameron (2010). The study, which explored comprehension monitoring in sentence reading with English language learners, established that learners' achievement in reading significantly associated with the frequency with which teachers applied the reciprocal-retells strategy to activate summarisation skills. Notably though, the study revealed that application of the strategy was relatively lower compared to the use of alternative strategies. Cameron (2010) connected this to the predominant assumption that each learner understands comprehension passages individually.

While reviewing Cameron's study, Routman (2014) observed that reciprocal-retells strategy entails instructing learners to orally reconstruct sections of comprehension passages by narrating the same using own words. The process is particularly extolled for enabling learners to interact with texts and to take charge of learning, within the framework of learner-centred approach. Additional reviewers such as Wixson (2016) and Kate (2004) also established the causal linkage between the reciprocal-retells strategy and learners' performance in reading comprehension. More particularly, the strategy is acclaimed for making reading lessons more engaging and interactive, which in turn, enable learners to identify order, summarise and deduce accurate inferences from passages.

Story maps and drawing pictures are also fundamental and complementary strategies for activating learners' summary telling skills. Whereas story maps entail tasking learners to identify and describe characters of interest from stories and subsequently to provide reasons for choices; drawing pictures involve asking learners to draw characters or events from comprehension passages to demonstrate the level of understanding (Archer & Hughes, 2011; Chamot, 2005). Nonetheless, both processes demand intensive interaction with text passages in order to identify and provide accurate description of characters or events of interest.

Even though a number of publications, including Archer and Hughes (2011), extol story maps and drawing pictures as effective strategies for enhancing learners' summarisation skills and improving comprehension of texts, the review reveals that

in many contexts, the strategies are under-utilised by teachers, with reasons ranging from lack of awareness to dissuading organisational cultures (Caldwell, 2007; Chamot, 2005; Beers, 2003). For instance, in the United States, Beers (2003) reported sub-optimal utilisation of story maps by English language teachers to actuate learners' summarisation skills during reading lessons due to inadequate awareness, misperceptions and low motivation. The situation is no different in the case of drawing maps, as alluded by Chamot (2005); and the main reasons for underutilisation included discouragement from colleagues, and disillusionment.

2.6 Prediction Skills and Achievement in Reading Comprehension

Prediction is an important skill needed by learners to facilitate the understanding of text passages. When applying prediction skills in reading, learners make guesses about the meaning of texts prior to reading and then compare prediction with actual contents. In view of this, readers relate prior knowledge with contents of comprehension passages (Rokhsari, 2012). Existing literature has identified various strategies that teachers and learners deploy when applying prediction skills to improve achievement in reading comprehension. In this regard, the author noted that the use of pictures and titles facilitated young learners' ability to recall key messages, as well as answer selected questions. The study concluded that prediction skills increase the extent to which learners interact with passages; thereby, improving understanding of contents (Oczkus, 2013; Palincsar, Spiro & Magnusson, 2013).

The literature further highlightsvisualisation as a key strategy for applying prediction skills in reading. The strategy requires learners to actively construct images of stories in mind when reading, which eventually improves the understanding and recall of contents. However, such mental images keep changing as learners' understanding deepens and broadens (Oczkus, 2013; Palincsar *et al.*, 2013). Prediction can also be enhanced through the use of anticipation guides, in which case, learners read anticipation guide statements before reading comprehension passages. Once the reading task is completed, learners go through each statement in the anticipation guide, upon which decisions are made by either agreeing or disagreeing with the statements, based on the new understanding (Oczkus, 2013; Palincsar *et al.,* 2013). Notably though, anticipation guides intrinsically connect with learners' background knowledge, which in turn, enables learners to not only understand the topic but also encourages exploration of own thoughts.

The relationship between prediction skills and learners' achievement in reading comprehension has featured in various studies across the globe. One such study,

conducted in Australia by Smith (2009), examined how high school learners' prediction abilities influenced achievement in reading scientific passages, based on the outcomes of content tests. The study found that learners' application of prediction skills reliably associated with reading achievement, with significant variations being noted between males and females. Besides, the effect of prediction skills on the achievement in reading scientific literature was stronger for high knowledge learners, than among those with lower knowledge of the scientific texts in question.

In Sweden, Hibbing and Rankin-Erickson (2003) established that discussion of titles with learners before reading passages significantly correlated with how such learners performed in comprehension questions. More still, the study demonstrated that the higher the frequency of discussing passage titles, the higher the scores obtained by middle school struggling learners. In explaining the results, the authors observed that discussing titles before reading enabled learners to develop quick ideas, which facilitated prediction of the content and context of comprehension passages. This implies that reading achievement can be constrained for struggling learners in situations where teachers fail to discuss titles before reading comprehension passages. Doing so is important because it enables learners to connect prior knowledge about comprehension subjects with expected knowledge from passages.

In the United States, Pressley and Gaskins (2006) examined how metacognitively competent reading of comprehension passages can be developed in learners; and discovered that visualisation is an important strategy that is applicable consistently to activate learners' prediction skills and improve reading achievement. More concisely, Pressley and Gaskins (2006) underscored the role of visualisation in helping learners to process visual representations of written words, symbols or objects in order to create meaning. Similar arguments were expressed in the 2013 National Reading Panel report. Based on reviewed information, the report hypes visualisation for enabling and motivating learners to engage with written materials, symbols or objects, while developing mental images of contents in subsequent sections of comprehension passages (National Reading Panel, 2013). Despite this, its application by teachers, particularly in developing countries, remains sub-optimal due to lack of relevant skills among teachers; as well as shortage of new information that would motivate and help teachers develop necessary skills. More overtly, few studies have explicitly examined the causal relationship between application of the visualisation strategy in reading and learners' achievement in reading comprehension.

Still in the United States, Lubliner (2005) investigated effects of comprehensive vocabulary instruction on title for learner metacognitive word-learning skills and reading comprehension; and reported that the use of section headings caused a direct and significant effect on learners' comprehension reading skills and achievement. Arguably, consistent use of section headings draws the attention of learners to the contents of various sections; making them strategic content-area readers who not only identify key messages, but also use the same to predict the contents of subsequent sections. In review of the study conducted by Lubliner (2005), Waller and Barrentine (2015) acknowledge that pausing and discussing section headings gives learners a chance to internalise information read; thereby, facilitating understanding of subsequent sections. Consequently, failure to discuss section headings denies learners the opportunity to predict what is expected in subsequent sections; which constrains comprehension of text passages among struggling learners.

In Kenya, Dubeck, Jukes and Okello (2011) assessed the early primary literacy instruction in Kenya. One of the study's themes was to examine the effect of prediction skills on learners' reading proficiency. Among other findings, the study reported that learners who always applied prediction skills when reading achieved higher scores consistently in post-reading questions than colleagues who did so occasionally. This led the study to recommend that prediction skills be used as learning instruments to improve learners' performance in reading comprehension. Still in Kenya, Makokha and Wanyonyi (2015) investigated the utilisation of instructional resources and strategies by Kiswahili teachers in the teaching of poetry in secondary schools in Nandi North Sub-County. The descriptive results revealed that utilisation of pictures to trigger learners' prediction skills in reading was near universal; while bivariate results indicated a significant association between the frequency of using prediction in reading and learners scores in post-reading questions. Despite the positive correlation between prediction skills and reading achievement, most teachers relied on pictures contained in syllabus books. There was no evidence that teachers used supplementary materials such as drawings, diagrams on chalkboards, or photographs. This was considered a drawback because syllabus books alone are too insufficient to help learners make accurate predictions about comprehension subjects. The authors attributed over-reliance on book pictures to issues such as time constraints, heavy workload, low motivation, negative school culture; as well as lack of awareness and innovation, among teachers.

2.7 Word Recognition and Achievement in Reading Comprehension

Word recognition skills are also essential for enhancing learners' achievement in reading comprehension. As noted by Adekola (2007) word recognition skills form the basic building blocks required by readers to decode the sound of words and to enhance achievement in reading comprehension. Extant literature identifies various strategies that teachers apply to develop learners' word recognition skills, including morphemes, syllabification, graphophonic units, context clues, phonemic awareness and fluency (Kwiatkowska-White, 2012; Opitz & Lindsey, 2010; Adekola, 2007).

Furthermore, various studies have established the connection between word recognition skills and learners' achievement in reading through operations and descriptive surveys. For instance, a study conducted by O'Connor (2007) revealed that learners trained on word recognition achieved higher scores in post-reading tests than colleagues in the control group. In the United Kingdom, Nunes, Bryant and Barros (2012) examined the significance of word recognition to comprehension and fluency. The study established a significant relationship between children's use of larger graphophonic units in reading and the ability to read comprehension passages fluently. A significant relationship was further established between children's use of morphemes and achievement in reading comprehensions. To achieve these findings, the investigators controlled for the effect of variables such as age and verbal IQ.

Of the two strategies of word recognition, the application of morphemes was found to be a stronger predictor of achievement in reading. The study recommended the need to incorporate appropriate teaching methods that would activate learners' word recognition skills into practice and policy. Even though the study determined the relationship between two aspects of word recognition, namely, larger graphophonic units and morphemes, its findings demonstrates the importance of word recognition skills in enhancing learners' achievement in reading; which enhances its relevance to the objectives of this study.

A study conducted in Scotland by Barth, Tolar, Fletcher and Francis (2014), examined the effect of student and text characteristics on the oral reading fluency among middle-school learners. Phonological decoding, which is an aspect of word recognition, is one of the student factors that seems to be relevant to the context of this study. The analysis showed that phonological decoding is one of the factors that accounted for high variability in learners' reading fluency, which confirm that phonological decoding directly affects reading fluency. Even though the latter is an intrinsic element of achievement in reading, it doesn't necessarily follow that fluent

readers become top achievers in comprehension reading. Thus, the need for strategies that would enhance learners' understanding of comprehension content, make meaning and deduce valid inferences.

In the United States, Cohen (2009) assessed the relationship between literature on vocabulary and reading achievement among disadvantaged second-grade learners; and the purpose was to test how oral reading of literature influenced reading achievement. In this regard, teachers in the experimental group were supported to read a story daily to learners, using designated books, which evoked emotional connection with characters and situations. Among other findings, the study demonstrated that learners in the experimental group achieved significant improvement over counterparts in the control group, particularly in terms of word knowledge, and reading proficiency (Cohen, 2009). In conclusion, the author pointed out that connecting the content of text passages with learners' intellectual and emotional experiences is vital for improving language power and reading achievement.

More still, the study conducted by Opitz and Lindsey (2010) in the United States reported that learners trained on the use of phonemics and sight words became more fluent in reading than those untrained, particularly because training improved word decoding skills. In Nigeria, the study conducted by Adekola (2007) also revealed that learners trained on the use of visual and context clues when reading, performed better in comprehension than counterparts in the control group. In view of this, the study recommended the need to train all learners to use both visual and context clues in order to improve reading proficiency and text comprehension.

The application of context clues to activate word recognition skills significantly connects with learners' achievement in reading comprehension as demonstrated by various studies. For instance, in the United States, Rasinski (2010) established that application of the strategy by English language teachers influenced achievement in reading comprehension by enabling learners to accurately, effectively and effortlessly decode words before reading passages; which then permitted learners to pay more attention on the meaning of content. While reviewing Rasinski's work, Perfetti and Stafura (2014) concurred that activation of learners' reading skills using context clues contributed significantly to improvement in reading comprehension passages, by lessening learners' attention on decoding the meaning of words, while increasing the same on understanding the content (Perfetti & Stafura, 2014).

The literature further reveals that activating learners' word recognition skills using phonemic awareness strategy is essential for improving achievement in reading comprehension. In a study that examined twenty-five oral reading strategies that cross proficiency levels in Pennsylvania, Opitz and Lindsey (2010) identified phonemic awareness as one of the strategies enabling learners to improve skills in: word recognition, reading proficiency and performance in pertinent tests. The strategy entails encouraging learners to examine the order of letters and combine sounds in order to identify how the word should be read. In view of this, failure by English language teachers to apply phonemic awareness during reading lessons tantamount to denying learners vital skills for recognising and decoding new words without the assistance of teachers.

The effectiveness of phonemic awareness strategy in activating word recognition skills and in influencing learners' achievement in reading comprehension also feature in studies conducted by Suggate (2016), Pikulski and Chard (2005), as well as Blevins (2001). Whereas Samwels (2016), praised phonemic awareness for improving learners' self-reliance in word recognition, while lessening dependency on teachers; Pikulski and Chard (2005) noted that the strategy affects reading comprehension in later grades of education; thereby, disproving the assumption regarding the suitability of phonemic awareness to learners in lower primary only. A little earlier, Blevins (2001) established a significant variation in the performance of learners exposed to phonemic awareness instruction and those not accorded the same treatment; with the former outperforming the latter in comprehension tests.

Extant literature further show that the use of fluency strategy to activate word recognition skills influences learners' achievement in reading comprehension. In a study that examined the multidimensional nature of reading fluency among high school learners in the United States, Hudson, Pullen, Lane and Torgesen (2009) established that learners who were taught using the fluency strategy over a period of three months became more accurate, faster and clearer when reading audibly than colleagues in the control group. In this regard, learners in the experimental group achieved three fundamental components of reading fluency, viz. accuracy, speed and proper expression or prosody.

In a follow-up study, Lane and Pullen (2015) noted that learners instructed on fluency gained the ability to read words correctly, with appropriate intonations and at an optimal speed. The connection between fluency strategy and learners' achievement was also confirmed by Kuhn, Shwanenflugel and Meisinger (2010),

who observed that fluency instruction enabled learners to improve reading abilities in tandem with improving comprehension of text passages. In this regard, fluency enables learners to shift attention from decoding words to extracting messages from text passages. This implies that failure by teachers to apply the fluency strategy is likely to impair learners' reading proficiency and comprehension abilities. Similar thoughts are shared by Eldredge (2015) who associated lack of fluency instruction with inaccurate, inconsistent reading pace, poor choice of prosody, as well as incorrect interpretation of texts; while Kuhn *et al.* (2010) established a link between lack of fluency instruction and prolonged attention on decoding individual words at the expense of deciphering key messages conveyed by authors.

In Canada, Kwiatkowska-White (2012) investigated the performance of high school learners in reading comprehension in order to increase understanding of the factors underlying the poor comprehension reading abilities in the targeted group. The study found that the use of syllabification by English language teachers contributed significantly to learners' comprehension reading abilities, by giving learners the opportunity to understand the meaning of new words before reading, which in turn, refocuses attention on constructing the meaning of content. Arguably, when teachers fail to apply the syllabification strategy, the reading process is interrupted frequently when learners stop to establish the meaning of unknown words. Such disruptions prevent learners from concentrating on the m content of comprehension passages.

In Indonesia, Amartha (2013) reported a significant difference in the ability to read comprehension between learners trained on how to apply word recognition skills and those with no prior experience with such skills. Based on this, the study concluded that word recognition skills are effective in improving learners' proficiency in reading comprehension, and advocated for its application in all grades. More specifically, the study attributed improved reading proficiency to the use fo two strategies, namely, syllabification and context clues.

Ngwaru and Opoku-Amankwa (2010) investigated home and school literacy practices in Africa, particularly focusing on Zimbabwe and Ghana. The study established a d statistically significant relation between improvement in learners' comprehension reading skills and the frequency with which teachers deployed phonemic awareness strategy to evoke word recognition skills before reading lessons. Notably though, most teachers were non- or occasional users of the strategy, a challenge which the authors attributed to inadequate access to appropriate professional training; thereby, resulting to the dominance of teachers in

pronunciation and decoding the meaning of new words at pre-reading sessions. Even though the teacher-centred approach guided learners in decoding the meaning of unfamiliar words, it encouraged dependency on teachers and discouraged active engagement with written materials; thus, contradicting a key principle of the interactive approach instruction.

In South Africa, Pretorius (2000) found that undergraduate students at the University of South Africa (UNISA) demonstrated low levels of word recognition, which affected learners' ability to make valid inferences. The study reported a significant correlation between word recognition and the ability to draw valid inferences, which is central to reading comprehension because inferential processing involves perceiving connections and relationships between various entities in a text. Based on this, learners with higher word recognition ability registered better performance in examinations. The study concluded by amplifying the need to improve learners' reading ability because word recognition is at the centre of learning.

2.8 Theoretical Framework

The Interactive Reading Theory, developed by Adam (2004), provided the theoretical framework upon which this study was anchored. The theory postulates that reading is a process that involves interaction between two longstanding approaches - the traditional bottom-up or text based approach; as well as the psycholinguistic or top-down or reader-based approach (Sharpe, 2013; Hudson, 2007; Adam, 2004). The Theory further holds that each approach has a unique set of skills, but which must interact to enable readers understand the meaning of text being read (Sharpe, 2013).

Efforts to trace origins of the Interactive Reading Theory revealed a distinctive path of paradigm shift from the traditional bottom-up approach, which dominated the period hitherto mid-1960s; to the psycholinguistic or top-down approach of the late 1960s; and more recently, to the interactive approach, which began influencing academic thoughts in 1977 following the works of David E Rumelhart; and became more pronounced at the dawn of the 21st Century, with emergence of the Interactive Reading Theory (Sharpe, 2013; Walker, 2010; Hudson, 2007; Adam, 2004; Yan 2002; Rumelhart, 1977; Goodman, 1967).

A key point that dominates the theoretical literature is that the Theory borrows heavily from the earlier reading paradigms, namely, the bottom-up and top-down approaches. More explicitly, the traditional bottom-up approach postulates that reading is a passive decoding process, which entails recognising written letters and constructing the meaning from the smallest textual units such as words at the

"bottom" to the largest units such as paragraphs at the "top". The basic tenet of the bottom-up approach is that reading involves decoding a series of written symbols, either silently or audibly to decode the meaning or enabling the audience to understand the meaning of texts (Sharpe, 2013; Hudson, 2007). In this regard, the traditional bottom-up approach to reading is understood to be a linear process following six key steps, including recognition of printed materials letters, digits or symbols; discrimination of letters, matching of phonemes and graphemes, blending, pronunciation and extracting meaning (Yan, 2002).

Notably though, the linear pattern of decoding written symbols in order to make the meaning of large texts is criticised for neglecting numerous other contextual factors that also facilitate or impede the meaning-making process (Sharpe, 2013; Hudson, 2007). More explicitly, the traditional bottom-up approach is chided for overemphasising written text as the core of the reading process, while assigning readers a passive role in the reading process, which according to Hudson (2007), is refutable. Weaknesses of the traditional bottom-up approach prompted the paradigm shift to the psycholinguistic or the top-down approach, which placed the reader at the centre of the reading process.

Notably, Goodman (1969) inspired the proliferation of reader-centred perspectives through the famous definition, perceiving reading as a psycholinguistic guessing game. The top-down approach postulates that reading proficiency doesn't necessarily come from precise decoding of words, but from the reader's skilled choice of effective cues that produce correct guesses the first time (Sharpe, 2013; Walker, 2010; Hudson, 2007). Unlike the traditional bottom-up approach, which begins with decoding written symbols, the top-down approach holds that reading begins by setting predictions about the meaning of texts to be read, whose correctness are verified using samples of texts. Incorrect predictions are revised and texts re-sampled to verify new predictions. Drawn from this position, the top-down approach perceives reading as a process through which readers reconstruct rather than decode the meaning of texts (Walker, 2010; Hudson, 2007; Yan, 2002; Goodman, 1967).

By making and verifying predictions regarding the meaning of texts, readers become active participants in the reading process, which is the hallmark of the top-down approach. During the verification process, readers employ various skills, including prediction, summarisation and self-questioning, among others, to construct meaning from texts; thereby, placing readers at the centre of the reading process (Sharpe, 2013; Walker, 2010; Yan, 2002). In this regard, the top-down approach is often

easier for readers who might experience difficulty with word recognition, but have immense background knowledge regarding a topic. Nonetheless, the top-down approach is reprimanded for over-emphasising the role of readers in the reading process, which seems to marginalise the decoding of written symbols, and building the meaning of texts (Sharpe, 2013; Walker, 2010; Yan, 2002). In view of this, the top-down approach doesn't fully provide solutions to reading proficiency, but seems to complement the traditional bottom-up approach.

The complementarily of the traditional bottom-up and the top-down approaches inspired a new perspective about reading, through the interactive approach; which perceives reading as neither a passive nor an active process, but one that involves interaction between readers and authors; between readers themselves; as well as between readers and facilitators or teachers (Sharpe, 2013; Walker, 2010; Yan, 2007). According to Walker (2010), the interactive approach postulates that achievement in reading is an interactive process where meaning of a text is created through the integration of the top-down processes and the bottom-up processes.

The Interactive Reading Theory integrates both the bottom-up and top-down approaches to facilitate the reading process, particularly by activating various dimensions of readers' knowledge, which may be refined or deepened by new information obtained from texts (Sharpe, 2013; Walker, 2010; Grabe, 2007; Hudson, 2007; Yan, 2002). Grabe (2007) points out that the bottom-up and top-down processes interact to make up for deficiencies at each level. In this regard, reading becomes an interactive process, in which readers interact with texts and authors in order to extract information and interpret the meaning of such (Sharpe, 2013).

The Theory further holds that the reading process triggers constant interaction between lower-level bottom-up comprehension processing skills, including recognition of words and ideas; knowledge of the subject being read; as well as higher-level top-down skills, including prediction, self-generated questions about the subject being read and summarisation (Sharpe, 2013; Walker, 2010Yan, 2002).

The Theory assumes that the bottom-up and top-down comprehension processing skills influence each other, but with unique contributions to the improvement of reading process. This implies that failure to apply any of the skills undermines readers' ability to understand the written work fully (Sharpe, 2013). This study applied the Theory because the interplay of the lower-level bottom-up and higherlevel top-down comprehension skills is vital for explaining learners' achievement in reading comprehension.

The Theory was further chosen because it enables learners to: bring own background knowledge to reading process, interact with others to construct the meaning of texts, use own strengths to understand new information within the context of learner-centred learning; as well as share knowledge with peers. However, the Theory has been chided for lacking operational justifications for readers' tendencies to draw inferences sub-unconsciously during reading activities.

In view of this, some researchers have observed that the Theory's principles failed to account for the results of their studies (Alderson, 2000); thereby, popping up questions about the Theory's predictability power. Despite these drawbacks, the Theory was chosen because it harnesses the comparative advantages of its predecessors, namely, the bottom-up and top-down models – an attribute that was considered important for understanding the reading process and learners' achievement in reading comprehension.

2.9 Conceptual Framework for Achievement in Reading Comprehension

The study investigated effect of the interactive approach instruction on learners' achievement in reading comprehension in Vihiga County. The interactive approach instruction was operationalized in terms of lower-level bottom-up comprehension processing skills, including background knowledge and word recognition; as well as higher-level top-down skills, including learner-generated questions, prediction and summary telling. The cited comprehension processing skills were identified through the empirical and theoretical literature. In addition, learners' achievement in reading comprehension was measured in terms of post-intervention test scores. Figure 2.1 shows the hypothesised relationship between aspects of the interactive approach instruction and learners' achievement in reading comprehension.

Background knowledge skills

-Know Want to know, Learnt

-Carousal brainstorming
-Pre-teaching vocabulary
-Analogy

Summary telling skills

-Reciprocal retells

-Oral summaries

-Main idea sort

- The 66 words

Word recognition skills

-

-Using Phonics

-

-

I N D E P E N D E N T   V A R I A B L E S

Learner generated questions

-Pre-questions

-Inserted questions

-Self questions

-Post questions

Prediction skills

-Pictures, prefatory statements

-Visualisation skills
-Personal predictions

-Anticipation guides

$H_0 1$

$H_0 3$

$H_0 5$

$H_0 2$

$H_0 4$

MODERATING

-Age
-Gender
-School
-Sub-group (whether pre-tested or not)

VARIABLES

DEPENDENT

Achievement in reading comprehension

-Improved scores in post Intervention test

VARIABLE

Figure 2.1: Interactive approach instruction and achievement in reading comprehension

Figure 2.1 shows that each aspect of the interactive approach interaction was measured in terms of various reading practices, which were transformed into perception statements in learners' self-administered questionnaire. The perception statements were measured using a five-point Likert scale, calibrated as '1', '2', '3',

'4' and '5'. In this regard, 1 signified 'strong agreement with the statement in question', 2 indicated 'agreement', 3 represented 'undecided views', 4 signified 'disagreement', while 5 stood for 'strong disagreement'. The five aspects, viz. background knowledge, learner-generated questions, summary telling skills, prediction skills and word recognition skills were designated as the independent variables.

Figure 2.1 further shows the dependent variable, which was learners' performance in the post-intervention test. The conceptual framework hypothesises that aspects of the interactive approach instruction (independent variables) affected leaners' achievement in reading comprehension (dependent variable) through a set of moderating variables, including learners' socio-demographic attributes. Various techniques were applied to determine statistical significance of the hypothesised relationships between the independent and the dependent variables, while factoring in the influence of moderating variables.

Figure 2.1 further shows that each independent variable was hypothetically connected to the dependent variable through a null hypothesis (H_0). Since the study aimed at fulfilling five objectives, five such null hypotheses were formulated as indicated under section 1.5. In the conceptual framework, the null hypotheses were represented by symbols H_01, H_02, H_03, H_04 and H_05. The arrows connecting independent variables with moderating variables shows the hypothesised direction of effect. The effect of each independent variable on the dependent variable was moderated by learners' socio-demographic attributes. The double-headed and dotted arrows suggest that the independent variables interact amongst themselves. For instance, a learner with detailed background knowledge of the comprehension subject may find it easier to generate questions, summarise the text in question and even recognise key words, than one with no such knowledge.

2.10 Summary of the Literature Review

The review process explores empirical and theoretical literature. A key points emerging from the empirical literature review process is that causal linkage between the interactive approach instruction and learners' academic performance is a subject that has been investigated widely across the globe. Notably though, most of such studies, including Finney (2013), Vries (2011) and McCormack (2010), among others, adopted a general approach by examining the relationship between interactive approach instruction and learners' academic performance. However, a few studies such as Nur and Ahmad (2017), Warner and Dupuy (2018) and Alfaki (2013), among others, went a step further to examine relationship between each component of the interactive approach instruction and learners' academic performance, including achievement in reading comprehension. The review process further revealed a skew in terms of the settings of such studies, with most of them conducted in developed countries. In African countries, including Kenya, studies focusing on each aspect of the interactive approach instruction vis-à-vis learners' achievement in reading comprehension remain scanty; thereby, impairing comparative analyses.

Besides, shortage of such studies in Kenya, and more particularly in Vihiga County, remains a key challenge to response interventions that would improve the application of interactive approach instruction, in tandem with synergizing learners' performance in English language examinations.

On the other hand, the review process reveals the paradigm shift in theoretical perspectives about reading from the bottom-up, through top-down, and to the interactive model. The review process brings out literature connecting the Interactive Reading Theory to its predecessors. Even though the theory harnesses the comparative advantages of the two models, it's chided for lacking operational justifications for readers' tendencies to draw inferences sub-unconsciously, as well as failing to account for the results of some studies; which in turn, raises questions about its predictability.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes methodological aspects that were applied to identify and select participants, as well as source, process, analyse and interpret the requisite information to accomplish the study's objectives. More specifically, the chapter describes the philosophical paradigms underpinning the study, research design, target population, sampling procedures, sample sizes, instruments for data collection, as well as the validity and reliability of the instruments. Lastly, the chapter describes the procedures used for data collection, processing, analysis, and ethical compliance

3.2 Philosophical Paradigms and Approaches

The study was founded on two complementary philosophical schools of thought, namely, positivism and constructivism. The positivist school of thought holds that information derived from phenomena is an exclusive source of authoritative knowledge, provided that the observation process is objective and the phenomena being observed is independent of investigators. A positivist investigator looks for causal relationships between phenomena, which entails formulating and testing null hypotheses. In this regard, concepts are broken down into variables, that can be measured and results used to either confirm or refute null hypotheses (Wong, 2014; Ashley & Orenstein, 2005; Hussey & Hussey, 1997).

On the other hand, the constructivist school of thought believes that phenomena is socially constructed and subjective, implying that a constructivist investigator is part of the phenomena under investigation (Wong, 2014; Ashley & Orenstein, 2005). According to Easterby-Smith, Thorpe and Lowe (1991), a constructivist investigator focuses on the meaning of reality being observed, examines totality of reality and induces generalisations. The methods used under the constructivist paradigm are often combined to enhance clarity of relationships between phenomena; while samples are relatively smaller than that used under the positivist paradigm (Wong, 2014; Ashley & Orenstein, 2005; Hussey & Hussey, 1997).

Based on positivist thoughts, the investigator determined causal relationships between the interactive approach instruction and learners' achievement in reading comprehension. The concepts were broken down to measurable variables, while null hypotheses were tested to determine effect of interactive approach instruction on learners' achievement in reading comprehension. Under the constructivist paradigm,

the study involved Key Informant Interviews (KIIs) with teachers and observation of how teachers applied the interactive approach instruction when reading comprehensions. The information generated was used to examine the totality of relationship between the interactive approach instruction and learners' achievement in reading comprehension.

Furthermore, based on the positivist and constructivist thoughts, the mixed methods approach was applied. According to Sale, Lohfeld and Brazil (2002), mixed methods entail combining quantitative and qualitative research methods in a study to fully explore the relationship between phenomena. As noted by Hughes and Sharrock (1997), each method has its philosophical basis, including a patterned set of assumptions concerning reality (ontology), knowledge of reality (epistemology), and particular ways of knowing reality (methodology).

3.3 Research Design

This was a quasi-experimental study involving the Solomon Four-Group Design, which combines pre-test post-test and post-test only designs (Symmons, 2013; Boushey, Harris, Bruemmer, Archer & Van Horn, 2006). Figure 3.1 shows the schematic layout of the design.
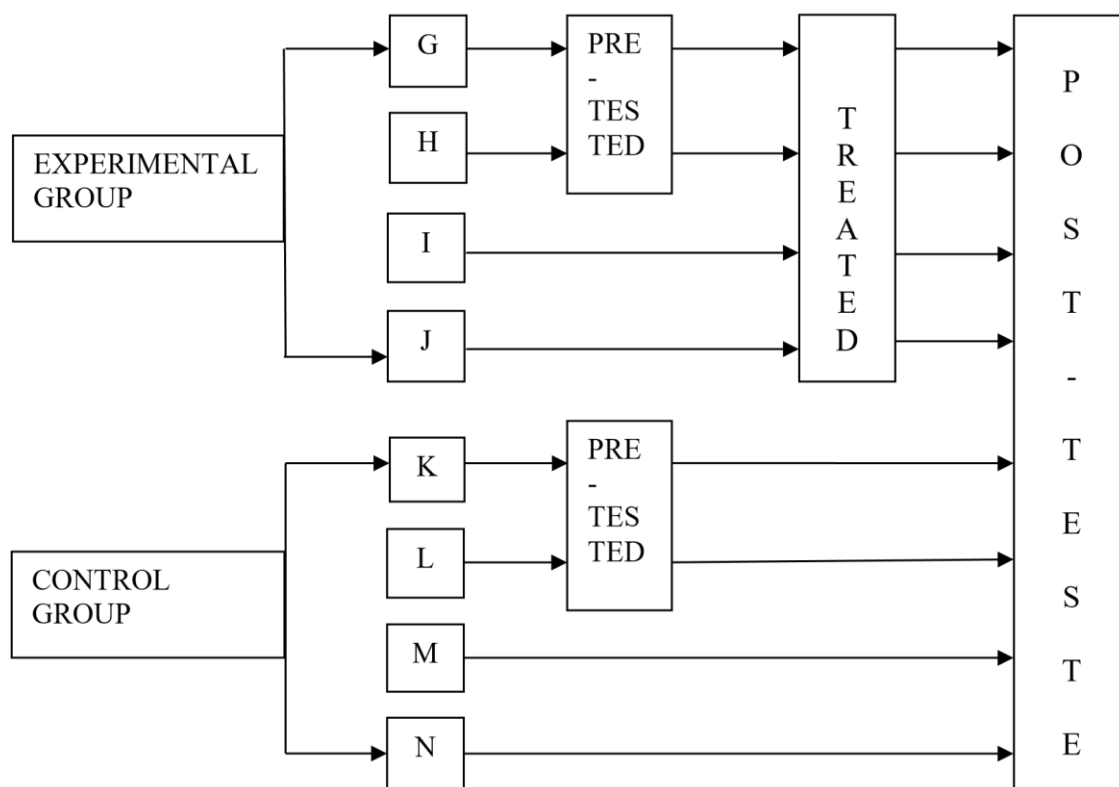
Figure 3.1: The Solomon Four-Group Design

In this design, participants are randomly assigned to one of the four groups, viz. an experimental group that receives both a pre-intervention test (pre-test) and a post intervention test (post-test); an experimental group that receives a post-test only; a control group that receives a pre-test and a post-test; as well as a control group that receives a post-test only. Whereas the experimental group is subjected to an intervention (treatment), the control group is not exposed to any treatment.

After the treatment period, the groups are subjected to a post-test. The ensuing analysis involves comparing the scores obtained by members of each group in the post-test. More particularly, investigators focus on determining whether or not, the treatment caused significant differences in the mean scores obtained by the experimental and control groups, while preventing threats to internal validity such as exposure to the pre-test (Symmons, 2013; Boushey *et al.*, 2006). In this regard, where the scores for those exposed to a pre-test are not significantly different from the scores obtained by those subjected to a pre-test, it means the administration of pre-tests has no adverse effects on post-test scores. In such scenarios, post-test scores between the experimental and control groups are compared to determine effect of the treatment (Boushey *et al.*, 2006).

In this study, the design was adopted particularly to ensure that taking the pre-test doesn't affect how learners score in the post-test. In view of this, the eight schools involved in this study were randomly assigned to four groups consisting of schools code-named G, H, I and J, as the experimental group that received treatment, viz. training teachers of English on the correct procedure of applying the interactive approach instruction; while the other four schools coded as K, L, M and N were randomly assigned to the control group, which didn't receive any treatment. The 'random assignment' process involved selecting elements from the sample pool randomly and allocating them into any of the four groups. As indicated in Figure 3.1, only two of the four schools in the experimental group (G and H), and two of the schools in the control groups (K and L) were subjected to the pre-test. The other four schools, namely, I and J of the experimental group, as well as M and N of the control group were not. However, all the eight schools were subjected to the posttest.

The comparison of post-test scores for learners in schools G and H against scores obtained by learners in schools I and J, enabled the investigator to determine the effect of administering the pre-test. In this regard, a significant difference between the mean scores for learners in the schools exposed to the pre-test and that for

learners in schools that were not indicated that the pre-test process had some influence on post-test results. This principle applies to schools in the control group as well.

The design was chosen because it enables investigators to determine the effect of exposure to pre-tests on the post-test scores. 'Pre-test sensitisation effects' is the term used to describe a situation where exposure to a pre-test influences scores on subsequent administrations of the same test. Arguably, pre-test sensitisation is an inevitable threat to internal validity in studies involving administration of a test before and after an intervention (Navarro & Siegel, 2018). Its intensity varies from one study to another, as well as with the lapse of time between the two tests. In this regard, the longer the duration between pre-tests and post-tests, the lower the chances of a testing effect occurring (Boushey *et al.,* 2006).

By determining the effect of pre-test sensitisation, the design enables investigators to report valid results; thereby, avoid making erroneous conclusions. However, the design demands a relatively larger sample size, multiple data collection instruments, and a relatively longer time for analyses, which involves comparison of post-test scores between members of the experimental group; between members of the control group; as well as between experimental and control groups, which brings up significant logistical implications for investigators (Boushey *et al.*, 2006). In addition, analyses can be quite complex, especially if the pre-test has an unintended effect on the dependent variable (Boushey *et al.*, 2006).

3.3 Target Population

The target population consisted of all public primary schools in Vihiga County, which consists of five sub-counties, namely, Vihiga, Sabatia, Emuhaya, Luanda, and Hamisi. The study targeted public schools because they enrol all learners, regardless of family's socio-economic background. Hence, public schools provided a better profile of communities residing in Vihiga County than private schools.

Accessible Ministry of Education records show that at the time of the study, the County had about 361 registered public primary schools, as indicated in Appendix XIII (Ministry of Education, 2017). Within schools, the study targeted all standard six learners and teachers of English language. Extant planning literature shows that at the time of the study, the County had 175,000 primary school learners, with an average of 480 learners per school and 60 learners per class (County Government of Vihiga, 2018). The targeting of standard six learners was considered appropriate because the participation of such learners was likely to contribute positively towards

their preparation for KCPE. More still, the County had about 4,300 primary school teachers, averaging at 12 per school. Each school had at least a teacher handling English subject.

3.4 Sample Sizes and Sampling Procedures

Part A of Table 3.1 shows sample sizes for the various sampling units, including sub-counties, schools, teachers and learners; as well as the methods of determination. Part B of the Table further shows the distribution of sample sizes by various attributes including group, sub-counties and gender, for both learners and teachers.

Table 3.1: Sample sizes

PART A

Sampling units	Sample size	Method of determination
Sub-counties	4	Fisher's formula
Schools	8	Solomon Four-Group design
Learners	280	Fisher's formula
Teachers	8	Convenient

PART B

Group	Sub County	School	Learners Girls	Boys	Total	Teachers Female	Male
Experimental	Luanda	G	19	16	35	1	
	Emuhaya	H	18	16	34	1	
	Hamisi	I	20	18	38	1	
	Sabatia	J	19	17	36	1	
	Luanda	K	22	14	36		1
Control	Emuhaya	L	17	17	34		1
	Hamisi	M	19	17	36	1	
	Sabatia	N	16	15	31	1	
Total		8	150	130	280	5	3

Out of 5 sub-counties, 4 were involved in the study using Fisher's formula for sample size determination from finite populations. The formula states that:

$$n_i = \frac{p(1-p)}{\left[\left(\frac{a}{z}\right)^2 + p(1-p)/N_i\right]}$$

Where: n_i is the sample size, N_i is the population, p is the estimated population variance, which by default is 0.5. In addition, α is the error margin, which by default

stands at 0.05, while Z is the confidence level, defaulted at 95%. Notably, 95% confidence level is equivalent to 1.96 on the normal distribution curve.

A sample of 8 schools was determined conveniently considering the amount of resources at the investigator's disposal and risk of the Solomon Four-Group Design yielding huge datasets, which would demand huge logistics to source and process. In this regard, the investigator was keen on a manageable sample within the available logistical framework. Fisher's formula was further applied to determine the sample of 280 learners from a population of 560 standard six learners in the 8 schools. In each school, the investigator targeted only 1 stream of standard six; therefore, only 1 teacher of English language was targeted; thereby, giving a sample of 8 teachers. Furthermore, purposive and simple random sampling procedures were applied to select units of analysis at various levels. More specifically, the sub-counties were sampled purposively based on their non-involvement in pilot-testing. This means that the sub-county that was involved in the pilot-testing was excluded from the main study. From each sub-county, 2 schools were sampled purposively based on previous participation in KCPE for at least five years, as well as rural-urban composition of the population. Besides, a simple random sampling procedure was applied to sample schools, which were further randomly assigned into the experimental and control groups. This means that each school in the sampling frame was given an equal chance of being included in the study; as well as of being assigned into either group.

In single-streamed schools, all standard six learners were sampled purposively; while in multi-streamed schools, a simple random procedure was applied to select one stream. All the leaners in sampled streams were involved in the study. Teachers were sampled purposively because of their involvement in teaching English language to the sampled standard six learners.

Purposive sampling is a non-probability procedure, which investigators to use cases that possess information that is relevant to the subject of a particular study. Such cases are often handpicked for being either informative or possessive of the characteristics of interest (Mugenda & Mugenda, 2003).

3.5 Data Collection Instruments

Various instruments were applied to source the requisite data, including a questionnaire for learners, a questionnaire for teachers, an observation schedule for both teachers and learners; an interview schedule for the teachers, as well as a pretest and post-test tool for the learners.

3.5.1 Questionnaire for learners

The questionnaire for learners had sections A and B. Section A sourced information on learners' background attributes, including age, gender and English test scores for the preceding term (See Appendix II). Section B comprised of closed-ended and Likert-scaled questions on application of the interactive approach instruction, and effect of the approach on learners' achievement in reading comprehensions. Besides, a few questions captured learners' perceptions about difficult areas in English examination papers. The questionnaire for learners was designed not to capture respondents' personal identifiers, which was critical for ensuring confidentiality; thereby, eliciting comprehensive and truthful responses.

3.5.2 Questionnaire for teachers

The structured questionnaire for teachers was also structured into two sections − A and B. Whereas section A elicited information on teachers' bio data, including gender, age, professional qualifications and experience, as well as average weekly workload, among others; section B captured perceptions on the use of interactive approach instruction, particularly in relation to reading comprehensions (See Appendix III).The questionnaire was muted on personal identifiers of teachers and schools, which in turn, enhanced validity of the information sourced.

3.5.3 Interview schedule for teachers

A semi-structured interview schedule was applied to source information on teachers' understanding of the interactive approach instruction at the onset of the treatment period as well as at the end of the treatment period (See Appendix V).

3.5.4 Observation schedule

An observation schedule was applied in classrooms to source information about implementation of the interactive approach instruction. This enabled the investigator to confirm teachers' perceptions about interactive instructional methods and learners' participation during lessons. The instrument consisted of a checklist with items confirming learners' involvement and demonstration of skills needed for the interactive approach, including background knowledge, word recognition skill, learner-generated questions, summary telling skills and prediction skills. The observation schedule also contained indicators of skills used in lesson delivery when teaching reading using the interactive approach instruction (See Appendix IV).

3.5.5 Comprehension Test

Criterion-referenced comprehension tests were applied to evaluate learners' performance before and after being exposed to the interactive approach instruction. The tests were purposed to reveal effectiveness of the interactive approach instruction in teaching comprehension. Two comprehension passages of different expository text structure were chosen based on the estimates of length and level of difficulty. Questions were formulated around facts discussed in the passages, information implied by the passages and learners' evaluative ability. The questions were presented in three formats: fill-in, multiple choices, and open-ended (See Appendices VI & VII).

3.6 Pilot Study

A pilot study was conducted in 4 schools in Vihiga sub-county. Whereas the subcounty was sampled randomly, the schools, teachers and learners were sampled purposively. The pilot study was implemented between January and April, 2017. Necessary adjustments such as re-statement of unclear questions and instructions, omission of irrelevant questions and correction of grammatical errors were effected based on results and respondents' observations.

3.6.1 Validity of research instruments

Measures taken to enhance validity of the instruments included designing clear questions and applying multiple instruments to capture the same information. In addition, the Content Validation Index (CVI) method was applied to assess validity of the instruments' contents. In this regard, draft instruments were subjected to scrutiny by two social science research experts, who were tasked to examine each question and determine relevance in relation to objectives of the study. The formula stated below was applied to compute the CVI.

$$CVI = \left[\frac{x_r}{\sum (x_r + x_i)} \right] \times 100$$

Where, CVI is the Content Validation Index, x_r is the number of items rated as relevant to study objectives, and x_i is the number of items rated as not relevant to study objectives. As guided by Polit and Beck (2006), a CVI value of 50% or more indicates that contents of an instrument are valid, while a CVI value of less than 50% indicates a weak or lack of content validity. In this study, the analysis obtained a CVI of 91.8%, for learners' questionnaire, 87.8% for teachers' questionnaire and 86.5% for teachers' interview schedule. In each case, the results suggested that content validity was above the minimum threshold prescribed by Polit and Beck (2006). As

noted by Beck and Gable (2001), the CVI method is applauded for being objective and representative of all items contained in data collection instruments.

3.6.2 Reliability of data collection instruments

Cronbach's alpha (α) was applied to determine the reliability of data sourcing instruments. Cronbach's alpha is a coefficient of reliability, which measures internal consistency, in terms of how closely related a set of items are as a group (Tavakol & Dennick, 2011). Cronbach's alpha is expressed as a function of the number of test items and the average inter-item correlation, as indicated below:-

$$\alpha = \frac{kr}{[1+ (k-1)r]} \tag{3}$$

Where k is the number of indicators or number of items and r is the mean inter-item correlation. Cronbach's alpha generally increases as inter-correlations among test items increase, and is thus, known as an internal consistency estimate of reliability of test scores. Because inter-correlations among test items are maximised when all items measure the same construct, Cronbach's alpha is widely believed to indirectly indicate the degree to which a set of items measures a single unidimensional latent construct (Ritter, 2010). The value of Cronbach's alpha is judged against the rule indicated in Table 3.2.

Table 3.2: Criteria for judging the value of Cronbach's alpha

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

When interpreting Cronbach's alpha coefficients, Ritter (2010) prescribes caution because a greater number of items involved in the test may artificially inflate the value of alpha, while a sample with a narrow range can deflate it. In addition, the value of alpha indicates the percentage of the reliable variance. For instance, if computations generate an alpha value of 0.70, it means that 70% of the variance data is reliable variance, which implies that 30% is error variance (Tavakol & Dennick,

2011). In this study, Cronbach's alpha coefficients were determined to show the level reliability for all the data collection instruments using the SPSS package. Table

3.3 provides a summary of Cronbach's alpha coefficients obtained by the investigator.

Table 3.3: Reliability analysis outcomes

Instrument	Test items	Cronbach's Alpha	Verdict
Questionnaire for learners	10	0.82	Good
Questionnaire for teachers	10	0.79	Acceptable
Observation schedule	10	0.90	Excellent
Interview schedule for teachers	10	0.84	Good

The Table shows that most of the data collection instruments used in this study were above the minimum threshold for internal consistency based on the judgement criterion developed by Ritter (2010).

3.7 Data Collection Procedure

The investigator sought authorisation for data collection from the National Commission for Science, Technology and Innovation (NACOSTI), as well as from the University of Nairobi. The latter provided an introductory letter, which facilitated the investigator's introduction during data collection. The process began with a meeting with the County Director of Education to build consensus, as well as seek necessary approval and support. The Directorate communicated to head teachers of sampled schools, requesting for administrative support and facilitation. Data was collected between May and August, 2017. The process involved training teachers about the correct procedure for applying the interactive approach instruction.

The schools involved in data collection were randomly assigned to the experimental group, comprising of schools G, H, I and J, or the control group, consisting of schools K, L, M and N. A comprehension pre-test was administered to learners in both groups as guided by the framework in Figure 3.1; followed by treatment in the experimental group, which lasted for three months. The investigator observed eight lessons in both groups to confirm responses provided by teachers and learners. After the three months of treatment, learners in all the four groups were subjected to a post-test, whose purpose was to check whether the treatment caused any significant effect on learners' achievement in reading comprehension.

3.8 Data Analysis Procedures

Both quantitative and qualitative techniques were applied to process and analyse data. Quantitative techniques included cross-tabulation, independent sample t-tests, which was used to determine the statistical significance of variations in the mean scores obtained by learners in the experimental and control groups; as well as mean scores obtained by learners in groups subjected to the pre-test and those not pretested. However, One-way Analysis of Variance (ANOVA) was applied to determine the significance of variations in the mean scores achieved by all the four groups. Furthermore, Chi-square (χ^2) statistic was applied to determine the statistical significance of the association between learner's achievement in reading comprehension (post-test scores) and various variables, including learners' background attributes; learners' background knowledge, learner-generated questions, summary telling skills, prediction skills, as well as word recognition skills.

In addition, multiple regression analysis was applied to determine effect of the interactive approach instruction on learners' achievement in reading comprehension. In this regard, the interactive approach instruction was operationalized in terms of learners' background knowledge, learner-generated questions, summary telling skills, prediction skills and word recognition skills; while achievement ion reading comprehension was in the form of test scores obtained by learners. Multiple regression analysis model holds that Y is a function of a set of k independent variables ($X_1, X_2...X_k$) in a population. The model assumes that for each set of values for the k independent variables ($X_{1j}, X_{2j}, X_{3j}...X_{kj}$), there is a distribution of Y_j values such that the mean of the distribution is represented by the equation.

$$Y_j = \beta_0 + \beta_1 X_{1j} + \beta_2 X_{2j} + \cdots \beta_k X_{kj} + \varepsilon_j$$

Where: β_0 is the intercept; $\beta_1 \ldots \beta_k$ are partial regression coefficients; ε_j is the error term; Y_j is the dependent variable; $X_i \ldots X_k$ are independent variables. In this study, the dependent variable (Y_j) was learners' achievement in reading comprehension, while independent variables $(X_i...X_k)$ included background knowledge, learnergenerated questions, summary telling skills, prediction skills and word recognition skills. The regression models generated three important outcomes, including standardised regression coefficients also known as *Beta* weights, adjusted coefficient of determination (R^2) and the F statistic. The effect of independent variables was indicated by *Beta* weights associated with each independent variable. Whereas a negative (-) *Beta* weight shows a negative effect, a positive *Beta* weight shows a positive effect. The regression analysis was used to test null hypotheses.

Furthermore, the regression analysis determined the relative importance of independent variable in relation to the magnitude of change in learners' achievement in reading comprehension. The analysis generated two regression models, one for learners in the independent group (Model 1) and one for learners in the control group (Model 2). Each regression model contained independent and moderating variables. The purpose of the two models was to determine how each independent variable affected the dependent variable among learners in schools where teachers were trained on how to correctly apply the interactive approach instruction and among learners in schools where teachers were not trained. The Statistical Package for Social Sciences(SPSS) facilitated all quantitative analyses. Table 3.4 provides a summary of the analysis techniques that were applied in the study and the outcomes.

Table 3.4: Summary of Inferential Analysis Techniques

Objectives	Null hypotheses	Analysis technique	Purpose
1.Determine the effect of background knowledge on learners' achievement in reading comprehension.	H_01: Background knowledge has no significant effect on standard six learners' achievement in reading comprehension.	-Chi Square tests -Binary logistic regression	-Determine association between achievement in reading comprehension and learners' background knowledge. -Determine effect of learners' background knowledge on achievement in reading comprehension. -Result judgement level: at least 90% confidence level.

2.Examine the effect of learner-generated questions on achievement in reading comprehension.	**H$_0$2:** Learnergenerated questions have no significant effect on standard six learners' achievement in reading comprehension.	-Chi Square tests -Binary logistic regression	-Determine association between achievement in reading comprehension and learnergenerated questions. -Determine effect of learnergenerated questions on achievement in reading comprehension. -Result judgement level: at least 90% confidence level.
3.Determine the effect of summary telling skills on learners' achievement in reading comprehension.	**H$_0$3:** Summary telling skills have no significant effect on standard six learners' achievement in reading comprehension.	-Chi Square tests -Binary logistic regression	-Determine association between achievement in reading comprehension and summary telling skills. -Determine effect of summary telling skills on achievement in reading comprehension.

			-Result judgement level: at least 90% confidence level.
4. Examine the effect of prediction skills on learners' achievement in reading comprehension.	H_04: Prediction skills have no significant effect on standard six learners' achievement in reading comprehension.	-Chi Square tests -Binary logistic regression	-Determine association between achievement in reading comprehension and prediction skills. -Determine effect of prediction skills on achievement in reading comprehension. -Result judgement level: at least 90% confidence level.
5. Assess the effect of word recognition skills on learners' achievement in reading comprehension.	H_05: Word recognition skills have no significant effect on standard six learners' achievement in reading comprehension.	-Chi Square tests -Binary logistic regression	-Determine association between achievement in reading comprehension and word recognition skills. -Determine effect of word recognition skills on achievement in reading comprehension. -Result judgement level: at least 90% confidence level.

The following publications provide details of the quantitative analysis techniques that were applied in this study, including Morgan, Leech, Gloeckner and Barrett (2007), Bryman and Cramer (1998), as well as Nachmias and Nachmias (1996). Furthermore, qualitative data obtained through interviews and observations were processed and analysed following three steps as prescribed by Best and Khan (2004). In the first step, data were transcribed and organised under five clusters, including background knowledge, learner-generated questions, as well as summarising, prediction and word recognition skills; in line with objectives of the study. The second step involved description of data to produce a preliminary report. The third step involved thematic analysis, whose purpose was to identify emerging themes under each cluster, as well as patterns of change in learners' achievement in reading comprehension.

3.9 Ethical Considerations and Research Authorisation

The study was guided by universal ethical principles of social science research, including respect for participants, beneficence and justice (Dench, Iphofen & Huws, 2004). Based on the principle of respect for participants, the investigator recognises that all human participants in a research process have the right to self-determination; hence, should be given opportunity to decide on whether to participate or not. In this study, the main participants were standard six children, who in social science research ethics, fall within the category of vulnerable participants (Dench *et al.,* 2004; Mugenda & Mugenda, 2003).

With the support of head teachers, the investigator sought for informed consent from parents or guardians before involving children in the study. This involved writing brief letters to parents and guardians, explaining purpose of the study, its potential benefits to the children regarding performance in examinations and the importance of voluntary participation. Parents and guardians were further informed about right to withdraw consent of participation for children at any time before or during data collection; and that such a move would not affect relationship with the schools in anyway. Besides, learners were required to fill in assent forms, while teachers were also taken through the consenting process.

The investigator recognises that all participants in a research process have the right to be protected from physical, social or psychosocial harm that may be caused or emerge as a result of participation in a research process. In this regard, head teachers, teachers and parents were assured that all the information obtained from the schools and participants would be kept confidential, and used for the purpose of the research only. In this regard, participants were informed that the information would only be accessed by the people involved in the study, including supervisors and research assistants. Confidentiality measures included ensuring anonymity of the schools and participants.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter presents results of the study, which have been organised into ten main sections, including introduction, questionnaire return rate, univariate analysis of the dependent variable, as well as learners' demographic profile and achievement in reading comprehension. This is followed by five sections focusing on effect of the independent variables, viz. background knowledge, learner-generated questions, summary telling skills, prediction skills and word recognition skills, on learners' achievement in reading comprehension. The last section presents regression models' goodness-of-fit. Details are presented under the following sections and sub-sections.

4.2 Questionnaire Return Rate

In this study, 280 self-reporting questionnaires were issued to standard six learners, who were given five days to fill in the requisite information and return the same through English language teachers. The results showed that 279 questionnaires were successfully filled and returned within the specified period; thus, suggesting 99.6% a questionnaire return rate. This was attributed to the support provided by head teachers, who implored learners to provide necessary support; as well as explanations provided by the investigator about the study, detailing its purpose, significance and need for voluntary participation.

According to Werner (2004), a questionnaire return rate of 80% or above is sufficient for making accurate deductions from samples. Based on this benchmark, the questionnaire return rate of 99.6% is above the minimum threshold for guaranteeing accuracy of results and conclusions. In addition, the study targeted 8 standard six teachers of English language with key informant interviews. Again, this was achieved fully, and the success was attributed to head teachers' administrative support.

4.3 Univariate Analysis of the Dependent Variable

Of the 279 learners involved in the study, 142 (50.9%) were members of the experimental group, comprising of schools G, H, I and J; while 137 (49.1%) were in the control group, including schools K, L, M and N. Again, of the 279 learners, 139 (49.8%) were subjected to pre-intervention testing in line with principles of the *Solomon Four-Group Design*, while 140 (50.2%) were not. The intervention involved training standard six teachers of English language on how to correctly apply

the interactive approach instruction method. The training's effectiveness was measured by exposing all learners to a post-intervention test, hereafter referred to as

'post-test', and the resulting score designated as learners' achievement in reading comprehension.

The study focused on determining if there was any significant difference in the achievement in reading comprehension between learners in the experimental group and those in the control group in terms of mean scores obtained in the post-test. In this regard, the t-test for independent samples was applied. Table 4.1 shows the mean scores obtained by learners in both groups and the significance tests. For ease of interpretation, *n* represents the sample size, *SD* is the standard deviation, *SE* is standard error, *Sig.* is the significance and *df* is the degree of freedom. Again, it's important to note that Levene's test for equality of variance determines whether variances between two groups are equal or not.

Equal variance across two or more groups is called homogeneity of variance

(Levene, 1960). Where the significance value (Sig.) for Levene's test is greater than 0.05, it means variances between two groups are assumed to be equal; hence, results are read from the first row. But if the significance of Levene's test is less than or equal to 0.05, then variances between the groups are assumed not to be equal; hence, results are read from the second row.

In addition, the difference of the mean scores between two groups or samples is indicated by Sig. (2-tailed), hereafter referred to as 'ρ-value'. Again, if the ρ-value is greater than 0.05, then there is no significant difference between the means scores obtained by two groups. However, if the ρ-value is less than or equal to 0.05, then there is a significant difference in the mean scores obtained by the two groups.

Table 4.1: Variation in post-test scores between learners in the experimental and control groups

Group	n	Mean	SD	SE	95% CI for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Experimental	142	35.89	7.115	0.597	34.71	37.07	21	49
Control	137	22.32	5.099	0.436	21.46	23.18	10	36
Total	**279**	**29.23**	**9.195**	**0.551**	**28.14**	**30.31**	**10**	**49**

		Levene's Test for Equality of Variances		ttest for Equality of Means						95% CI of the Difference	
		F	Sig.	t	df	Sig. (2 tailed)	Mean Difference	SE Difference		Lower	Upper
Post-test score	Equal variances assumed (1st row)	26.970	0.000***	18.249	277 0	.000***	13.566		0.743	12.103	15.030
	Equal variances not assumed (2nd row)			18.355	255.890 0	.000***	13.566		0.739	12.111	15.022

*,**,*** *show significance at ρ<0.1, ρ<0.05 and ρ<0.01 error margins, respectively*

The results presented in Table 4.1 show that learners in the experimental group obtained a mean score of 35.59 (95% Confidence Interval [CI] = 34.71-37.07); while those in the control group obtained a mean score of 22.32 (95% CI = 21.46-23.18).

Based on these principles, the results further show that the Sig. value for Levene's test was 0.000, which implies that equal variances were not assumed; hence, the results were read from the second row. In this regard, the analysis obtained a tstatistic of 18.355 with a ρ-value of 0.000, which suggested up to 99% chance that the mean scores obtained by learners in the experimental and control groups were significantly different. Given that the mean score obtained by learners in the experimental group (35.89) was higher than that of learners in the control group (22.32), the results implied that the training of teachers on how to correctly apply the interactive approach instruction, enhanced learners' achievement in reading comprehension.

A pre-intervention test, hereafter referred to as 'pre-test', was administered to a section of learners in both groups. The analysis also focused on determining if there was any significant difference in the scores obtained by learners subjected to the pretest and those not subjected. The purpose of this analysis was to determine if

exposure to pre-test had any significant influence on the post-test scores. In view of this, Table 4.2 presents that means scores obtained by the pre-tested learners and those not pre-tested, in addition to significance tests.

Table 4.2: Difference in post-test scores between the pre-tested and not pre-tested sub-groups

Sub-group		n	Mean	SD	SE	95% CI for Mean		Minimum	Maximum
						Lower Bound	*Upper Bound*		
Pre-tested	139	30.74	8.292	0.703		29.35	32.13	18	49
Not Pre-tested	140	30.72	9.434	0.797		29.15	30.30	11	48
Total	**279**		**29.23**	**9.195**	**0.551**	**28.14**	**30.31**	**11**	**49**

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% CI of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	SE Difference		*Lower*	*Upper*
Post-test score	Equal variances assumed (1st row)	3.889	0.050	0.018	277	0.985	0.020	1.064	-2.074	2.113	
	Equal variances not assumed (2nd row)			0.018	272.994	0.985	0.020	1.063	-2.073	2.113	

*, **, *** show significance at ρ<0.1, ρ<0.05 and ρ<0.01 error margins, respectively

The results in Table 4.2 show that of the 279 learners, 139 (49.8%) were subjected to pre-intervention testing. This group obtained a mean score of 30.74 (95% CI = 29.35-32.13), against 30.72 (95% CI = 29.15-30.30) for those not subjected to the pre-test. The results further show that Levene's test for equality of variances equalled 0.05, which meant that equal variances were not assumed. Based on this, the results read from the second row showed that a t-statistic of 0.018, with 272.994 degrees of freedom and a ρ-value of 0.985 were obtained. The ρ-value was not significant, which meant that the scores obtained by learners exposed to the pre-test were not significantly different from that obtained by learners not exposed to the same testing. Since the pre-tested learners had a mean score of 30.74 against 30.72 for those not pre-tested, it meant that the pre-test didn't cause a significant effect on learners' achievement in reading comprehension.

The effect of pre-test was also examined within the experimental and control groups. The analysis revealed lack of a significant effect among learners in the experimental group [t = 1.152, df = 140 & ρ-value = 0.251]; as well as among learners in the control group [t = 3.228 df = 134.78 & ρ-value = 0.237].

4.4 Socio-demographic Attributes & Achievement in Reading Comprehension

To facilitate bivariate analysis, the measurement scale for post-test scores was changed from interval to nominal by collapsing the continuous data into four categories of '<20 marks', '20-29 marks', '30-39 marks' and '40+ marks'. This was cross-tabulated with learners' socio-demographic attributes, including age, gender, school and sub-county of residence. Table 4.3 shows the cross-tabulation results, whose purpose was to determine the attributes that were significantly associated with the dependent variable. Only those with significant association were involved in multivariate analyses covered under sections 4.5 to 4.9.

Table 4.3: Cross-tabulation of learners' attributes & achievement in reading comprehension

| attributes | Post-test scores | | | | | | | | | |
| | <20 | 20-29 | 30-39 | | | | 40+ | | Total | |
	Freq	%	Freq	%	Freq	%	Fre q	%	Fre q	%
Age										
11 years	1									
		2.4	5	3.9	0	0.0	0	0.0	6	2.2
12 years	22	53.7	64	49.6	28	47.5	29	58.0	143	51.3
13 years	11	26.8	32	24.8	21	35.6	12	24.0	76	27.2
14 years	7	17.1	20	15.5	7	11.9	9	18.0	43	15.4
15 years	0	0.0	8	6.2	3	5.1	0	0.0	11	3.9
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
Gender										
Male										
	20	48.8	62	48.1	26	44.1	22	44.0	130	46.6
Female	21	51.2	67	51.9	33	55.9	28	56.0	149	53.4
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

School											χ^2	df	ρ-value
									Learners' Test results				
G	0	0.0	13	10.1	11	18.6	11	22.0	35	12.5			
H	0	0.0	7	5.4	12	20.3	15	30.0	34	12.2			
I	0	0.0	14	10.9	9	15.3	15	30.0	38	13.6			
J	0	0.0	10	7.8	16	27.1	9	18.0	35	12.5			
K	8	19.5	19	14.7	9	15.3	0	0.0	36	12.9			
L	4	9.8	28	21.7	2	3.4	0	0.0	34	12.2			
M	14	34.1	22	17.1	0	0.0	0	0.0	36	12.9			
N	15	36.6	16	12.4	0	0.0	0	0.0	31	11.1			
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**			

13.082 12 0.023[**]

0.477 3 0.924

15.719 9 0.013[**]

Sub-county											χ^2	df	ρ-value
Luanda	8	19.5	32	24.8	20	33.9	11	22.0	71	25.4			
Emuhaya	4	9.8	35	27.1	14	23.7	15	30.0	68	24.4			
Hamisi	14	34.1	36	27.9	9	15.3	15	30.0	74	26.5	166.542	21	0.000[***]
Sabatia	15	36.6	26	20.2	16	27.1	9	18.0	66	23.7			
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**			

*, **,*** *show significance at ρ<0.1, ρ<0.05 and ρ<0.01 error margins, respectively; while Freq = Frequency*

The results presented in Table 4.3 show that about one-half of learners, 143 (51.3%), were aged 12 years, 76 (27.2%) were 13 years old, while 43 (15.4%) indicated 14 years. In relation to post-test scores, the results showed that in the 20-29 marks category, 64 (49.6%) learners were aged 12 years, 32 (24.8%) were 13 years old, while those aged 14 years were 20 (15.5%). In the 30-39 marks category, 28 (47.5%) learners indicated 12 years, while 21 (35.6%) were 13 years old. Based on this, the analysis obtained a computed Chi-square (χ^2) value of 13.082, with 12 degrees of freedom (*df*) and a ρ-value of 0.023, which suggested up to 95% chance that learners' achievement in reading comprehension significantly associated with age. In other words, learners' age influenced performance in the post-test.

Learners included 130 (46.6%) boys and 149 (53.4%) girls. The category of <20 marks included 20 (48.8%) boys and 21 (51.2%) girls, while in the category of 40+ marks were 22 (44.0%) boys and 28 (56.0%) girls. However, the analysis revealed lack of a significant association between learners' gender and achievement in reading comprehension (χ^2 = 0.477, df = 3 & ρ-value = 0.924). This implies lack of a significant difference between the marks obtained by boys and girls in the post-test; thus, learners' gender didn't influence achievement in reading comprehension.

The results in Table 4.3 further show that learners were sampled from 8 public primary schools, which for the purpose of confidentiality, were coded as G, H, I, J, K, L, M and N. The results showed that 38 (13.6%) learners were sampled from school I, followed by 36 (12.9%) from schools K and M, each; while 35 (12.5%) were sampled from school G. The category of <20 marks, included 15 (36.6%) learners of school N, and 14 (34.1%) of school M. The category of 40+ marks consisted of 15 (30.0%) learners of schools H and I, each; while 11 (22.0%) learners were members of school G. Based on the cross-tabulations, the analysis obtained a computed χ^2 value of 15.719, (df = 9 & ρ-value = 0.013), which suggested up to 95% chance that learners' achievement in reading comprehension significantly varied across the schools.

Table 4.3 also show that learners were drawn from four sub-counties, including Hamisi, 74 (26.5%); Luanda, 71 (25.4%); Emuhaya, 68 (24.4%) and Sabatia, 66 (23.7%). In relation to achievement in reading comprehension, the category of 20-29 marks consisted of 36 (27.9%) learners from Hamisi, 35 (27.1%) from Emuhaya and 32 (24.8%) from Luanda. In the upper category of 40+ marks, 15 (30.0%) learners were from Hamisi and Emuhaya sub-counties, each; while 11 (22.0%) were natives of Luanda Sub-County. Based on this, the analysis revealed a significant association

between learners' achievement in reading comprehension and sub-county of residence (χ^2 = 166.542, df = 21 & ρ-value = 0.000). The results suggested that achievement in reading comprehension varied across the sub-counties.

Furthermore, the study covered socio-demographic attributes of teachers, including gender, age, highest education level, teaching experience and weekly number of lessons. The results showed that the teachers included 5 (62.5%) males and 3 (37.5%) females. About two-thirds of teachers, 5 (50.0%), were aged 31 to 40 years; 2 (25.0%) were aged less than 30 years; while 1 (12.5%) was in the 41 to 50 years age bracket. Besides, most teachers, 7 (87.5%), were diploma holders; only 1 (12.5%) reported certificate qualification. Of the 8 teachers, 3 (37.5%) reported a teaching experience of less than 10 years, another 3 (37.5%) indicated 11 to 20 years, while 2 (25.0%) had more than 20 years of experience. Regarding the number of lessons per week, teachers reported an average of 35 lessons, with 2 (25.0%) participants indicating as high as 40 lessons, while 1 (12.5%) stating a low of 30 lessons per week.

4.5 Background Knowledge and Achievement in Reading Comprehension

Background knowledge was operationalized using five reading practices, framed as perception statements. Learners were requested to indicate views on a five-point scale, calibrated as 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree', for each of the perception statements. Details of the subsequent analyses are presented in the following sub-sections.

4.5.1 Bivariate results

Learners' views about the perception statements aligned to background knowledge were cross-tabulated against achievement in reading comprehension, measured in terms of post-test scores, and clustered into four categories of '<20 marks', '20-29 marks', '30-39 marks' and '40+ marks'. Table 4.4 presents the cross-tabulation results for all the perception statements.

Table 4.4: Cross-tabulation of background knowledge & achievement in reading comprehension

Aspects of background knowledge	Post-test scores									
	<20		20-29		30-39		40+		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
I think about what I know to help understand what I read										
Strongly agree	4	9.8	28	21.7	14	23.7	12	24.0	58	20.8
Agree	16	39.0	43	33.3	30	50.8	30	60.0	119	42.7
Undecided	7	17.1	13	10.1	4	6.8	4	8.0	28	10.0
Disagree	9	22.0	28	21.7	8	13.6	1	2.0	46	16.5
Strongly disagree	5	12.2	17	13.2	3	5.1	3	6.0	28	10.0
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I preview the text to see what it's about before reading it										
Strongly agree	2	4.9	17	13.2	6	10.2	11	22.0	36	12.9
Agree	19	46.3	34	26.4	28	47.5	18	36.0	99	35.5
Undecided	2	4.9	11	8.5	6	10.2	4	8.0	23	8.2
Disagree	7	17.1	38	29.5	8	13.6	12	24.0	65	23.3
Strongly disagree	11	26.8	29	22.5	11	18.6	5	10.0	56	20.1
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I use context clues to help me understand what I read										
Strongly agree	0	0.0	16	12.4	8	13.6	14	28.0	38	13.6
Agree	10	24.4	46	35.7	26	44.1	11	22.0	93	33.3
Undecided	3	7.3	16	12.4	4	6.8	7	14.0	30	10.8
Disagree	19	46.3	36	27.9	16	27.1	16	32.0	87	31.2
Strongly disagree	9	22.0	15	11.6	5	8.5	2	4.0	31	11.1
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I try to guess the meaning of unknown words										
Strongly agree	1	2.4	5	3.9	5	8.5	3	6.0	14	5.0
Agree	1	2.4	47	36.4	23	39.0	22	44.0	93	33.3
Undecided	9	22.0	17	13.2	8	13.6	7	14.0	41	14.7
Disagree	20	48.8	42	32.6	17	28.8	12	24.0	91	32.6
Strongly disagree	10	24.4	18	14.0	6	10.2	6	12.0	40	14.3
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I read slowly but carefully to understand what I am reading on										
Strongly agree	10	24.4	25	19.4	10	16.9	16	32.0	61	21.9
Agree	10	24.4	55	42.6	29	49.2	25	50.0	119	42.7
Undecided	3	7.3	11	8.5	5	8.5	2	4.0	21	7.5
Disagree	15	36.6	30	23.3	7	11.9	4	8.0	56	20.1
Strongly disagree	3	7.3	8	6.2	8	13.6	3	6.0	22	7.9
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

The first perception statement postulated that 'I think about what I know to help me understand what I read'. The results in Table 4.5 show that of the 279 learners, 119 (42.7%) agreed with the statement, while 58 (20.8%) agreed strongly. Contrastingly, 46 (16.5%) learners indicated disagreement with the statement, while 28 (10.0%) disagreed strongly. Cumulatively, 177 (63.4%) learners admitted thinking about the known to facilitate the understanding of text content, while 74 (26.5%) didn't practice such.

In relation to achievement in reading comprehension, cumulative results showed that among the learners who scored less than 20 marks (n=41), about one-half, 20 (48.8%), affirmed that thinking about the known to understand text content, while 14 (34.1%) denied practicing the same when reading. Among those who scored 40+ marks (n=50), 42 (84.0%) affirmed the statement, while 4 (8.0%) didn't. In the category of those who scored 20-29 marks (n=129), 71 (55.0%) felt the statement was true, while 45 (34.9%) indicated contrary views. Based on this, the analysis obtained a computed χ^2 value of 26.266 (df = 12 & ρ-value = 0.010), which suggested up to 95% chance that learners' achievement in reading significantly associated with the practice of thinking about the known to understand text content.

The second perception statement read as 'I preview text to see what it's about before reading it'. Table 4.5 shows that of the 279 learners, 99 (35.5%) agreed with the statement, while 36 (12.9%) agreed strongly. However, 65 (23.3%) learners disagreed, while 56 (20.1%) disagreed strongly. Cumulatively, 135 (48.4%) learners affirmed previewing texts before reading, while 121 (43.4%) hinted that the statement was untrue about their reading practices. Cumulative results further showed that of the 41 learners who scored less than 20 marks, about one-half, 21 (51.2%), felt that the statement was true, while 18 (43.9%) didn't. In the category of learners who scored 40+ marks (n=50), 29 (58.0%) affirmed the statement, while 17 (34.0%) didn't. Among those who scored 30-39 marks (n=59), 34 (57.6%) felt the statement was true, while 19 (32.2%) didn't. Based on this, the analysis revealed up to 95% chance that learners' achievement in reading significantly associated with the practice of previewing texts before reading(χ^2 value = 22.313, df = 12 & ρ-value = 0.034).

Learners were further requested to indicate views about the third perception statement claiming that 'I use context clues to help me understand what I read'. The results in Table 4.5 indicate that of the 279 learners, 93 (33.3%) agreed with the

statement, while 38 (13.6%) strongly agreed. However, 87 (31.2%) learners disagreed with the claim, while 31 (11.1%) disagreed strongly. Besides, cumulative results showed that whereas 135 (48.4%) learners acknowledged using context clues to understand text content, 121 (43.4%) denied practicing the same.

In relation to achievement in reading comprehension, cumulative results showed that among the learners who scored less than 20 marks (n=41), 28 (68.3%) disproved the statement, which suggested non-use of context clues to understand text content, while 10 (24.4%) affirmed the same. Among those who scored 40+ marks (n=50), 25 (50.0%) accepted that the statement was accurate about their reading practices, while 18 (36.0%) indicated contrary views. In the category of 20-29 marks (n=129), even though 62 (48.1%) said the statement was true, 51 (39.5%) hinted that it wasn't. In view of this, the analysis yielded a computed χ^2 value of 31.408 (df = 12 &ρ-value = 0.002), which suggested up to 99% chance that learners' achievement in reading significantly associated with the use of context clues to understand text content.

Learners also provided views regarding the fourth perception statement, postulating that 'I try to guess the meaning of unknown words'. In this regard, the results presented in Table 4.5 show that of the 279 learners, 93 (33.3%) agreed with the statement, while 14 (5.0%) agreed strongly. Those who disagreed were 91 (31.6%), while 40 (20.1%) disagreed strongly. Cumulatively, 131 (47.0%) learners argued against the statement by denying guessing the meaning of unknown words when reading, while 107 (38.4%) endorsed it.

Cumulative results further indicated that of the 41 learners who scored less than 20 marks, 30 (73.2%) felt that the statement was untrue about their reading practices, while 2 (4.8%) upheld the assertion. Contrastingly, among those who scored 40+ marks (n=50), 25 (50.0%) affirmed the statement, while 18 (36.0%) didn't. Among those who scored 30-39 marks (n=59), 28 (57.6%) were of the view that the statement was true, while 23 (39.0%) didn't. In this regard, the analysis revealed up to 99% chance that learners' achievement in reading significantly associated with the practice of guessing the meaning of unknown words when reading (χ^2 value =

26.995, df = 12 & ρ-value = 0.008).

The study further required learners to indicate views regarding the perception statement saying that 'I read slowly but carefully to understand what I am reading on'. Table 4.5 shows that 119 (42.7%) of the 279 learners agreed with the statement, while 61 (21.9%) hinted at a strong agreement. At the opposite side of the scale, 56

(20.1%) disagreed with the assertion, while 22 (7.9%) expressed strong disagreement. Cumulatively, 180 (64.5%) learners affirmed the statement by accepting reading slowly but carefully in order to understand text, while 78 (28.0%) indicated that the statement was untrue about their reading practices.

Cumulative results further showed that of the 41 learners who scored less than 20 marks, 20 (48.8%) endorsed the statement, meaning that it was accurate about their reading practices; while 18 (43.9%) didn't. Among those who scored 40+ marks (n=50), 41 (82.0%) hinted that the statement was correct, while 7 (14.0%) felt it was incorrect. Furthermore, the category of 30-39 marks (n=59) included 39 (66.1%) learners who validated the statement and 15 (25.4%) who felt it was incorrect. Consequently, the analysis obtained a significant statistical association between learners' achievement in reading and the practice of slow but careful reading of textsto understand the meaning(χ^2 value = 23.926, df = 12 & ρ-value = 0.021).

Furthermore, bivariate analysis involved aggregation of the five perception statements to estimate the extent to which learners applied background knowledge skills in reading. The output, which was generated at interval scale was transformed into five ordinal categories of 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. To bring out the extent to which learners applied background knowledge skills, the ordinal categories were renamed as 'very consistent', 'consistent', 'undecided', 'inconsistent' and 'very inconsistent'. In this regard, learners who strongly agreed with perception statements were assumed to be 'very consistent' in applying background knowledge skills in reading, while those who 'strongly disagreed' were considered to be 'very inconsistent' applicants of background knowledge skills.

The resultant variable was cross-tabulated with the variable determine the extent to which learners in the experimental and control learners' group to groups applied the skills in reading. Figure 4.1 shows the cross-tabulation results between the aggregated variable (background knowledge skills) and learners' achievement in reading comprehension.
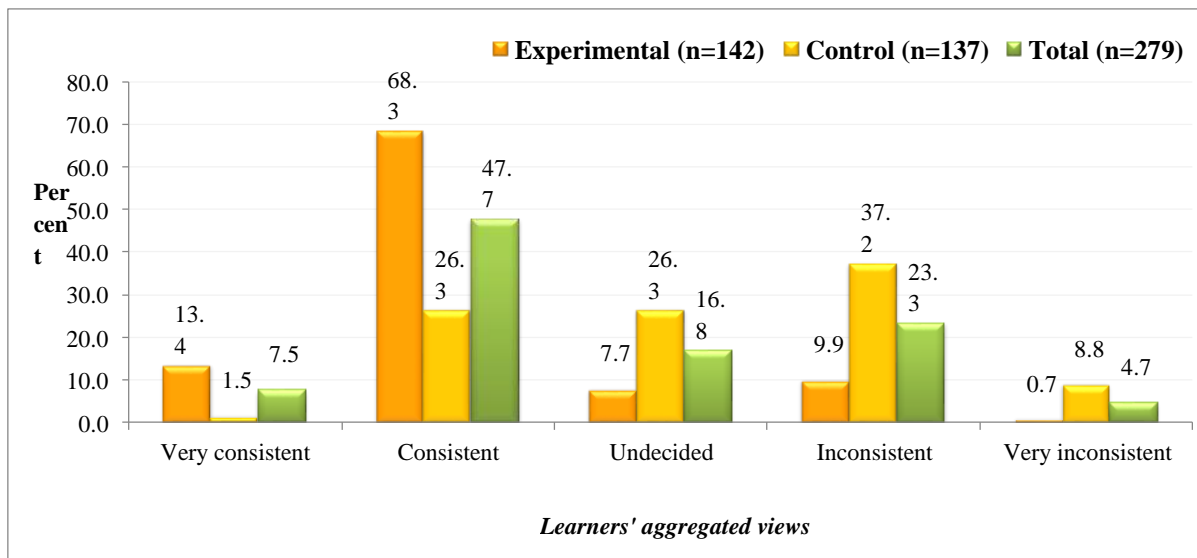
Figure 4.1: Learners' aggregated views on the use of background knowledge skills when reading

The results presented in Figure 4.1 show that of the 279 learners, 133 (47.7%) were consistent in applying background knowledge skills in reading, while 21 (7.5%) were very consistent. Those who were inconsistent were 65 (23.3%), while 13 (4.7%) were very inconsistent. Between the groups, the results showed that 97 (68.3%) learners in the experimental group against 36 (26.3%) in the control group were consistent in applying background knowledge skills. Those who were very consistent included 19 (13.4%) learners in the experimental group against 2 (1.5%) in the control group.

Contrastingly, 51 (37.2%) learners in the control group against 14 (9.9%) in the experimental group were inconsistent in applying the skills. Those who were very inconsistent included 12 (8.8%) learners in the control group against 1 (0.7%) in the experimental group. Cumulatively, 116 (81.7%) learners in the experimental group compared to 53 (38.7%) in the control group aligned towards consistent application of the skills when reading comprehension passages; while 63 (46.0%) learners in the control group against 15 (10.6%) in the experimental group inclined towards inconsistent use of such skills.

The results suggest that most consistent applicants of background knowledge skills were in the experimental group, while the majority of inconsistent users of the skills were based in control group. In view of this, the analysis obtained a computed χ^2 value of 85.344 (df = 4 &ρ-value = 0.000), which suggested up to 99% chance that consistency in applying background knowledge skills in reading comprehension varied significantly between learners in the experimental and those in the control

groups. More explicitly, learners in the experimental group were likely to be more consistent in applying background knowledge skills than those in control groups.

4.5.2 Multivariate results

Bivariate analysis performed in the preceding sub-sections tell about the existence of statistical association between background knowledge and learners' achievement in reading comprehension; but doesn't bring out effect of background knowledge on the same. This necessitated application of linear regression analysis. Table 4.5 presents the regression analysis results, showing effect of background knowledge on learners' achievement in reading comprehension for those in the experimental group (Model 1) and those in the control group (Model 2).

Table 4.5: Effect of background knowledge on learners' achievement in reading comprehension

Model		Unstandardized Coefficients		Standardised Coefficients		t	p-value(7)
(1)	(2)	B(3)	Std. Error(4)	Beta(5)	(6)		
1	(Constant)	32.351	2.745			5.631	0.000***
	Background knowledge	**0.623**	**0.208**	0.412		**1.965**	**0.041****
	Learner-generated questions	0.588	0.190	0.410		1.931	0.046**
	Summary telling skills	0.586	0.194	0.409		1.905	0.057*
	Prediction skills	0.465	0.222	0.358		1.302	0.077*
	Word recognition skills	0.498	0.213	0.361		1.335	0.063*
	Age	0.364	0.682	0.045		0.533	0.595
	Gender[†]	-0.002	1.200	-0.000		-0.002	0.999
	School[†]	-1.496	1.198	-0.235		-1.249	0.214
	Sub-group[†]	4.346	2.665	0.306		1.631	0.105
2	(Constant)	26.574	2.732			4.095	0.000***
	Background knowledge	**0.585**	**0.141**	0.403		**1.902**	**0.059***
	Learner-generated questions	0.494	0.153	0.396		1.730	0.063*
	Summary telling skills	0.370	0.146	0.329		0.953	0.088*
	Prediction skills	0.283	0.138	0.278		0.357	0.285
	Word recognition skills	0.429	0.159	0.356		1.266	0.082 *
	Age	0.325	0.405	0.059		0.801	0.425
	Gender[†]	-0.053	0.747	-0.005		-0.071	0.944
	School[†]	-1.350	0.740	-0.294		-1.825	0.070
	Sub-group[†]	2.770	1.639	0.273		1.691	0.067*

Dependent Variable: Post-test score

*,**,*** *show significance at $p<0.1$, $p<0.05$ and $p<0.01$ error margins, respectively*

[†] *Converted into a dummy variable before inclusion into the linear regression analysis*

The results in Table 4.5 show that in both models, background knowledge caused the biggest positive effect on learners' achievement in reading comprehension (Model 1: *Beta* = 0.412, t = 1.965; Model 2: *Beta* = 0.403, t = 1.902). However, the effect of background knowledge seemed bigger in the experimental than in the control group, based on the value of *Beta* and t-statistic. This suggests that trained teachers were more effective than untrained colleagues in activating learners' background knowledge. In addition, the results in Model 1 suggest up to 95% chance that the effect was significant ($\rho = 0.041$), while in Model 2, the effect was significant at 90% confidence level ($\rho = 0.059$). In both Models, the first null hypothesis (H_01), stating that background knowledge has no significant effect on learners' achievement in reading comprehension was rejected for being untrue.

4.5.3 Qualitative results

The results presented in the foregoing sub-section are consistent with those obtained through teachers' questionnaires, observation of comprehension reading lessons and key informant interviews. In this regard, analysis of the information generated by teachers' questionnaires revealed that the application of background knowledge when reading comprehension passages was near universal in the experimental group, but sub-optimal in the control group. Participants attributed the finding to variation in the effort put in by teachers in the two groups to activate learners' background knowledge.

More specifically, the study focused on four key strategies through which learners' background skills can be actuated, including KWL, carousal brainstorming, preteaching vocabulary and analogy. In this regard, participants were engaged to explore the extent to which teachers applied each of the strategies to activate learners' background knowledge, with the intention of identifying underlying challenges. Table 4.6 shows the strategies that were commonly applied by teachers to activate learners' background knowledge skills.

Table 4.6 Application of strategies for activating background knowledge

Group	School	KWL	Carousal Brainstorming	Pre-teaching Vocabulary	Analogy
Experimental	G	×	√	√	×
	H	×	×	√	×
	I	×	×	√	×
	J	×	×	√	×
Control	K	×	√	√	×
	L	×	×	√	×
	M	×	×	√	×
	N	×	√	√	√
Total		**0**	**3**	**8**	**1**

The analysis of qualitative data revealed that the pre-teaching vocabulary was applied by most teachers, in both the experimental and control groups, to activate learners' background knowledge as indicated in Table 4.7. In this regard, participants explained that learners were often taught the meaning of new words before reading comprehension passages; and the strategy's application was more common in the experimental group. This suggested that more teachers in the experimental than in the control group applied the pre-teaching vocabulary strategy to stimulate learners' background knowledge before reading.

Studies conducted in various countries identified pre-teaching vocabulary as a crucial strategy for stimulating learners' background knowledge, particularly by helping them understand the meaning of new words as used in comprehension passages (National Reading Panel, 2013; Jenkins, Pany & Schreck, 2013). Despite this, the 2013 National Reading Panel report observed that pre-teaching vocabulary alone was not sufficient to enhance reading comprehension. On the same note, Keene and Zimmerman (1999) explained that activating learners' background knowledge skills, creates three types of connections with texts, namely, connection with self-accumulated knowledge, connection with the real world situation, as well as connection with pre-existing texts on the same subject. Creating such connections with texts before, during, and after reading requires learners to develop multiple skills - something which may not be accomplished using a single strategy. More explicitly, the pre-teaching vocabulary strategy alone is too insufficient to fully activate learners' background knowledge skills and to maximise achievement in reading comprehension. This amplified the need for teachers to embrace other three strategies, including carousal brainstorming, analogies and *KWL*, in order to synergise the activation of learners' background knowledge skills.

The analysis of qualitative data further revealed that application of *carousal brainstorming* to actuate learners' background knowledge was below average in both groups; however, its use seemed to be more common in the experimental than in the control group. Previous studies also revealed that the use of carousal brainstorming to stimulate learners' background knowledge skills was sub-optimal in many countries. For instance, Woolley (2011) observed that carousal brainstorming had been under-utilised to teach reading comprehension in both developed and developing countries; while Dube and Bessette (2013) described carousal brainstorming as an effective strategy for activating learners' background knowledge.

The study advocated for the application of carousal brainstorming by suggesting that small groups of 5 to 6 learners should go around a classroom, posting ideas for other groups to read. In this regard, the strategy provides a platform for learners to develop background knowledge by reviewing, discussing and reflecting on the ideas of their colleagues (Dube & Bessette, 2013). Similarly, Anyiendah and Odundo (2017) noted that group consultations promoted language learning, and breaking learner isolation; while creating opportunity for cooperative learning.

The analysis further revealed that the application of analogies to activate learners' background knowledge was far below average, with participants hinting that the strategy's use was less common in the control than in the experimental group. Despite the findings of this study, Pardhan and Juma (2011) acknowledge that the use of analogies is essential for stimulating learners' thinking about words related to a particular subject. More particularly, the strategy involves challenging learners to connect prior knowledge and the subject of comprehension being read.

The study further established that teachers in both the experimental and control groups never applied KWL strategy to actuate learners' background knowledge. Participants indicated that application of the KWL strategy was hampered by the assumption that comprehension of passages develop naturally as long as learners know the meaning of new words. Participants further noted that application of the strategy was hampered by teacher domination of reading lessons, through lengthy and detailed explanations of new words, as provided for in guide books; which in turn, made the learning process teacher-centred, rather than learner-centred. Key informant interview sessions further revealed that most teachers in both the experimental and control groups focused on pre-reading explanations of new words used in passages, which led to avoidance of strategies perceived to be more demanding in terms of time and resources, such as KWL and carousal brainstorming.

When asked to provide reasons for avoiding KWL and carousal brainstorming, a participant explained that, "You see, for me to use KWL and carousal brainstorming skills I need to buy several manila papers and felt pens yet I don't earn extra money to keep buying such materials for every reading lesson." When asked if she would consider improvising by using carton boxes, the participant firmly said, "No, no, no. I cannot do that, where do I get the extra time to look for these materials. You see, I also have other subjects to teach and many books to mark every day, and as you can see, this is a densely populated school." The analysis suggests that limited application of the KWL and carousal brainstorming strategies to trigger learners' background knowledge was primarily impeded by inadequacy of instructional resources and heavy workload, which speculatively, connected to understaffing.

The observation of comprehension reading lessons revealed that even though most learners knew how to read, understanding the content of passages was a critical challenge, which in turn, undermined achievement in reading comprehension. In one instance, a learner lamented that "I know how to read very well in English, and when I read, I just know that I understand but when it comes to answering questions, I find that I have failed, so I don't know the problem." These views suggested that most teachers were inconsistent in applying the strategies for activating learners' background knowledge, which undermined learners' ability to understand texts, and achievement in reading comprehension.

Observation further revealed that most teachers conservatively relied on learner's course books to teach reading comprehension, which according to Mubichakani and Koros (2014), is not sufficient to motivate learners' background knowledge, and to improve achievement in reading comprehension. More specifically, Mubichakani and Koros (2014) asserted that for the achievement in reading comprehension to flourish, teachers should access and use good instructional resources, which are not only innovative but also appropriate in terms of content. For instance, a supportive classroom environment is an essential resource for visual stimulation of learners' background knowledge. The assertion implies that failure by teachers to use appropriate and innovative instructional resources is likely to emasculate learners' achievement in reading comprehension.

Similarly, Onchera (2013) singled out the inadequacy of appropriate nonconventional instructional materials for teaching reading comprehension, as a key factor preventing teachers of English language from activating learners' background knowledge. Anyiendah (2017) also established the association between the

inadequacy of appropriate instructional resources and effective teaching of English language. In this regard, the study suggested the need for teachers to improvise instructional resources, particularly in contexts where such resources are either inadequate or not available altogether.

While advocating for background knowledge skills, O'Connor and Snow (2013) urged teachers to build bridges between the known and the unknown, to effectively guide learners in reading comprehension. This argument is based on the conjecture that 'learners can easily connect prior knowledge to related contents in passages'.

Activating learners' background knowledge is further based on the hypothesis that learners can assess own understanding using meta-cognition skills, eventually resulting to improved comprehension. According to Yeh and Lai (2012), where learners lack background knowledge that is necessary to enhance achievement in reading comprehension, compensation may be done by engaging learners through KWL, pre-teaching vocabulary, analogies and carousal brainstorming.

4.6 Learner-Generated Questions and Achievement in Reading Comprehension

In this section, five reading practices through which learner-generated questions manifest itself, were presented in the form of perception statements, upon which learners were requested to indicate their views, as guided by the five-point scale, calibrated as 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. Details of subsequent analyses are presented in the following sub-sections.

4.6.1 Bivariate results

Learners' views on the perception statements were cross-tabulated against achievement in reading comprehension to determine the significance of association between each statement and the dependent variable. Table 4.7 presents the crosstabulation results for all the perception statements under learner-generated questions.

Table 4.7: Learner-generated questions and achievement in reading comprehension

Aspects of learner generated questions	<20 Freq	<20 %	20-29 Fre q	20-29 %	30-39 Freq	30-39 %	40+ Freq	40+ %	Total Fre q	Total %
I ask myself questions I'd like to be answered by texts										
Strongly agree	5	12.2	42	32.6	20	33.9	18	36.0	85	30.5
Agree	14	34.1	33	25.6	20	33.9	22	44.0	89	31.9
Undecided	2	4.9	13	10.1	3	5.1	4	8.0	22	7.9
Disagree	14	34.1	31	24.0	11	18.6	5	10.0	61	21.9
Strongly disagree	6	14.6	10	7.8	5	8.5	1	2.0	22	7.9
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I check to see if my guesses about texts are right										
Strongly agree	2	4.9	17	13.2	14	23.7	4	8.0	37	13.3
Agree	14	34.1	46	35.7	21	35.6	25	50.0	106	38.0
Undecided	4	9.8	4	3.1	3	5.1	4	8.0	15	5.4
Disagree	17	41.5	45	34.9	19	32.2	13	26.0	94	33.7
Strongly disagree	4	9.8	17	13.2	2	3.4	4	8.0	27	9.7
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I ask myself questions after reading passages										
Strongly agree	4	9.8	26	20.2	16	27.1	12	24.0	58	20.8
Agree	20	48.8	62	48.1	27	45.8	25	50.0	134	48.0
Undecided	2	4.9	17	13.2	7	11.9	5	10.0	31	11.1
Disagree	5	12.2	17	13.2	6	10.2	5	10.0	33	11.8
Strongly disagree	10	24.4	7	5.4	3	5.1	3	6.0	23	8.2
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I go back and forth texts asking questions										
Strongly agree	9	22.0	39	30.2	18	30.5	16	32.0	82	29.4
Agree	16	39.0	54	41.9	27	45.8	25	50.0	122	43.7
Undecided	4	9.8	11	8.5	4	6.8	4	8.0	23	8.2
Disagree	6	14.6	14	10.9	10	16.9	4	8.0	34	12.2
Strongly disagree	6	14.6	11	8.5	0	0.0	1	2.0	18	6.5
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
When a text is difficult I read aloud to help me understand										
Strongly agree	6	14.6	20	15.5	8	13.6	9	18.0	43	15.4
Agree	6	14.6	29	22.5	8	13.6	8	16.0	51	18.3
Undecided	2	4.9	7	5.4	0	0.0	1	2.0	10	3.6
Disagree	19	46.3	60	46.5	34	57.6	26	52.0	139	49.8
Strongly disagree	8	19.5	13	10.1	9	15.3	6	12.0	36	12.9
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

The first perception statement posited that 'I ask myself questions I like to be answered in the text'. The results in Table 4.8 show that of the 279 learners, 89 (31.9%) agreed with the statement, while 85 (30.5%) indicated strong agreement. Contrastingly, 61 (21.9%) learners disagreed with the statement, while 22 (7.9%) disagreed strongly. Cumulative results showed that 174 (62.4%) learners affirmed the statement, while 83 (29.7%) learners never asked themselves such questions. In the category of learners who scored less than 20 marks (n=41), 20 (48.8%) affirmed the statement, while 19 (46.3%) contested its correctness in relation to their reading practices. Of the 50 learners who scored 40+ marks, 40 (80.0%) believed the statement was true; only 6 (12.0%) expressed contrary views. Among the 129 learners in the category of 20-29 marks, 75 (58.1%) validated the statement, while 41 (31.8%) hinted that it was untrue. Based on this, the analysis yielded a computed χ^2 value of 22.499 (df = 12 & ρ-value = 0.032), which suggested up to 95% chance that learners' achievement in reading comprehension significantly associated with the practice of asking themselves questions to be answered by texts.

Learners indicated views on the second perception statement stating that 'I check to see if my guesses about texts are right'. The results in Table 4.8 show that 106 (38.0%) of the 279 learners, agreed with the statement, while 37 (13.3%) strongly agreed. However, 94 (33.7%) learners indicated disagreement, while 27 (9.7%) disagreed strongly. Cumulatively, the results showed that 143 (51.3%) learners acknowledged checking to see if their guesses about texts were right, while 121 (43.4%) invalidated the statement.

In relation to learners' achievement in reading comprehension, the analysis showed that among those who scored less than 20 marks (n=41), 21 (51.2%) refuted the statement. Contrastingly, 16 (39.0%) learners admitted that the statement was true. In the category of those who scored 40+ marks, 29 (58.0%) felt that the statement was true, while 17 (34.0%) indicated that it wasn't. Furthermore, in the category of 30-39 marks (n=59), 35 (59.3%) learners affirmed the statement, while 21 (35.6%) hinted that it was untrue. Based on this, the analysis revealed that the association between learners' achievement in reading comprehension and the practice of checking to see if guesses about texts were right was statistically significant at 90% confidence level (χ^2 value = 19.674, df = 12 & ρ-value = 0.074).

The third item required learners to indicate views about the perception statement postulating that 'I ask myself questions after reading passages'. In this regard, Table 4.8 shows that 134 (48.0%) learners agreed with the statement, while 58 (20.8%) strongly agreed. However, 33 (11.8%) learners disagreed with the assertion, while 23

(8.2%) disagreed strongly. Cumulatively, 192 (68.8%) learners confirmed asking themselves questions after reading passages, while 56 (20.1%) didn't.

The cross-tabulation results in Table 4.8 further show that among the 41 learners who scored less than 20 marks, 24 (51.2%) admitted that the statement was true about reading practices, while 15 (36.6%) indicated that it was untrue. In the category of those who scored 40+ marks (n=50), 37 (74.0%) endorsed the statement, while 8 (16.0%) refuted it on account of being inaccurate. In the category of 20-29 marks (n=129), 88 (68.2%) learners affirmed the statement, while 24 (18.6%) didn't. The analysis further revealed that learners' achievement in reading comprehension significantly associated with self-interrogation skills after reading passages at 95% confidence level (χ^2 value = 21.644, df = 12 & ρ-value = 0.042).

The fourth perception statement postulated that 'I go back and forth texts asking questions', upon which respondents were requested to indicate their views. Table 4.8 shows that of the 279 learners, 122 (43.7%) agreed with the statement, while 82 (29.4%) agreed strongly. Those who disagreed were 34 (12.2%) learners, while 22 (7.9%) others expressed strong disagreement. Cumulative results showed that 204 (73.1%) learners affirmed the statement, which suggested that going back and forth texts asking questions was practiced by most learners involved in the study, while 52 (18.6%) learners didn't.

In connection to achievement in reading comprehension, Table 4.8 shows that among learners who scored less than 20 marks (n=41), 25 (61.0%) affirmed the statement, while 12 (29.2%) didn't. In the category of learners who scored 40+ marks (n=50), 41 (82.0%) hinted that the statement correctly reflected their reading practices, while 5 (10.0%) indicated different thoughts. In the category of 20-29 marks (n=129), whereas 93 (72.1%) validated the statement, 41 (31.8%) didn't. Despite this, the analysis revealed lack of a significant association between learners' achievement in reading comprehension and the practice of going back and forth the text asking questions (χ^2 value = 14.709, df = 12 & ρ-value = 0.258).

Learners also indicated thoughts on the fifth perception statement, claiming that 'When text is difficult, I read aloud to help me understand'. In this regard, Table 4.8 shows that nearly one half of the 279 learners, 139 (49.8%), disagreed with the statement, while 36 (12.9%) strongly disagreed. Contrastingly, 51(18.3%) learners agreed, while 43 (15.4%) agreed strongly. Besides cumulative results showed that 175 (62.7%) learners confuted the statement, which suggests that reading aloud to

understand difficult texts was uncommon. Despite this, 94 (33.7%) learners admitted that the assertion was correct about their reading practices.

The cross-tabulation results in Table 4.8 further show that among the 41 learners who scored less than 20 marks, 27 (65.9%) countered the statement, while 12 (29.3%) endorsed it. Among those who scored 40+ marks (n=50), 32 (64.0%) hinted that the statement was incorrect about their reading practices, while 17 (34.0%) expressed affirmative views. In addition, 73 (56.6%) learners in the 20-29 marks category (n=129), opposed the statement, while 49 (38.0%) felt that it was correct.

However, the analysis revealed lack of a significant association between learners' achievement in reading comprehension and the practice of reading aloud to understand difficult texts (χ^2 value = 10.271, df = 12 & ρ-value = 0.592).

The five perception statements were aggregated to determine optimal estimates regarding the extent to which learners applied learner-generated questions in reading to understand texts. The output was scaled into five categories, including 'very consistent', 'consistent', 'undecided', 'inconsistent' and 'very inconsistent'. In this regard, learners who strongly agreed with perception statements were assumed to be 'very consistent' in generating questions before, during or after reading texts, while those who 'strongly disagreed' were presumed to be 'very inconsistent' in applying the same. The resultant variable was cross-tabulated with the variable learners' group in order to determine variation in the extent to which learners in the experimental and control groups applied learner-generated questions in reading.

Figure 4.2 shows cross-tabulation results between the aggregated variable (learner-generated questions) and learners' group.
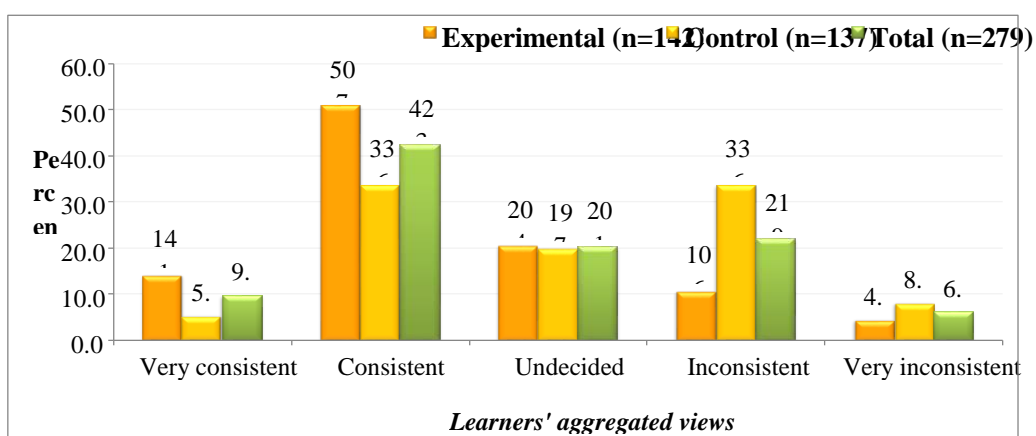
Figure 4.2: Learners' aggregated views on the use of learner-generated questions when reading

Figure 4.2 shows that of the 279 learners in the study, 118 (42.3%) consistently applied learner-generated questions in reading, while 27 (9.7%) were very consistent. Contrastingly, 61 (21.9%) were inconsistent, while 17 (6.1%) were very inconsistent. The results in Figure 4.2 further show that those consistent in applying learner-generated questions included 72 (50.7%) learners in the experimental group against 46 (33.6%) learners in the control group. Among those who were very consistent in applying the technique were 20 (14.1%) learners in the experimental group and 7 (5.1%) in the control group. Furthermore, those who were inconsistent in applying learner-generated questions included 46 (33.6%) learners in the control- and 15 (10.6%) in the experimental groups; while 11 (8.0%) learners in the control- and 6 (4.2%) in the experimental groups were very inconsistent in applying the technique.

The analysis further revealed that 92 (64.8%) learners in the experimental group against 53 (38.7%) in the control group were inclined towards consistent application of learner-generated skills, while 57 (41.6%) learners in the control group against 21 (14.8%) in the experimental group inclined towards inconsistent application of such skills. Consequently, the analysis obtained a computed χ^2 value of 29.204, (df = 4 &ρ-value = 0.000); thus, suggesting up to 99% chance that the consistency of applying learner-generated questions in reading comprehension significantly varied between learners in both groups.

4.6.2 Multivariate results

Multiple linear regression analysis was performed to determine effect of learnergenerated questions on learners' achievement in reading comprehension, while considering the influence of moderating variables. The process generated two regression models, one for learners in the experimental group (Model 1) and one for learners in the control group (Model 2). The purpose was to determine how the results varied between the two groups. Table 4.8 presents multivariate results.

Table 4.8: Effect of learner-generated questions on learners' achievement

Model (1)	(2)	Unstandardized Coefficients		Standardised Coefficients	t	ρ-value(7)
		B(3)	Std. Error(4)	Beta(5)	(6)	
1	(Constant)	32.351	2.745		5.631	0.000***
	Background knowledge	0.623	0.208	0.412	1.965	0.041**
	Learner-generated questions	**0.588**	**0.190**	**0.410**	**1.931**	**0.046****
	Summary telling skills	0.586	0.194	0.409	1.905	0.057*
	Prediction skills	0.465	0.222	0.358	1.302	0.077*
	Word recognition skills	0.498	0.213	0.361	1.335	0.063 *
	Age	0.364	0.682	0.045	0.533	0.595
	Gender†	-0.002	1.200	-0.000	-0.002	0.999
	School†	-1.496	1.198	-0.235	-1.249	0.214
	Sub-group†	4.346	2.665	0.306	1.631	0.105
2	(Constant)	26.574	2.732		4.095	0.000***
	Background knowledge	0.585	0.141	0.403	1.902	0.059*
	Learner-generated questions	**0.494**	**0.153**	**0.396**	**1.730**	**0.063***
	Summary telling skills	0.370	0.146	0.329	0.953	0.088*
	Prediction skills	0.283	0.138	0.278	0.357	0.285
	Word recognition skills	0.429	0.159	0.356	1.266	0.082*
	Age	0.325	0.405	0.059	0.801	0.425
	Gender†	-0.053	0.747	-0.005	-0.071	0.944
	School†	-1.350	0.740	-0.294	-1.825	0.070*
	Sub-group†	2.770	1.639	0.273	1.691	0.067*

Dependent Variable: Post-test score

*,**,*** *show significance at ρ<0.1, ρ<0.05 and ρ<0.01 error margins, respectively*
† *Converted into a dummy variable before inclusion into the linear regression analysis*

The results in Table 4.8 show that in both models, learner-generated questions caused a positive effect on learners' achievement in reading comprehension (Model 1: *Beta* = 0.410, t = 1.931; Model 2: *Beta* = 0.396, t = 1.730). This means that increased invocation of learners to generate questions on the content of texts caused a proportionate increment in learners' achievement in reading comprehension. However, based on the magnitude of *Beta* weights and t-statistic, the variable's effect seemed to be bigger in the experimental group than in the control group; thereby, suggesting that trained teachers were more effective than those untrained in developing learners' ability to generate questions that aid the understanding comprehension passages. As noted by Dubin (2016), consistent application of learner-generated questions improves achievement in reading by making lessons more active, participatory and engaging. Going by this premise, comprehension

reading lessons were likely to be more active in the experimental than in the control group.

In addition, the results suggest up to 95% chance that the variable's effect was significant among learners' in the experimental group ($\rho = 0.046$), while among those in the control group, the effect was significant at 90% confidence level ($\rho = 0.063$). Based on this, the second null hypothesis (H_02), stating that learner generated questions have no significant effect on learners' achievement in reading comprehension was also rejected in the two models for being inconsistent with results. The quantitative results agree with those obtained through teachers' questionnaires, key informant interviews and observations.

4.6.3 Qualitative results

The analysis of qualitative information elicited through teachers' questionnaires and observation revealed that learner-generated questions were moderately applied by teachers in the experimental group to teach comprehension reading. However, in the control group, application of the skill was below average. This suggested that comprehension reading lessons were fairly more active in the experimental- than in the control group. Participants asserted that having accessed training on application of the interactive approach instruction, teachers in the experimental group made a greater effort to activate learner-generated questions than their counterparts in the control group.

The extent to which teachers activated learner-generated questions was examined in terms of four strategies, namely, pre-reading questions, inserted questions, self questioning and post-reading questions. In this regard, teachers' questionnaire explored views on the extent to which the strategies were applied to rouse learner generated questions. The study also focused on unearthing factors that prevented teachers from activating learner-generated questions, before, during and after reading comprehension passages. Table 4.10 indicates how the strategies for activating learner-generated questions were applied across the schools.

Table 4.9: The use of strategies for activating learner-generated questions

Group	School	Pre-questions	Inserted questions	Self-questioning	Post-questions
Experimental	G	√	√	×	√
	H	√	×	×	√
	I	×	×	×	√
	J	√	×	×	√
Control	K	√	×	×	√
	L	×	×	×	√
	M	×	×	×	√
	N	×	×	×	√
Total		**4**	**0**	**0**	**8**

The results in Table 4.9 show that post-reading questions was the most frequently applied strategy to stimulate learner-generated questions, particularly because it assists learners to summarise comprehension passages and explore additional areas of study. Participants further acknowledged that application of the strategy was common in both the experimental and control groups. The findings of this study are consistent with those reported by Jenkins *et al.* (2013), who found that post-reading questions strategy was frequently practiced by teachers to stimulate learner generated questions when reading comprehension passages. However, the authors pointed out that the strategy was ineffectual in developing learners to become active readers, because it entails passive reading of comprehension passages, then oral or written questions are generated at the end of reading lessons.

The observations made by Jenkins *et al.* (2013) resonate with those advanced by Chapmans (2014), who indicated that post-reading questions strategy, when used alone, doesn't significantly influence learners' achievement in reading comprehension because questions are posed at the end of reading sessions. Similarly, Dubin (2016) observed that even though post-reading questions strategy is best suited for checking and aiding learners to understand comprehension passages; it minimises the opportunity for active participation during reading, which makes it unsuitable for lengthy comprehension passages.

The analysis further indicated that the application of pre-reading questions strategy was fairly common in the experimental group, but rarely used in the control group.

Pre-reading questions entail asking learners' questions prior to reading comprehension passages to provoke their thinking, as well as improve awareness and understanding of contents. These findings appear to be inconsistent with those

reported by Hedge (2016), who established that the pre-reading questions strategy was commonly applied to activate learner-generated questions, and to improve performance in comprehension reading.

Based on this, the study amplified the effectiveness of pre-reading questions in improving learners' understanding of passages. More specifically, Hedge (2016) observed that posing relevant questions to learners prior to reading, improves comprehension of passages by increasing awareness about the nature, context, content and significance of passages to be read.

In support of the pre-reading questions strategy, Farrell (2011) argued that asking learners questions in advance is likely to facilitate the understanding of difficult passages, by enabling learners to have some information about the topic to be read.

In this regard, the strategy activates learners' existing knowledge on the topic to be read, which eventually increases interaction with passages, understanding of content and overall achievement in reading comprehension (Branford, 2012). Studies conducted separately by Jenkins *et al.* (2013), as well as Jackson and Dizney (2011) hyped benefits of the pre-reading questions strategy, particularly for enabling learners to build background knowledge, connect prior knowledge to the reading subject and make predictions about texts. In this regard, the studies emphasised the need for all learners to be taught how to pose questions before reading passages, in order to improve achievement in reading comprehension.

The analysis further revealed that the use of inserted questions and self-questioning strategies was uncommon in both groups. More specifically, the application of inserted questions, which entails posing questions during reading sessions to stimulate self-questioning, was minimal in the experimental group, but rare in control group. This suggests that in both groups, most teachers rarely or never engaged learners in active reading of comprehension passages, which doesn't resonate with the argument expressed by O'Malley *et al.* (1985) on the use of inserted questions strategy. In this regard, O'Malley *et al.* (1985) observes that the strategy enable learners to actively interact with texts; which in turn, improves awareness, deepens understanding of texts and enhances the ability to answer questions correctly.

In this study, participants connected under-utilisation of the strategy to the assumption that such questions should only be posed at the end of reading to check learners' understanding of passages – a view that the analysis revealed was more

common in the control group. Still on the same point, key informant interviews confirmed that most teachers ignored the inserted questions strategy, but attracted towards post-reading questions. In one instance, a participant said, "We read passages silently then we answer questions asked by the teacher. Sometimes he asks us oral questions and sometimes he asks us to write the questions from text books in our exercise books after we have read passages." This position was corroborated by another participant, who expressed bias towards post-reading questions, and away from the inserted questions strategy. In the words of a participant, "Yes, I ask oral questions when learners have completed reading passages silently. I also give to my learners written questions on comprehension passages to see if they understood the content, but I don't tell them to ask any questions while reading."

Observations of comprehension reading lessons further confirmed that in both groups, teachers inclined towards post-reading questions rather than inserted questions; as a result, learners were rarely involved in active reading where they could interact with passages for better comprehension. Contrastingly, studies conducted by Jenkins *et al.* (2013), as well as Jackson and Dizney (2011) recognised the importance of inserted questions in helping learners to monitor their understanding and to confirm their predictions. In view of this, the study suggested that learners should be taught how to pose questions during reading as a way of encouraging active participation, which is vital for learners' understanding of comprehension passages.

Analysis of qualitative data further revealed that application of self-questioning to actuate learner-generated questions was rare in both the experimental and control groups. Self-questioning is a strategy for developing learners' ability to pose and answer own questions, rather than those posed by teachers. As learners read, they locate answers to the questions they have formed in mind or jotted down, which makes the reading process active and interactive. Macaro (2006) observed that when learners interact with texts, they combine new information with prior knowledge on the subject, which improves the understanding of passages. In this regard, selfquestioning is acclaimed for initiating a paradigm shift from teacher-centred to learner-centred approach to reading comprehension (National Reading Panel, 2013).

4.7 Summary Telling Skills and Achievement in Reading Comprehension

Summary telling skills was unpacked in terms of five perception statements, each representing a reading practice. Learners were requested to indicate views about each statement on the five-point scale, calibrated as 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. The information was used to perform bivariate analysis, whose results are detailed in the following sub-section.

4.7.1 Bivariate results

Learners' views on the perception statements were cross-tabulated against achievement in reading comprehension (dependent variable). The purpose was to determine the statistical significance of the association between each statement and the dependent variable. Table 4.10 shows the cross-tabulation results.

Table 4.10: Aspects of summary telling skills and achievement in reading comprehension

Aspects of summary telling skills	Post-test scores									
	<20		20-29		30-39		40+		Total	
	Freq	*%*	*Freq*	*%*	*Freq*	*%*	*Freq*	*%*	*Freq*	*%*
I summarize what I read to reflect on important information.										
Strongly agree	9	22.0	43	33.3	24	40.7	17	34.0	93	33.3
Agree	8	19.5	37	28.7	16	27.1	25	50.0	86	30.8
Undecided	1	2.4	4	3.1	4	6.8	2	4.0	11	3.9
Disagree	18	43.9	33	25.6	11	18.6	5	10.0	67	24.0
Strongly disagree	5	12.2	12	9.3	4	6.8	1	2.0	22	7.9
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I re-state ideas in my own words to help me understand texts.										
Strongly agree	10	24.4	51	39.5	21	35.6	21	42.0	103	36.9
Agree	3	7.3	17	13.2	14	23.7	10	20.0	44	15.8
Undecided	1	2.4	4	3.1	3	5.1	3	6.0	11	3.9
Disagree	17	41.5	39	30.2	13	22.0	16	32.0	85	30.5
Strongly disagree	10	24.4	18	14.0	8	13.6	0	0.0	36	12.9
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**
I use typological aids like bolded words to identify key information.										
Strongly agree	1	2.4	19	14.7	11	18.6	14	28.0	45	16.1
Agree	5	12.2	19	14.7	11	18.6	8	16.0	43	15.4
Undecided	3	7.3	19	14.7	10	16.9	6	12.0	38	13.6
Disagree	20	48.8	49	38.0	20	33.9	15	30.0	104	37.3
Strongly disagree	12	29.3	23	17.8	7	11.9	7	14.0	49	17.6
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

I make an oral summary of the text to help my understanding.									
Strongly agree	4	9.8	18	14.0	12	20.3	9	18.0	43	15.4
Agree	4	9.8	27	20.9	20	33.9	17	34.0	68	24.4
Undecided	2	4.9	5	3.9	2	3.4	0	0.0	9	3.2
Disagree	23	56.1	45	34.9	18	30.5	15	30.0	101	36.2
Strongly disagree	8	19.5	34	26.4	7	11.9	9	18.0	58	20.8
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

I make short notes when I read to help me understand texts.									
Strongly agree	12	29.3	42	32.6	16	27.1	21	42.0	91	32.6
Agree	8	19.5	56	43.4	28	47.5	24	48.0	116	41.6
Undecided	0	0.0	4	3.1	1	1.7	1	2.0	6	2.2
Disagree	14	34.1	14	10.9	8	13.6	2	4.0	38	13.6
Strongly disagree	7	17.1	13	10.1	6	10.2	2	4.0	28	10.0
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

Learners were requested to indicate views on the first perception statement, which postulated that 'I summarise what I read to reflect on important information'. Based on this findings, the results presented in Table 4.11 show that of the 279 learners, 93 (33.3%) strongly agreed with the statement, while 86 (30.8%) agreed. On the opposite side of the scale, 67 (24.0%) learners disagreed, while 22 (7.9%) voiced strong disagreement. Cumulatively, 179 (64.2%) learners expressed affirmative views regarding the perception statement, which suggests that summarising texts to reflect on important information was a common practice. Nonetheless, 89 (31.9%) learners negated the statement; meaning that the action inherent in the statement was not consistent with their reading practices.

Within the categories, cross-tabulation results showed that among the 41 learners who scored less than 20 marks, 23 (56.1%) negated the statement, while 17 (41.5%) hinted that it was true. Among those who scored 40+ marks (n=50), 42 (84.0%) affirmed the statement, while 6 (12.0%) indicated contrary views. More still, 80 (62.0%) learners in the category of 20-29 marks (n=129), validated the statement, while 45 (34.9%) felt it was untrue. Based on the cross-tabulations, the analysis obtained a computed χ^2 value of 27.613, (df = 12 & ρ-value = 0.006), which suggested up to 99% chance that learners' achievement in reading comprehension significantly associated with the practice of summarising texts to reflect on important information.

Learners also indicated thoughts on the second perception statement, which claimed that 'I re-state ideas in my own words to help me understand texts'. As indicated in Table 4.11, 103 (36.9%) of the 279 learners strongly agreed with the statement, while 44 (15.8%) agreed. Contrastingly, 85 (30.5%) learners expressed disagreement with the statement, while 36 (12.9%) disagreed strongly. Cumulative results further indicated that 147 (52.7%) learners accepted the perception statement; thereby, suggesting that they re-stated ideas in own words to understand texts. However, a significant 121 (43.4%) learners rejected the statement because it was inconsistent with their reading practices.

In connection with learners' achievement in reading comprehension, among the learners who scored less than 20 marks (n=41), 27 (65.9%) rebutted the statement, while 13 (31.7%) validated it. In the category of 40+ marks (n=50), 31 (62.0%) upheld the statement, while 16 (32.0%) felt that it was untrue. Among those who achieved 30-39 marks (n=59), 35 (59.3%) learners validated the statement, while 21 (35.6%) felt it had no connection with their reading practices. The analysis revealed that learners' achievement in reading comprehension significantly associated with the practice of re-stating ideas for facilitate understanding of texts at 95% confidence level (χ^2 value = 22.723, df = 12 & ρ-value = 0.030).

Learners further stated views concerning the third perception statement, asserting that 'I use typographical aids like bolded works in order to identify key information'. In this regard, Table 4.11 shows that of the 279 learners, 104 (37.3%) disagreed with the statement, while 49 (17.6%) disagreed strongly. Notably though, 43 (15.4%) learners agreed, while 45 (16.1%) agreed strongly. Cumulative results showed that 153 (54.8%) learners repudiated the perception statement, by suggesting that they never used of typographical aids to identify key information. Contrastingly, 88 (31.5%) learners validated the statement.

Cross-tabulation results further indicate that of the 41 learners who scored less than 20 marks, 32 (78.1%) rebutted the statement, while 6 (14.6%) affirmed it. Among those who scored 40+ marks (n=50), 22 (44.0%) upheld the statement; while another 22 (44.0%) felt it was untrue. In the category of 30-39 marks (n=59), 27 (45.8%) learners indicated that the statement was untrue, while 22 (37.2%) endorsed it. Based on this, the analysis obtained a computed χ^2 value of 19.155, (df = 12 & ρvalue = 0.085); thereby, suggesting up to 90% chance that learners' achievement in reading comprehension significantly associated with the practice of using typological aids such as bolded words to identify key information.

The study further required learners to indicate views on the perception statement, claiming that 'I make an oral summary of texts to help my understanding' on the five-point perception scale. Table 4.11 shows that of the 279 learners, 101 (36.2%) disagreed with the statement, while 58 (20.8%) disagreed strongly. On the upper end of the scale, 68 (24.4%) learners agreed, while 43 (15.4%) voiced a strong agreement. Cumulative results further showed that 159 (57.0%) learners repudiated the perception statement because they never made oral summaries to understand texts. Notably though, 111 (39.8%) learners validated it because the action inherent in the statement formed part of their reading practices.

In connection with achievement in reading comprehension, the cumulative results indicate that among those who scored less than 20 marks (n=41), 31 (75.6%) indicated that the statement was untrue, while 8 (19.6%) affirmed it. Among those who obtained 40+ marks (n=50), about one-half, 24 (48.0%) rejected the statement; while 26 (52.0%) hinted that making oral summaries to understand texts was a common reading practice. Among those who scored 20-29 marks (n=129), about two-thirds of the learners, 79 (61.3%), refuted the statement on account of being untrue, while 45 (34.9%) endorsed it. Based on the cross-tabulations, the analysis revealed that learners' achievement in reading comprehension significantly associated with the practice of making oral summaries to understand texts at 95% confidence level (χ^2 value = 22.636, df = 12 & ρ-value = 0.031).

Learners provided views on the fifth perception statement, postulating that 'I make short notes when I read to help me understand texts'. As indicated in Table 411, 116 (41.6%) learners agreed with the statement, while 91 (32.6%) agreed strongly. By contrast, 38 (13.6%) learners disagreed with the statement, while 28 (10.0%) declared a strong disagreement. Cumulatively, 207 (74.2%) learners concurred with the statement; thereby, suggesting that making short notes to understand texts was a common reading practice. However, 66 (23.7%) learners confuted the statement because making short notes when reading was uncommon.

Further analysis indicates that among the learners who scored less than 20 marks (n=41), 21 (51.2%) believed the statement was incorrectly about their reading practices, while 20 (48.8%) endorsed it. Among those who obtained 40+ marks (n=50), 45 (90.0%) backed the statement; while 5 (8.0%) denied making short notes to understand texts. A similar pattern of perceptions was noted among learners in the category of 30-39 marks (n=59), where the statement was affirmed by 44 (74.6%) learners, but refuted by 14 (23.7%) others. Based on this, the analysis revealed that

learners' achievement in reading comprehension significantly associated with the practice of making short notes when reading to understand texts at 99% confidence level (χ^2 value = 30.061, df = 12 & ρ-value = 0.003).

The five perception statements were aggregated to show how consistently learners applied summary telling skills when reading texts. The output, which was measured as 'very consistent', 'consistent', 'undecided', 'inconsistent' and 'very inconsistent', was cross-tabulated against learners' group to determine variation between learners in the experimental group and those in the control group, regarding the use of summary telling skills in reading. The five-point categorisation was based on the assumption that learners who 'strongly agreed' with perception statements were likely to be 'very consistent' in applying summary telling skills when reading, while those who voiced out 'strong disagreement' were likely to be 'very inconsistent' in using such skills. Figure 4.3 presents the cross-tabulation results concerning the application of summary telling skills in reading among learners in both groups.
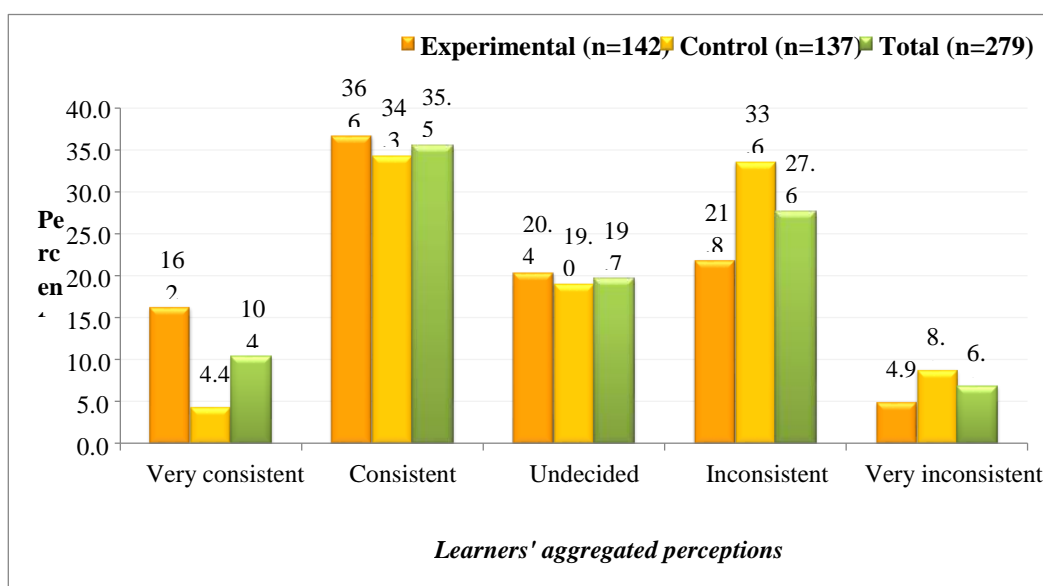
Figure 4.3: Learners' aggregated views on the use of summary telling skills in reading

Results presented in Figure 4.3, show that among the 279 learners, 99 (35.5%) were consistent in using summary telling skills when reading, while 29 (10.4%) were very consistent in applying the skills. However, 77 (27.6%) learners were inconsistent, while 19 (6.8%) were very inconsistent. Analysis further revealed that 52 (36.6%) learners in the experimental group against 47 (34.3%) in the control group were consistent in using summary telling skills. Those who were very consistent in applying the skills included 23 (16.2%) learners in the experimental group against 6

(4.4%) in the control group. Contrastingly, 46 (33.6%) learners in the control group against 31 (21.8%) in the experimental group were inconsistent in using the skills; while 12 (8.8%) learners in the control group against 7 (4.9%) in the experimental group were very inconsistent.

Cumulatively, 75 (52.8%) learners in the experimental group compared to 53 (38.7%) in the control group were predisposed towards consistent application of summary telling skills; while 58 (42.3%) learners in the control group against 38 (26.8%) in the experimental group demonstrated attraction towards inconsistent use of such skills. In view of this, the analysis obtained a computed χ^2 value of 14.535, (df = 4 &ρ-value = 0.006), which suggested up to 99% chance that learners in the experimental group and those in the control group varied significantly in terms of consistency in using summary telling skills when reading. More explicitly, participants indicated that more learners in the experimental than the control group were consistent users of summary telling skills.

4.7.2 Multivariate results

Multiple linear regression analysis was performed to determine effect of the summary telling skills on learners' achievement in reading comprehension, while considering the effect of moderating variables. This was done separately for learners in the experimental group (Model 1) and the control group (Model 2); and the purpose was to determine variation in results between the two groups. Table 4.11 shows that the regression analysis results.

Table 4.11: Effect of summary telling skills on learners' achievement

(1)	(2) B(3)	Std. Error(4)	Model Unstandardized Coefficients Beta(5)	Standardised Coefficients (6)	t	ρ-value(7)
1						
(Constant)	32.351	2.745			5.631	0.000***
Background knowledge	0.623	0.208	0.412		1.965	0.041**
Learner-generated questions	0.588	0.190	0.410		1.931	0.046**
Summary telling skills	**0.586**	**0.194**	**0.409**		**1.905**	**0.057***
Prediction skills	0.465	0.222	0.358		1.302	0.077*
Word recognition skills	0.498	0.213	0.361		1.335	0.063*
Age	0.364	0.682	0.045		0.533	0.595
Gender[†]	-0.002	1.200	-0.000		-0.002	0.999
School[†]	-1.496	1.198	-0.235		-1.249	0.214
Sub-group[†]	4.346	2.665	0.306		1.631	0.105
2						
(Constant)	26.574	2.732			4.095	0.000***
Background knowledge	0.585	0.141	0.403		1.902	0.059*
Learner-generated questions	0.494	0.153	0.396		1.730	0.063*
Summary telling skills	**0.370**	**0.146**	**0.329**		**0.953**	**0.088***
Prediction skills	0.283	0.138	0.278		0.357	0.285
Word recognition skills	0.429	0.159	0.356		1.266	0.082 *
Age	0.325	0.405	0.059		0.801	0.425
Gender[†]	-0.053	0.747	-0.005		-0.071	0.944
School[†]	-1.350	0.740	-0.294		-1.825	0.070*
Sub-group[†]	2.770	1.639	0.273		1.691	0.067*

Dependent Variable: Post-test score

*,**,*** *show significance at ρ<0.1, ρ<0.05 and ρ<0.01 error margins, respectively*

[†] *Converted into a dummy variable before inclusion into the linear regression analysis*

The results in Table 4.11 show that in both models, summary telling skills caused a positive effect on learners' achievement in reading comprehension (Model 1: *Beta* = 0.409, t = 1.905; Model 2: *Beta* = 0.329, t = 0.953). The results suggested that increased application of summary telling skills caused a proportionate increase in learners' achievement in reading comprehension. Nonetheless, based on the magnitude of *Beta* weights and t-statistic, the variable's effect was stronger among learners in the experimental group than among those in the control group.

The results suggest that training teachers in the experimental group might have contributed to the variation by improving effectiveness in developing summary telling skills. The results further showed that in both models, the variable's effect was significant at 90% confidence level (Model 1: ρ = 0.057; Model 2: ρ = 0.088). In view of this, the third null hypothesis (H₀3), postulating that summary telling skills

have no significant effect on learners' achievement in reading comprehension, was rejected for being inconsistent with results.

4.7.3 Qualitative results

This sub-section focuses on the qualitative information sourced using teachers' questionnaires, observation and key informant interviews. Generally, the analysis revealed insufficient application of summary telling skills in both the experimental and the control group. The activation of summary telling skills was examined in terms of four strategies, including main idea sort, reciprocal retells, story maps and drawing pictures. The study assessed the extent to which teachers in the two groups applied the listed strategies to activate learners' summary telling skills. In this regard, Table 4.12 indicates how the strategies were applied across the schools.

Table 4.12: Application of the strategies for activating summary telling skills

Group	School	Main Idea Sort	Reciprocal-Retells	Story Maps	Drawing pictures
Experimental	G	√	×	×	×
	H	√	×	×	×
	I	√	×	×	×
	J	√	×	×	×
Control	K	√	×	×	×
	L	√	×	×	×
	M	√	×	×	×
	N	√	×	×	√
Total		**8**	**0**	**0**	**1**

The analysis of information sourced through teachers' questionnaires and observations revealed that main idea sort was the most common strategy used by teachers in both groups to activate learners' summary telling skills, as indicated in Table 4.13. Despite this, some participants pointed out that over-reliance on a single strategy suggested that teachers were not making adequate effort to develop learners' summary telling skills, which in turn, influenced achievement in reading comprehension. Activating summary telling skills using the main idea sort strategy entailed developing learners' ability to explain the main content of comprehension passages in a few sentences, or to identify main moral lessons derivable from such, which contributed to its popularity among teachers.

Similar findings were reported by studies conducted in various contexts. For instance, Afflerbach (2009) found that identifying the main idea from comprehension passages was the core strategy adopted by teachers to improve learners' understanding of text content. Being a cognitive strategy, the main idea sort enables learners to understand key points communicated by authors. Similarly, Paris and Stahl (2015) found that most teachers concentrated on building learners skills on how to identify main ideas or important information, and to consolidate the same information succinctly. Based on this, Johnson (2015) observed that the ability to identify main ideas in a text, whether explicitly or implicitly stated, is critical for learners' achievement in reading comprehension. In this regard, learners taught on the main idea sort are more likely to interact with texts than those lacking such skills; thereby, leading to greater achievement in comprehension.

Analysis further reveals that the use of reciprocal-retells to activate summary telling skills was rare in both groups. This is consistent with observations made by Cameron (2010), which also indicated that reciprocal-retells is often ignored in many comprehension reading lessons, particularly because teachers assume that each learner understands comprehension passages individually. Reciprocal-retells is a strategy through which learners take charge of own learning in small groups of five to six members. As noted by Routman (2014), such learners are instructed to orally reconstruct passages by narrating each paragraph using own words to demonstrate the extent to which they have understood the content. Consequently, failure to use the strategy when teaching reading comprehension denies learners the opportunity to understand passages better through interaction with peers. According to Wixson (2016) acclaims the strategy for making reading lessons more engaging and interactive, than merely posing follow-up questions after reading. In the same spirit, Kate (2004) observed that by enabling learners to actively engage in identifying, ordering, summarising and making inferences from passages, reciprocal-retells makes lessons learner-centred, which according to Trabasso (2015), is known for facilitating deeper understanding of passages and for improving overall achievement.

The analysis further revealed that story maps were barely used by teachers in both the experimental and control groups to stimulate learners' summary telling skills. In this regard, teachers cited lack of awareness of the strategy as the primary constraint. Similar findings were documented by Beers (2003) who noted that story maps were inadequately used by teachers in reading lessons to actuate learners' summarisation skills. The strategy is often used to enhance learners' comprehension of passages, particularly by prioritising identification and description of characters of interest

from stories and subsequently to provide reasons for choices (Archer & Hughes, 2011). This requires learners to interact with comprehension passages in order to identify and provide accurate description of characters of interest. Story maps are particularly suitable for summarising long passages. In view of this, Caldwell (2007) advocated for the use of story maps for summary telling, because the strategy helps learners to sort out main ideas from passages; thereby, enhancing comprehension.

Drawing pictures after reading comprehension passages is an interesting strategy for retelling stories in summary, at least according to Chamot (2005). In this regard, learners' ability to choose and draw characters or events from passages demonstrates the level of understanding of such texts. In this study, key informant interviews revealed that some teachers applied the strategy to help learners develop summary telling skills during the first few years of employment, but later on dropped the practice for various reasons, including discouragement from colleagues and disillusionment. In one instance, a participant explained, "I liked using the drawing skill after reading a text passage those early years after completing college. I used to ask learners to pick a character they liked most or hated most from a comprehension passage and draw that character doing something. We could then mount the picture drawings on the wall and all learners could go round the class viewing the pictures. When asked to explain whether the skill was important the participant said *"Madam, that skill is very good, you know, I could see my learners going back to re-read the story as they drew the picture and afterwards, you could get a whole paragraph summarised in a single picture. Madam that is the class I taught from class six to eight and we became position one in KCPE year 2010 in the former Vihiga District.

That skill is good!"* she reiterated. Regarding reasons for infrequent use, the participant lamented, "Madam, I stopped completely. Here, in this school, if you do things differently, or start something new, these teachers will discourage you. They tell you how you are seeking for favours from the head teacher, they tell you how they also used to work so hard immediately they left college but gave up, and they in fact told me, lady, go slow, you will just be like the rest of us. Give written questions forget these things you are doing. So I got discouraged."

Analysis of the quoted statements suggests that some teachers stifle learners' achievement in reading comprehension by giving in to negative school cultures and perceptions. Peterson and Deal (2013) define school culture as a shared stream of norms, values, beliefs, traditions, and rituals, which are cultivated and perfected over

time. Various scholars including Peterson and Deal (2013), as well as Wang (2011) have separately established the influence of school culture on teachers' choice of instructional methods. Drawing from this position, some cultures confine teachers to particular instructional methods, even where weaknesses associated with suchmethods are well-known. Consequently, programmes initiated to improve learners' achievement in reading comprehension should incorporate appropriate strategies for weakening and eliminating negative school cultures, which prevent the use of interactive instructional methods to improve learners' achievement in reading comprehension.

4.8 Prediction Skills and Learners' Achievement in Reading Comprehension

'Prediction skills' was also unpacked in terms of five perception statements, each expressing a reading practice through which prediction skills manifest itself. Learners were requested to indicate their views about each perception statement on the five-point measurement scale, standardised as 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. Subsequent analysis details are presented in the following sub-sections.

4.8.1 Bivariate results

The views on perception statements were cross-tabulated against achievement in reading comprehension to determine the statistical significance of the association between each statement and the dependent variable. Table 4.13 presents the crosstabulation results for all the perception statements under prediction skills.

Table 4.13: Aspects of prediction skills and achievement in reading comprehension

Aspects of prediction skills	Post-test scores									
	<20	20-29	30-39				40+		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Fre q	%
I try to visualize information to help me remember what I read.										
Strongly agree	5	12.2	10	7.8	7	11.9	7	14.0	29	10.4
Agree	10	24.4	43	33.3	23	39.0	31	62.0	107	38.4
Undecided	2	4.9	5	3.9	1	1.7	2	4.0	10	3.6
Disagree	16	39.0	36	27.9	16	27.1	5	10.0	73	26.2
Strongly disagree	8	19.5	35	27.1	12	20.3	5	10.0	60	21.5
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

I try to guess what the material is all about when I read the information.

Strongly agree	8	19.5	34	26.4	14	23.7	9	18.0	65	23.3
Agree	13	31.7	47	36.4	31	52.5	29	58.0	120	43.0
Undecided	2	4.9	4	3.1	3	5.1	2	4.0	11	3.9
Disagree	13	31.7	23	17.8	5	8.5	5	10.0	46	16.5
Strongly disagree	5	12.2	21	16.3	6	10.2	5	10.0	37	13.3
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

I use pictures, tables and figures to increase my understanding.

Strongly agree	6	14.6	38	29.5	12	20.3	18	36.0	74	26.5
Agree	18	43.9	44	34.1	32	54.2	23	46.0	117	41.9
Undecided	3	7.3	2	1.6	3	5.1	1	2.0	9	3.2
Disagree	5	12.2	26	20.2	6	10.2	3	6.0	40	14.3
Strongly disagree	9	22.0	19	14.7	6	10.2	5	10.0	39	14.0
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

I use context clues to better understand what I read.

Strongly agree	1	2.4	10	7.8	7	11.9	7	14.0	25	9.0
Agree	17	41.5	39	30.2	27	45.8	20	40.0	103	36.9
Undecided	8	19.5	14	10.9	6	10.2	8	16.0	36	12.9
Disagree	11	26.8	45	34.9	14	23.7	14	28.0	84	30.1
Strongly disagree	4	9.8	21	16.3	5	8.5	1	2.0	31	11.1
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

I skim the text first before I read, to help my understanding.

Strongly agree	9	22.0	33	25.6	18	30.5	12	24.0	72	25.8
Agree	13	31.7	43	33.3	21	35.6	30	60.0	107	38.4
Undecided	4	9.8	4	3.1	3	5.1	3	6.0	14	5.0
Disagree	9	22.0	36	27.9	12	20.3	3	6.0	60	21.5
Strongly disagree	6	14.6	13	10.1	5	8.5	2	4.0	26	9.3
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

The first perception statement claimed that 'I try to visualise information to help me remember what I read'. The results in Table 4.13 show that of the 279 learners, 107 (38.4%) agreed with the perception statement, while 29 (10.4%) agreed strongly. On the opposite side of the scale, 73 (26.2%) learners voiced disagreement with the statement, while 60 (21.5%) disagreed strongly. Cumulatively, 136 (48.7%) learners affirmed the statement; thereby, suggesting that visualisation of information to facilitate recollection of passage contents was practiced by nearly one-half of the learners. Those who felt that the statement was untrue were 60 (21.5%) learners.

The results in Table 4.13 further show that among the 41 learners who scored less than 20 marks, 24 (58.5%) hinted that the statement was untrue, while 15 (36.6%) indicated that the statement was true. In the category of learners who obtained 40+ marks (n=50), 38 (76.0%) said the statement was correct; while 10 (20.0%) confuted it. More still, the category of learners who scored 20-29 marks (n=129) consisted of 71 (55.0%) learners who felt the statement was untrue about their reading practices and 53 (41.1%) who upheld it. Consequently, the analysis revealed that learners' achievement in reading comprehension significantly associated with the practice of visualising information to facilitate recollection of text contents at 95% confidence level (χ^2 value = 25.649, df = 12 & ρ-value = 0.012).

Learners also provided views regarding the second perception statement, which asserted that 'I guess what the material is all about when I read the information'. The results in Table 4.14 show that of the 279 learners, 120 (43.0%) agreed with the statement, while 65 (23.3%) agreed strongly. Those who disagreed were 46 (16.5%) learners; while 37 (13.3%) expressed strong disagreement. Cumulative results indicated that whereas 185 (66.3%) learners believed that the statement truly reflected their reading practices, about one-third, 83 (29.7%) refuted it on account of being untrue.

More still, the results showed that among the learners who scored less than 20 marks (n=41), 21 (51.2%) affirmed the statement, meaning that it was true; while 18 (43.9%) hinted that the statement was untrue. On the upper side of the scale, among the learners who obtained 40+ marks (n=50), 38 (76.0%) felt that the statement correctly portrayed their reading practices; while 10 (20.0%) clued that the assertion was incorrect. The category of 30-39 marks (n=59) consisted of 45 (76.3%) learners who endorsed the statement and 11 (18.6%) who didn't. Following the cross tabulations, the analysis proved that learners' achievement in reading comprehension significantly associated with the practice of guessing the content of materials when reading at 90% confidence level (χ^2 value = 19.492, df = 12 & ρ-value = 0.077).

The study also required learners to state their thoughts about the third perception statement, postulating that 'I use pictures, tables and figures to increase my understanding'. The finding on Table 4.14 shows that whereas 117 (41.9%) learners agreed with the statement, 74 (26.5%) agreed strongly. Contrastingly, 40 (14.3%) learners disagreed, while 39 (14.0%) disagreed strongly. Cumulative results further showed that 191 (68.5%) learners endorsed the statement; thereby, suggesting that the use of pictures, tables and figures to increase the understanding of texts was a

common practice. Those who countered the assertion for being untrue were 79 (28.3%) learners.

Table 4.14 further show that among those who scored less than 20 marks (n=41), nearly two-thirds, 24 (58.5%), felt that the statement was consistent with reading practices; while 14 (34.1%) said that the statement was inconsistent. Those who obtained 40+ marks (n=50), included 41 (82.0%) learners who affirmed the statement and 8 (16.0%) who didn't. Among those who scored 20-29 marks (n=129), 82 (63.6%) learners said the statement was correct, while 45 (34.9%) refuted it. Based on the cross-tabulation results, the analysis obtained a computed χ^2 value of 22.921, (df = 12 & ρ-value = 0.028), which suggested up to 95% chance that learners' achievement in reading comprehension significantly associated with the practice of using pictures, tables and figures to increase the understanding of texts.

The fourth perception statement asserted that 'I use context clues to better understand what I read'. In this regard, the results in Table 4.14 indicate that of the 279 learners, 103 (36.9%) agreed with the statement, while 25 (9.0%) agreed strongly. However, 84 (30.1%) learners disagreed, while 31 (11.1%) disagreed strongly. In addition, cumulative results indicate that 128 (45.9%) learners affirmed the statement; meaning that the use context clues to better understand texts was a regular practice.

Contrastingly, 115 (41.2%) learners were non-users of context clues when reading. In relation to achievement in reading comprehension, in the category of those who scored less than 20 marks (n=41), 18 (43.9%) backed the statement for being true regarding their reading practices; while 15 (36.6%) didn't. Among those who scored 40+ marks (n=50), 27 (54.0%) learners upheld the statement, while 15 (30.0%) countered it for being untrue. In the 30-39 marks (n=59) category, 34 (57.6%) learners avowed that the statement was correct, while 19 (32.2%) refuted it.

Consequently, the analysis found that learners' achievement in reading comprehension significantly associated with the practice of using context clues to understand content, at 90% confidence level (χ^2 value = 19.088, df = 12 & ρ-value = 0.086).

Learners also expressed their thoughts concerning the fifth perception statement, which postulated that 'I skim the text first before I read to help my understanding'. In this regard, Table 4.14 shows that those who agreed with the statement were 107 (38.4%), and those who agreed strongly were 72 (25.8%) learners. Contrastingly, 60 (21.5%) learners disagreed with the statement, while 26 (9.3%) disagreed strongly. Cumulatively, the analysis showed that of the 279 learners, 179 (64.2%)

acknowledged skimming texts before reading for better understanding, while 86 (30.8%) learners refuted it because skimming of texts was not part of their reading practices.

The cross-tabulation results further showed that of the 41 learners who obtained less than 20 marks, 22 (53.7%) affirmed the statement; while 15 (36.6%) countered it. The 40+ marks category (n=50), consisted of 42 (84.0%) learners who averred the statement, and another 5 (10.0%) who felt the assertion was incorrect. Among those who scored 30-39 marks (n=59), 39 (66.1%) learners upheld the statement, while 17 (28.8%) refuted it. Based on this, the study demonstrated that learners' achievement in reading comprehension significantly associated with the practice of skimming texts before reading to facilitate understanding, at 95% confidence level (χ^2 value =

22.204, df = 12 & ρ-value = 0.035).

Furthermore, the perception statements were aggregated to determine the consistency with which learners applied prediction skills when reading. The output, which was measured using five ordinal categories, calibrated as, 'very consistent', 'consistent', 'undecided', 'inconsistent' and 'very inconsistent', was cross-tabulated with learners' group. The process aimed at determining variation between learners in the experimental group and counterparts in the control group regarding consistency in using prediction skills when reading comprehension passages. Figure 4.4 presents the cross-tabulation results.
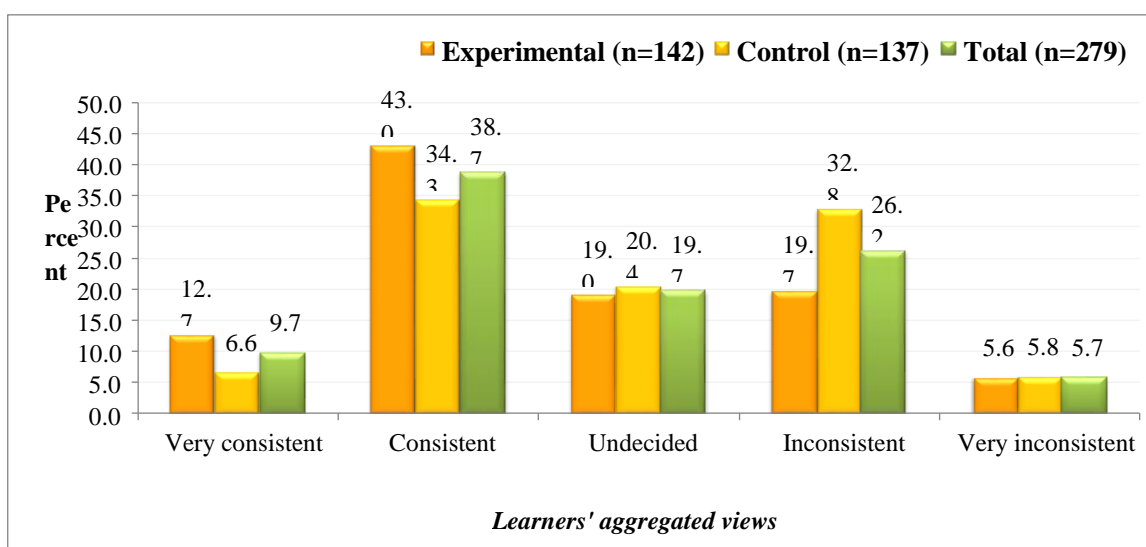
Figure 4.4: Learners' aggregated perceptions on the application of prediction skills when reading

The analysis showed that of the 279 learners, 108 (38.7%) were consistent in applying prediction skills, while 27 (9.7%) were very consistent. Contrastingly, 73 (26.2%) learners were inconsistent in doing so, while 16 (5.7%) were very inconsistent. More still, those who were consistent in applying prediction skills when reading included 61 (43.0%) learners in the experimental group compared to 47 (34.3%) in the control group. Besides, 18 (12.7%) learners in the experimental group against 9 (6.6%) in the control group were very consistent in applying the technique when reading. However, 45 (32.8%) learners in the control group against 28 (19.7%) in the experimental group were inconsistent users of the skills; while 8 (5.8%) learners in the control group against another 8 (5.6%) in the experimental group were very inconsistent.

Cumulatively, 79 (55.7%) learners in the experimental group against 56 (40.9%) in the control group aligned towards consistent application of prediction skills when reading comprehension passages, while 53 (38.7%) learners in the control group compared to 36 (25.3%) in the experimental group demonstrated affinity towards inconsistent use of prediction skills. In this regard, the analysis revealed that variation between learners in the two groups regarding the consistency of applying prediction skills when reading comprehension passages was significant at 90% confidence level (χ^2 value = 8.705, df = 4 & ρ-value = 0.069). This suggests that more learners in the experimental group than in the control group were consistent in using prediction skills when reading comprehension passages.

4.8.2 Multivariate results

The analysis involved application of the multiple linear regression model to determine effect of the prediction skills on learners' achievement in reading comprehension, while factoring in the effect of moderating variables. The analysis generated two models, namely, Model 1 for learners in the experimental group and Model 2 for those in the control group (Model 2). The purpose of the two models was to bring out variation in the key outcomes between the two groups. Table 4.14 presents the regression analysis results.

Table 4.14: Effect of prediction skills on learners' achievement in reading comprehension

		Unstandardized Coefficients		Standardised Coefficients	t	p-value(7)
Model (1)	(2)	B (3)	Std. Error (4)	Beta (5)	(6)	
1	(Constant)	32.351	2.745		5.631	0.000***
	Background knowledge	0.623	0.208	0.412	1.965	0.041**
	Learner-generated questions	0.588	0.190	0.410	1.931	0.046**
	Summary telling skills	0.586	0.194	0.409	1.905	0.057*
	Prediction skills	**0.465**	**0.222**	**0.358**	**1.302**	**0.077***
	Word recognition skills	0.498	0.213	0.361	1.335	0.063*
	Age	0.364	0.682	0.045	0.533	0.595
	Gender†	-0.002	1.200	-0.000	-0.002	0.999
	School†	-1.496	1.198	-0.235	-1.249	0.214
	Sub-group†	4.346	2.665	0.306	1.631	0.105
2	(Constant)	26.574	2.732		4.095	0.000***
	Background knowledge	0.585	0.141	0.403	1.902	0.059*
	Learner-generated questions	0.494	0.153	0.396	1.730	0.063*
	Summary telling skills	0.370	0.146	0.329	0.953	0.088*
	Prediction skills	**0.283**	**0.138**	**0.278**	**0.357**	**0.285**
	Word recognition skills	0.429	0.159	0.356	1.266	0.082 *
	Age	0.325	0.405	0.059	0.801	0.425
	Gender†	-0.053	0.747	-0.005	-0.071	0.944
	School†	-1.350	0.740	-0.294	-1.825	0.070
	Sub-group†	2.770	1.639	0.273	1.691	0.067*

Dependent Variable: Post-test score

*, **, *** *show significance at $\rho<0.1$, $\rho<0.05$ and $\rho<0.01$ error margins, respectively*

† *Converted into a dummy variable before inclusion into the linear regression analysis*

Analysis revealed that the effect of prediction skills on learners' achievement in reading comprehension was positive in both models (Model 1: *Beta* = 0.358, t = 1.302; Model 2: *Beta* = 0.278, t = 0.357). This meant that in both models, the activation of prediction skills by teachers caused a proportionate increase in learners' achievement in reading comprehension. Notably though, the effect of prediction skills seemed stronger among learners in the experimental group than among those in the control group; which in turn, suggested that teachers in the experimental group were more effective in developing learners' prediction skills than their colleagues in the control group.

Results further showed that whereas in Model 1 the variable's effect was significant at 90% confidence level ($\rho = 0.077$); in Model 2, variable's effect was not significant ($\rho = 0.285$). Again, this suggested that trained teachers were likely to be better in motivating learners to apply prediction schools in order to improve achievement inreading comprehension. Based on the results, the fourth null hypothesis (H$_0$4), which stated that prediction skills have no significant effect on standard six learners' achievement in reading comprehension, was rejected in Model 1 for being untrue. However, the hypothesis was not rejected in Model 2 for insufficiency of empirical evidence to warrant such action.

4.8.3 Qualitative results

Analysis of qualitative information, sourced through teachers' questionnaires, observation and key informant interviews, revealed a feeble relationship between activation of learners' prediction skills and achievement in reading comprehension. More specifically, the study examined the used of various strategies to activate learners' prediction skills, including pictures, titles, section-heads and visualisation.

Table 4.15 presents the results obtained through teachers' questionnaire and verified through observation of comprehension reading lessons.

Table 4.15: Application of strategies for activating learners' prediction skills

Group	School	Pictures	Titles	Section-headings	Visualisation
Experimental	G	√	√	×	×
	H	√	×	√	×
	I	√	√	×	×
	J	√	√	×	×
Control	K	√	×	×	×
	L	√	×	×	×
	M	√	√	×	×
	N	√	√	×	×
Total		**8**	**5**	**1**	**0**

The analysis showed that teachers in both groups over-relied on pictures to stimulate learners' prediction of what they were going to read about in comprehension passages, as indicated in Table 4.15. This resonates with the findings obtained by Makokha and Wanyonyi (2015), who discovered that the use of pictures to trigger learners' prediction skills in reading was near universal. The findings of this study and those reported by Makokha and Wanyonyi (2015) are further consistent regarding the source of pictures used by teachers to activate learners' prediction

skills. In this regard, most teachers use pictures contained in course books, with minimal effort to source additional relevant materials in the form of drawings, diagrams on chalkboards, or photographs.

Key informant interviews also confirmed that teachers in both groups relied on pictures in course books to stimulate learners' prediction skills. In the words of a participant, *"You see here, I mostly use pictures in textbooks because it is readily available so I find it easier and faster to administer content of passages to learners. You know, the pictures are already there in the textbook, why should I spend time looking for others?"* Pictures were particularly useful in stimulating prediction skills among learners struggling with reading.

One the same vane, a participant pointed out that "I like using pictures in the course book because even the struggling readers who never answer any question in class get an opportunity to speak. You see, all they need to do is to say what they can see in the pictures. So the pictures offer support to my struggling readers because they get a chance to answer at least a correct question during reading lessons."

The analysis further revealed that teachers were aware of the valuable role of pictures in activating learners' prediction skills in reading. Despite this, the study found that there was overreliance on pictures contained in course books, with limited effort to create or obtain supplementary materials from alternative sources. The main constraining factor according to participants was inadequacy of time to seek and prepare supplementary pictures for use during reading lessons, due to heavy workload, low motivation and negative school culture. In addition to the cited factors, Makokha and Wanyonyi (2015) attributed overreliance on course book pictures to inadequate awareness about the need for innovation in developing learners' prediction skills, as a strategy for improving learners' achievement in reading comprehension.

The analysis also revealed that teachers in both experimental and control group used titles to rouse learners' prediction skills. However, application of the strategy was found to be more common in the experimental than in the control group, with the variation attributed to the training provided to teachers in the experimental group. Even though all comprehension passages in course books have well-bolded titles, the study found that some teachers ignored discussing such titles with learners as a prereading activity intended to stimulate prediction of subjects to be read. In connection to this, observation of comprehension reading lessons revealed that failure to apply the strategy to activate prediction skills denied learners the

opportunity to connect prior knowledge with the subjects to be read, which constrained the understanding of comprehension passages.

These results echo the observations made by Hibbing and Rankin-Erickson (2003) about the importance of discussing titles at the pre-reading phase of comprehension passages. More specifically, the authors pointed out that, discussing titles before reading enables learners to get quick ideas about the content and context of comprehension passages. Consequently, reading comprehension passages can be difficult for learners if teachers ignore discussing titles during the pre-reading phase, which in turn, is likely to affect achievement in reading comprehension (Hibbing & Rankin-Erickson, 2003).

Based on findings which emphasized that the need for teachers to lead discussions on titles to enable learners connect what they know about the subject at hand with what they expect to read about in passages.

The analysis also indicated that the use of section headings to inspire learners' prediction skills was marginal in the experimental group, but rare in control group. The use of section headings enables learners to focus on the content of various sections, identifying main messages and predicting contents of subsequent sections. This assertion corroborates views expressed by Lubliner (2005) regarding the importance of using section headings to kindle learners' prediction skills.

Based on this findings reaveled that learners who are taught to understand section headings become strategic content-area readers, who use the content of a particular section to predict the information to be read in subsequent sections.

Similarly, Waller and Barrentine (2015) highlighted that pausing and discussing section contents enables learners to internalise information read, which in turn, enhances understanding and achievement. This implies that learners not trained to pause at section heading to digest contents, before proceeding to subsequent sections, were likely to experience difficulties in remembering key messages conveyed by comprehension passages, especially where such passages are lengthy.

The study found than the use of visualisation to activate learners' prediction skills was uncommon in both groups. Despite this, National Reading Panel (2013) and Pressley and Gaskins (2006) separately established that visualisation helps learners to process both visual representations of verbal information and objects to create meaning. In this regard, visualisation is commended for actively engaging and motivating learners to read continuously, which in turn, improves understanding of comprehension passages (National Reading Panel, 2013).

While supporting the use of visualisation strategy to activate learners' prediction skills, Gambrell and Jawitz (1993) accentuate the need for teachers to train learners on how to create mental pictures of what they read in passages, which improves understanding contents. In this study, key informant interviews singled out lack of training on visualisation as the key factor preventing teachers from using the strategy to actuate learners' prediction skills. In this regard, a participant stated, "To be sincere madam, I have never heard of this skill before, and as much as I remember, I was not taught this skill at the TTC. You know most of the methods we apply in the field here, can be traced back to our training. I can't recall learning such a skill."

In relation to this, observation of comprehension reading lessons captured the impression that most teachers in both groups stifled learners' achievement in reading comprehension by depending on knowledge acquired from their professional training, and by not trying out innovative approaches. The redundant use of traditional strategies to activate learners' prediction skills suggested that most teachers lacked access to continuous professional development on interactive instructional methods.

These sentiments reiterated those documented by Anyiendah (2017), who found a close connection between a teacher's choice of instructional methods and the knowledge acquired from professional training. The author further established a strong correlation between instructional methods applied by a teacher and the frequency usage. For this reason, the author brought to the fore the need for teacher training colleges to equip trainees with sound teaching methods for effective implementation of teaching strategies. Similarly, Graves (2016) found that most teachers in primary schools were conformists relying on professional training to deliver content. However, Hebert (2017) pointed out that in view of changing educational needs, it is necessary for teachers to keep abreast with new teaching methodologies by attending refresher courses, workshops and conferences, which is likely to sustain their effectiveness in delivering relevant content.

More still, Oczkus (2013) affirmed that an interactive approach "demands that teachers should activate learners' schema" before reading, particularly by enabling separation of information that they already have about the subject of a comprehension passage. This may be achieved through various strategies, including discussion of pictures, titles and section-headings in tandem with activation of learners' visualisation skills. In this regard, Oczkus (2013) observes that a

multifaceted approach is likely to deepen learners' understanding of texts; thereby, improving achievement in reading comprehension.

4.9 Word Recognition Skills and Achievement in Reading Comprehension

Word recognition skill was also measured in terms of five perception statements, each denoting a reading practice. The data collection process captured learners' views regarding each of the statement, which was measured using the five-point scale, marked as 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. The views were utilised in subsequent analyses as detailed in the following sub-sections.

4.9.1 Bivariate results

Learners' views about the perception statements affiliated to word recognition skills were cross-tabulated against achievement in reading comprehension to determine the statistical significance of association between the two key variables, viz. word recognition skills and learners' achievement in reading comprehension. Table 4.16 presents the cross-tabulation results.

Table 4.16: Aspects of word recognition skills and achievement in reading comprehension

Aspects of word recognition skills	Post-test scores									
	<20		20-29	30-39			40+		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
I use the look and say method to help me understand what I read										
Strongly agree	5	12.2	32	24.8	14	23.7	9	18.0	60	21.5
Agree	2	4.9	31	24.0	14	23.7	23	46.0	70	25.1
Undecided	3	7.3	9	7.0	1	1.7	3	6.0	16	5.7
Disagree	21	51.2	31	24.0	19	32.2	8	16.0	79	28.3
Strongly disagree	10	24.4	26	20.2	11	18.6	7	14.0	54	19.4
Total	41	100.0	129	100.0	59	100.0	50	100.0	279	100.0
I combine letters to sound out words when I come across a difficult word to read										
Strongly agree	8	19.5	38	29.5	10	16.9	19	38.0	75	26.9
Agree	11	26.8	55	42.6	26	44.1	22	44.0	114	40.9
Undecided	3	7.3	2	1.6	1	1.7	0	0.0	6	2.2
Disagree	16	39.0	23	17.8	15	25.4	5	10.0	59	21.1
Strongly disagree	3	7.3	11	8.5	7	11.9	4	8.0	25	9.0
Total	41	100.0	129	100.0	59	100.0	50	100.0	279	100.0

I try using visual clues such as pictures to help me understand what I read.									
Strongly agree	6	14.6	15	11.6	10	16.9	9	18.0	40	14.3
Agree	12	29.3	64	49.6	31	52.5	32	64.0	139	49.8
Undecided	3	7.3	10	7.8	5	8.5	1	2.0	19	6.8
Disagree	15	36.6	28	21.7	10	16.9	2	4.0	55	19.7
Strongly disagree	5	12.2	12	9.3	3	5.1	6	12.0	26	9.3
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

I use context clues when reading to help me understand what I read									
Strongly agree	11	26.8	29	22.5	17	28.8	20	40.0	77	27.6
Agree	15	36.6	69	53.5	30	50.8	27	54.0	141	50.5
Undecided	3	7.3	11	8.5	6	10.2	2	4.0	22	7.9
Disagree	7	17.1	13	10.1	4	6.8	0	0.0	24	8.6
Strongly disagree	5	12.2	7	5.4	2	3.4	1	2.0	15	5.4
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

I work out the meaning of words from the way they are used in sentences									
Strongly agree	8	19.5	46	35.7	18	30.5	23	46.0	95	34.1
Agree	11	26.8	43	33.3	25	42.4	22	44.0	101	36.2
Undecided	2	4.9	5	3.9	3	5.1	1	2.0	11	3.9
Disagree	13	31.7	26	20.2	7	11.9	3	6.0	49	17.6
Strongly disagree	7	17.1	9	7.0	6	10.2	1	2.0	23	8.2
Total	**41**	**100.0**	**129**	**100.0**	**59**	**100.0**	**50**	**100.0**	**279**	**100.0**

The first statement claimed that 'I use the look and say method to help me understand what I read'. The results summarised in Table 4.17 show that of the 279 learners involved in the study, 79 (28.3%) disagreed with the statement, while 54 (19.4%) disagreed strongly. The positive side of the measurement scale consisted of 70 (25.1%) learners who agreed with the statement and 60 (21.5%) who expressed strong agreement. Cumulatively, 133 (47.7%) learners disproved the statement; thus, suggesting that the use of look and say method was not a common reading practice. Notably though, up to 130 (46.6%) learners embraced the practice.

In connection with achievement in reading comprehension, the results showed that of the 41 learners who scored less than 20 marks, 31 (75.6%) indicated that the statement was untrue; thus, suggesting that the use of look and say method in reading was uncommon; while 7 (17.1%) expressed positive views about the statement. Among learners who scored 40+ marks (n=50), 32 (64.0%) affirmed the statement, while 15 (30.0%) confuted it. Furthermore, in the category of 20-29 marks (n=129),

63 (48.8%) learners endorsed the statement, while 57 (44.2%) indicated that it was untrue. Based on this, the analysis generated a computed χ^2 value of 33.190, (df = 12 & ρ-value = 0.001), which suggested up to 99% chance that learners' achievement in reading comprehension significantly associated with the practice of using look and say method to understand texts.

Secondly, learners were requested to indicate views about the perception statement, asserting that 'I combine letters to sound out words when I come across a difficult word to read'. The results in Table 4.17 show that of the 279 learners, 114 (40.9%), agreed with the statement, while 75 (26.9%) agreed strongly. Contrastingly, 59 (21.1%) learners disagreed, while 25 (9.0%) disagreed strongly. In addition, cumulative results indicated that 189 (67.7%) learners acknowledged combining letters to sound words,while 86 (30.1%) learners countered the statement for being inconsistent with their reading practices.

The analysis further showed that among the learners who scored less than 20 marks (n=41), 19 (46.3%) were of the view that the statement was true regarding their reading practices; while another 19 (46.3%) said that the statement was untrue. In the category of 40+ marks (n=50), 41 (82.0%) learners affirmed the statement, while 9 (18.0%) didn't. Those in the category of 30-39 marks (n=59), consisted of 36 (61.0%) learners who upheld the statement, and 22 (37.3%) who disproved it.

Consequently, the analysis established a significant association between learners' achievement in reading comprehension and the practice of combining letters to sound out difficult words (χ^2 value = 25.466, df = 12 & ρ-value = 0.013).

Learners also indicated views regarding the third perception statement, which posited that 'I try using visual clues such as pictures to help me understand what I read'. Findings in Table 4.17 shows that about one-half of the learners, 139 (49.8%), agreed with the statement, while 40 (14.3%) agreed strongly. Those who disagreed were 55 (19.7%) learners, while 26 (9.3%) disagreed strongly. Cumulatively, the statement was endorsed by 179 (64.2%) learners, who admitted using visual clues such as pictures to understand texts'. However, about one-third of the learners, 81 (29.0%), confuted the statement on account of being untrue.

In relation to achievement in reading comprehension, the cross-tabulation results further showed that in the category of learners who scored less than 20 marks (n=41), 20 (48.8%) indicated that the statement was true about reading practices; while 18 (43.9%) believed that it was untrue. Among those who scored 40+ marks (n=50), 41 (82.0%) learners endorsed the statement, while 8 (16.0%) felt that the assertion was

incorrect. More still, in the category of 20-29 marks (n=129), whereas 79 (61.2%) learners upheld the statement, 40 (31.0%) rebutted it. Based on this, the study established that learners' achievement in reading comprehension significantly associated with the practice of using visual clues such as pictures to understand texts at 95% confidence level (χ^2 value = 23.673, df = 12 & ρ-value = 0.023).

Learners also indicated opinions regarding the fourth perception statement, which asserted that 'I use context clues when reading to help me understand what I read'. As indicated in Table 4.17, 41 (50.5%) learners agreed with the statement, while 77 (27.6%) agreed strongly. However, 24 (8.6%) learners disagreed with statement, while 15 (5.4%) indicated strong disagreement. Cumulatively, 218 (78.1%) learners supported the statement by admitting using context clues to facilitate the understanding of texts; while 39 (14.0%) felt that the statement was inconsistent with their reading practices.

Further examination of the cross-tabulation results revealed that of 41 learners who scored less than 20 marks, 26 (63.4%) hinted that the statement was correct concerning their reading practices; while 12 (29.3%) believed that it was untrue. In the category of those who achieved 40+ marks (n=50), 47 (94.0%) learners affirmed the statement, while 1 (2.0%) felt that it was incorrect. The distribution was fairly the same among those who scored 30-39 marks (n=59), where 47 (79.6%) learners upheld the statement and 6 (10.2%) didn't. Based on the cross-tabulation results, the analysis revealed that learners' achievement in reading comprehension significantly associated with the practice of using context clues to understand texts, at 90% confidence level (χ^2 value = 20.719, df = 12 & ρ-value = 0.055).

Learners also judged the fifth perception statement, postulating that 'I work out the meaning of words from the way they are used in sentences'. The results in Table 4.17, show that whereas 101 (36.2%) learners agreed with the statement, 95 (34.1%) agreed strongly. On the lower side of the scale, 49 (17.6%) learners disagreed with the statement, but 23 (8.2%) disagreed strongly. Cumulative results showed that of the 279 learners, 196 (70.3%) endorsed the statement by admitting working out the meaning of words as used in sentences, while 72 (25.8%) said the statement was incorrect about their reading practices.

In relation to achievement in reading comprehension, the analysis indicated that among those who scored less than 20 marks (n=41), 20 (48.8%) affirmed the statement, while 19 (46.3%) felt it was untrue. Among the 50 learners who achieved 40+ marks, 45 (90.0%) learners believed the statement was correct, while 4 (8.0%)

expressed reservations about the statement's accuracy. In addition, the category of 20-29 marks (n=129), included 89 (69.0%) learners who affirmed the statement, and 35 (27.2%) who didn't. In view of this, the analysis found that learners' achievement in reading comprehension significantly associated with the practice of working out the meaning of words as used in sentences, at 95% confidence level (χ^2 value =

25.292, df = 12 & ρ-value = 0.013).

Bivariate analysis further involved aggregation of the perception statements aligned to word prediction skills to generate optimal estimates showing how learners consistently applied the technique when reading comprehension passages. The output was measured on a five-point ordinal scale, calibrated as 'very consistent', 'consistent', 'undecided', 'inconsistent' and 'very inconsistent'. The output was then cross-tabulated with learners' group in order to determine variation between learners in the experimental group and those in the control group concerning the consistency of using word prediction skills when reading comprehension passages. A finding in Figure 4.5 present the cross-tabulation results.
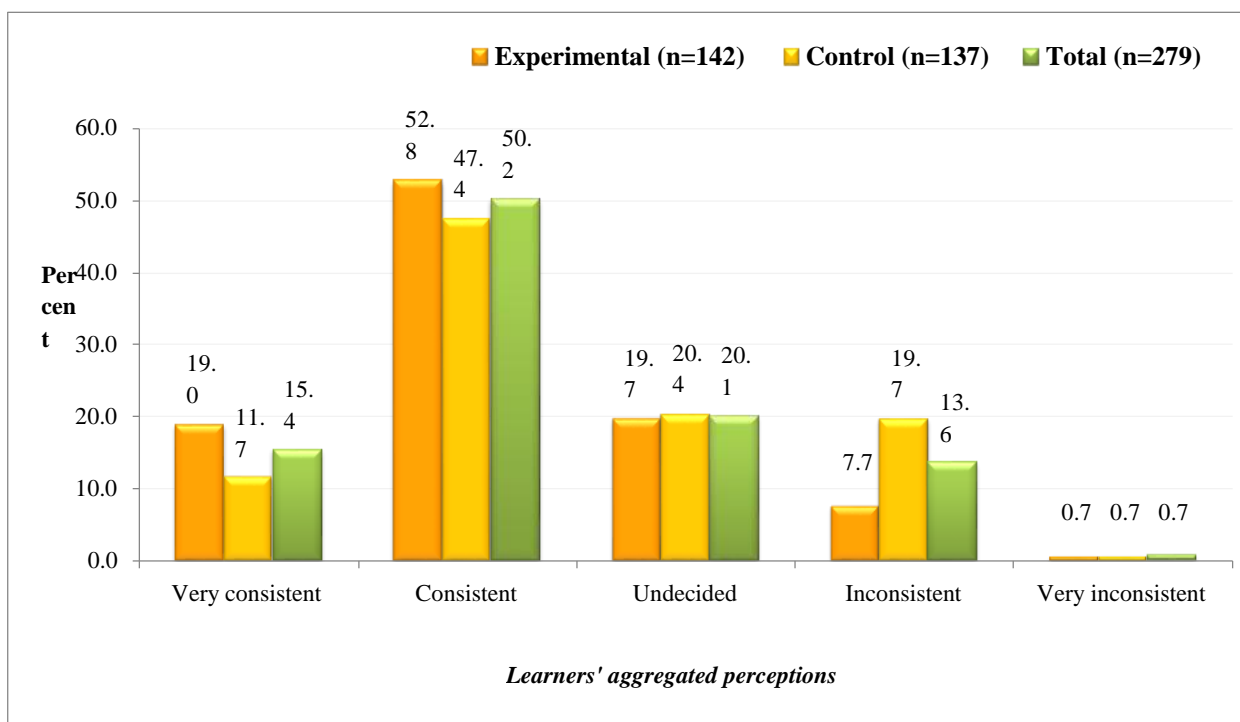
Figure 4.5: Learners' aggregated views regarding the use of word recognition skills when reading

The results in Figure 4.5 show that 140 (50.2%) learners were consistent in applying word recognition skills, while 43 (15.4%) were very consistent. Those who were inconsistent in applying the skills were 38 (13.6%) learners, while 2 (0.7%) were

very inconsistent. The results in Figure 4.5 further show that those who were consistent in applying the skills in their reading included 75 (52.8%) learners in the experimental group compared to 65 (47.5%) in the control group. Besides, 27 (19.0%) learners in the experimental group against 16 (11.7%) in the control group were very consistent in applying the skills. However, 27 (19.7%) learners in the control group and 11 (7.7%) in the experimental group were inconsistent. Cumulatively, 102 (71.8%) learners in the experimental group compared 81 (59.1%) in the control group were predisposed towards consistent use of word recognition skills when reading comprehension passages.

On the lower side of the scale, 28 (20.4%) learners in the control group against 12 (8.4%) in the experimental group inclined towards inconsistent application of the technique. Based on this, the analysis obtained a computed χ^2 value of 10.179, (df = 4 &ρ-value = 0.038), which suggested up to 95% chance that the consistency of applying word recognition skills to understand texts varied significantly between learners in the experimental and control groups.

4.9.2 Multivariate results

Multiple linear regression analysis was applied to determine effect of word recognition skills on learners' achievement in reading comprehension, while considering influence of moderating variables. The analysis generated Model 1 for learners in the experimental group and Model 2 for those in the control group. The two models were generated to bring out variations in the key outcomes, which may be attributed to the training provided to teachers in the experimental group. In view of this, Table 4.17 presents the regression analysis results.

Table 4.17: Effect of word recognition skills on learners' achievement in reading

Model (1)	(2)	B (3)	Std. Error (4)	Beta (5)	t (6)	p-value (7)
	(Constant)	32.351	2.745		5.631	0.000***
	Background knowledge	0.623	0.208	0.412	1.965	0.041**
1	Learner-generated questions	0.588	0.190	0.410	1.931	0.046**
	Summary telling skills	0.586	0.194	0.409	1.905	0.057*
	Prediction skills	0.465	0.222	0.358	1.302	0.077*
	Word recognition skills	**0.498**	**0.213**	**0.361**	**1.335**	**0.063***
	Age	0.364	0.682	0.045	0.533	0.595
	Gender[†]	-0.002	1.200	-0.000	-0.002	0.999
	School[†]	-1.496	1.198	-0.235	-1.249	0.214
	Sub-group[†]	4.346	2.665	0.306	1.631	0.105
	(Constant)	26.574	2.732		4.095	0.000***
	Background knowledge	0.585	0.141	0.403	1.902	0.059*
	Learner-generated questions	0.494	0.153	0.396	1.730	0.063*
	Summary telling skills	0.370	0.146	0.329	0.953	0.088*
2	Prediction skills	0.283	0.138	0.278	0.357	0.285
	Word recognition skills	**0.429**	**0.159**	**0.356**	**1.266**	**0.082***
	Age	0.325	0.405	0.059	0.801	0.425
	Gender[†]	-0.053	0.747	-0.005	-0.071	0.944
	School[†]	-1.350	0.740	-0.294	-1.825	0.070
	Sub-group[†]	2.770	1.639	0.273	1.691	0.067*

Dependent Variable: Post-test score

*, **, *** *show significance at $p<0.1$, $p<0.05$ and $p<0.01$ error margins, respectively*

[†] *Converted into a dummy variable before inclusion into the linear regression analysis*

The results presented in Table 4.17 show that, in both Models, word recognition skills caused a positive effect on learners' achievement in reading comprehension (Model 1: *Beta* = 0.361, t = 1.335; Model 2: *Beta* = 0.356, t = 1.266). This suggests that the application of word recognition skills by teachers, in both groups, caused a proportionate improvement in learners' achievement in reading comprehension. However, the effect was stronger in the experimental group than in the control group, judging from Beta and t-statistic values. This further suggests that teachers in the experimental group were likely to be more effective in developing learners' word recognition skills than those in control group. In both models, the results suggest up to 90% chance that the variable's effect was significant (Model 1: ρ = 0.063; Model 2: ρ = 0.082). In view of this, the fifth null hypothesis (H$_0$5), postulating that *word recognition skills have no significant effect on standard six learners' achievement in*

reading comprehension, was rejected in both Models for being inconsistent with the results.

4.9.3 Qualitative Results

The analysis of qualitative information sourced through teachers' questionnaire, observation and key informant interviews, also established the linkage between activation of learners' learners' word recognition skills and achievement in reading comprehension. However, qualitative results confirm that the extent to which teachers stimulated word recognition skills during reading lessons, varied between the experimental and control groups. The study examined four key strategies for activating word recognition skills among learners, namely, syllabification, context clues, phonemic awareness and fluency. Table 4.18 presents results on the application of the cited strategies for developing learners' word recognition skills.

Table 4.18: Application of strategies for activating word recognition skills

Group	School	Phonemic Awareness	Syllabification	Fluency	Context Clues
Experimental	G	×	√	×	√
	H	×	√	×	√
	I	×	√	×	√
	J	√	√	×	×
Control	K	×	√	×	×
	L	×	√	×	×
	M	×	√	×	√
	N	×	√	×	×
Total		**1**	**8**	**0**	**4**

The analysis revealed that the use of syllabification to develop learners' word recognition skills was universal in both the experimental and control groups, as shown in Table 4.18. Participants explained that syllabification involved training learners on how to use prefixes and suffixes to decode new words in texts with less effort. In this regard, new compound words were decoded by breaking them down into constituent parts using either prefixes or suffixes on root words. Through observation of comprehension reading lessons, the investigator noted that the strategy, which was commonly applied before reading sessions, enabled learners to recognise and know the meaning of new words; thereby, improving the understanding of passages.

Further analysis revealed that these finding resonated with those reported by Kwiatkowska-White (2012). The latter found that the use of syllabification by teachers improved learners' knowledge of new words prior to reading, which in turn, allowed them to focus on understanding the content of passages. The author argues that when learners have to frequently, stop reading to figure out the meaning of unknown words, they are less likely to concentrate on understanding the content of text materials.

The analysis further indicated that context clues were used occasionally in the experimental group, but rarely in control group, to activate word learners' recognition skills. In this regard, teachers guided learners on how to decode words and infer meaning from the context in which such words were used in comprehension passages. Participants noted that having recognised and known the meaning of new words, learners experienced minimal obstacles when reading passages, which refocused attention on understanding the content.

Similar findings were documented by Rasinski (2010), who noted that when learners can accurately, effectively and effortlessly decode words, reading passages while focusing on understanding content becomes easier. In addition, Pradak (2013) reported that the use of context clues to activate word recognition skills, enabled learners to realise significant gains in reading comprehension passages, particularly by focusing on understanding the content. When readers focus too much attention on decoding the meaning of words, less attention is paid to understanding the content, which affects the level of achievement in reading comprehension (Perfetti & Stafura, 2014).

The analysis further indicated that the application of phonemic awareness to activate learners' word recognition skills was uncommon in both the experimental and control groups. Phonemic awareness instruction is about teaching reading by stressing learning on how letters correspond to sounds. As noted by Opitz and Lindsey (2010), phonemic awareness is the realisation that letters make sounds, which are systematically joined together to form words. Consequently, when learners come across new words, they are encouraged to examine the order of letters and combine the sounds in order to identify how the word should be read.

This implies that when learners are not instructed on phonemic awareness they are denied essential skills for recognising and decoding unfamiliar words by themselves; which in turn, intensifies dependency on teachers when reading comprehension passages. In connection to this, Ngwaru and Opoku-Amankwa (2014) observed that lack of phonemic skills among learners is one of the factors explaining why prereading sessions in most schools in Africa are dominated by teachers.

The findings of this study confirm the observations made by Ngwaru and OpokuAmankwa (2014), regarding the dominance on teachers in decoding and reading new words. In this regard, classroom observations revealed that teachers played a pivotal role in guiding learners to pronounce unfamiliar words and how to decode the meaning. In one instance, a participant reported that, "Our teacher always teaches us how to pronounce words and what they mean." Further enquiry into what happens when learners come across new words, another participant said "When we read silently and we see a difficult word, we put up our hands and our teacher reads the word for us." These findings were confirmed through key informant interviews with teachers. Below is an excerpt from a case in point.

Interviewer: *Do you use phonemic awareness skill with your learners?*

Respondent: *No, not at this level.*

Interviewer: *Why don't you use it at this level?*

Respondent: *You see, that skill is very good but for lower primary, for beginner readers, who are still learning how to combine sounds to make letters, do you think these learners didn't pass through lower primary before getting here in class six? Definitely no.*

Interviewer: *Could you be having learners who cannot read some words in your class?*

Respondent: *Yes, the new words I have not taught are sometimes troublesome to my learners.* 114

Interviewer: *What do you do in such cases?*

The findings suggest that teachers ignored the use of phonemic awareness instruction in upper primary, based on the assumption that the strategy was suitable for beginner readers in lower primary. Notably though, studies conducted in various contexts over time, have established that phonemic awareness is helpful to readers at all levels of basic education. For instance, Blevins (2001) found that learners who received explicit phonemic instruction outperformed those who never accessed such treatment, regardless of the level of education.

Similar findings were documented by Chard (2012), who noted that phonemic instruction affects reading comprehension in later grades of education. The findings of such studies prove that the assumption regarding the suitability of phonemic awareness to learners in lower primary is fallacious. The assumption is further faulted by the findings reported by Suggate (2016), who noted that phonemic instruction is likely to improve self-reliance in word recognition and reading at all levels of education, while lessening dependency on teachers.

The analysis further showed that fluency skills were rarely used by teachers in both groups to stimulate learners' skills in word recognition. Reading fluency is a set of skills that enables learners to read passages accurately, speedily and with proper expression (Hudson, Pullen, Lane & Torgesen, 2009; Lane & Pullen, 2015). This demands that learners be instructed on the three major components, including accuracy, speed and proper expression (prosody), which according to Lane and Pullen (2015), are not only complementary but also inseparable. In this regard, learners instructed on accuracy can read words correctly, those instructed on speed optimise rate of reading, while those instructed on prosody can read with appropriate intonations, including stresses, pitches, cadences and pauses, among others. As noted separately by Lane and Pullen (2015), as well as Kuhn, Shwanenflugel and Meisinger (2014), reading fluency has a clear connection to learners' achievement in reading comprehension. More specifically, Kuhn *et al.* (2014) asserted that fluency instruction enables learners to read and comprehend texts concomitantly, because fluent learners are able shift focus from decoding words to understanding the content of passages. In this study, the analysis of the qualitative information established a connection between lack of fluency instruction and learners' poor achievement in reading, which manifested through incorrect answers to post-reading questions, sluggish reading speed, as well as lack of, or use of inappropriate prosody when reading aloud for class.

The findings of this study resonate with the observations made by Eldredge (2015), which suggest that learners not instructed on the three components of fluency are likely to be inaccurate and lacklustre in reading, as well as poor in the interpretation of texts and choice of prosody. On the same note, Kuhn *et al.* (2014) pointed out that without fluency instruction, learners focus on decoding individual words; thus, allowing minimal attention for understanding passages.

4.10 Models' Goodness-of-Fit and Significance

The goodness-of-fit of a regression model is the strength with which it explains a dependent variable from an independent or a set of independent and moderating variables. In multiple linear regression analysis, the strength of a model is interpreted from the adjusted R^2, also known as the coefficient of determination. Table 4.19presents results on the models' goodness-of-fit.

Table 4.19: Strength and significance of the models

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.670	0.449	0.415	2.975	0.126	1.291	5	273	0.000***
2	0.568	0.323	0.341	2.021					

	ANOVA	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	522.203	5	104.441	9.147	0.014**
	Residual	6615.995	136	48.647		
	Total	7138.197	141			
2	Regression	233.863	5	46.773	7.856	0.017**
	Residual	3302.006	131	25.206		
	Total	3535.869	136			

*,**,*** *show significance at ρ<0.1, ρ<0.05 and ρ<0.01 error margins, respectively*

The results presented in Table 4.19 show that Model 1 obtained an adjusted R^2 of 0.415, which suggests that the interactive approach instruction variables incorporated in the analysis, including background knowledge, leaner-generated questions, summary telling, prediction and word recognition skills, accounted for 41.5% of improvement in learners' achievement in reading comprehension. The results suggest that Model 1 was moderately strong in estimating the effect of interactive approach instruction on learners' achievement in reading comprehension. The Analysis of Variance (ANOVA) results further showed that the Model's strength was statistically significant at 95% confidence level (F = 9.147; ρ= 0.014), which means that in the experimental group, effect of the interactive approach instruction on learners achievement in reading comprehension was statistically significant.

The results further showed that Model 2 generated an adjusted R^2 of 0.341, which suggests that the Model explained 34.1% of improvement in learner's achievement in reading comprehension; thus, implying that Model 2 was relatively weaker than Model 1 in estimating effect of interactive approach instruction on learners' achievement in reading comprehension. However, the ANOVA results showed that its strength was statistically significant at 95% confidence level (F = 7.856; ρ= 0.011). Regarding variation between Models 1 and 2 in terms of strength, the analysis obtained an R^2 change of 0.126 and an F change of 1.291, which was significant at 99% confidence level (ρ = 0.000). The results suggest up to 99% chance that variation in the strength of Model 1 and Model 2 was statistically significant; which further validates the premise that trained teachers were more effective in applying the interactive approach instruction, than their untrained colleagues in the control group.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of findings drawn from thematic areas of the study which include; background knowledge, learner-generated questions, summary telling, prediction and word recognition skills. Also presented herein are conclusions and recommendations for appropriate interventions.

5.2 Summary of the Study

The aim of the study was to determine effect of interactive approach instruction on learners' achievement in reading comprehension in Vihiga County. Whereas the interactive approach instruction was measured in terms of learners' background knowledge, learner-generated questions, summary telling skills, prediction skills, and word recognition skills, each of forming an objective; achievement in reading comprehension was gauged in terms of test scores.

The study was intended to generate information that would influence programming and policy interventions focused on improving the training, management and motivation of teachers, so that they may sustainably actuate the interactive approach instruction skills as an important precursor to improving learners' achievement in reading comprehension. The study was also intended to inform policy deliberations at the national and county levels, with a view to influencing mobilisation and allocation of additional resources for supporting teacher training.

Lastly, the information generated by the study was expected to spur further research interventions on the twin subjects, viz. interactive approach instruction and leaners' achievement in reading comprehension, in order to deepen and broaden knowledge on causal linkages between the two aspects at various levels of education, as well as in various geopolitical contexts.

A quasi-experiment involving the Solomon Four-Group Design was applied, with quantitative and qualitative approaches. Primary data were sourced using four sets of tools, including a self-administered questionnaire for learners, a questionnaire for teachers, a key informant interview guide for teachers and an observation guide. The data were sourced in mid-2017 from 279 learners and 8 teachers. Notably, 142 (50.9%) learners were members of the experimental group, while 137 (49.1%) were in the control group. In the experimental group, teachers were trained on how to correctly apply the interactive approach instruction.

Both quantitative and qualitative techniques were applied to analyse the data. Whereas quantitative data analysis techniques included independent samples t-test of variance, cross-tabulations with Chi-square tests, and multiple linear regression, qualitative data were analysed thematically. The regression analysis generated two models, one for the experimental group (Model 1) and one for the control group (Model 2), with each incorporating independent and moderating variables. The findings were summarised under the following sub-sections, in line with objectives of the study.

5.2.1 Background knowledge and learners' achievement in reading comprehension

Background knowledge caused a positive effect on learners' achievement in reading comprehension in both the experimental and control groups (Model 1: *Beta* = 0.412, t = 1.965; Model 2: *Beta* = 0.403, t = 1.902). Judging from *Beta* weights and tstatistic values, the variable's effect was stronger in the experimental group (Model 1) than in the control group (Model 2). This suggests that trained teachers in the experimental group were more effective in activating learners' background knowledge than their untrained colleagues in control group.

The results further suggest that teachers in the experimental group invested more effort in activating learners' background knowledge during comprehension reading lessons than those in the control group. In both models, the variable's effect was found to be statistically significant, at 95% confidence level for Model 1 ($\rho = 0.041$) and at 90% confidence level for Model 2 ($\rho = 0.059$). Consequently, the first null hypothesis ($H_0 1$), stating that background knowledge has no significant effect on standard six learners' achievement in reading comprehension, was rejected in both models, for being untrue. This implies that the variable had a significant effect on standard six learners' achievement in reading comprehension.

Furthermore, qualitative findings show that of the four strategies for activating learners' background knowledge skills, pre-teaching vocabulary was the most applied by teachers, in both the experimental and control groups. However, between the two groups, the strategy's application was more common in the experimental group.

Contrastingly, KWL strategy was hardly used by teachers in both groups and its application was constrained by various factors, including the assumption that comprehension of passages develops naturally as learners get to know the meaning of new words; teachers' domination of reading lessons through lengthy explanations of new words; inadequacy of instructional resources and budgetary provisions, heavy workloads, as well as lack of innovation and motivation among teachers.

5.2.2 Learner-generated questions and achievement in reading comprehension

In both models, learner-generated questions caused a positive effect on learners' achievement in reading comprehension (Model 1: *Beta* = 0.410, t = 1.931; Model 2: *Beta* = 0.396, t = 1.730); meaning that increased stimulation of learners to generate questions on the content of texts caused a proportionate improvement in the achievement in reading comprehension. Despite this, the variable's effect was stronger in the experimental than in the control group, which suggests that teachers trained on the correct methods of applying the interactive approach instruction, were more effective in activating learner-generated questions and applying the same to teach reading comprehensions than their untrained colleagues in the control group.

Again, in both models, the effect of learner-generated questions was statistically significant at 95% confidence level for the experimental group (ρ = 0.046) and 90% confidence level (ρ = 0.063) for the control group; which led to rejection of the null hypothesis (H_02), stating that learner-generated questions have no significant effect on standard six learners' achievement in reading comprehension. This suggests that learner-generated questions had a significant effect on standard six learners' achievement in reading comprehension.

Regarding the strategies for activating learner-generated questions, post-reading questions was the most applied by teachers in both groups, particularly because it enabled learners to summarise comprehension passages, besides exploring additional areas of study. However, the strategy is faulted for encouraging passive reading of comprehension passages, which denies learners the opportunity to actively participate in reading comprehensions; develop active reading skills and improve achievement in reading. However, the use of inserted questions and self-questioning strategies was uncommon in both groups. The results suggest that teachers in both groups over-relied on a single strategy to activate text questioning skills among learners.

5.2.3 Summary telling skills and learners' achievement in reading comprehension

Summary telling skills caused an improvement on learners' achievement in reading comprehension, with the effect being relatively stronger in the experimental group than in the control group, as indicated by *Beta* weight and t-statistic (Model 1: *Beta* = 0.409, t = 1.905; Model 2: *Beta* = 0.329, t = 0.953). This suggests that training teachers on the correct methods of interactive approach instruction is likely to improve their effectiveness in developing learners' summary telling skills, which is crucial for improving achievement in reading comprehension. In addition, the effect of summary telling skills was statistically significant at 90% confidence level in both models (Model 1: ρ = 0.057; Model 2: ρ = 0.088); and this prompted rejection of the null hypothesis ($H_0 3$), postulating that summary telling skills have no significant effect on standard six learners' achievement in reading comprehension. The results showed a weak causal relationship between application of learners' summary telling skills and achievement in reading comprehension; thus, suggesting that the activation of such skills by teachers was sub-optimal in both groups, but relatively stronger in the experimental than in the control group.

Furthermore, main idea sort was the most common strategy used by teachers in both groups to improve learners' summary telling skills. Even though the strategy enabled learners to understand key points communicated by authors, its over-application suggests that learners' summary telling skills were not fully developed. Contrastingly, story maps were barely applied by teachers to activate learners summary telling skills, with the key reasons being limited awareness of the strategy among teachers, dissuasion from colleagues and disillusionment, particularly due to low pay, prolonged stagnation and heavy workload.

5.2.4 Effect of prediction skills on learners' achievement in reading comprehension

Activation of prediction skills improved learners' achievement in reading comprehension in both groups; with the effect being stronger in the experimental than in the control group, as indicated by *Beta* and *t*-statistic values (Model 1: *Beta* = 0.358, t = 1.302; Model 2: *Beta* = 0.278, t = 0.357). Besides, the variable's effect was statistically significant in the experimental group at 90% confidence level (ρ = 0.077), but insignificant in the control group (ρ = 0.285). The findings suggest that teachers in the experimental group were more effective in developing learners'

prediction skills than their colleagues in the control group. Consequently, the null hypothesis ($H_0 4$), stating that prediction skills have no significant effect on standard six learners' achievement in reading comprehension, was rejected in Model 1 for being untrue. However, in Model 2, the null hypothesis was not rejected due to insufficient empirical evidence to warrant such action. Generally, the causal relationship between the prediction skills and learners' achievement in reading comprehension was feeble in both groups.

Regarding the four strategies for activating learners' prediction skills, pictures were most commonly applied by teachers in both groups. Notably though, most teachers relied on pictures contained in course books, with minimal effort to source additional relevant materials in the form of drawings, diagrams or photographs. Time constraint due to heavy workload emerged the main factor preventing teachers from preparing supplementary pictures for use during reading lessons.

Additional constraints included low motivation, negative school culture and inadequate awareness among teachers regarding the need for innovative approaches in developing learners' prediction skills. Notably though, application of the visualisation strategy was uncommon in both groups due to issues such as lack of continuous professional development on interactive instructional methods. Lack of training encouraged reliance on conventional teaching resources such as pictures in course books; while preventing the use of additional relevant resource materials in the form of drawings, diagrams or photographs.

5.2.5 Word recognition skills and learners' achievement in reading comprehension

In both Models, the effect of word recognition skills on learners' achievement in reading comprehension was positive and relatively stronger in the experimental group than in the control group (Model 1: *Beta* = 0.361, *t* = 1.335; Model 2: *Beta* = 0.356, *t* = 1.266). In this regard, teachers in the experimental group were likely to be more effective in developing learners' word recognition skills than their colleagues in the control group. In addition, the variable's effect was statistically significant at 90% confidence level in both models (Model 1: ρ = 0.063; Model 2: ρ = 0.082).

This suggests that activating word recognition skills improved learners' achievement in reading comprehension; thereby, leading to rejection of the null hypothesis ($H_0 5$), stating that word recognition skills have no significant effect on standard six learners' achievement in reading comprehension, in both Models. Furthermore, of

the strategies used by teachers to activate learners' word recognition skills, application of syllabification was near universal in both the experimental and control groups; while fluency skills were barely used by teachers in both groups.

5.3 Conclusions

The conclusions presented in this section were drawn from the study's findings; and have been presented under various themes, in line with objectives of the study.

5.3.1 Background knowledge and learners' achievement in reading comprehension

Even though the effect of background knowledge on learners' achievement in reading comprehension was positive and statistically significant in both the experimental and control groups, it was stronger in the former than in the latter. The variation implies that training teachers of English on the correct procedures for activating learners' background knowledge skills is likely to add value by improving effectiveness in lesson delivery. In addition, such training is likely to inspire teachers to go an extra mile in activating learners' background knowledge.

Despite the positive effect of training, over-application of the pre-teaching vocabulary strategy is an issue that deserves attention. Encouraging teachers to apply multiple strategies for activating learners' background knowledge skills should be prioritised and stimulated through appropriate interventions targeting: availability of appropriate instructional resources in schools and improved budgetary allocation.

It's vital for stakeholders to note that training teachers on how to activate learners' background knowledge skills may not necessarily translate into desired results, until the same teachers are supported and facilitated to perform optimally. Furthermore, training and providing necessary resource materials are capital intensive interventions, which may not be realised immediately in resource-poor countries such as Kenya. However, training should be designed to encourage innovation.

Access to appropriate instructional materials is vital for improving learners' background knowledge skills in tandem with enhancing achievement in reading comprehension.

5.3.2 Learner-generated questions and achievement in reading comprehension

The effect of learner-generated questions on the achievement in reading comprehension was stronger in the experimental than in the control group, which implies that teachers who were subjected to training became more effective in

activating learner-generated questions than their colleagues in the control group. Consequently, training teachers on the correct methods of activating learnergenerated questions is vital for not only informing and instilling essential skills, but also for motivating teachers to apply necessary strategies for evoking questions on text passages, consistently.

Even though teachers in both groups inclined towards one strategy for activating learner-generated questions, in the experimental group, this implied that the training provided the teachers were insufficient. Even though post-reading questions is commended for enabling summarisation of comprehension passages, it's equally admonished for entrenching a passive reading culture, which, denied learners the opportunity for active interaction with text passages . Over-reliance on the post reading questions strategy also confounded a paradigm shift from teacher- to learner centred reading of comprehensions. By actively involving learners in reading comprehensions, generating questions and discussing texts with colleagues, the learner-centred approach enables learners to inter alia, build communication and social skills, develop thinking and problem solving skills as well as minimise dependency on teachers. In view of this, continuous professional development interventions should sensitise teachers of English language on the need to apply multiple strategies that encourage learners to take active roles in reading, discussing and reflecting on the subject of comprehension passages.

5.3.3 Summary telling skills and learners' achievement in reading comprehension

The effect of summary telling skills on learners' achievement in reading comprehension was relatively stronger in the experimental than in the control group; a situation that was attributed to the training intervention in the experimental group.

However, the weak relationship between learners' summary telling skills and achievement in reading comprehension suggested that the activation of such skills was sub-optimal in both groups; which points to insufficiency of the training provided to teachers in the experimental group. Of the four strategies for activating summary telling skills, the main idea sort was the most common strategy used by teachers in both groups. Even though the strategy enabled learners to understand key points communicated by authors, its application cannot fully support the development of skills required by learners to comprehend text passages.

The minimal use or non-use of ancillary strategies is often prevented by various factors, which in this study, included negative school culture, lack of awareness and low level motivation among teachers. By giving in to negative school cultures, teachers of English language stifled learners' achievement in reading comprehension. Based on this realization, stakeholders should consider appropriate sensitisation interventions to weaken or eliminate negative cultures that directly or indirectly prevent the teachers from applying particular instructional methods when teaching reading comprehension. Equally important is the need to motivate teachers by improving remuneration and welfare programmes.

5.3.4 Effect of prediction skills on learners' achievement in reading comprehension

The activation of learners' prediction skills caused a positive effect by improving achievement in reading comprehension in both groups. Despite this, the variable's effect was stronger in the experimental- than in the control group. Similarly, the effect was statistically significant in the experimental group, but insignificant in the control group, which implies that training teachers on the interactive approach instruction is likely to enhance their effectiveness in developing learners' prediction skills. However, the feeble relationship between prediction skills and learners' achievement in reading comprehension, in both groups suggested that learners' prediction skills were not fully developed; which in turn, constrained critical thinking skills as well as the ability to evaluate texts and extract messages.

Of the four strategies used by teachers to activate learners' prediction skills, pictures were the most commonly applied in both groups. Notably though, teachers relied on pictures in course books, which implies that few sourced supplementary resource materials. Even though course books are common instructional resources in classrooms, over-dependence prevented learners from deepening and broadening their perspectives on passages contents. Over-dependence on course books also narrowed the opportunities for innovation. The situation worsens where course books fail to cover particular subjects sufficiently or where such books are outdated. This amplifies the need to sensitise teachers about cautious use of course books, while supplement course books with relevant resource materials; prioritise innovation in creating supplementary resource materials, as well as improve staffing for teachers to cope with workload challenges; thus, create time for innovation.

Contrastingly, the use of visualisation to activate learners' prediction skills was uncommon in both groups. This denied learners the opportunity to develop prediction skills fully, thereby, undermining achievement in reading comprehension. The non-use of visualisation was attributed to lack of awareness, knowledge and requisite skills.

Findings suggested the need to review teacher training curriculum by incorporating interactive instructional methods, ICT-based methods and innovation to enable teachers diversify instructional resources. The findings further bring up the need for continuous professional development in various forms, including mentorship, refresher courses, workshops and conferences to enable teachers upgrade their skills and cope with job market dynamics. This may be achieved through innovative strategies such as teacher collaboration forums which create forums for teachers to share experiences, skills, challenges and solutions; as well as build a culture of trust and solidarity.

5.3.5 Word recognition skills and learners' achievement in reading comprehension

The effect of word recognition skills on learners' achievement in reading comprehension was positive and significant; thus, implying that activating learners' word recognition skills is essential for improving achievement in reading comprehension. That aside, the variable's effect was relatively stronger in the experimental group than in the control group, which implies that trained teachers in the experimental group were more effective in developing learners' word recognition skills than those in the control group. Despite the achievement, teachers in both groups relied on one strategy, namely, syllabification, which again implies that activation of learners' word recognition skills was sub-optimal. A high level of reading proficiency requires teachers to diversify instructional methods. Contrastingly, fluency skills were rarely used by teachers in both groups.

Even though teachers occupy a central position in developing learners' word recognition skills, the effectiveness with which they achieve this depends on how well they access supervisory support from their superiors. Supervisory support entails a continuous process of mentoring and guiding teachers to improve competencies in applying various instructional methods. Through supervisory support, instructional challenges can be detected through observation and appraisal for timely corrective measures. Improving supervisory support to English language

teachers involves sensitising authorities about supervisory needs of such teachers, improving budgets and providing logistical support, for consistency. As the quality of supervisory support improves, teachers are likely to become more effective in activating learners' word recognition skills.

5.4 Recommendations

These recommendations target various stakeholders, including Ministry of Education, particularly Quality Assurance and Standards officers, KICD, TSC, teacher training institutions, school administration and teachers of English language in Vihiga County. The sub-section covers recommendations for policy action, practice and further research.

5.4.1 Recommendations for policy action

1. Ministry of Education should develop and disseminate policy guidelines to all public primary schools, requiring all teachers of English language to access training on application of the interactive instructional methods. This is likely to improve adoption of such methods; thereby, putting schools in better positions to improve achievement in reading comprehension.

2. The Ministry of Education should review expenditure guidelines for the Free Primary Education funds to ensure that boards of management allocate some funds for purchasing recommended instructional resources for teachers and learners. This is likely to facilitate the application of the interactive instructional methods in the schools.

3. Develop and disseminate policy guidelines aimed at sensitizing head teachers about the need to encourage innovation and use of alternative resources to supplement conventional instructional materials in institutions. This is likely to motivate teachers of English language to improvise instructional resources necessary for supporting application of the interactive approach instruction in reading comprehensions.

4. The Ministry should ensure regular dissemination of information on available training opportunities for primary school teachers, including refresher courses, workshops and conferences. Given the importance of English language in relation to learners' performance in the other subjects, the Ministry should ensure that such information is disseminated regularly and teachers of the subject supported to access such training opportunities.

5. Provide policy guidance about the formation, objectives, management, financing and functions of collaboration forums. Through regular meetings, either physically or through a cost-effective online platform, teachers of English language can share of experiences, challenges and skills regarding application of the interactive instructional methods for teaching comprehensions.

5.4.2 Recommendations for practice

1. Train teachers on the correct procedures for activating learners' comprehension treading skills, including background knowledge, learner-generated questions, summary telling, prediction and word recognition. The training should cover integration of learner-centred approaches in reading comprehensions to develop communication, social, thinking and problem-solving skills.

2. Support and facilitate teachers to access refresher courses, workshops and conferences, to update knowledge, skills and practices on interactive instructional methods; as well as sustain effectiveness in delivery of content.

3. Update teacher training curriculum by integrating innovation and expanding scope to include ICT-based interactive instructional methods, in line with job market demands.

4. Provide appropriate instructional resources to enable teachers apply diverse instructional methods and strategies for activating leaners' comprehension treading skills. This may entail, improving budgetary allocation to schools to facilitate acquisition of more resource materials for learners and teachers.

5. Encourage teachers' innovation in improvising and using alternative instructional resources that are adapted to learners' social and environmental contexts. This should supplement conventional instructional materials for improving learners' comprehension reading skills.

6. Motivate teachers by improving remuneration and welfare programmes, providing information about training opportunities, recruiting more teachers to reduce workloads, as well as honouring and recognising achievements. This is likely to encourage application of diverse strategies for activating comprehension reading skills.

7. Initiate appropriate sensitisation interventions to weaken or eliminate negative cultures that directly or indirectly prevent teachers from applying particular instructional methods when teaching reading comprehension. This should entail

advising teachers to use course books cautiously and apply multiple strategies that encourage learners to take active roles in reading, discussing and reflecting on the subject of comprehension passages.

8. Initiate teacher collaboration forums to facilitate sharing of experiences, challenges and solutions. The forum can involve periodical meetings or an online platform where teachers can engage cost-effectively, frequently and continuously.

9. Strengthen supervisory support to teachers by increasing budgetary allocations, sensitising head teachers and quality and standards assurance officers about the supervisory needs of English language teachers. This is likely to increase the frequency of supervisory visits, intensity of mentorship and guidance to teachers; thereby, improve competencies in applying various instructional methods in line with established standards.

5.4.3 Recommendations for further research

This study generated two regression models. Whereas Model 1 accounted for 41.5% of improvement in learners' achievement in reading comprehension, Model 2 explained 34.1% of the same. Notably, both Models were moderate in estimating the effect of interactive approach instruction on learners' achievement in reading comprehension. Even though the effect was statistically significant in each case, there is need for similar studies conducted in the future to adopt better designs, have bigger samples and increase the number of independent variables, in order to generate models that will provide more robust estimation of the causal relationship between interactive approach instruction aspects and learners' achievement in reading comprehension.

Secondly, this study examined the effect of interactive approach instruction on learners' achievement in reading comprehension in Vihiga County. More specifically, the study focused on the experiences of standard six learners and teachers of English language. Because its scope doesn't cover other tiers of the education sector, it may be fallacious to assume that the findings of this study are generalizable to the entire education sector. This brings up the need for future studies to focus on other classes within the primary tier, as well as on learners at the secondary and tertiary tiers, because the experiences, needs, challenges and priorities vary across the education sector. Furthermore, future studies may be of greater benefit to national-level policy, legislative and programmatic interventions if scaledup to cover entire sub-sectors, regions and country.

5.5 Contributions of the Study to Knowledge

The study contributes to knowledge by either affirming or refuting theoretical constructs advanced by the Interactive Theory of Reading. Specific contributions of the study are described in the Table below.

Objective	Contribution
1. Determine the effect of background knowledge on learners' achievement in reading comprehension.	The Interactive Theory of Reading postulates that reading proficiency increases when learners use both what they know and information from the text to construct the meaning texts being read. This study confirms the theoretical construct by establishing that learners' background knowledge positively and significantly affected learners' achievement in reading comprehension. The effect can be augmented by training teachers on how to correctly apply the interactive approach instruction. Such training makes teachers more effective in activating learners' background knowledge skills, which in turn, improves achievement in reading comprehension.
2. Examine the effect of learner-generated questions on learners' achievement in reading comprehension.	Learner-generated questions is an aspect of the Interactive Theory of Reading, which postulates that reading proficiency increases when learners interact with texts actively through self-generated questions. This study contributes to knowledge by confirming the theoretical construct and further demonstrating that training teachers on how to correctly apply the interactive approach instruction improves the potential to activate learners' skills in generating questions, which in turn, improves learners' performance in reading comprehension.

3. Determine the effect of summary telling skills on learners' achievement in reading comprehension.	The Interactive Theory of Reading holds that reading proficiency increases when readers continually monitor understanding to see if it makes sense. Summarisation of text passages is one way through which readers monitor understanding (Walker, 2010). This study contributes to knowledge by affirming that learners' summary telling skills are crucial for improving achievement in reading comprehension. The effect becomes stronger where teachers are imbued with appropriate skills on how to activate learners' summary telling skills.
4. Examine the effect of prediction skills on learners' achievement in reading comprehension.	The Interactive Theory of Reading postulates that reading proficiency increases with predictions about the meaning of text passages to be read. In the process, readers sample texts to verify the correctness of predictions. In view of this, the theory explicitly holds that reading proficiency improves where learners can make correct predictions about the meaning of texts. This study contributes to knowledge by confirming that prediction skills are vital for improving learners' reading achievement. More particularly, the study demonstrates that achievement in reading comprehension can be improved significantly by training teachers on how to correctly develop prediction skills among learners.
5. Assess the effect of word recognition skills on learners' achievement in	Word recognition marks the cradle of reading proficiency. The skill involves automatic and effortless decoding of printed text into speech and

reading comprehension.	making meaning of it. The Interactive Theory of Reading postulates that as word recognition improves, it's highly likely for reading proficiency to follow suit. If word recognition processes don't operate fluently and efficiently, reading will be at best highly inefficient. This study contributes to knowledge by testing the theoretical construct linking word recognition to reading proficiency, in the context of primary school learners of Vihiga County. The study confirms that word recognition does affect achievement in reading comprehension, and that the effect becomes stronger in contexts where teachers are provided with essential skills on how to correctly apply the interactive approach instruction. In this regard, training teachers on such improves effectiveness in developing learners' word recognition skills, which logically improves ability to decode words and to understand the meaning of such words.

Figure: 4.6 Interactive Instruction Model on Achievement in Reading Comprehension

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APPENDICES

Appendix I: Letter of Transmittal

Anyiendah Mary Susan,
P.O. Box 30197 – 00100,
NAIROBI.
Email: maryanyiendah@yahoo.com
Tel: 0720797664

29th March 2017.

Dear Sir/Madam,

RE: ACADEMIC RESEARCH

Hello, my name is **Mary Anyiendah**. I'm a PhD student at the University of Nairobi. As part of the requirements of the Doctor of Philosophy in Language Education, I'm undertaking a research study titled *Effect of Interactive Approach Instruction on Standard Six Learners' Achievement in Reading Comprehension in Primary Schools in Vihiga County, Kenya*. The study is intended to determine how building the capacity of English language teachers is likely to affect standard six learners' achievement in reading comprehension. Based on the results, the study shall make recommendations, which should influence policy, programming and funding decisions, as well as spur research in various geopolitical contexts.

I humbly request for your support by responding to this questionnaire. The study has no direct benefits to participants and there are no risks to your participation. Your decision to participate is highly appreciated. You may withdraw from the study at any time during your participation before submitting the questionnaire. After that it will be difficult to identify the information you have provided.

The information you provide will be kept strictly confidential and used for the purpose of this study only. The data may be accessed by my supervisor only, as part of Thesis examination. You should not indicate your name on the questionnaire. No information identifying you shall be reported in the Thesis or publications. By responding to the questionnaire, you provide consent for me to use data for the stated purposes – Thesis and publications. Thank you for your time.

Yours sincerely,

Anyiendah Mary Susan

PhD Student

Department of Educational Communication and Technology

UNIVERSITY OF NAIROBI

Appendix II: Learners' Questionnaire

Dear Respondent,

This questionnaire is designed to establish the effect of interactive approach instruction on standard six learners' achievement in reading comprehension in primary schools in Vihiga County, for academic purposes. You are humbly requested to participate in the study by filling in this questionnaire. Your responses will be treated with at most confidentiality. Therefore, kindly respond to all questionnaire items as they apply to you, by ticking against the appropriate options or filling in the blank spaces provided. You need not to write your name.

SECTION A: Personal Information

1. Name of your school: ……………………………………………………………………….
2. Age: …………………………………………………………………………………...…..
3. Class: ……………………………………………………………………………….……
4. Gender: ………………………………………………………………….……………..
5. Sub-county: …………………………………………………………………...…………
6. County: …………………………………………………………………………………
7. Have you ever repeated any upper primary class? NO (   )   YES (   ) If yes which one?
   (a) Class four (   )
        (b) Class five (   )
        (c) Class six   (   )
8. What mark did you score in last terms English examination?
(a) Below 30 % (   )
(b) Below 40 % (   )
(c) Below 50 % (   )
(d) Above 50 % (   )

SECTION B: Strategy Questionnaire

9.   Indicate whether you strongly agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD) with the following statements by ticking [√] against each statement. Use a scale of 1-4 where 1= SA, 2 = A, 3=U, 4=D, 5=SD.

No	STATEMENT	SA	A	U	D	SD
9.1	**Background knowledge and achievement in reading comprehension**					
a.	I think about what I know to help understand what I read	1	2	3	4	5
b.	I preview the text to see what it's about before reading it	1	2	3	4	5
c.	I use context clues to help me understand what I am reading	1	2	3	4	5
d.	I try to guess the meaning of unknown words	1	2	3	4	5
e.	I read slowly but carefully to understand what I am reading on	1	2	3	4	5
f.	I ask myself what I have read about after reading	1	2	3	4	5
9.2	**Learner-generated questions and achievement in reading**					
a.	I ask myself questions I like to be answered in the text	1	2	3	4	5
b.	I check to see if my guesses about the text are right	1	2	3	4	5
c.	I ask myself questions after reading the passage	1	2	3	4	5
d.	I go back and forth the text asking questions	1	2	3	4	5
e.	When a text is difficult I read aloud to help me understand	1	2	3	4	5
f.	I adjust my reading speed according to what I am reading	1	2	3	4	5

9.3	**Summary telling skills and achievement in reading**					
a.	I summarize what I read to reflect on important information	1	2	3	4	5
b.	I re-state ideas in my own words to help me understand	1	2	3	4	5
c.	I use typological aids like bolded words to identify key information	1	2	3	4	5
d.	I make an oral summary telling of the text to help my understanding	1	2	3	4	5
e.	I make short notes when I read to help me understand a text	1	2	3	4	5
f.	I share what I have read about with a friend to help me understand better	1	2	3	4	5
9.4	**Prediction skills and achievement in reading comprehension**					
a.	I try to visualize information to help me remember what I read	1	2	3	4	5
b.	I tries to guess what the material is all about when I read the information	1	2	3	4	5
c.	I use pictures, tables and figures to increase my understanding	1	2	3	4	5
d.	I use context clues to better understand what I read	1	2	3	4	5
e.	I skim the text first before I read, to help my understanding	1	2	3	4	5
f.	I try to guess what the material is about to help my understanding	1	2	3	4	5
9.5	**Word recognition skill and achievement in reading comprehension**					
a.	I use the look and say method to help me understand what I read	1	2	3	4	5
b.	I combine letters to sound out words when I come across a difficult word to read	1	2	3	4	5
c.	I try use the visual clues such as pictures to help me understand what I read	1	2	3	4	5
d.	I use context clues when reading to help me understand what I read	1	2	3	4	5
e.	I work out the meaning of words from the way they are used in the sentence to understand meaning	1	2	3	4	5

10.   Do you find answering comprehension questions difficult? If yes, explain what makes comprehension questions difficult to answer..

…………………………………………………………………………………………………….

11.What do you think should be done to help you answer comprehension questions correctly?...

....

Thank you for your participation!

Appendix III: Questionnaire for Teachers of English

Dear Sir/Madam,

Thank you for accepting to participate in the study designed to establish the effect of interactive approach instruction on standard six learners' achievement in reading comprehension in primary schools in Vihiga County, for academic purposes. Kindly complete all the questionnaire items by either ticking [√] against the appropriate options or filling in the blank spaces provided to reflect your opinion. Your responses will be treated with at most confidentiality.

SECTION A: Personal Information

1. Name of your school: ………………………………………………………………………….
2. Class: ………………………………………………………………………………….......
3. Gender: (a) Male [ ] (b) Female [ ]…………………………………………………………
4. Sub-county: ………………………………………………………………...……………
5. In which of the following age categories do you fall?

(a) Less than thirty years [ ]   (b) 31-40years [ ]   (c) 41-50 years [ ]   (d) Over 50 years [ ]

6. What is your highest level of education?
   (a) PhD degree   [ ]   (b) Master's degree [ ]
   (c) Bachelor's degree [ ]   (d) Diploma   [ ]   (e) Certificate   [ ]

7. For how long have you been teaching?
   (a) 1-10 years   [ ]   (b) 11-20 years [ ]
   (c) 21-30 years [ ]   (d) 31-40 years [ ]   (e) over 41 years [ ]

8. What is the total population of learners in your class by gender?
i. Girls ……………… ii.
Boys …………….. iii.
Total …………….

9.   What is your week's total number of lessons?

10. Do you enjoy teaching English? Yes [ ]   No [ ]

11. If your response to question 10 is a "no", please explain why you don't enjoy teaching English
_____
_____

SECTION B: Strategy Questionnaire

12. The following are some skills and activities taught by teachers of English when teaching reading comprehension to class six learners. Please tick [√] only in one of the options given as "Yes" or "No" to indicate the skills you teach.

(a) Background knowledge:　　　　　　　　　　　　　　**Yes**　　　　**No**

    (i)   Know, want to know and learned (KWL)   [ ]   [ ]

    (ii)   Carousal brainstorming   [ ]   [ ]

    (iii)   Pre-teaching vocabulary   [ ]   [ ]

    (iv)   Analogy   [ ]   [ ]

(b) Learner-generated questions:　　　　　　　　　　**Yes**　　　　**No**

    (i)   Pre-questions   [ ]   [ ]

    (ii)   Inserted questions   [ ]   [ ]

    (iii)   Self-questioning   [ ]   [ ]

    (iv)   Post questions   [ ]   [ ]

(c) Summary telling:　　　　　　　　　　　　　　　　**Yes**　　　　**No**

    (i)   Oral summaries   [ ]   [ ]

    (ii)   Reciprocal -retells   [ ]   [ ]

    (iii)   Main idea sort   [ ]   [ ]

    (iv)   The 66 words skills   [ ]   [ ]

(d) Prediction skills:　　　　　　　　　　　　　　　**Yes**　　　　**No**

    (i)   Pictures, prefatory statement and titles   [ ]   [ ]

    (ii)   Visualisation   [ ]   [ ]

    (iii)   Personal predictions   [ ]   [ ]

    (iv)   Anticipation guides   [ ]   [ ]

(e) Word recognition skills:　　　　　　　　　　　　**Yes**　　　　**No**

    (i)   Sight words   [ ]   [ ]

    (ii)   Phonics   [ ]   [ ]

    (iii)   Visual clues   [ ]   [ ]

    (iv)   Context clues   [ ]   [ ]

(f) Please list any other skill and activities that you teach during reading comprehension lessons

_____
_____

13. Of the skills you have ticked in the question above, indicate how often you teach the skills.

No.	Skills	Activities	Very often	Often	Rarely	Very rarely
1.	Background knowledge	Know, want to know and learned (KWL)				
		Carousal brainstorming				
		Pre-teaching vocabulary				
		Analogies				
		Class discussion				
2.	Learner-generated questions	Pre-questions				
		Inserted-questions				
		Self-questioning				
		Post-questions				

3.	Summary telling skills	Oral summaries				
		Reciprocal retells				
		Main idea sort				
		The 66 words skills				
4.	Prediction skills	Pictures, prefatory statements and titles				
		Visualisation				
		Personal predictions				
		Anticipation guides				
5.	Word recognition skills	Sight words				
		Phonics				
		Visual clues				
		Context clues				

14. Give reasons for teaching the skills and activities you teach most often_____
_____

15.   Do the learners enjoy learning reading comprehension lessons using the activities most often used?
Yes [ ]   No [ ]

16.   Do you believe there exists a relationship between the skills you teach during a reading comprehension and learners' achievement in reading comprehension? Yes [ ]   No [ ]

17.   Based on your experience over the years, state the teaching methods you think tend to boost children achievement in reading comprehension
_____
_____

18. Assuming more time was allocated to teaching English, would you anticipate a change in your teaching approach?
Yes [ ]   No [ ]

19. Do you think your teaching load affects the methods you use most frequently?
Yes [ ]   No [ ]

Explain_____
_____

20. How often do you use instructional materials/ resources?
Very often [ ] Often [ ] Rarely [ ] Very rarely [ ] Not at all [ ]

Explain

_____
_____

Thank you for your participation!

Appendix IV: Classroom Observation Schedule

A. Background Information

Name of school:…………………………………………………………………………………

Name of teacher:……………………………………………………………………………..

Class: ………………………………………………………………………………………..

Date:……………………………….........................Time:…………………………………………

Number of learners: Girls:………………………Boys: …………………Total:…………………

Average age of learners:………………………………………………………………………

Subject:…………………………………………………………………………………………...

Topic:………………………………………………………………………………………..

Sub-topic:…………………………………………………………………………………

B. Observation of Classroom Layout and Activities

NO.	SKILL	ACTIVITIES	INDICATORS
1.	Background knowledge	-Know/want to know/learned (KWL)	Can fill the first two column organiser before the lesson and return to the last after the lesson.
		-Carousal brainstorming	Can respond to the questions posed at the top of the paper placed in different stations
		-Pre-teaching vocabulary	Different activities are used in the lesson to teach new words
		-Analogy	Can compare sets of words using synonyms, prefixes, suffixes or antonyms
2.	Learner-generated questions	-Pre-questions	Can respond to the questions given before the topic to be read
		-Inserted questions	Can stop at different stages of reading to ask and respond to questions.
		-Self questioning	Can generate a set of questions types across the text.
		-Post-questions	Can answers the teachers questions asked at the end of the reading session
3.	Summary telling skills	-Oral summaries	Can generate a summary telling of a text through group discussions
		-Reciprocal retells	Can tell a section of a story and pass it over to the next till the whole story is retold in groups.
		-Main idea sort	Can arrange the key words recorded by the teacher to create subtitles of a text.
		-66 words	Can write a summary telling of a story in any given number of words
4.	Prediction skills	-Pictures, prefatory statement, titles	Use pictures and titles to talk about the text.
		-Visualisation	Can tell the mental visuals created as they read the story.

		-Personal predictions	Can use the key words provided to make predictions on the story.
		-Anticipation guides	The number of correct anticipations is more than the wrong ones.
5.	Word recognition skills	Sight words	Can read new words in the passage at first sight using internal skills
		Phonics	Learners use phonics to decode the articulation of a new word
		Visual clues	Use the pictures provided the guess the meaning of given words
		Context clues	The learners use context to work out the meaning of the new words asked in the passage.

Appendix V: Interview Schedule for Teachers

1. What do you feel about teaching reading using interactive approach instruction method?

2. How did your students respond to the interactive approach instruction method?

3. What were the new aspects that you learned when using interactive approach instruction method?

4. How was the learners' performance in English after using the interactive approach instruction method?

5. Was there a difference in terms of preparation and presentation when using interactive approach instruction method from the traditional methods?

6. What would you consider as the strong points of using the interactive approach instruction method?

7. What do you consider as the weak points of the interactive approach instruction method in teaching reading comprehension?

8. Do you think the slow learners/fast learners liked the interactive approach instruction method when reading comprehension?

9. What were the challenges of using interactive approach instruction method in the teaching of reading comprehension?

10.   How do you compare the interactive approach instruction method with the traditional method in the teaching of reading comprehension?

Thank you for your participation!

Mkulima and his Neighbours
Before you read
1. Name the animals we keep at home
2. How do these animals help us?

"Wanza, are you ready?" called Nzuki. "It is almost two thirty." Nzuki put two chairs in front of the radio, turned it on and sat down. Soon his sister Wanza joined him. It was time for favourite programme, a story on Sunday. They never missed it if they could help it. "This is FM radio service, said the radio announcer. "Its two thirty and it is time for this week's story on Sunday." There was some music and then the story teller began.

"Good afternoon, children," she said; I hope you are enjoying the weekend. Today I want to tell you a story about the first man who lived on this land. His name was Mkulima. In the beginning, Mkulima lived on the land with all animals, when he was hungry; he picked fruit or dug up rooted with his hands. However Mkulima was cleverer than the animals. He learnt how to make instruments from wood and stones and he also learnt how to repair them. Then he learnt how to prepare the land, sow seeds and look after the crops as they grew. He also found out how to harvest and store crops so that they could be used later.

When he had learnt how to grow food in his way, Mkulima built a homestead where he lived with the family. In it he had a big house with green paint and beautiful curtains. The wife would draw curtains every morning to le in sunlight. There was green grass outside the house which Mkulima would slash. During the dry season he would water the grass with a horse pipe. Some of the animals in the neighbourhood felt unhappy about this. They saw that Mkulima was now living a quiet life because of his hard work and they wanted to join him in his homestead. They asked the cow to go and talk to him about it" my friends and I would like to come and work for you and live with you here" the cow told Mkulima. "If you agree we cows and the goats will give you milk. The fowls have promised to give you eggs and the sheep will give you wool. The dogs and cats will look after the homestead at night and the donkeys will help you to carry heavy loads then you will only have to do the usual chores in the house like cooking, cleaning and wiping. You will also brush and polish your shoes in return you will provide us with food and a place to sleep.

Mkulima thought about this idea and saw that it was good. He agreed with the animals' suggestions and soon afterwards all the cows, goats, sheep, cats, dogs and donkeys went to live with him. Together they worked very hard cultivating and growing enough food to feed them all. They also built a strong fence around their part of the land and put up a gate. The other animals remained in the forest, living as they had always done.

Mkulima and his friends lived happily together for several years. Then one dark night the dog heard a loud cracking sound somewhere on the farm. He immediately barked to awake the others up. The cock heard the dog and crowed loudly. Soon Mkulima and all the other animals woke up and came out to see what was happening. Then there was more cracking sounds as if something was being broken. Mkulima and his friends ran towards the place where the sound was coming from.

When they reached the main field, they saw a group of elephants, buffaloes, antelopes, hippopotamuses and a leopard. The animals had broken a part of the fence and were moving across the *shamba,* eating and breaking down the crops. "This is terrible!" said Mkulima.

"Look at what they've done to the fence and our crops." We will put traps along the path they have made "said Mkulima. If they come back they will be caught" In the morning they put different types of traps near the fence and along the path which the animals had made.

Their plan worked well, because two nights later the animals came back the same way they had gone. As they crossed the farm several of them were caught in the traps. When the others saw what happened to the friends, they ran quickly out of the farm and back to the forest.

The animals which had been caught were kept as prisoners by Mkulima and his friends. First they were made to mend the fence, and then they were given other work to do in the farm. Many days past, and the relatives of the prisoners began to get very worried. They didn'tdidn't know if the animals were alive or dead. They decided to ask the leader, the lion, to talk to Mkulima about it.

The lion went to visit Mkulima in his homestead. After listening to him Mkulima decided to……
(Adapted from wamuluma zonal mock for class six 2006)

Comprehension Questions for the Learners

(i)Background Knowledge
1. Name the animals we keep at home……………………………………………………….
2. How do these animals help us?...
3. Do we have neighbours at home?………………………………………………...........
4. How do they help us?…………………………………………………………………..
5. What happens when you disagree with your neighbour?………………………………….
6. What is the meaning of the name Mkulima…………………………………………...
7. What work do you think he does…………………………………………………………

(ii)Learner-Generated Questions 1. Write two questions that came to your mind when you read the title of the story………..
2. Are neighbours always good people?…………………………………………………… 3.
If I was Mkulima, what would I have done to my neighbours…………………………….
4. What should you do in case you found someone stealing your items…………………….
5. Can animals be our neighbours?...
6. How do domestic animals help us?...
7. Do you think wild animals can be beneficial to us? If yes explain............................... ....

(iii) Summary Telling Skill
1. In pairs, share what you like about the story…………………………………………….
2. In pairs, share what don't like in the story………………………………………………
3. What do you think can be the best proverb to summarize the story?....................................
4. Write down five things we get from animals we keep at home……………………………...
5. Give a summary telling of the two groups of animals identified in the story?........................
7. In less than 50 words, complete the story………………………………………………….
8. What moral lesson do we learn from the passage………………………………………………

(iv) Prediction Skills

1. What came to your mind when you first saw the title of this passage……………………..
2. How did Mkulima feed himself at first……………………………………………………….
3. Why was the donkey very angry about the damage?..
4. When do you think some of the animals were caught…………………………………...
5. Do you think the animals in the story deserve any punishment?...
6. Who are the thieves in the story?...
7. What kind of punishment should be given to the thieves in the passage?.............................

(v) Word Recognition Skill

1. Name the animals mentioned in the story……………………………………………………
2. Do you listen to the radio at home, what is your favourite radio programme?........................
3. Without reference to the passage, who is a neighbour?..
4. Read the title of the passage and share with your friend what you think it means………….
5. In pairs, share with your friend any interesting story you have been told before……………
6. What kind of traps were used to catch the animals?...
7. What do you do when you come across a new word you don't know?.................................

Thank you for your Participation!

Flower 1

Flower 2

Flower 3
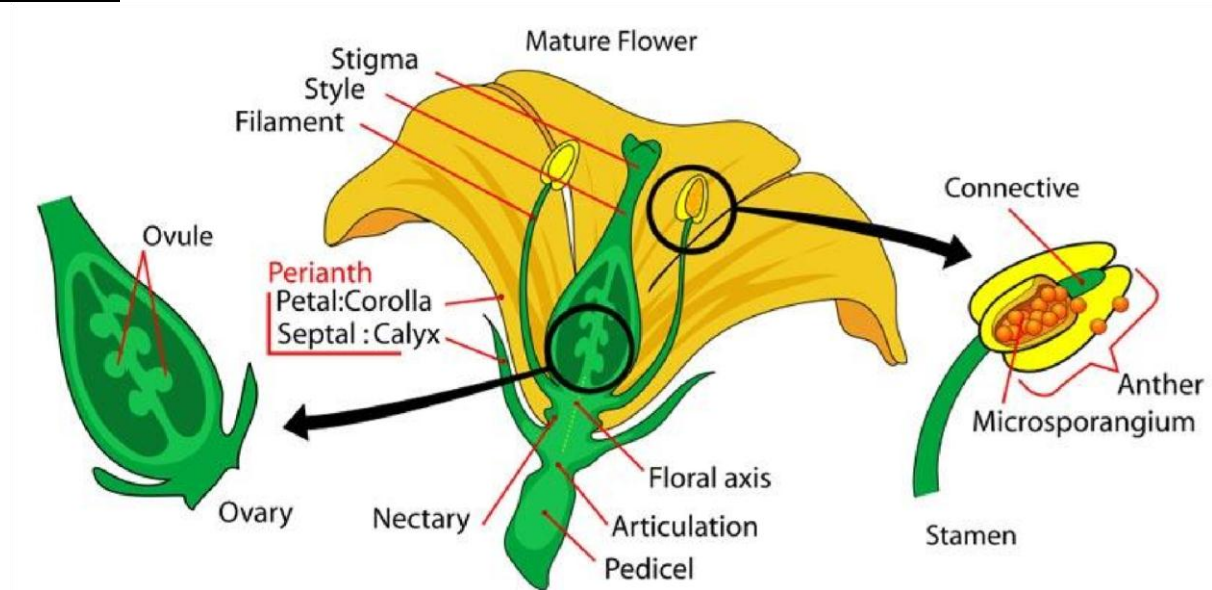
The work of any flower is to produce seeds which later produce new plants. Let us examine the parts of a flower called petals, sepals, stamens and pistil. The petals of a flower look like coloured leaves. They may be brightly coloured in order to attract insects, in which case they may not be scented. At the base of the petals we usually find the nectar where the honey is stored. The sepals are the small leaf-like parts below the petals. They are usually green in colour. All the sepals are called the cup or the calyx. This cup protected the flower while it was a young bud.

The stamens are made up of a stalk or filament and one or two little bags at the top. These bags, called anthers, contain yellow powder, called pollen, which consists of thousands of male cells. The stamen is the male part of a flower. The pistils are the female parts of a flower. The pistil of a flower consists of the parts namely ovary, where these seeds form a style and a stigma. The ovary is the seed box, which contains ovules which will later develop into seeds. Growing out of the ovary is a stalk, called the style, which ends in a sticky part, called the stigma. The stigma collects the yellow pollen from the stamen. Insects such as butterflies, ants, Bees and wasps carry pollen grains from the stamens to the stigma. The process is called pollination. When this has taken place the seed in the seed box begins to grow.

When an insect, such as a bee, pushes its head into a flower, it comes into contact with both stamens and stigma. If the bee already has pollen on its head or body, this is picked up by the stigma. The bee picks up more pollen from the stamen s but this pollen only comes into contact with the stigma of the next flower it visits. The wind also helps pollination. Flowers that are pollinated by the wind like maize have long and feathery stigma so as to trap any pollen dust being blown by the wind. The stamens of such flowers usually hang out of the flowers. Birds also pollinate flowers. Birds with pointed beaks and small light bodies, such as the doctor birds and the sunbirds seek nectar from the bananas flower, for example, they carry away pollen than sticks to their beaks to the other flowers when they visit them.

New plants come from ripe seeds. But a ripe seed is only formed when the male cell of a flower joins with the female cell of another flower. The stigma of a flower is covered with sugary liquids which is sticky and which thus traps any pollen that falls on it. In this sugary solution the pollen grains begin to grow, and from each pollen grain tube grows down through the style towards unripe seeds or ovules in the seed box. When it reaches the unripe seed the male cell fertilizes the female through a process called fertilization.

When the unripe seed in the ovary gets fertilized, many changes occur in the flower. The petals die and fall, having done their task, which was to attract insects by their colour and smell. The stamens too, wither and fall off. But in the ovary the seeds begin to grow larger and a covering forms to protect the growing seed.

Comprehension Questions for the Learners

(i) Background Knowledge
1. Look at the three different flowers. Which one have you ever seen before?
2. Which flower do you like, give a reason…………………………………..
   3. Name the different parts of the flower in diagram three…………………..
4. Using the picture of flower three above, which parts make the female flower?
5. Which parts constitute the male flower?..
6. Do all plants have flowers? Explain………………………………………………….
7. Name any plant that doesn't produce flowers………………………………………….

(ii) Learner-Generated Questions
1. What do we use flowers for?...
2. Have you ever seen an insect visiting a flower?...
3. Why do insects visit flowers?..
4. Which kind of flowers do insects visit?...
5. In a fully grown flower, the sepals…………………………………………………………
6. What is the work of a coloured flower………………………………………………………….
   7. What is the work of scent in a flower………………………………………………………

(iii) Summary Telling Skills
1. In less than 50 words explain why the stamens of some flowers hangout………
   2. Which of the following is true according to the passage?...
A. A new plant cannot be formed if a flower has unripe seeds in the ovary.
B. A new plant cannot be formed if a flower has lost all its pollen.
C. A new plant cannot be formed if a flower has stigma but no pollen.
D. A new plant cannot be formed if a flower has pollen but no stigma.

3.   According to paragraph two an unscented red flower is most normally pollinated by………
A. The stigma collecting pollen directly from the stamens
B. The wind blowing pollen dust onto the stigma
C. Insects carrying pollen to be taken up by its stigma
D. Birds

4.   It seems that nature has created wind pollination for
A. areas where there are not many birds
B. Flowers which are not brightly coloured
C. Flowers which have practically no scent or colour
D. Flowers which have no honey

5.   From the first paragraph we learn that …………………………………………………....
A. All flowers have the same appearance
B. Seeds are never planted to produce
C. Flowers produce plants
D. Any flower produces seeds

6.   When an insect such as a bee pushes its head into a flower,……………………………

7.   What is the best title for the passage?..

(iv) Word Recognition Skills

1. In reference to the third flower, which of the following is a male part of flower?
A. Ovary
B. Ovule
C. Anther
D. Nectary

2. Using the flower in picture three above, which of the following is a female part of a flower?
A. Connective
B. Pedicel
C. Filament
D. .Ovary

3. Small leaf-like parts below the petals are called………………………………………….

4. The two little bags at the top of the stamen are called
A. Stalk
B. Filament
C. Anthers
D. Stigma

5. Complete the statement; insects visit flowers to………………………………………

6. Which among the following words is the odd one out
A. Ovary
B. Stamen
C. Anther
D. Connective

7. The…………………develops into seeds in a mature flower.
A. Ovary
B. Ovules
C. Petals
D. Sepals

Thank you for your participation!

Appendix VIII: Sample Lesson Plan

SCHOOL	CLASS	SUBJECT	TIME	DATE	ROLL
	6	ENGLISH			

TOPIC: READING

SUB-TOPIC: A comprehension passage on "Mkulima and his Neighbours"

OBJECTIVES: By the end of the lesson the learner should be able to read the comprehension passage "Mkulima and his Neighbours" and answer the comprehension questions.

TEACHING AIDS: Pictures in the learners' book, word cards, statement charts.

REFERENCE: Teachers own collection.

STEP	TIME	TEACHER'S ACTIVITIES	LEARNERS' ACTIVITY
1. Language preparation	5mins	Introduces the new words; trap, prisoner, court, duty etc.	They use word recognition skills to read the new words
2. Motivation for reading	8mins	-Guides learners to identify the picture in the course book. -Leads a class discussion on the title of the passage. -Leads a discussion on KWL, carousal brainstorming	-Observe the pictures and answer the teachers' questions. -Participate in the class discussion on the topic - Identify the KWL and participate in carousal brainstorming
3. Silent reading	15mins	-Asks the learners to read the passage silently. Initiates the learner-generated questions.	-They read the given passage silently and use the learner-generated questions where necessary
4. Checking understanding	8mins	-Asks learners oral questions on the passage and facilitate confirmation of predictions	-They respond to the oral questions asked and confirm their predictions.
5. Conclusion	6mins	-Goes over the skills used and gives learners a written exercise	-They confirm the skills used in the passage and do the written exercise

Appendix IX: Marking Scheme for Comprehension Passage 1

1. BACKGROUND KNOWLEDGE

1. The animals we keep at home are; cows, goats, sheep, cats, donkeys, pigs, chicken, turkey, doves, ducks and geese. (½ mark)
2. The animals help in various ways such as cows give us milk, meat, cow dung for smearing the house or making manure, all the birds for meat and eggs, dogs for protection. (1 mark)
3. Yes we have neighbours at home. (½ mark)
4. They help us in many ways such as do some work, we can borrow something from them, they help us do some work. (1 mark)
5. When you disagree with your neighbour, you talk about the cause of the disagreement and ask you for forgiveness. (1 mark)
6. The name Mkulima means a farmer. (½ mark)
7. His work is to cultivate crops and keep animals. (1 mark)

2. LEARNER-GENERATED QUESTIONS

1. Two questions that come to my mind are; Who was Mkulima? Who are his neighbours? (1 mark)
2. Yes/ No accept any answer with justification. (½ mark)
3. I would have punished them. (1 mark)
4. You report the matter to the police station. (1 mark)
5. Yes/No (½ mark)
6. Domestic animals give us food, protection. (1 mark)
7. Wild animals are dangerous. (1 mark)

3. SUMMARY-TELLING SKILLS

1. Open (½ mark)
2. Open (½ mark)
3. A friend in need is a friend indeed/ The days of a thieve are numbered. (1 mark)
4. Meat, milk, cow dung, manure, protection. (½ mark)
5. The domestic and the wild animals. (½ mark)
6. Mkulima decided to forgive all the other animals but issued a stern warning that should they repeat the mistake, they would face dire consequences. He also reinforced his fence so that none of the wild animals could break into his compound. (42 words) (3 mark)
7. Don't attack an innocent person. (1 mark)

4. PREDICTION SKILLS

1. I thought that the neighbours were human beings. (1 mark)
2. He would pick fruits, dig up roots, later he learnt how to sow crops. (1 mark)
3. The donkey was very angry because he had been carrying heavy loads during the fencing period. (1 mark)
4. I think they were caught at night when they came as usual to steal. (1 mark)
5. Yes (½ mark)
6. The thieves in the story are the wild animals such as elephants, buffaloes, antelopes, hippopotamus, and leopard. (1 mark)
7. The thieves should be made to make the fence they destroyed, pay for the food they stole, and work to compensate for the disturbance of the peace of Mkulima. (1 mark)

5. WORD-RECOGNITION SKILLS

1. The animals mentioned in the story are cows, goats. Sheep, fowls, donkey, elephants, buffaloes, antelopes, hippopotamus and leopard. (1 mark)
2. Yes/accept any radio programme mentioned. (½ mark)
3. A neighbour is a person who stays next to you or a person in need. (1 mark)
4. Accept any reasonable answer. (½ mark)
5. They learners share in pairs. (½ mark)
6. Accept any reasonable answer. (½ mark)
7. I will try to sound it out, then try to guess the meaning depending on how it is used in the sentence. (1 mark)

TOTAL POSSIBLE MARKS: 30

Appendix X: Marking Scheme for Learners' Comprehension Passage 2

1. BACKGROUND KNOWLEDGE
1. Accept any of the answers (½ mark)
2. Accept any answer and justification given (½ mark)
3. Accept the answers as stipulated in the diagram (½ mark)
4. The female parts of a flower are, pistil (½ mark)
5. The male part of a flower is called stamen (½ mark)
6. No, we have non-flowering plants (½ mark)
7. Plants that don't produce flowers are mushrooms (½ mark)

2. LEARNER GENERATED QUESTIONS
1. We use flowers to decorate places (½ mark)
2. Yes (½ mark)
3. To suck nectar (½ mark)
4. They visit flowers that have nectar (½ mark)
5. The sepals are small like leavers found below the flower (½ mark)
6. The work of a coloured flower is to attract insects (½ mark)
7. The work of scent is to attract insects (½ mark)

3. SUMMARY-TELLING SKILLS
1. The stamens of some flowers usually hang out so that they can easily trap any pollen dust being blown by the wind. (1.5 marks)
2. According to the passage the true statement is: A new plant cannot be formed if a flower has unripe seeds. (1.5 mark)
3. According to paragraph two, an unscented flower is most likely to be pollinated by wind blowing pollen duct on the stigma. (1.5 mark)
4. It seems that nature has created wind pollination for flowers which have practically no scent of colour. (1.5 mark)
5. From the first paragraph we learn that flowers produce plants. (1mark)
6. When an insect such as a bee pushes it head into a flower, it comes into contact with both stamen and stigma resulting into pollination. (1.5 mark) 7.The work of scent in a flower is to attract insects. (1mark)

4. WORD RECOGNITION SKILLS
1. The male parts of a flower are the anthers (½ mark)
2. The female part of a flower is the ovary (½ mark)
3. Small leave-like parts below the petals are called sepals (½ mark)
4. The two little bags at the top of the stamen are called stamen (½ mark)
5. Insects visit flowers to collect nectar (½ mark)
6. The odd one out is ovary because it the female part of a flower whereas the rest are the male parts of the flower. (½ mark)
7. The ovules develop into seeds in a mature flower. (½ mark)

TOTAL POSSIBLE MARKS: 20

Appendix XI: Training Schedule for Teachers

Time	Activities	Remarks
8.00 – 9.00 am	Introduction to Interactive Approach Instruction	
	• Concepts and purpose • Advantages • Limitations	
9.00 – 10.00 am	Introduction to comprehension reading • Importance in language skills development • Comprehension reading skills • Importance of comprehension reading skills in relation to English language examination. • Leaners' KCPE performance in the comprehension section of English language in Vihiga County 2011-2015	
10.00 – 10.30 am	**Tea break**	
10.30 – 11.30 am	Interactive approach instructional methods • Instructional skills • Best practices	
11.30 am -1.00 pm	Mock application of interactive approach instruction	
1.00 – 1.59 pm	**Lunch break**	
2.00 – 3.00 pm	Mock application of interactive approach instruction	
2.00 – 4.00 pm	Review of emerging issues arising, way forward and dispersal	

Appendix XII: Training Schedule for Research Assistants

Time	Activities	Remarks
8.00 – 9.00 am	Understanding the mission • Objectives of the study • Purpose of the study • Target population – schools, learners, teachers • Sampling methods	
9.00 – 10.00 am	Introduction to research process • Key steps in the research process • Data collection and its significance • Data collection approaches relevant for the study • Data collection best practices • Interactive session: sharing of data collection experiences	
10.00 – 10.30 am	**Tea break**	
10.30 am – 1.00 pm	Data collection tools for the study • Questionnaire for learners • Questionnaire for teachers • Interview guide for teachers • Comprehensions for learners • Observation guide • Addressing issues arising	
1.00 – 2.00 pm	**Lunch break**	
2.00 – 3.00 pm	Conducting mock interviews and other data collection activities	
2.00 – 4.00 pm	Review of emerging issues arising, way forward and dispersal	

Appendix XIII: List of Public Primary Schools in Vihiga County

SCHOOL	TYPE	COUNTY
1. ACK EMUTSA PRIMARY	PUBLIC	VIHIGA
2. ASIONGO PRIMARY	PUBLIC	VIHIGA
3. B.O YUSUF PRY SCH	PUBLIC	VIHIGA
4. BANJA MUSLIM PRY SCH	PUBLIC	VIHIGA
5. BOYANI PRY SCH	PUBLIC	VIHIGA
6. BUDAYWA PRY	PUBLIC	VIHIGA
7. BUGINA PRI. SCH.	PUBLIC	VIHIGA
8. BUKULUNYA PRY SCH	PUBLIC	VIHIGA
9. BULUKHOMBE PRIM. SCH.	PUBLIC	VIHIGA
10. BUMBO PR. SCH.	PUBLIC	VIHIGA
11. BUMIRA PRY SCH	PUBLIC	VIHIGA
12. BUMUYANGE PRY SCH	PUBLIC	VIHIGA
13. BUSAMO PRI	PUBLIC	VIHIGA
14. BUSWETA PRY	PUBLIC	VIHIGA
15. BUTITI PRIM. SCH.	PUBLIC	VIHIGA
16. CHAMAKANGA PRY SCH	PUBLIC	VIHIGA
17. CHAMBALE PRIMARY	PUBLIC	VIHIGA
18. CHAMBITI PRI	PUBLIC	VIHIGA
19. CHANDA PRI	PUBLIC	VIHIGA
20. CHANDOLO PRI	PUBLIC	VIHIGA
21. CHANDOLO SPECIAL UNIT	PUBLIC	VIHIGA
22. CHANDUMBA PRY	PUBLIC	VIHIGA
23. CHANDUNGUNYI PRI	PUBLIC	VIHIGA
24. CHANGO PRI	PUBLIC	VIHIGA
25. CHANZEYWE PRI SCH	PUBLIC	VIHIGA
26. CHANZUVU PRI	PUBLIC	VIHIGA
27. CHATAMILU PRY SCH	PUBLIC	VIHIGA
28. CHAVAKALI PRY SCH	PUBLIC	VIHIGA
29. CHAVAVO PRIMARY	PUBLIC	VIHIGA
30. CHAVUGAMI PRI	PUBLIC	VIHIGA
31. CHEBUNAYWA PRY SCH	PUBLIC	VIHIGA
32. CHEKOMBERO PRY	PUBLIC	VIHIGA
33. CHEKOMBERO SPECIAL SCH FOR DEAF	PUBLIC	VIHIGA
34. CHEPSAGA PRY SCH	PUBLIC	VIHIGA
35. CHEPTECH PRIM. SCH.	PUBLIC	VIHIGA
36. CHEVOGERE PRY	PUBLIC	VIHIGA
37. CHUGI PRI. SCH.	PUBLIC	VIHIGA
38. DEMESI PRY SCH	PUBLIC	VIHIGA
39. DIGULA PRY SCH	PUBLIC	VIHIGA
40. EBBIBA PRIMARY	PUBLIC	VIHIGA
41. EBBITSI PRIMARY	PUBLIC	VIHIGA
42. EBUBAYI PRIMARY	PUBLIC	VIHIGA
43. EBUHANDO PRI	PUBLIC	VIHIGA
44. EBUKANGA PRIMARY	PUBLIC	VIHIGA
45. EBUKHAYA PRIMARY	PUBLIC	VIHIGA
46. EBUKHULITI PRIMARY	PUBLIC	VIHIGA
47. EBUKOOLO PRIMARY	PUBLIC	VIHIGA
48. EBUKUYA PRIMARY	PUBLIC	VIHIGA
49. EBUKUYASCHOOL FOR THE DEAF	PUBLIC	VIHIGA
50. EBULAKO PRI	PUBLIC	VIHIGA
51. EBULAMBA PRIMARY	PUBLIC	VIHIGA
52. EBULONDI PRIMARY	PUBLIC	VIHIGA
53. EBULONGA PRIMARY	PUBLIC	VIHIGA
54. EBUMBAYI PRIMARY	PUBLIC	VIHIGA
55. EBUNANGWE PRIMARY	PUBLIC	VIHIGA
56. EBUSAKAMI PRIMARY	PUBLIC	VIHIGA
57. EBUSILOLI PRIMARY	PUBLIC	VIHIGA
58. EBUSIRALO PRIMARY	PUBLIC	VIHIGA
59. EBUSIRATSI A.C PRIMARY	PUBLIC	VIHIGA
60. EBUSIRATSI CG PRIMARY	PUBLIC	VIHIGA
61. EBUSIRATSISPECIALSCHOOL	PUBLIC	VIHIGA
62. EBUSSAMBA PRIMARY	PUBLIC	VIHIGA

63.EBUSYUBI PRIMARY	PUBLIC	VIHIGA
64.EBUYALU PRIMARY	PUBLIC	VIHIGA
65.EBWALI PRI	PUBLIC	VIHIGA
66.EBWIRANYI PRIMARY	PUBLIC	VIHIGA
67.EKAMANJI PRIMARY	PUBLIC	VIHIGA
68.EKWANDA PRIMARY	PUBLIC	VIHIGA
69.EL'LONGO PRY SCH	PUBLIC	VIHIGA
70.ELUHOBE PRIMARY	PUBLIC	VIHIGA
71.ELUKHAMBI PRIMARY	PUBLIC	VIHIGA
72.ELUNYU PRY	PUBLIC	VIHIGA
73.ELWUNZA PRY SCH	PUBLIC	VIHIGA
74.EMABWI PRIMARY	PUBLIC	VIHIGA
75.EMANDA PRI	PUBLIC	VIHIGA
76.EMANYINYA PRIMARY	PUBLIC	VIHIGA
77.EMATSULI PRIMARY	PUBLIC	VIHIGA
78.EMBAGA PRI	PUBLIC	VIHIGA
79.EMMALOBA PRIMARY	PUBLIC	VIHIGA
80.EMMATSI PRI	PUBLIC	VIHIGA
81.EMMUNWA PRI	PUBLIC	VIHIGA
82.EMUHAYA PRIMARY	PUBLIC	VIHIGA
83.EMUKHUYA PRI	PUBLIC	VIHIGA
84.EMUKUNZICHURCH OF GOD PRIMARY	PUBLIC	VIHIGA
85.EMULULU PRIMARY	PUBLIC	VIHIGA
86.EMUREMBE PRIMARY	PUBLIC	VIHIGA
87.EMUSENJELI PRI	PUBLIC	VIHIGA
88.EMUSIRE PRIMARY	PUBLIC	VIHIGA
89.EMUSUTSWI PRIMARY	PUBLIC	VIHIGA
90.EMUTSURU PRIMARY	PUBLIC	VIHIGA
91.EMWATSI PRIMARY	PUBLIC	VIHIGA
92.ENANGA PRI	PUBLIC	VIHIGA
93.ENDELI PRY SCH	PUBLIC	VIHIGA
94.EPANGA PRIMARY	PUBLIC	VIHIGA
95.ESALWA PRIMARY	PUBLIC	VIHIGA
96.ESIANDUMBA PRIMARY	PUBLIC	VIHIGA
97.ESIBAKALA PRIMARY	PUBLIC	VIHIGA
98.ESIBEMBE PRIMARY	PUBLIC	VIHIGA
99.ESIBEYE PRIMARY	PUBLIC	VIHIGA
100.ESIBILA PRIMARY	PUBLIC	VIHIGA
101.ESIBUYE PRIMARY	PUBLIC	VIHIGA
102.ESIEMBERO PRIMARY	PUBLIC	VIHIGA
103.ESIKHUYU PRIMARY	PUBLIC	VIHIGA
104.ESIRABE PRIMARY	PUBLIC	VIHIGA
105.ESIRULO PRIMARY	PUBLIC	VIHIGA
106.ESSABA PRIMARY	PUBLIC	VIHIGA
107.ESSABA SPECIAL UNIT	PUBLIC	VIHIGA
108.ESSONGOLO PRIMARY	PUBLIC	VIHIGA
109.ESSUMBA PRIMARY	PUBLIC	VIHIGA
110.ESSUNZAPRIMARY SCHOOL	PUBLIC	VIHIGA
111.EVOJO PRY SCH	PUBLIC	VIHIGA
112.FRIENDS HAKEDOHI PRY SCH	PUBLIC	VIHIGA
113.FRIENDS KEGONDI PRY SCH	PUBLIC	VIHIGA
114.FRIENDS KIGAMA PRY SCH	PUBLIC	VIHIGA
115.FRIENDS SCH. SHIPALA PRI. SCH.	PUBLIC	VIHIGA
116.FRIENDS SCHOOL LYMIDI	PUBLIC	VIHIGA
117.GAHUMBWA PR. SCH.	PUBLIC	VIHIGA
118.GAIGEDI PRI. SCH.	PUBLIC	VIHIGA
119.GALONA PRY SCH	PUBLIC	VIHIGA
120.GAMALENGA PRY SCH	PUBLIC	VIHIGA
121.GAMOI PRY SCH	PUBLIC	VIHIGA
122.GAMUGUYWA PRY SCH	PUBLIC	VIHIGA
123.GAVALAGI PRI	PUBLIC	VIHIGA
124.GAVUDIA PRI. SCH.	PUBLIC	VIHIGA
125.GAVUDUNYI PRY SCH	PUBLIC	VIHIGA
126.GIDAGADI PRY SCH	PUBLIC	VIHIGA
127.GIDIMO PRY SCH	PUBLIC	VIHIGA
128.GILWADZI PRI	PUBLIC	VIHIGA

129.GIMARAKWA PRY SCH	PUBLIC	VIHIGA
130.GIMARIANI PRY SCH	PUBLIC	VIHIGA
131.GIMEMNGWA PRY SCH	PUBLIC	VIHIGA
132.GIMIMOI SALVATION ARMY PRY SCH	PUBLIC	VIHIGA
133.GISAMBAI PRY SCH	PUBLIC	VIHIGA
134.GIVAVEI FRIENDS SCH FOR THE DEAF PRY	PUBLIC	VIHIGA
135.GIVOGI PRY SCH	PUBLIC	VIHIGA
136.GIVOLE PRY SCH	PUBLIC	VIHIGA
137.GIVUDEMESI PRY SCH	PUBLIC	VIHIGA
138.GIVUDIANYI PRI. SCH.	PUBLIC	VIHIGA
139.GOIBEI PRY SCH	PUBLIC	VIHIGA
140.GOODSHEPHERDACADEMY PRY SCH	PUBLIC	VIHIGA
141.GULUMA PRY SCH	PUBLIC	VIHIGA
142.HAKERONGO PRY SCH	PUBLIC	VIHIGA
143.HAMADIRA PRY SCH	PUBLIC	VIHIGA
144.HAMASANA PRI	PUBLIC	VIHIGA
145.HAMBALE PRI	PUBLIC	VIHIGA
146.HAMUYUNDI PRY SCH	PUBLIC	VIHIGA
147.HAVUYIYA PRY SCH	PUBLIC	VIHIGA
148.HOBUNAKA PRI	PUBLIC	VIHIGA
149.HOMBALA PRY SCH	PUBLIC	VIHIGA
150.HOMUNOYWA CATHOLIC PRY SCH	PUBLIC	VIHIGA
151.IBUBI PRI	PUBLIC	VIHIGA
152.IDAVAGA PRI	PUBLIC	VIHIGA
153.IDELERI PRI	PUBLIC	VIHIGA
154.IDUKU PRI	PUBLIC	VIHIGA
155.IGAKALA PRI	PUBLIC	VIHIGA
156.IGUNGA PRY SCH	PUBLIC	VIHIGA
157.IHYAGALO PRIMARY	PUBLIC	VIHIGA
158.IKOBERO PRY SCH	PUBLIC	VIHIGA
159.IKUMBA PRI	PUBLIC	VIHIGA
160.IKUMU P.A.G PRIMARY	PUBLIC	VIHIGA
161.IKUVU SPECIAL UNIT	PUBLIC	VIHIGA
162.IKUVU PRY SCH	PUBLIC	VIHIGA
163.ILUNGU PRIMARY	PUBLIC	VIHIGA
164.INAVI PRIMARY	PUBLIC	VIHIGA
165.INDURU PRI	PUBLIC	VIHIGA
166.INGIDI PRI	PUBLIC	VIHIGA
167.INYALI PRY SCH	PUBLIC	VIHIGA
168.INYANZA PRI	PUBLIC	VIHIGA
169.IRUKOSE PRIMARY SCH	PUBLIC	VIHIGA
170.IRUMBI PRIMARY	PUBLIC	VIHIGA
171.ISANDA PRIMARY	PUBLIC	VIHIGA
172.ISIKHI PRIM. SH.	PUBLIC	VIHIGA
173.ITABALIA PRI	PUBLIC	VIHIGA
174.ITEGERO PRY SCH	PUBLIC	VIHIGA
175.ITIENG'ERE PRY SCH	PUBLIC	VIHIGA
176.ITOVOSATELLITEACADEMY PRY SCH	PUBLIC	VIHIGA
177.ITUMBU PRIMARY	PUBLIC	VIHIGA
178.ITUMBU SPECIAL UNIT	PUBLIC	VIHIGA
179.IVOLA PRY SCH	PUBLIC	VIHIGA
180.IVOLA PRY SPECIAL UNIT	PUBLIC	VIHIGA
181.IVONAFRIENDSCHURCH PRY	PUBLIC	VIHIGA
182.IVUMBU PRI. SCH.	PUBLIC	VIHIGA
183.JAMULONGOJI PRI. SCH.	PUBLIC	VIHIGA
184.JEBLEBUK PRY SCH	PUBLIC	VIHIGA
185.JEBROK PREMIER ACADEMY PRY SCH	PUBLIC	VIHIGA
186.JEBRONGO PRY SCH	PUBLIC	VIHIGA
187.JEMOVO PRI. SCH.	PUBLIC	VIHIGA
188.JEPKOYAI PRY SCH	PUBLIC	VIHIGA
189.JEPTULU PRIM. SCH.	PUBLIC	VIHIGA
190.JIDERERI PRIM. SCH.	PUBLIC	VIHIGA
191.JIMARANI PRY SCH	PUBLIC	VIHIGA
192.JIVIRAI SALVATION ARMY PRY SCH	PUBLIC	VIHIGA
193.JIVUYE PRI. SCH.	PUBLIC	VIHIGA
194.KABINJARI PRY SCH	PUBLIC	VIHIGA

195.KAIMOSI FRIENDS PRI. SCH.	PUBLIC	VIHIGA
196.KAIMOSI SPECIAL SCH.	PUBLIC	VIHIGA
197.KAIMOSI DEMONSTRATION PRI. SCH.	PUBLIC	VIHIGA
198.KAKUBUDU PRIM. SCH.	PUBLIC	VIHIGA
199.KAMULUGUYWA PRY SCH	PUBLIC	VIHIGA
200.KAPCHEMGUM PRY SCH	PUBLIC	VIHIGA
201.KAPKOI PRY SCH	PUBLIC	VIHIGA
202.KAPSAMBO PRY	PUBLIC	VIHIGA
203.KAPSAOI PRY SCH	PUBLIC	VIHIGA
204.KAPSOGORO PRY SCH	PUBLIC	VIHIGA
205.KAPSOI PRY SCH	PUBLIC	VIHIGA
206.KAPSOTIK PRY SCH	PUBLIC	VIHIGA
207.KAPTIENI PRY SCH	PUBLIC	VIHIGA
208.KAPTIK PRI. SCH.	PUBLIC	VIHIGA
209.KAPTISI PRIM. SCH.	PUBLIC	VIHIGA
210.KAYILA PRIMARY	PUBLIC	VIHIGA
211.KEDOHI PRI	PUBLIC	VIHIGA
212.KEGENDIROVA PRI SCH	PUBLIC	VIHIGA
213.KEGOYE FRIENDS PRI	PUBLIC	VIHIGA
214.KERONGO PRIMARY	PUBLIC	VIHIGA
215.KEVEYE PRY	PUBLIC	VIHIGA
216.KHWILIBA PRIMARY	PUBLIC	VIHIGA
217.KIBAALA PRY SCH	PUBLIC	VIHIGA
218.KIDINGE PRI	PUBLIC	VIHIGA
219.KIDUNDU PRIMARY	PUBLIC	VIHIGA
220.KIGADAHI PRI	PUBLIC	VIHIGA
221.KIGULIENYI PRY SCH	PUBLIC	VIHIGA
222.KIGUNGA PRY SCH	PUBLIC	VIHIGA
223.KILAGILU PRY	PUBLIC	VIHIGA
224.KILINGILI PRIMARY	PUBLIC	VIHIGA
225.KIMAPRIMARY SCHOOL	PUBLIC	VIHIGA
226.KINU FRIENDS PRY SCH	PUBLIC	VIHIGA
227.KIPSIGOR PRY SCH	PUBLIC	VIHIGA
228.KISANGULA PRY SCH	PUBLIC	VIHIGA
229.KISASI PRI. SCH.	PUBLIC	VIHIGA
230.KISATIRU PRY SCH	PUBLIC	VIHIGA
231.KISIENYA PRIMARY	PUBLIC	VIHIGA
232.KISINGIRU PRIMARY	PUBLIC	VIHIGA
233.KITAGWA PRY SCH	PUBLIC	VIHIGA
234.KITAMBAZI PRY SCH	PUBLIC	VIHIGA
235.KITULO PRI	PUBLIC	VIHIGA
236.KITUMBA PRIMARY	PUBLIC	VIHIGA
237.KIVAGALA PRY SCH	PUBLIC	VIHIGA
238.KIVUYE PRI. SCH.	PUBLIC	VIHIGA
239.LIADUYWA PRY SCH	PUBLIC	VIHIGA
240.LOGEMO PRY SCH	PUBLIC	VIHIGA
241.LOSENGELI PRI. SCH.	PUBLIC	VIHIGA
242.LOSOSI PRI. SCH.	PUBLIC	VIHIGA
243.LOTEGO PRY SCH	PUBLIC	VIHIGA
244.LUSALA PRY	PUBLIC	VIHIGA
245.LUSAVASAVI PRI	PUBLIC	VIHIGA
246.LWOMBEI PRY SCH	PUBLIC	VIHIGA
247.LYAMAGALE FRIENDS PRIMARY	PUBLIC	VIHIGA
248.MADEGWA PRY	PUBLIC	VIHIGA
249.MADEGWA SPECIAL UNIT	PUBLIC	VIHIGA
250.MADEIYA PRY SCH	PUBLIC	VIHIGA
251.MADIRA PRI	PUBLIC	VIHIGA
252.MADZUGI PRI	PUBLIC	VIHIGA
253.MADZUU PRIMARY	PUBLIC	VIHIGA
254.MAGANYI PRY	PUBLIC	VIHIGA
255.MAGO PRI. SCH.	PUBLIC	VIHIGA
256.MAGUI PRIMARY	PUBLIC	VIHIGA
257.MAHANGA PRI. SCH.	PUBLIC	VIHIGA
258.MAHANGA PRIMARY	PUBLIC	VIHIGA
259.MAKUCHI PRIM. SCH.	PUBLIC	VIHIGA
260.MALINDA PRY SCH	PUBLIC	VIHIGA

261.MAMBAI PRI. SCH.	PUBLIC	VIHIGA
262.MASANA AIC PRI	PUBLIC	VIHIGA
263.MATAGALU FAM PRI	PUBLIC	VIHIGA
264.MATSIGULU PRI	PUBLIC	VIHIGA
265.MBALE FRIENDS PRY SCH	PUBLIC	VIHIGA
266.MBIHI PRI SCH	PUBLIC	VIHIGA
267.MBIHI PRY SCH	PUBLIC	VIHIGA
268.MOSES MUDAVADI MULULU PRY SCH	PUBLIC	VIHIGA
269.MTUME PRY	PUBLIC	VIHIGA
270.MUCHULA PRIMARY	PUBLIC	VIHIGA
271.MUDETE PRY SCH	PUBLIC	VIHIGA
272.MUDINDIVILLAGE MIXED DAY PRY SCH	PUBLIC	VIHIGA
273.MUDUNGU PRI. SCH.	PUBLIC	VIHIGA
274.MUHANDA PRI	PUBLIC	VIHIGA
275.MUHAYA PRY SCH	PUBLIC	VIHIGA
276.MUHUNDU PRIMARY SCH.	PUBLIC	VIHIGA
277.MUKHOMBE PRIMARY	PUBLIC	VIHIGA
278.MUKINGI PRY SCH	PUBLIC	VIHIGA
279.MUKOMBA PRY SCH	PUBLIC	VIHIGA
280.MUKULI PRI	PUBLIC	VIHIGA
281.MUKUNYA PRI. SCH.	PUBLIC	VIHIGA
282.MULELE PRY	PUBLIC	VIHIGA
283.MULUNDU PRI. SCH	PUBLIC	VIHIGA
284.MULWAKHI PRIMARY	PUBLIC	VIHIGA
285.MUMBUHI PRIMARY	PUBLIC	VIHIGA
286.MUNDICHIRI PRIMARY	PUBLIC	VIHIGA
287.MUNGAVO PRY SCH	PUBLIC	VIHIGA
288.MUNGOYE PRIMARY	PUBLIC	VIHIGA
289.MUNOYWA FRIENDS PRY SCH	PUBLIC	VIHIGA
290.MUNUGI PRY SCH	PUBLIC	VIHIGA
291.MUNZATSI FRIENDS PRY SCH	PUBLIC	VIHIGA
292.MUSASA PRY SCH	PUBLIC	VIHIGA
293.MUSEYWA PRY SCH	PUBLIC	VIHIGA
294.MUSINAKA PRIMARY	PUBLIC	VIHIGA
295.MUSIRI PRY SCH	PUBLIC	VIHIGA
296.MUSITINYI PRIMARY	PUBLIC	VIHIGA
297.MUSUDZU S.A PRI. SCH.	PUBLIC	VIHIGA
298.MUSUNGUTI PRIMARY	PUBLIC	VIHIGA
299.MUSUNJI PRIM. SCH.	PUBLIC	VIHIGA
300.MUTAMBI PRY SCH	PUBLIC	VIHIGA
301.MUTIVA PRY SCH	PUBLIC	VIHIGA
302.MUTSYULU PRY SCH	PUBLIC	VIHIGA
303.MUYERE PRIM. SCH.	PUBLIC	VIHIGA
304.MWEMBE PRY SCH	PUBLIC	VIHIGA
305.MWILITSA PRY SCH	PUBLIC	VIHIGA
306.MWINAYA PRIMARY	PUBLIC	VIHIGA
307.MWITUHA PRIMARY	PUBLIC	VIHIGA
308.MWITUKHO PRIMARY	PUBLIC	VIHIGA
309.MWOKI PAG PRI	PUBLIC	VIHIGA
310.NABWANI PR. SCH.	PUBLIC	VIHIGA
311.NADANYA PRY SCH	PUBLIC	VIHIGA
312.NAVUHI PRI	PUBLIC	VIHIGA
313.NYANG'ORI PRY SCH	PUBLIC	VIHIGA
314.ONDEYO PRY SCH	PUBLIC	VIHIGA
315.REV. MOSES AKARANGA EGALONI PRY SCH	PUBLIC	VIHIGA
316.SABATIA PR. SCH.	PUBLIC	VIHIGA
317.SAOSI PRI. SCH.	PUBLIC	VIHIGA
318.SARIDE PRY SCH	PUBLIC	VIHIGA
319.SENENDE PRY SCH	PUBLIC	VIHIGA
320.SHAMAKHOKHO PRY SCH	PUBLIC	VIHIGA
321.SHAMALAGO PRY SCH	PUBLIC	VIHIGA
322.SHAVIRINGA PRY SCH	PUBLIC	VIHIGA
323.SHIKOMOLI PRY SCH	PUBLIC	VIHIGA
324.SHIRU PRIM. SCH.	PUBLIC	VIHIGA
325.SHIVEMBE PRI. SCH.	PUBLIC	VIHIGA
326.SIEKUTI PRI. SCH.	PUBLIC	VIHIGA

327.SIMBI PRY SCH	PUBLIC	VIHIGA
328.SIMBOYI PRY SCH	PUBLIC	VIHIGA
329.ST URSULAS SPECIAL SCH	PUBLIC	VIHIGA
330.ST. ELIZABETH'S GIRLS BOARDING SCH	PUBLIC	VIHIGA
331.ST. JOACHIM BUYANGU PRY SCH	PUBLIC	VIHIGA
332.ST. KIZITO'S KIMARANI PRY SCH	PUBLIC	VIHIGA
333.ST. MATTHEWS HAMISI PRY SCH	PUBLIC	VIHIGA
334.ST. PATRICK'S HALOMBOVE PRY SCH	PUBLIC	VIHIGA
335.ST. PETER'S ERUSUI BOYS BOARDING SCH	PUBLIC	VIHIGA
336.TIGOI PRY SCH	PUBLIC	VIHIGA
337.TIRIMAS SPECIAL PRY SCH	PUBLIC	VIHIGA
338.TSIMBALO PRY SCH	PUBLIC	VIHIGA
339.VIGEZE PRI	PUBLIC	VIHIGA
340.VIGINA PRIMARY	PUBLIC	VIHIGA
341.VIHIGA PRI	PUBLIC	VIHIGA
342.VIHINDE PRY	PUBLIC	VIHIGA
343.VISIRU PRI	PUBLIC	VIHIGA
344.VIYALO PRY SCH	PUBLIC	VIHIGA
345.VOHOVOLE PR. SCH.	PUBLIC	VIHIGA
346.VOKOLI PRI. SCH.	PUBLIC	VIHIGA
347.VUMALE PRI	PUBLIC	VIHIGA
348.VUNANDI PRI	PUBLIC	VIHIGA
349.VUYIYA PRY SCH	PUBLIC	VIHIGA
350.WAGEVI PRI. SCH.	PUBLIC	VIHIGA
351.WALODEYA PRY SCH	PUBLIC	VIHIGA
352.WALUKA PRI	PUBLIC	VIHIGA
353.WAMAGE PRY SCH	PUBLIC	VIHIGA
354.WANAKHALE PRI SCH	PUBLIC	VIHIGA
355.WANDECHE PRI	PUBLIC	VIHIGA
356.WANDEGA PR. SCH.	PUBLIC	VIHIGA
357.WANGULU PRY SCH	PUBLIC	VIHIGA
358.WANONDI PRY SCH	PUBLIC	VIHIGA
359.WEMILABI PRIMARY	PUBLIC	VIHIGA
360.WOMULALU PRI	PUBLIC	VIHIGA
361.ZULULU PRY SCH	PUBLIC	VIHIGA

Appendix XIV: Test Scores

Experimental schools

No.	GENDER		NAME		PRE-TEST, Out of 50	POST-TEST, out of 50		
			SCHOOL G - LUANDA					
1	B	1	Sammy Akumbi		20	35		
2	B	1	Gilbert Ananda		23	39		
3	G	2	Milcah Andisi		24	48		
4	G	2	Susan Otweche		21	42		
5	G	2	Mary Andeyo		12	28		
6	B	1	Wycliffe Omuoto		14	26		
7	B	1	Paul Tupe		16	23		
8	G	2	Sophy Khamanya		22	39		
9	B	1	Derrick Iminjili		24	46		
10	B	1	Peter Amuke		10	26		
11	B	1	Kepta Kwendo		19	29		
12	B	1	Philip Abulwa		13	29		
13	G	2	Dinah Andanje		16	34		
14	G	2	Sandra Anzemo		18	29		
15	G	2	Consolata Kagai		23	44		
16	G	2	Rebbeca Mbeka		18	36		
17	G	2	Mercy Ongachi		24	38		
18	G	2	Cecilia Ombilo		15	26		
19	B	1	Benerd Okech		18	28		
20	B	1	Bramwel Kwendo		25	40		
21	G	2	Stacy Amutavi		22	40		
22	G	2	Stacy Uvwenda		13	37		
23	B	1	Bainito Nyonje		12	28		
24	B	1	Teddy Akumbi		11	26		
25	G	2	Verah Kadesa		16	30		
26	B	1	Jairo Ounza		19	39		
27	G	2	Hellen Venneza		28	40		
28	G	2	Margret Ondiso		23	42		
29	B	1	Arthur Okwemba		22	44		
30	G	2	Phylis Mbuti		19	31		
31	G	2	Rose Ambiyo		18	37		
32	B	1	Francis Adura		24	42		
33	B	1	Tom Khasakhala		28	44		
34	G	2	Ebby Ombisi		16	27		
35	G	2	Mable Ambuyo		19	29		

No.	GENDER	NAME	PRE-TEST, Out of 50	POST-TEST, out of 50	
		SCHOOL H - EMUHAYA			
1	M	Teddy Olenja	23	42	
2	M	Peter Sakwa	21	46	
3	F	Noel Ayuma	25	44	
4	M	William Ottichilo	24	41	
5	F	Mary Ondiso	15	36	
6	F	Beatrice Andenyi	18	38	
7	F	Deborah Runaku	15	26	
8	M	Benjamin Kwendo	24	38	
9	M	Nehemiah Akusa	20	39	
10	M	Gilbert Simekha	19	29	
11	F	Seline Muyuka	17	28	
12	M	Seth Omwini	19	37	
13	F	Tabitha Nafula	19	30	
14	M	David Mafwoli	23	46	
15	F	Lilian Andenyi	14	27	
16	M	Hudson Opuole	18	29	
17	M	Mani Amutsama	15	39	
18	M	Joel Omuchane	24	38	
19	F	Doreen Aluoch	19	44	
20	F	Melsa Liabutsa	22	42	
21	F	Veronicah Atemo	22	48	
22	M	Bramuel Tindi	15	28	
23	F	Leah Anyiso	16	29	
24	F	Mercy Andeyo	17	36	
25	M	David Otieno	18	38	
26	F	Serah Kabuti	19	41	
27	F	Rosebellah Sakwa	16	40	
28	F	Metrine Kadogo	29	49	
29	F	Beatrice Kwendo	26	45	
30	M	Solomon Okusi	15	37	
31	F	Fridah Ateka	17	36	
32	F	Apili Phanice	25	45	
33	M	Musa Mbinji	27	47	
34	M	Paul Stinde	21	46	

	SCHOOL I – HAMISI				
No.	GENDER	NAME	PRE-TEST	POST-TEST	
1	M	Stephen Andaye	-	29	
2	M	Winstone Jiveti	-	23	
3	F	Gloris Anyula	-	24	
4	F	Euniter Kabei	-	41	
5	M	Wycliffe Ambani	-	44	
6	F	Fanice Kabei	-	42	
7	F	Christine Gozerani	-	29	
8	M	Edwin Ambani	-	27	
9	F	Phelistus Lusweti	-	44	
10	M	Gregory Shitsama	-	42	
11	F	Edna Mususi	-	37	
12	M	Peter Vulimu	-	38	
13	M	Sosthene Mulama	-	46	
14	M	Moses Mmaitsi	-	42	
15	M	David Sang	-	36	
16	F	Shelyne Mmbone	-	28	
17	F	Sheila Kisali	-	28	
18	F	Elizabeth Elazia	-	28	
19	M	Mark Adamba	-	31	
20	F	Beryl Sasha	-	41	
21	F	Linda Vusha	-	41	
22	M	Moses Mudaki	-	21	
23	F	Margret Amanya	-	26	
24	F	Jasmin Afandi	-	36	
25	M	Kevin Khaniri	-	39	
26	M	Paul Kiptoo	-	44	
27	F	Vivian Kageha	-	26	
28	F	Marita Msupa	-	34	
29	M	James Kubuta	-	28	
30	M	Geoffrey Gimode	-	29	
31	F	Purity Mbone	-	46	
32	M	Mathew Mudave	-	44	
33	M	Stanslaus Onzere	-	41	
34	F	Anne Kavere	-	42	
35	F	Rispar Andia	-	46	
36	F	Mercy Kagonya	-	38	
37	M	Felix Mulamula	-	36	
38	F	Rose Aswani	-	28	

No.	NAME	GENDER	PRE-TEST	POST-TEST
	SCHOOL J (SABATIA) – 19 girls, 17 boys, Total 36			
1	Mercy Muhonja	F	-	26
2	Jacklyne Uside	F	-	23
3	Tom Onzere	M	-	34
4	Peter Kaduvane	M	-	38
5	Paul Ingutia	M	-	37
6	Rose Mwenderani	F	-	38
7	Ebby Kaduka	F	-	49
8	Reagan Enonda	M	-	48
9	Pamela Muhonja	F	-	46
10	Pauline Imali	F	-	38
11	Zakayo Onyango	M	-	38
12	Maryenda Musonye	F	-	35
13	Elizabeth Imali	F	-	28
14	Rodgers Muzembi	M	-	36
15	Clinton Onzere	M	-	38
16	Vivian Musimbi	F	-	33
17	Kendra Tsindoli	F	-	38
18	Trufena Vihenda	F	-	40
19	Kabi Sogon	M	-	42
20	Rodgers Hyuga	M	-	43
21	Samuel Swegenyi	M	-	29
22	Douglas Sande	M	-	28
23	Milcah Afandi	F	-	24
24	Wycliffe Amuyunzu	M	-	28
25	Fridah Mwanisa	F	-	27
26	Kennedy Wasilwa	M	-	25
27	Collins Barasa	M	-	29
28	Edna Musimbi	F	-	40
29	Agnes Wangari	F	-	42
30	Naima Fatuma	F	-	36
31	Iris Muhonja	F	-	33
32	Noah Kipsang	M	-	32
34	Morris Chanzu	M	-	35
35	Margret Kagai	F	-	30
36	Collins Besa	M	-	40

Control group

No.	GENDER	SCHOOL K – LUANDA NAME	PRE-TEST, Out of 50	POST-TEST, Out of 50
1	F	Beatrice Akeng'o	23	23
2	M	Martin Omwami	24	19
3	M	Antony Otanga	25	27
4	M	Sammy Musungu	22	28
5	F	Salome Ondiso	14	19
6	M	Goodrique Osimbo	16	19
7	F	Norah Ariko	18	24
8	F	Stellah Omwoma	24	27
9	F	Jedida Asami	26	29
10	F	Phylis Ayuma	13	19
11	M	Samuel Imbwacha	21	29
12	M	Sammy Anjichi	15	18
13	F	Naomi Musumba	18	18
14	F	Asnet Saisi	15	19
15	F	Leilaka Andisi	26	30
16	M	Philip Adagi	19	29
17	F	Selina Anyiso	26	25
18	F	Rosalina Ayieta	17	19
19	M	John Kimoto	19	22
20	F	Elizabeth Adego	28	32
21	M	Yusto Anjuki	22	28
22	M	Julius Ong'ai	24	28
23	F	Rebecca Esipila	18	24
24	F	Britney Senje	19	25
25	F	Selefia Aseyo	16	20
26	M	Joab Okunani	22	26
27	F	Tecla Anyango	24	30
28	F	Teresa Kadasia	21	32
29	F	Miriam Misiko	27	31
30	F	Dinah Andanje	29	33
31	M	Simon Opulu	18	29
32	F	Jescah Amutabi	19	29
33	M	Francis Musundi	21	32
34	F	Ephely Amimo	28	36
35	M	Amulioto Opanda	22	30
36	F	Sabina Aleso	20	29

No.	GENDER			PRE-TEST	POST-TEST	
		SCHOOL L – EMUHAYA				
1	F	Salome Anjiko		19	26	
2	F	Cynthia Were		18	22	
3	M	Albert Ombayia		28	34	
4	M	Abisai Amatalo		23	26	
5	M	Greens Mukoyia		19	24	
6	F	Vera Omuyonga		23	26	
7	M	Fanuel Akusa		25	26	
8	F	Betty Aseyo		27	29	
9	F	Mary Ayuma		20	25	
10	F	Rodah Mbandu		21	24	
11	M	John Okwako		15	21	
12	M	Festo Busolo		15	19	
13	M	Douglas Anjichi		17	22	
14	F	Agnetta Mmata		28	33	
15	M	Saulo Okole		24	26	
16	F	Terry Jerusa		19	24	
17	M	Elvis Shitere		18	23	
18	F	Loice Lisu		20	26	
19	F	Mercy Katai		22	26	
20	M	Sospeter Mukuna		23	25	
21	M	Philip Matanga		20	24	
22	F	Philomena Aseyo		11	19	
23	F	Telly Silibwa		16	20	
24	M	Joshua Ligude		18	19	
25	F	Mercy Akumbi		14	21	
26	M	Ayub Timbwa		20	26	
27	F	Cyndy Malyazo		24	25	
28	M	Dan Echiswa		22	21	
29	M	Kerry Attichi		21	22	
30	F	Selina Mwinamo		16	22	
31	F	Rhodah Ombima		14	20	
32	F	Susan Simati		19	21	
33	M	Peter Mwangi		14	19	
34	M	Gerry Omwoha		22	25	

No.	GENDER	SCHOOL M – HAMISI NAME	PRE-TEST	POST-TEST Out of 50
1	M	Robert Ginni	-	13
2	M	Alistair Mutongi	-	12
3	M	Joel Shitemi	-	11
4	F	Irene Kasoa	-	16
5	F	Rose Khatali	-	19
6	M	Albert Osotsi	-	24
7	F	Phoebe Inziani	-	23
8	M	Samuel Magovi	-	25
9	F	Sarah Kuga	-	19
10	F	Mercyline Khaimba	-	23
11	M	Felix Indimuli	-	21
12	M	Nelson Mandela	-	22
13	F	Tessy Mwenderani	-	24
14	M	Antony Andambi	-	26
15	F	Rosebella Vugutsa	-	22
16	M	Martin Aradi	-	26
17	M	Shiebi Isinga	-	21
18	F	Christine Nafula	-	24
19	F	Christabel Mbone	-	22
20	M	Philip Gimose	-	20
21	F	Stacy Vihenda	-	13
22	F	Miami Shiku	-	15
23	F	Cynthia Vugutsa	-	17
24	F	Sarah Mbogi	-	22
25	F	Pauline Besa	-	25
26	M	Phineas Onzere	-	11
27	M	Peter Mutange	-	21
28	M	Issac Manyeve	-	14
29	F	Stellah Mbone	-	17
30	M	David Mamboleo	-	19
31	F	Agnes Faith	-	24
32	F	Mary Minayo	-	20
33	M	David Mmboga	-	22
34	M	Moses Akaranga	-	19
35	F	Tabitha Chacha	-	20
36	F	Angelina Uvwenda	-	21

		SCHOOL N - SABATIA			
No.	GENDER	NAME	PRE-TEST	POST-TEST Out of 50	
1	F	Euster Kageshi	-	22	
2	M	Moses Kidiavai	-	24	
3	M	Edwin Musalia	-	20	
4	M	Martin Chazima	-	16	
5	F	Fauzia Mmboga	-	23	
6	F	Benta Mbone	-	14	
7	F	Rose Monyani	-	14	
8	F	Beverlyne Vuyanzi	-	16	
9	M	Abdi Mulusa	-	19	
10	M	Priston Alavudidi	-	23	
11	F	Alice Musimbi	-	25	
12	M	Zablon Mudasia	-	21	
13	M	Teddy Changirwa	-	22	
14	M	David Musera	-	19	
15	F	Mary Mbone	-	16	
16	F	Mouline Kageha	-	21	
17	M	Erick Otieno	-	24	
18	F	Tebra Changwira	-	18	
19	M	Suleiman Mansour	-	19	
20	M	Jorum Chazara	-	20	
21	F	Stacy Monyani	-	23	
22	F	Khadijah Mudim	-	21	
23	F	Carolyne Vugutsa	-	14	
24	M	Godfrey Mudavadi	-	16	
25	F	Jescah Vugutsa	-	12	
26	M	Japheth Karani	-	25	
27	F	Faith Wairimu	-	22	
28	F	Rebecca Chachi	-	10	
29	M	Eugine Mugita	-	19	
30	M	Nelson Muhati	-	16	
31	F	Zainabu Wamboi	-	23	

Appendix XV: Authorisation Letter from University of Nairobi

23rd March, 2017

TO WHOM IT MAY CONCERN

SUBJECT: ANYIENDAH MARY SUSAN – REG. NO. E81/51137/2016

This is to certify that **Anyiendah Mary Susan** has defended her PhD proposal successfully at the Department and School levels towards achieving the Doctor of Philosophy in Language Education of the University of Nairobi.

She is currently undertaking her research on *Effect of Interactive Approach Instruction on Standard Six Learners' Achievement in Reading Comprehension: A Focus on Primary Schools in Vihiga County, Kenya*. **Any assistance accorded to her during data collection will be highly appreciated**.

Yours sincerely,

PROF. PAUL A. ODUNDO

CHAIRMAN,
DEPARTMENT OF EDUCATION COMMUNICATION AND TECHNOLOGY

Appendix XVI: Authorisation Letter from NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref No.

Date:
12th January, 2017

NACOSTI/P/17/5238/5733

Mary Susan Anyiendah
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Effect of Interactive Approach Instruction on Standard Six Learners' Achievement in Reading Comprehension: A Focus On Primary Schools in Vihiga County, Kenya"*, I am pleased to inform you that you have been authorized to undertake research in **Vihiga County** for a period ending **12th January, 2018**.

You are adviced to report to **the County Commissioner and the County Director of Education, Vihiga County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

SAID HUSSEIN
FOR: DIRECTOR-GENERAL/CEO

Copy to

The County Commissioner
Vihiga County.

The County Director of Education
Vihiga County.

National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified