METACOGNITION AND ATTITUDES TOWARDS READING AS CORRELATES OF READING COMPREHENSION PERFORMANCE AMONG STANDARD SIX PUPILS IN DAGORETTI DIVISION, NAIROBI COUNTY, KENYA

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NOVEMBER, 2015
DECLARATION

I confirm that this thesis is my original work and has not been presented in any other University/institution. The thesis has been complemented by referenced works duly acknowledged. Where data, text, graphics, pictures or tables have been borrowed from other works including the internet, the sources are specifically accredited through referencing in accordance with anti-plagiarism regulations.

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This thesis is dedicated to my dear husband Mwaniki Gachuba, our lovely children Brian Mwaniki Gachuba and Becky Mukami Mwaniki and to all teachers, past and present who have shaped me into what I am today.
ACKNOWLEDGEMENTS

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# ABBREVIATIONS AND ACRONYMS

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<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>ALA</td>
<td>Annual Learning Assessment</td>
</tr>
<tr>
<td>ATRS</td>
<td>Attitudes Towards Reading Scores</td>
</tr>
<tr>
<td>EGRA</td>
<td>Early Grade Reading Assessment</td>
</tr>
<tr>
<td>ELN</td>
<td>English Literacy Norms</td>
</tr>
<tr>
<td>ERAS</td>
<td>Elementary Reading Attitude Survey</td>
</tr>
<tr>
<td>KCPE</td>
<td>Kenya Certificate of Primary Education</td>
</tr>
<tr>
<td>KICD</td>
<td>Kenya Institute of Curriculum Development</td>
</tr>
<tr>
<td>KNEC</td>
<td>Kenya National Examinations Council</td>
</tr>
<tr>
<td>KU</td>
<td>Kenyatta University</td>
</tr>
<tr>
<td>MKS</td>
<td>Metacognitive Knowledge Score</td>
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<tr>
<td>MS</td>
<td>Metacognition Score</td>
</tr>
<tr>
<td>MSU</td>
<td>Metacognitive Strategy Use</td>
</tr>
<tr>
<td>NACOSTI</td>
<td>National Commission for Science, Technology and Innovation</td>
</tr>
<tr>
<td>NASMLA</td>
<td>National Assessment System for Monitoring Learning</td>
</tr>
<tr>
<td></td>
<td>Achievement</td>
</tr>
<tr>
<td>NFER</td>
<td>National Foundation for Educational Research</td>
</tr>
<tr>
<td>PISA</td>
<td>Programme for International Student Assessment</td>
</tr>
<tr>
<td>RTI</td>
<td>Research Triangle Institute</td>
</tr>
<tr>
<td>SACMEQ</td>
<td>Southern and Eastern Africa Consortium for Monitoring</td>
</tr>
<tr>
<td></td>
<td>Educational Quality</td>
</tr>
<tr>
<td>TAC</td>
<td>Teacher Advisory Centre</td>
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ABSTRACT
This study sought to establish whether there was a significant relationship among pupils’ metacognition, attitudes towards reading and their reading comprehension performance in an English passage. Differences in metacognition and attitudes towards reading due to both gender and age were also tested. Flavell’s Model of Cognitive Monitoring and Mathewson’s Model of Attitude Influence upon Reading and Learning to Read guided the study. The study adopted a correlational research design. It was carried out in Dagoretti Division in Nairobi County with a sample of 320 standard six pupils drawn from 8 public primary schools. Purposive sampling was used to select Dagoretti Division. Simple random sampling was used to obtain 4 public primary schools from each of the two Educational Zones in Dagoretti. Stratified sampling procedures were then used to ensure equal gender representation. An English reading comprehension test was used to measure the pupils’ reading comprehension performance. A questionnaire was employed to obtain pupils’ personal data, metacognition and attitudes towards reading. The pilot study was carried out on 40 pupils from one school in Dagoretti which was not used in the final study to check and enhance the validity and reliability of the research instruments. Descriptive and inferential statistics were used to describe and analyse the collected data. Specifically, Pearson’s Product Moment Correlation Coefficient, ANOVA, Chi-square, t-test for independent samples, Multiple Regression Analysis and Tukeys HSD tests were utilized. The results revealed that there was a positive and significant relationship between metacognition and reading comprehension performance \( r (310) = 0.41, p < 0.05 \) as well as between attitudes towards reading and reading comprehension performance \( r (310) = 0.22, p < 0.05 \). Metacognitive knowledge had a higher predictive value for reading comprehension performance than metacognitive strategy use. There were no significant gender differences in metacognition \( t = -1.25, df = 308, p > 0.05 \) and attitudes towards reading \( t = -0.92, df = 308, p > 0.05 \) respectively. Significant differences in metacognition and attitude towards reading due to age were found \( F= 9.50, df = 2, p < 0.05 \) in favour of the younger participants (10-11 year age category). Positive attitudes towards reading combined with metacognitive knowledge had significant predictive values \( \beta = 0.25, p < 0.05 \) for reading comprehension. In the exploratory analysis, significant differences were found among schools in terms of their metacognition, attitudes towards reading and reading comprehension performance. In conclusion, a positive and significant relationship was found among metacognition, attitudes towards reading and reading comprehension performance. A major recommendation is that teacher trainees need to be taught metacognition so that they can later teach it to their pupils as they teach them how to read. Teachers, parents and all stakeholders in education should also help in creating conducive environments that foster positive attitudes towards reading in pupils so that they can have more intention to read and more metacognition. This will not only improve their reading comprehension performance but also their overall academic performance.
CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter discusses the background to the study, statement of the problem, purpose and objectives of the study. The research questions, significance, limitations and delimitations as well as the assumptions of the study are also covered. The theoretical and conceptual frameworks as well as the operational definitions of key terms conclude the chapter.

1.2 Background to the Study

Reading comprehension is essential for everyday life situations because it enables people to acquire knowledge and information from the world around them. It is even more critical in academic learning. According to Arasa (2004), reading comprehension is an important part of any school curriculum. This as she says is because learners have to read and understand different instructional texts at different levels of their learning and use the knowledge acquired in examinations. Anderson and Krathwohl (2001) have reiterated this position by stating that, reading comprehension forms the foundation upon which other higher level cognitive goals of education such as applying, analyzing, evaluating and creating are achieved. Without reading comprehension, a learner cannot achieve the higher
level processes of applying, analyzing, evaluating and creating that are vital in the learning process.

Despite the stated importance of reading comprehension in learning, assessments of reading worldwide continue to show that many learners are unable to read and comprehend at the required level. This often leads to poor academic performance. Although these assessments have been on reading achievement, reading comprehension is implied because learners cannot comprehend what they cannot read. Low reading attainment therefore has a direct and negative impact on reading comprehension. This is because learners’ ability to read is a prerequisite to reading comprehension.

In the United States of America, the National Assessment of Educational Progress (2007) revealed a gloomy picture in terms of reading comprehension. It found out that 37 percent of learners in fourth grade were not able to achieve basic levels of reading achievement. Lee, Grigg and Donahue (2007) further add that the fourth grade learners read at levels so low they could not complete their schoolwork. The implication of this inability to read and comprehend is that the learners in question may not succeed in higher levels of learning that involve reading.

At the regional level, poor reading comprehension has been reported in South Africa as in many other African countries. Systematic evaluations conducted on the reading performance of learners in South Africa by the National Reading Panel...
(2008) reported that learners’ reading comprehension performance was not at the required levels. This trend was observed at the primary, high school and even at the tertiary level. Quoting these results, Cekiso (2012) reported that overall, 14% of learners were outstanding in their comprehension competence, 23% were satisfactory or partly competent but majority (63%) were below the required competence for their age level. Thus, as Cekiso (2012) continues to say, many South African students enter higher education underprepared for the reading demands that are placed upon them hence underperform academically.

Lack of reading comprehension in Nigerian secondary schools has also been reported by Jude and Ajayi (2012). The inability to read and comprehend they say is confounded by related factors such as lack of interest in reading and poor reading habits. Due to this, they argue, learners are not able to achieve their educational goals. This in turn leads to frustration and many learners drop out of schools. Ultimately, this may have negative consequences on the general economy of the country.

Locally, reading assessments reveal that learners are not able to read and comprehend at the required levels. These include the 1998 Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) which assessed Standard 6 pupils. They reported that whereas 64.8% of the sampled pupils had reached the minimum level of mastery, only 23% had attained the English reading mastery level
deemed desirable for successful learning in Standard 7 (Nzomo, Kariuki & Guantai, 2001). The remaining pupils (12.2%) had not even reached the minimum reading mastery level for that grade. Similarly, in their review of national assessment studies in Kenya, Wasanga and Kyalo (2007) reported in their English Literacy Norms (ELN) project undertaken in public primary schools in Kenya, that 72% of their standard three pupils who constituted the sample had not attained a desirable level of literacy in English to be able to comprehend English instructional texts within the primary school cycle.

Poor reading attainment has also been reported by Annual Learning Assessment (ALA) undertaken in 2009 by Uwezo using 68, 945 pupils aged between 6-16 years from 2,030 public primary schools in 70 sub-counties in Kenya. The report compiled by Rajani and Githongo (2009) revealed that two in three children (33%) in standard two could not read and comprehend at the required level. The low reading levels cut across all classes to the extent that out of every 1,000 pupils completing standard eight, 50 could not read and comprehend a story meant for standard two while one out of four (25%) of children in standard five could not read and comprehend a story meant for standard two.

The subsequent Annual Learning Assessments of 2011 and 2012 by Uwezo did not show evidence of improvements in reading. For example, the 2011 assessments found out among other things that 30% of standard three pupils could
not read a standard two level story in English. Worse still, 4% of standard eight pupils could not read a story meant for standard two pupils in English. The 2012 reading assessments across East Africa revealed that 7 out of 100 pupils (7%) in standard 8 could not read and comprehend a simple English story (Uwezo, 2012).

In the year 2010, the Kenya Early Grade Reading Assessment (EGRA) report revealed that reading comprehension was indeed lower than expected in many public primary schools. The assessment carried out in 2009 with a sample of 2,000 standard three pupils from 100 public primary schools in rural and urban Luo-Nyanza and Central Kenya assessed among other tasks, reading fluency and reading comprehension in English, Kiswahili, Gikuyu and Dholuo. The results indicated that there was a significant percentage of children (28.1%) who were completely unable to read and comprehend by the end of Standard three (Piper, 2010). Such pupils, the report says, leave the early grades with very low levels of reading skills and are therefore not able to obtain the requisite skills to persist and succeed in primary school.

The above results seem to have been corroborated by the government’s National Assessment System for Monitoring Learning Achievement (NASMLA, 2010) study of literacy in English at Standard 3. The results as reported by the Kenya National Examinations Council (KNEC) in 2010 revealed similarly poor reading attainment with reading achievement standing at a mean score of 297.58, which was below the
standardized mean of 300. Slightly less than half of the pupils (47.7%) in the study had attained the desirable levels of literacy. This means that the remaining learners (52.3%) are not able to benefit from instructional texts which demand not only the ability to read, but also ability to comprehend.

Though the above findings are worrying, they nevertheless reveal the importance of reading comprehension in learners’ academic performance. The findings imply that learners’ inability to read and comprehend instructional texts may lead to low academic performance. This may help to explain why some learners, schools and educational divisions consistently perform poorly academically. Dagoretti educational division in Nairobi County is one such division where low academic performance has consistently been experienced. Statistics obtained from the City Council of Nairobi Education Department (2013) reveal that between the years 2009-2013, Dagoretti posted the poorest academic performance in KCPE compared to the other eight educational divisions in Nairobi County. (See Appendix V). The implication of such poor academic performance is that most of the pupils from this educational division are not able to achieve their academic goals due to their inability to proceed to the next levels of learning that often require higher marks.

In Kenya, a lot of emphasis is placed on good grades as a major avenue for upward educational and social mobility. It is therefore very frustrating to learners, their
parents and all stakeholders in education when learners fail to achieve their academic goals. This according to Kwena (2007) is because a child’s success is always measured in terms of his or her academic achievement especially in the Kenya Certificate of Primary Education (KCPE). This underscores the need to focus attention on how learners’ reading comprehension can be enhanced so that they are able to achieve their academic goals.

Many factors have been blamed for lack of reading comprehension including lack of reading materials (Arasa, 2004), incompetence of teachers in teaching reading (Runo, Karugu & Mugo, 2010), lack of student motivation (Abosi, 2007) and lack of resources for teaching English (Njoroge, 2000). It is worth noting that very little attention has been focused on the combined role of cognitive and affective factors within the learner that can be manipulated to help achieve reading comprehension and the subsequent academic excellence among learners. These factors include but are not limited to metacognition and attitudes towards reading.

The concept of metacognition was introduced by Flavell (1979). In a broad sense, it refers to one’s knowledge about themselves as learners, the task at hand and its goals as well as the ability to monitor, control, regulate and evaluate his or her own cognitive processes to achieve success in the task. Metacognition is composed of two key elements called metacognitive knowledge and metacognitive strategy use. According to Simons (2000), metacognitive knowledge refers to what one
knows about his capabilities and learning habits as well as the nature of a learning task and useful learning strategies to use with different types of learning. Metacognitive strategy use on the other hand refers to the regulation of cognition and learning experiences through a set of activities that a learner uses to monitor, control and restructure their on-going learning processes in order to comprehend (Simons, 2000).

In a reading context, metacognition can therefore be said to refer to the awareness of oneself as a reader, of the requirements and goals of the reading task and of useful strategies that can be used to facilitate comprehension which in most cases is the main goal of reading. It also includes monitoring and evaluating the ongoing reading task so that the necessary strategies can be used to remediate any breakdown in comprehension. According to Sweet and Snow (2002), comprehension occurs when a reader deliberately interacts with a text. The reader, they opine, comes to this interaction with certain levels of knowledge, skills, attitudes and experiences. These skills according to Meneghetti, Carretti and De Beni (2006) include reading skills, language skills, prior knowledge as well as metacognitive processes that are then combined to help in the execution of the task.

For reading comprehension to occur, a reader must decide to get involved in the text. As Guthrie and Wigfield (1999) opined, one cannot comprehend a text by accident. One has to be aware of the text, deliberately attend to it, choose to make
meaning out of it and apply cognitive effort. This deliberate attending to the text is what differentiates those readers who will achieve their reading goals from those that will not. This is because successful readers know and use a wide range of metacognitive strategies to aid their understanding of text. These strategies are used before, during and after reading and include glancing through the text, looking at pictures and headings, rereading difficult paragraphs, underlining key words and phrases, checking meanings of difficult words from the dictionary or guessing meanings from the context of the passage and reflecting on what one has read (Guthrie & Wigfield, 1999).

Attitudes towards reading have also been associated with reading comprehension outcomes (Mohamed, 2012). Attitudes towards reading refers to how learners’ feel about reading. It is their positive or negative evaluative reaction towards reading. According to Gagne, Wager, Golas and Keller (2005), the effect of an attitude is to amplify an individual’s positive or negative reaction toward some person, thing or situation. Learners with a positive attitude towards reading like and enjoy reading and are therefore likely to spend considerable time and effort reading. Those with a negative attitude towards reading may not like or even enjoy reading. They are therefore not likely to have the intention to read. Since learners with a positive attitude towards reading are more likely to think and react positively towards reading, they are also more likely to aim at understanding texts. The opposite may be true of those with a negative attitude towards reading.
Attitudes towards reading and metacognition may influence each other directly or indirectly. The attitudes held towards reading may determine how often and how well one reads and uses metacognitive strategies. According to Mohamed (2002), positive attitudes towards reading may support development of metacognition especially if they make one to engage in more meaningful reading where one is able to monitor and regulate their thoughts in a bid to achieve understanding. On the other hand, Martinez (2006) argues that the knowledge and use of metacognitive strategies can improve attitudes, persistence and motivation in the face of challenging reading tasks. This means that lack of knowledge about the metacognitive strategies to use while reading or even the inability to use them effectively may lead to negative attitudes towards reading due to the frustration arising from failure to comprehend texts.

Learners’ attitudes towards reading are developed through a variety of ways over time. While some reading attitudes develop through repeated success or failure with reading tasks (Kush, Watkins & Brookhart; 2005), others are learnt from parents, siblings, peers and the social-cultural environment in which the learner grows up. In Kenya for example, most people have not incorporated a culture of reading into their lifestyle (Mbae, 2012). Reading is usually associated with those in school. This non-reading culture ends up affecting young learners who have no role models to copy in regard to reading and who due to this, may not regard
reading highly. Ultimately, this attitude ends up affecting their academic performance.

Differences in learners’ metacognition and attitudes towards reading may explain why some learners read and comprehend with ease while others do not despite being exposed to similar schooling experiences. There was a need to clearly understand how these differences among learners affect reading comprehension performance and perhaps subsequent overall academic performance. With such understanding, appropriate and timely interventions can be undertaken to help struggling learners like those in Dagoretti educational division achieve their academic goals. This study therefore examined the relationship between learners’ metacognition, attitudes towards reading and their reading comprehension performance in Dagoretti Division, Nairobi County. Gender and age differences in these variables were also tested.

1.3 Statement of the Problem

The aforementioned concerns about deteriorating reading comprehension performance amongst public primary school pupils should be a concern to every stakeholder in education. This is because lack of reading comprehension in instructional texts may lead to academic failure and its resulting consequences such as frustration, truancy, dropping out of school and lack of upward educational and social mobility. If the trend continues unchecked, the country may not even have enough educated manpower to implement its development agenda.
Inability to comprehend instructional texts may be the reason why Dagoretti educational division has been performing poorly academically for the last five years.

This trend can be reversed by understanding some of the key variables that interact to influence reading comprehension and then providing instruction and positive role modelling where possible to the advantage of learners. Research from the West and the Orient has reported that certain cognitive and affective factors within the learner affect reading comprehension positively. These include metacognition and positive attitudes towards reading. Despite having this knowledge, learners continue to perform poorly in reading comprehension and in their examinations. The reported research findings are against a background of cultural differences in reading comprehension and may therefore not hold true for Kenyan children in all aspects. There is need therefore for local research to understand the two variables exhaustively to inform reading practice and help our learners comprehend instructional texts.

This study proposed that if metacognition and attitudes towards reading were studied systematically and well understood, they could be manipulated to enhance learners’ reading comprehension performance. The central problem of this study therefore was to find out the extent to which metacognition and attitudes towards reading were related to reading comprehension performance of standard six pupils of Dagoretti division, Nairobi County. The study hoped to provide local empirical
data that could be the missing link required to reverse the poor academic performance in this educational division.

1.4 Purpose of the Study

The purpose of this study was to examine the relationship between metacognition, attitude towards reading and reading comprehension performance in an English passage among standard six pupils. It also sought to find out how these variables differ with regard to the gender and age of the pupils.

1.5 Objectives of the Study

The objectives of this study were to:

i. Establish the relationship between metacognition and reading comprehension performance.

ii. Find out the relationship between attitudes towards reading and reading comprehension performance.

iii. Test if there are gender differences in metacognition and attitudes towards reading.

iv. Examine age differences in metacognition and attitudes towards reading.

v. Determine the interaction effect of metacognition and attitudes towards reading on reading comprehension performance.
1.6 Research Questions

The study sought to answer the following research questions;

i. What is the relationship between metacognition and reading comprehension performance?

ii. How are attitudes towards reading related to reading comprehension performance?

iii. What are the differences in metacognition and attitudes towards reading due to gender?

iv. How does metacognition and attitudes towards reading differ across the ages of participants?

v. What is the interaction effect of metacognition and attitudes towards reading on reading comprehension performance?

1.7 Assumptions of the Study

In this study, it was assumed that;

i. Metacognition, attitudes towards reading and reading comprehension skills were already developed in all the standard six pupils.

ii. Pupils had different levels of metacognition and types of attitudes towards reading.

iii. The pupils accurately reported their metacognition and attitudes towards reading.
iv. There was homogeneity of schools and pupils since they were all public with the same curriculum and similar quality of teachers and educational orientation.

1.8 Limitations of the Study

This study involved only eight public primary schools in Dagoretti educational division. The findings may be generalizable to pupils with similar characteristics but with caution. There are many methods of measuring metacognition, attitudes towards reading and reading comprehension performance. However, due to the limitations associated with each method and the need for adequate sample size, data in this study was only obtained from pupils’ self-reports from a questionnaire and from a multiple-choice comprehension test.

1.9 Delimitations of the Study

The study was restricted to only standard six pupils in eight public primary schools in Dagoretti educational division. This was due to the fact that recent studies have reported low reading achievement levels mainly in public primary schools. Dagoretti educational division has also been performing poorly in KCPE for the last five years. Though many variables could influence reading comprehension performance, the study only focussed on metacognition and attitudes towards reading. This was because local studies on how the two variables relate to reading comprehension performance were not readily available.
1.10 Significance of the Study

Findings from this study may inform policy makers on the importance of metacognition in facilitating reading comprehension. With such knowledge, policy makers may get a basis upon which they can direct teacher trainers to incorporate metacognitive skills training among teacher trainees who can later impart it to learners as part of regular classroom instruction. On the basis of the findings, the policy makers may also direct curriculum developers to organise instructional materials for the benefit of learners in terms of text structure and strategies that can be utilized to enhance comprehension. The findings may also reiterate to all stakeholders in education the importance of inculcating positive attitudes towards reading right from an early age in order to help pupils read more, gain more reading skills and consequently achieve their academic goals. The findings may also add on to the existing cross-cultural literature on correlates of reading comprehension.

1.11 The Theoretical Framework

This study was guided by Flavell’s Model of Cognitive Monitoring and Mathewson’s Model of Attitude Influence upon Reading and Learning to Read.

1.11.1 Flavell’s Model of Cognitive Monitoring (1979)

Flavell (1979) developed a model of cognitive monitoring and regulation that has various components of metacognition. These components are metacognitive
knowledge, metacognitive experiences, metacognitive goals and metacognitive strategies. The interactions among these components help one to perform various cognitive tasks. Metacognitive knowledge consists of knowledge or awareness of oneself as a learner, awareness about one’s cognitive abilities, the nature and demands of the task at hand and of the strategies that can be used to achieve the objectives of the cognitive task. This knowledge can either be retrieved as a result of a deliberate and conscious memory search or it can be activated unintentionally and automatically by retrieval clues in a task situation.

At the conscious level, metacognitive knowledge may provoke what he called a metacognitive experience. This is a consideration of intellectual experiences that accompany any success or failures in learning such as having a feeling of confusion after reading a passage or remembering that outlining the main ideas of a passage on a previous occasion helped increase comprehension. Many of these experiences can occur at any time before, during or after a cognitive task. Goals refer to the actual objectives of a cognitive endeavour such as reading and understanding a passage for an upcoming test which will trigger the use of metacognitive knowledge and lead to new metacognitive experiences. Strategies refer to the utilization of specific techniques or actions that may assist in achieving cognitive goals.

This model was used in the current study to help explain the functions of metacognition in monitoring and regulating reading comprehension. According to
the model, knowledge about one’s capability as a reader, of the nature and demands of a reading task as well as the goals to be achieved may lead one to deliberately use certain strategies to facilitate comprehension. This knowledge may also help a reader realize when he or she does not understand and therefore help to deliberately remediate the lack of understanding through use of appropriate strategies. The model also helps to explain that skilled readers are more aware of their abilities as readers, of the nature and goals of a reading passage and of the strategies that they can employ to achieve these goals. They therefore consistently monitor their understanding or lack of it and may be willing to make use of strategies that worked for them in the past to achieve reading comprehension.

Flavell’s model was helpful in explaining how the various metacognitive components interact to facilitate reading comprehension. However, metacognitive components do not operate in a vacuum. They must interact with other affective factors within the learner such as attitudes towards reading to facilitate comprehension. The model was limited in its illustration of the relationship between metacognitive components and attitudes towards reading in facilitating reading comprehension. Yet, it was hypothesized in this study that metacognition would interact with attitudes towards reading to produce reading comprehension. Another model was therefore necessary to illustrate the interrelationship between metacognition and attitudes towards reading in facilitating reading comprehension as well as to explain how attitudes towards reading may improve metacognition.
The model used was the Mathewson’s Model of Attitude Influence upon Reading and Learning to Read (1994).

1.11.2 Mathewson’s Model of Attitude Influence upon Reading and Learning to Read (1994)

This model is derived from social psychology and explains the roles of affect and cognition in reading comprehension. The core of the attitude-influence model explains that a reader's whole attitude toward reading will influence the intention to read and in turn influence reading behaviour. The intention to read is proposed as the primary mediator between attitude and reading. Mathewson (1994) defines intention as the commitment to a plan for achieving one or more reading purposes at a more or less specified time in the future. All other moderator variables such as extrinsic motivation, involvement, prior knowledge and purpose are viewed as affecting the attitude-reading relationship by influencing the intention to read.

This model was very relevant for this study since it helped to explain that learners’ attitudes towards reading are instrumental in deciding whether they will read a certain text or not. Since reading comprehension in whatever subject cannot be achieved without first and foremost reading, the intention to read that the model emphasized is very crucial. The model explains that learners with positive attitudes towards reading may not only be likely to have the intention to read, but that this intention to read may also affect their reading behaviour positively. This is
because the intention to read may make them read more hence exposing them to different text structures. Ultimately, the readers may end up improving their metacognitive knowledge and strategies which they can use to improve reading comprehension.

The two models used in this study were complementary in their explanation of the role of metacognitive components and attitudes towards reading in facilitating reading comprehension among learners. Both models helped to clarify how metacognitive components may be influenced by attitudes towards reading and vice versa. The models were therefore appropriate in this study that sought to investigate the relationship between metacognition and attitudes towards reading in reading comprehension performance.

1.12 The Conceptual Framework

Figure 1.1 illustrates the study variables as well as the hypothesized relationships among the study variables. The two predictor variables were metacognition and attitudes towards reading. Metacognition was at two levels namely, metacognitive knowledge and metacognitive strategies. Attitudes towards reading were also at two levels namely, positive and negative attitudes. The outcome variable was reading comprehension performance which was inferred from reading comprehension test scores. The intervening variables were age and gender.

A pupil’s reading comprehension performance was hypothesized to be influenced by their metacognition as well as the attitudes they hold towards reading. The two
levels of metacognition (metacognitive knowledge and metacognitive strategy use) could also interact with the two levels of attitudes towards reading (positive and negative) to influence pupils’ reading comprehension performance.

Figure 1.1 Conceptual Framework

Source: Researcher, 2015
The two predictor variables (and their levels) may also interact with the intervening variables (gender and age) to influence reading comprehension performance.

1.13 Operational Definitions of Key Terms

To avoid ambiguity, some terms are defined as they were used in the study:

**Attitude towards Reading:** The score at the interval level obtained by pupils in a self-report questionnaire on their evaluative reaction towards reading.

**Reading Comprehension Performance:** The standardized mean T-Score obtained by pupils in a reading comprehension test.

**Metacognition:** The total score at the interval level obtained by pupils in a self-report questionnaire on their knowledge and use of certain reading strategies.

**Metacognitive Knowledge:** The score at the interval level obtained by pupils in a self-report questionnaire on their knowledge or awareness of certain reading strategies or skills that one can use to aid reading comprehension.

**Metacognitive Strategy Use:** The score at the interval level obtained by pupils in a self-report questionnaire on their actual use of certain strategies or skills while reading the English comprehension passage.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

In this chapter, the researcher has reviewed related literature in line with the study objectives. Literature on the relationship between metacognition, attitudes towards reading and reading comprehension performance is reviewed as well as literature on gender and age differences in metacognition and attitudes towards reading. A summary of the reviewed literature and gap identification is presented at the end of the chapter.

2.2 Relationship between Metacognition and Reading Comprehension Performance

The construct metacognition is usually difficult to define owing to the different definitions and characterisations emphasized by different scholars. It is usually not easy to draw a clear boundary between which processes are cognitive and which ones are metacognitive. Veenman, Van Hout-Wolters and Afflerbach (2006) have opined that it is often difficult to draw a clear boundary between cognitive and metacognitive reading strategies. This according to them is because of the way the two constructs are used interchangeably. Cognition they say, guides metacognition. This means that cognition in terms of thinking of the necessary skills to use is necessary to perform a task. However, metacognition in terms of the
actual knowledge and use of the thought-out skills or strategies is necessary to perform a task as well as to understand and evaluate how the task has been performed. This as Schraw (1998) says is because metacognition involves both the awareness and the conscious control of one’s learning called regulation in the use of strategies.

The definition and conceptualisation of metacognition by Mokharti and Sheorey (2002) will be adapted in this study because of its clarity in showing how the various phases in the reading process involve different metacognitive components. As already stated, metacognition consists of two key elements namely metacognitive knowledge also commonly referred to as metacognitive awareness and metacognitive strategy use also commonly referred to as metacognitive skills. Mokharti and Sheorey (2002) have explained that metacognitive awareness is divided into three components. These are declarative, procedural and conditional knowledge.

Declarative knowledge according to Mokharti and Sheorey (2002) consists of knowledge about factors and issues that may affect an individual’s reading comprehension performance such as mental states of alertness, mood, interest and lack of knowledge of vocabulary that may be used in the text being read. Procedural knowledge is the knowledge and understanding about how certain strategies are used in the text. Conditional knowledge includes knowledge about
when and why different strategies should be used in a text. For example, knowing when to reread a paragraph to remediate lack of understanding or when to check the meaning of a difficult word from the dictionary due to limited vocabulary.

Mokharti and Sheorey (2002) also cite metacognitive strategy use which they also call regulation as an important element in the reading process. This they say, includes planning, monitoring and evaluation of the strategies used in the reading process. The planning phase includes the selection of the necessary strategies to attain the intended reading goal. It may include elements such as previewing a text or glancing through the paragraphs, headings and pictures to get an idea of what the text is all about. It may also include summoning the required alertness based on the type of text being read. The amount of alertness needed when reading an instructional text is not the amount of alertness needed when reading for leisure.

Monitoring according to Mokharti and Sheorey (2002) includes periodic self-testing of individuals’ actions during reading. This may involve constantly reminding oneself what the goals of reading were and trying to check whether one is using the strategies required to achieve those goals. This phase may also involve discarding a strategy that is not working and substituting it with one that has worked in the past. This way, the reader uses their metacognitive experiences and knowledge to regulate their reading pace and strategy in accordance with the expected goals.
Evaluation according to Mokharti and Sheorey (2002), includes an examination and assessment of the entire reading process and its end result vis a vis the expected reading goals. Schraw and Moshman (1995) opine that also analyzed at this phase are the personal abilities used to achieve the reading goal in order to see how effective they were. Although this phase comes at the end of the reading exercise, it may be the beginning of certain metacognitive experiences that can inform the monitoring phase in future reading tasks. This happens when the reader takes stock of the strategies that worked for them while reading and those that did not. Strategies that helped the reader achieve the reading goals are likely to be added to their repertoire of useful strategies and used in future with similar tasks.

Research supports the notion that metacognitive strategies, when known and used effectively, result in increased learning and achievement (Bransford, Brown & Cocking, 2000). The common difficulties in text comprehension have also been shown to arise from the hardship of decoding the text or from poor metacognitive skills (Hall, 2004). Most research has shown that proficient readers know and engage in a wide range of metacognitive strategies.

In a study with 30 ninth-grade students, Cromley and Azevedo (2011) administered three parallel strategy use measures comprising of a prospective self-report measure, a concurrent multiple-choice measure which required students to apply the strategies to specific passages and a text on which they asked students to
think aloud. They also collected two measures of reading comprehension ie a standardized measure and free recall scores. Though the prospective self-report data yielded non-significant correlations with all of the other measures, the concurrent multiple-choice and think-aloud data showed that metacognition was significantly correlated with both the comprehension scores and with each other. These results are consistent with Veenman’s (2005) conclusions based on a literature review.

In as much as Cromley and Azevedo (2011) reported a positive and significant relationship between metacognition and reading comprehension performance, the current study was still necessary since it used a different sample (standard six pupils) and different methodology. The reviewed study had used parallel measures to collect data and this may have affected the results. This is because when self-report data was used, there were no nonsignificant correlations. The current study used pupils’ self-reports and obtained significant correlation between the variables of interest.

In another study aimed at exploring the relationship between reading strategy awareness and reading comprehension, Anastasiou and Griva (2009) used retrospective interviews and reading comprehension test scores of 36 grade six students aged between 11 and 12 years in Greece. They found out that metacognitive strategy use awareness (knowledge) made a unique contribution to
reading comprehension. Phakiti (2003) investigated the cognitive and metacognitive strategies used by students studying English as a foreign language (EFL) and their reading achievement and found that the use of cognitive and metacognitive strategies had a positive relationship to the reading test performance. In the study, highly successful test takers also reported significantly higher metacognitive strategy use than the moderately successful ones who in turn reported higher use of these strategies than the unsuccessful test takers. The current study used a sample of a similar age. However, the cultural milieu of the participants was different. This allowed for cross-cultural comparison in results.

Mohamed (2002) used a quasi-experiment and questionnaire with 503 Malaysian University students and found out that metacognition was highly related to their reading efficiency and performance in English. These results were consistent with those of Ortlieb and Norris (2012) who in a quasi-experimental study using 37 kindergarten learners in Texas, investigated the effects of metacognition on comprehension of science concepts. They found out that using a think-aloud strategy during reading significantly increased learners’ comprehension of science concepts. Their results concurred with those of Rahman, Jumani, Chaudry, Chisti and Abbasi (2010) who had earlier used 900 tenth grade students in Pakistan and a researcher made test in the subject of chemistry to find out whether metacognition would influence performance. They found out that metacognitive awareness was significantly correlated with the performance of students.
There is a notable difference between the sample and methodology used in the current study and those used by Mohamed (2002). The university students he used are likely to have developed the necessary metacognitive strategies due to the success they have experienced in their studies. A quasi-experiment may also produce results that may not be generalizable especially to younger groups from a different culture like those used in the current study. This study used self-report questionnaires that may allow for generalization of results albeit with caution.

Local studies that have directly investigated the relationship between metacognition and reading comprehension performance were not readily available. However, this relationship can be inferred from studies investigating other related variables such as cognitive strategy use. Using 785 primary school pupils in standard 5 and 7 in Kisumu Municipality, Dinga (2011) reported a positive correlation between strategy use and the ability to gain meaning from text.

In another study, Rwanda (2012) investigated reading comprehension with different variables. She used 216 standard eight pupils from 6 public primary schools in Meru District to find out the relationship between breadth and depth of vocabulary knowledge and reading comprehension performance in English. In her survey, she found a positive significant relationship between depth and breadth of vocabulary knowledge and reading comprehension performance. Although her study variables were different, her results seem to support most of the earlier
research findings that comprehension does not happen by chance but rather is a function of certain cognitive processes such as knowledge and depth of vocabulary.

Overall, the studies reviewed point to a positive relationship between metacognition and reading comprehension performance. However, there are methodological differences between those studies reported and the current study. For example, Cromley and Azevedo (2011) used think-aloud protocols that yielded a significant correlation with comprehension scores. It is important to note that the prospective self-report data used concurrently did not yield significant correlations with reading comprehension scores. This implies that the research method used has a bearing on study outcomes. Though the current study used self-report measures, it still found a positive and significant correlation between metacognition and reading comprehension just like most reviewed studies did.

Almost all the studies reviewed were conducted in Western and Oriental countries where learning and cultural environments are different from those in Kenya. Locally, studies investigating metacognition and how it is related to reading comprehension are not readily available. Given the already stated importance of metacognition in reading comprehension and the fact that there are very few local studies related to this area, the present study was a necessary effort to bridge the gap in the literature and contribute to cross-cultural psychology.
2.3 Relationship between Attitudes towards Reading and Reading Comprehension Performance

Although educational studies have produced mixed results, most of them reveal that positive attitudes toward reading significantly alter academic achievement for the better (Ilustre, 2011). This has been confirmed by Mohamed (2002). Using a quasi-experiment and a questionnaire with 503 Malaysian University students, he investigated the effects of reading attitude on reading proficiency and found a significant positive correlation between the two variables. In their study, McKenna, Kear, and Ellsworth (1995) also examined attitudes towards reading of 18,185 first to sixth grade students in the United Kingdom and found a positive significant relationship between attitudes towards reading and reading proficiency.

In yet another related study, Kirmizi (2011) used 1316 fourth and fifth grade Turkish students to determine the relationship between levels of reading comprehension strategy use, reading attitudes and the amount of reading per year among elementary school students. He found out that reading attitude was a significant predictor of the level of reading comprehension strategies used by students and consequently their performance in the same. These results corroborated those of Krashen (2007) who in a review of studies of extensive reading of English as a foreign language, found out that adolescents and young adults who liked reading and had access to reading did significantly better on tests of reading comprehension.
The above findings are consistent with a comprehensive meta-analysis of 41 studies on in-school free reading, sustained silent reading and self-selected reading programs by Krashen (1995). The meta-analysis found out that in 38 of 41 studies, students who engaged in free reading did better than those who did not on standardized tests of reading comprehension. This was because in-school free reading programs are related to vocabulary development, knowledge of grammar, writing and oral language facility. These results were however inconsistent with those of Sallabas (2008) who used 148 eighth grade participants in a survey and determined that there was a low level correlation between students’ reading comprehension skills and attitude towards reading.

A meta-analysis of the relationship between attitudes in reading and achievement in reading was conducted by Petscher (2010) to provide a statistical summary to the observed variability in the magnitude of previously reported effect sizes. A total of 32 studies, with a total sample size of 224,615 were used, and included a total of 118 effect sizes. A multilevel approach was used in meta-analysis to determine if variance in the magnitude of effect sizes could be partitioned to study (level 1) and moderator (level 2) levels by using a mixed model approach. Results from the meta-analysis indicated that the mean strength of the relationship between reading attitudes and achievement was moderate overall. It was however stronger for students in elementary school when compared with those of middle school.
Locally, most studies have focused on attitudes towards specific participants such as mathematics and sciences or on attitudes and general academic performance. Results from these studies have produced mixed findings hence are inconclusive.

Using a survey and 232 form 4 students in Machakos District, Maweu (2005) investigated the relationship between attitudes towards mathematics and students’ preference for mathematic-based careers. He found out that the preference for mathematics-based careers was significantly related to attitudes towards mathematics. These results were however inconsistent with those of Waihenya (2010) who examined the relationship between attitudes, academic performance, gender and choice of agricultural careers among secondary school students. Using 240 students in a survey, she found out that there was no significant relationship between students’ attitudes towards agriculture and their examination scores in agriculture.

The studies reviewed show an apparent lack of consensus in results. Whereas some report positive and significant relationship between the variables of interest, others do not. This may be due to the sample used as well as the method used. For example, Mohamed (2002) used a quasi-experimental design with university students and obtained a significant relationship unlike Petscher (2010) who used meta-analysis and obtained only moderate relationship between the variables. This is therefore confusing and a study like the current one may shed light on how the
variables being studied vary and relate within local settings and with a younger sample.

2.4 Gender differences in Metacognition and Attitudes towards Reading

Some researchers have found significant gender differences in metacognition while others have not. In their study with 941 fourth to eighth grade learners in Turkey, Topçu and Yilmaz-Tüzün (2009) found significant differences in metacognition that favoured females in a science reading text. Rahman, Jumani, Chaudry, Chisti and Abbasi (2010) however failed to find significant gender differences in metacognition when they used 900 tenth grade Pakistan students and a researcher made test in chemistry.

These results were consistent with those of Padeliadu, Botsas and Sideridis (2011) who used 125 average readers and 125 reading disabled students in grades 3 through 6 and found no significant gender differences in their metacognition. The results by Topçu and Yilmaz-Tüzün (2009) are surprising in a country (Kenya) where girls are not known to have positive attitudes towards science subjects. Cultural differences may therefore be implied because Rahman, Jumani, Chaudry, Chisti and Abbasi (2010) did not report such findings in chemistry. It was therefore necessary to undertake a research like this one and test for gender differences within local settings.
There are also mixed findings regarding gender differences in attitudes towards reading. Logan and Johnston (2009) used 232 ten year old children and a questionnaire to explore the relationship between reading ability, frequency of reading and attitudes and beliefs across gender. They found out that only boys’ reading ability was associated with their attitude to reading. Most research however indicate that females begin school with higher attitudes towards reading than males, regardless of grade level or socioeconomic status (Petscher, 2010).

A female reading advantage due to attitude towards reading has been observed in the 57 countries participating in the Programme for International Student Assessment (PISA), in which 15-year-olds were assessed in reading, math and science. Oakhill and Petrides (2007) compared the attitudes and reading comprehension of 10 and 11 year-old boys and girls and reported results that favoured girls. These results are in agreement with those of McKenna, Kear, and Ellsworth (1995) who used 18,185 first to sixth grade students in the United Kingdom. They reported that the gap between girls’ positive attitudes and boys’ negative attitudes towards reading widened as they got older and that females had more consistent positive academic attitudes than boys across all grades.

Locally, studies have reported gender differences that favour girls in reading comprehension (Piper 2010; Runo, 2010). However, studies on gender differences in metacognition are not readily available. One study by Dinga (2010) examined a
sub-scale of metacognition (cognitive strategy use) with 785 primary school pupils in standard 5 and 7 in Kisumu Municipality. He found no significant gender differences in the pupils’ explicit and implicit meaning of texts. Most studies on attitudes have mostly focused on attitudes towards specific subjects especially science. Chetcuti and Kioko (2012) used questionnaires and focus group interviews with 120 girls from four secondary schools in the Eastern province and found out that a majority of Kenyan girls had a favourable attitude towards science.

There are apparent inconsistencies reported in Western and Oriental research concerning gender differences in the area of reading comprehension. This is compounded by the unavailability of local studies on gender differences in pupils’ metacognition and attitudes towards reading. A local study was therefore necessary to shed more light on whether there are gender differences in metacognition and attitudes towards reading.

2.5 Age differences in Metacognition and Attitudes towards Reading

The idea of how and when metacognition develops borrows heavily from Piaget’s cognitive psychology. Piaget (1973) opined that cognitive processes develop over time and in stages. He further asserted that metacognition cannot develop until the formal operational stage which is around 11 to 12 years when children become capable of abstract thoughts. During this stage, Piaget says that children’s thinking
becomes more deliberate. This made the early researchers to think that young children are not capable of metacognitive activities.

Many researchers today disagree with Piaget (1973). They believe that metacognition appears early and continues to improve with age due to the development of the brain that triggers other changes such as regulation of behavior (Schneider, 2008). Adults therefore tend to have more knowledge about their own cognition than young children. As children grow older and get exposed to varied reading experiences, they are likely to come across many different types of texts with different text structures and strategies. Consequently, they are more likely to know how to make use of the text structure and strategy employed in different texts. As they continue growing and schooling, they are more likely to benefit from systematic and direct instruction from the teachers hence improving their metacognitive awareness and skills ((Duke & Pearson, 2002; Dymock, 2007). Concurring with this assertion are McKenna and Robinson (2002) and Vacca (2002) who opine that very young learners may not be exposed to such reading skills on a regular basis and so may not have something from which to draw upon when monitoring their reading comprehension.

According to McLeod (1997), researchers have observed metacognition even in preschool-aged children. This he points out, has been in the form of planning and monitoring progress toward goals and persistence at challenging tasks. A study by
Whitebread et al., (2009) found that children as young as three to five years old exhibited both verbal and nonverbal metacognitive behaviours. This was evident during problem solving including articulation of cognitive knowledge, cognitive regulation and regulation of emotional and affective states. Hennessey (1999) agrees with this having observed first-grade students evaluating the plausibility of their science conceptions. This observation made him to conclude that young children can reflect with accuracy on their cognition.

Some studies have shown that children’s metacognition increases with age due to exposure to more reading required of them. One such study was by Schnieder (2008) who used 174 children who were about 3 years of age at the beginning of a longitudinal study. He investigated the development of their metacognition while at the same time taking into consideration the fact that they were developing their language skills. He found out that language abilities assessed at the ages of 3 and 4 made significant contributions to their metacognition at the age of 5. Overall, he demonstrated that children’s metacognition progressed with age.

These findings were consistent with those of Topçu and Yılmaz-Tüzün (2009) who studied metacognition of 315 students in fourth and fifth grades and a further 626 students in sixth, seventh and eighth grades of seven elementary schools in Turkey. They found out that the older students had more domain specific metacognition in their science courses as compared to the younger ones. These
results may only hold true for learners who are exposed to different texts and therefore develop appropriate metacognitive strategies required in reading comprehension. There were differences in methodology as well as age of the learners. These are factors that can affect results and hence the current study.

Other researchers have not found this corresponding increase in metacognition with the age of the learner. Sperling, Howard, Miller and Murphy (2002) used a self-report instrument with children in the third to eighth grade and found a tendency for younger students to earn higher metacognition scores than older students. Such results have also been reported by Padeliadu, Botsas and Sideridis (2011). Using 125 average readers and 125 reading disabled students attending grades 3 through 6, they assessed metacognitive awareness and reading strategies and found out that there were no significant differences in regard to the grade and by implication the age of the students. However, what was very clear was that good readers developed their metacognitive skills significantly quite early after the third grade.

Some studies have also shown that attitudes are related to age. Mitchell and Ley (1996) examined high school students’ reading attitudes and behaviours and found out that though students in grade 12 had a more positive attitude towards reading than students in grade nine, this was not statistically significant for grade level. In another study, McKenna, Kear, and Ellsworth (1995) used 299 schools in the
United Kingdom and found out that there was a steady decline of attitudes towards reading as students progressed through elementary school. They found out that by the sixth grade, students attitudes towards reading were very negative. The deterioration starts in fourth grade which they referred to as ‘the fourth grade slump’. These results were consistent with those of Black (2006) who studied reading attitudes of Australian children in first grades to seventh grade. The study found out that older students’ attitudes towards recreational reading were not significantly different from younger students’ attitudes. Older students’ attitudes towards academic reading were more negative overall.

Research findings on differences in pupils’ metacognition and attitudes towards reading due to age are not conclusive. Different methods have also been used by different researchers and this may affect results. Despite these methodological gaps, it is clear from the literature reviewed that age is an important variable in both metacognition and attitudes towards reading. Many studies reveal a deterioration in metacognition and attitudes towards reading for older students. This presented a very compelling need to test if there were differences in Kenyan pupils’ metacognition and attitudes towards reading due to age differences.
2.6 Interaction effect of Metacognition and Attitudes towards Reading on Reading Comprehension Performance

Reading researchers have acknowledged the role attitudes play in reading, in general school achievement and specifically in text comprehension (Linderholm & Wilde, 2010). Metacognition has also been shown to influence reading outcomes significantly. There are however very few empirical studies that have directly investigated the interactive effects and predictive values of metacognition and attitudes towards reading on reading comprehension. The literature reviewed in this section therefore focused on the general relationship between metacognition and attitudes towards reading and how they interact with other related variables to influence reading comprehension performance.

In a study with 503 Malaysian University students, Mohammed (2002) used a quasi-experiment to investigate various aspects of metacognition, study approaches and reading attitudes. He established that metacognition was positively correlated to students' reading attitudes. These results are consistent with those of Khonamri (2009) who used 200 postgraduate students aged between 20 to 26 years and majoring in English literature in India. He found that significant positive correlations existed between metacognitive awareness and learners’ beliefs about reading that facilitated comprehension. The major gap that the current study may fill in these results are methodological and use of an older sample already at the
university. The current study was interested in the metacognition and attitudes towards reading of a younger group.

In yet another study, Suwantarathip (2012) sought to establish the relationship between metacognition and attitudes towards reading English. Using a questionnaire with 192 Bangkok University first-year students, he found out that there was a significant positive relationship between metacognition and attitudes towards reading English. These results were in agreement with those of Logan and Johnston (2009) who used 232 ten year old children and a questionnaire to explore the relationship between reading ability, frequency of reading and attitudes and beliefs about reading. They found that reading ability was associated with attitudes to reading and school for boys and not for girls.

These results were however inconsistent with those of Ozsoy, Memis and Zoysc (2011). Using 221 fifth grade Turkish primary school students, they reported that there was no significant relationship between metacognition and study attitudes for low and medium achievers but, there was a significant relationship for high achievers. The results revealed that there was a medium positive relationship between metacognitive knowledge and skills and study attitudes overall for the whole sample.
In a related study, Ilustre (2011) explored whether metacognitive reading strategies and beliefs about reading predicted text comprehension significantly. The participants were two hundred and twenty six Filipino college students aged between 16 and 22 years of age. The results of the study showed that active beliefs about reading were positively correlated to metacognitive strategies and subsequently to text comprehension.

Attitudes towards reading were also found to be directly related to reading behaviour and reading enjoyment. Clark and De Zoysa (2011) used 17,089 pupils from 112 schools in the United Kingdom aged 9 to 11 years. Using an online survey, they found out that reading attainment was Attitudes towards reading were also related to reading attainment indirectly through their relationship with reading behaviour. Ozsoy, Memis and Temur (2009) used 221 fifth grade students from six public primary schools in Turkey to investigate the relationship between their metacognition levels, study habits and attitudes towards reading. They found out that there was a moderate and positive relationship between metacognition and study attitudes for high achievers only.

The reviewed studies were limited in ascertaining the interaction effects of metacognition and attitudes towards reading on reading comprehension performance. This was mainly due to the unavailability of studies that have systematically studied the influence of the two variables together in producing
reading comprehension. Due to this limitation, it was not possible to know which of the two variables best predicts learners’ reading comprehension performance. One of the objectives of this study was to provide empirical data concerning the interaction effects of the two variables on pupils’ reading comprehension performance. The researchers also used online surveys whose limitations may end up giving misleading results. The method is not usually used in research with children. Interpreting such results may be problematic.

2.7 Summary and Gap Identification

The reviewed studies pointed out the fact that metacognition and attitudes towards reading affect reading outcomes. What was not clear though was the level or magnitude of the effect of these two variables on reading comprehension. This was because the studies reviewed gave inconsistent and inconclusive results with some showing that metacognition and attitudes towards reading were significantly correlated to reading comprehension performance while others did not. Concerning gender and age differences in metacognition and attitudes towards reading, the studies reported inconsistent results with some indicating significant differences and others not.

Most of the research studies reviewed were carried out in Western and Oriental countries where home and schooling conditions are different from those in Kenya. Some of these studies were also conducted with older students in high schools,
colleges and universities and used online surveys and quasi-experiments to obtain their data. The results obtained from such studies cannot be generalized to our Kenyan children even when they target similar age groups. Some of the reviewed studies did not directly investigate the interaction effect of metacognition and attitudes towards reading on reading comprehension but rather related variables such as motivation, beliefs about reading, studying and about schooling which may mean different things in different contexts. This presented a need to empirically understand the interplay of these variables within local settings for clearer conclusions that could be used to positively affect reading outcomes in pupils.
CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the research methodology employed in the study. It discusses the research design, research variables, location of the study and the population of the study. Sampling techniques, sample size, instrumentation, pilot study, reliability and validity, data collection techniques as well as data analysis are also discussed.

3.2 Research Design

This study adopted a correlational research design. The research design is useful when measuring the degree to which a relationship exists between two or more variables (Mertler, 2009). It was therefore considered suitable for this study whose main aim was to examine relationships among metacognition, attitudes towards reading and reading comprehension performance. This research design involves collecting two or more sets of data in order to test the relationship (s) between and among them. It is considered a good research design to use in cases where the researcher is not able to randomize and manipulate the independent variables but nevertheless wants to test how they influence the dependent variable.
3.2.1 Variables

In this study, the predictor variables were pupils’ metacognition and attitudes towards reading. Each of the two predictor variables had two levels. The levels for metacognition were metacognitive knowledge and metacognitive strategy use. The attitudes towards reading were either positive or negative. Pupils’ metacognition was inferred from a total score at the interval level obtained in a self-report metacognition questionnaire that sought to know their knowledge and actual use of various strategies before, during and after reading. Pupils’ attitudes towards reading were inferred from a total score at the interval level obtained in a self-report attitude towards reading questionnaire that sought to know their evaluative reaction towards reading. The outcome variable was the pupils’ reading comprehension performance which was inferred from reading comprehension test scores measured at the interval level. Gender and age of the pupils were the intervening variables in this study.

3.2.2 Locale

This study was carried out in Dagoretti educational division which is one of the 9 educational divisions in Nairobi County. The others are Westlands, Langata, Makadara, Embakasi, Kamukunji, Njiru, Starehe and Kasarani. This locale was chosen due to its poor academic performance in KCPE during the last five years. Statistics obtained from the City Council of Nairobi Education Department (2013) reveal that between the years 2009-2013, Dagoretti has been performing poorly in
KCPE in Nairobi County compared to the other educational divisions. (See Appendix V).

The continued poor academic performance in KCPE in Dagoretti division may be due to the often blamed factors such as lack of enough trained teachers hence high pupil-teacher ratio, lack of books, lack of essential facilities, lack of role models and indiscipline. Most of these factors are mostly physical and administrative and hence not within control of the learners. It is however possible that lack of reading comprehension among pupils in this division may also lead them to answer examination questions incorrectly hence the poor academic performance over the years. It was therefore necessary to move away from the various factors often associated with poor academic performance and examine other key metacognitive and affective factors within the learner that local research has not addressed exhaustively.

This study therefore examined the relationship among metacognition and attitudes towards reading on the reading comprehension of pupils in Dagoretti division. It was hoped that once the role of the two factors in facilitating reading comprehension was well understood, then these factors could be enhanced in the learners to improve their reading comprehension performance and ultimately help reverse the poor academic performance in the division.
3.3 Population

The target population of this study were all standard six pupils from the 24 public primary schools in Dagoretti division in 2014 (See Appendix IV). According to statistics from the City Council of Nairobi Education Department (2014), there were 3028 (1462 boys and 1,566 girls) standard six pupils in Dagoretti division. The accessible population comprised of the standards six pupils from the eight public primary schools sampled for the study.

Standard six pupils were used as participants because it was assumed that at this level, metacognition, attitudes towards reading and comprehension skills were already developed. This is because, in the lower public primary school levels specifically standard 1 to 3, a lot of reading is done by the teachers as they teach reading to the pupils. When the pupils read, it is usually in unison imitating the teacher or because the teacher has requested one of them to read for the others so as to test their reading proficiency. However, this changes as the pupils progress to standard 4 where they are expected to do a lot of reading on their own in the various subject areas. They then must employ all the knowledge and strategies taught at the lower levels to facilitate understanding. By the time the pupils are in standard six, it is expected that they have mastered the necessary strategies for comprehension.

Standard 6 pupils were also considered familiar with comprehension passages like the one chosen for this study. Being two years away from the KCPE, it was also
expected that findings from this study would reveal the levels of reading comprehension among mid-primary school pupils in public schools so that if they were found wanting, then remedial measures could be implemented early enough to help them achieve their academic goals.

3.4 Sampling Techniques and Sample Size Determination

3.4.1 Sampling Techniques

This study employed three types of sampling procedures namely purposive, simple random and stratified. Purposive sampling was used to select Dagoretti division as the location of the study out of the 9 educational divisions in Nairobi County. This was because of its continued poor performance in KCPE for the period 2009-2013 (See Appendix V). Dagoretti division has two educational zones, Riruta and Waithaka each with 12 public primary schools making a total of 24 public primary schools.

To select the 8 public primary schools that were considered in the study, the researcher first used stratified sampling method. The public primary schools were arranged into two groups based on the educational zone that they were in hence forming two strata. This was done to ensure equal representation of schools in each educational zone. From the two groups (strata), the researcher used simple random sampling to pick four schools from each strata. This was done by writing all the names of the 12 schools from each strata on 12 paper folds, mixing them in
a cup and then picking any four at random. The four schools picked this way from each strata made a total of eight public primary schools that participated in the study. Stratified sampling was then used to ensure an equal representation of both boys and girls in the study.

3.4.2 Sample Size Determination

The sample was first obtained through stratified sampling and later through simple random sampling procedures. Using class lists given in the schools, the researcher first organized separate lists for boys and for girls to ensure equal representation of both boys and girls per school. Paper folds equivalent to the total number of participants required were written ‘yes’ and the rest left blank. They were then placed in a basket and thoroughly mixed. The pupils who had been assembled in a hall in two groups of boys and girls were then asked to each pick a paper fold randomly. The pupils who picked the paper folds with the ‘yes’ were instructed to remain in the hall as the rest went back to their classes. Those that remained were given code numbers to be used in the questionnaires in case they did not want to use their names for confidentiality purposes.

A sample of 40 participants (20 boys and 20 girls) from standard six was obtained from each of the eight public primary schools. This brought the total sample to 320 participants (160 boys, 160 girls). This sample size and composition is illustrated in Table 3.1.
Table 3.1

*The Sample Composition*

<table>
<thead>
<tr>
<th>Educational Zones</th>
<th>No. of Schools</th>
<th>Zonal Pop.</th>
<th>Schools Sampled</th>
<th>Sampled B</th>
<th>Sampled G</th>
<th>Sample Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riruta</td>
<td>12</td>
<td>2020</td>
<td>4</td>
<td>80</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>Waithaka</td>
<td>12</td>
<td>1008</td>
<td>4</td>
<td>80</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>3028</td>
<td>8</td>
<td>160</td>
<td>160</td>
<td>320</td>
</tr>
<tr>
<td>Percentage</td>
<td>100</td>
<td>100</td>
<td>33</td>
<td>5.3</td>
<td>5.3</td>
<td>10.6</td>
</tr>
</tbody>
</table>

*Note.* Pop. = Population; B = Boys; G = Girls

Table 3.1 shows that the sample size for schools and pupils was 8 and 320 respectively. This sample size was preferred because it was manageable in terms of administration, time and resources. It also represented 33% and 11% of the target schools and pupils’ population respectively and therefore fulfilled the threshold of what Kothari (2013) and Gorard (2001) consider an appropriate sample from a normal distribution. According to the two researchers, a sample of between 10% and 20% is appropriate.

### 3.5 Research Instruments

The instruments used in this study were an English reading comprehension passage with a 10 item multiple choice test and two questionnaires for the pupils. An English reading comprehension passage was chosen because most academic learning in Kenya is done using English. The subjects in the Kenyan school curriculum are taught and tested in English except for Kiswahili and foreign
languages. This means that it is very essential for learners to comprehend English texts.

The first questionnaire was on pupils’ metacognition while the second one was on pupils’ attitudes towards reading. The metacognition questionnaire was subdivided into two parts each with 20 items to reflect and measure the two elements of metacognition namely metacognitive knowledge and metacognitive strategy use. The second questionnaire was the Elementary Reading Attitudes Survey (ERAS) which was used to obtain pupils’ attitudes towards reading. These two questionnaires were used in the current study because they contained easy-to-understand items that have been used with success in other studies using learners of similar ages.

3.5.1 The English Reading Comprehension Passage and Comprehension Test

The English reading comprehension passage with comprehension questions was drawn from “New Progressive Primary English” Pupil’s Book 6 (See Appendix II). The passage was chosen using the criteria of age, class and content appropriateness. The text book from which it was drawn was also the recommended text book by the Kenya Institute of Curriculum Development (KICD) for the teaching of English in standard six. The passage had no specialized knowledge that would have made it difficult for pupils to understand. The English reading comprehension passage was followed by a 10 multiple-choice comprehension test. 1 mark was awarded for each correct answer. The highest
possible score was 10 and the lowest 0. A high score of above 5 denoted high comprehension performance while a low score of below 5 denoted low comprehension performance.

3.5.2 Questionnaires for the Pupils

Two questionnaires (metacognition and ERAS) were used to collect data on pupils’ metacognition and attitudes towards reading respectively. The metacognition questionnaire had two sub-scales namely metacognitive knowledge and metacognitive strategy use. Each of these two sub-scales had 20 items. The ERAS also had 20 items to measure pupils’ attitudes towards reading. For ease of administration, the two questionnaires were arranged in four parts based on the sequence in which they were administered to pupils. Part I of the questionnaires had questions on the participants’ demographic characteristics such as age, gender and name of school. Part II contained the metacognitive strategy use sub-scale while part III contained the metacognitive knowledge sub-scale. The last part IV contained the attitudes towards reading questionnaire.

The participants’ total metacognition score was obtained by combining the scores from the 20 items scale on metacognitive knowledge and the other 20 items scale on metacognitive strategy use. The metacognition questionnaire with its two sub-scales were adapted from a metacognition questionnaire originally developed by Jager, Jansen and Reezigt (2004) for Dutch children of similar age. Using
suggestions of experts from the English department, peer review and information from the pilot study, the scales were reworded and rephrased to suit the participants in the present study. For example, the original metacognitive strategy use scale had statements written in present simple tense such as “Before I start reading, I look at the title of the text”. The items were paraphrased and written in the past tense to reflect the strategies used by participants as they read the comprehension passage for example, “Before I started reading, I looked at the title of the passage”.

Items that contained difficult or unfamiliar words were also reworded. For example, the original questionnaire had the word ‘text’ which was changed to ‘passage’. Statements such as “Before I started reading, I predicted what the text will be about” were reworded to replace the word predicted with guessed and so became “Before I started reading, I guessed what the passage will be about”. The statement “When I have finished reading, I reflect on what I have read” was reworded to read “When I finished reading, I thought about what the writer wanted to say”.

The final metacognitive knowledge sub-scale (See Appendix III) contained 20 items reflecting knowledge used at different stages of the reading comprehension process such as “The best thing to do before starting to read a passage is to think about the title”, “The best thing to do during reading is to jump to the last
sentence to know how the passage will end” and “The best thing to do when I do not understand a part of the passage is to read that part of the passage once again.” Pupils were required to indicate the extent to which the knowledge described in an item corresponded with what they knew about reading.

The final metacognitive strategy use sub-scale used in the study had 20 items reflecting skills or strategies used by the participants at different stages as they read the English comprehension passage such as “Before I started reading, I checked whether the passage had a title or heading”, “During reading, I thought about the parts I had to read very carefully” and “When I finished reading, I did not think about the passage again”. Participants were required to indicate the extent to which the use of a skill or strategy described in an item corresponded to their behaviour while reading the comprehension passage. Responses from the two sub-scales were rated on a five point Likert scale ranging from strongly agree = 5, agree = 4, unsure = 3, disagree = 2 and strongly disagree = 1 for positively worded items and vice versa for negatively worded items. The possible scores could therefore range from 20 to 100 for each subscale with a high score in any subscale indicating higher metacognitive knowledge and strategy use and vice versa for low scores.

Pupils’ attitudes towards reading were measured using a questionnaire adapted from the Elementary Reading Attitude Survey (ERAS) by McKenna and Kear (1990). The two creators of ERAS with permission from Jim Davis who was the
creator of Garfield and his United Features publishers made ERAS a public tool for any educator interested in measuring learners’ attitudes towards reading. This permission is expressly stated in McKenna and Kear (1990). The original ERAS contained 20 items showing pictures of the comic strip cat called Garfield in four poses ranging from very happy to very upset. Although it was created for and used with learners of similar age, some modifications were made to the questionnaire. The original questionnaire had pictures of the cat Garfield’s four poses indicating responses from “very happy” to “very upset”. These were replaced with statements with answers ranging from “strongly agree” to “strongly disagree”. This was because the researcher thought that Kenyan children in public primary schools may not readily identify Garfield and correctly interpret his poses.

The ERAS had items in form of questions such as “How do you feel reading in school?” and “How do you feel about reading instead of playing?” These were revised into statements such as “I like reading in school”, “I like reading instead of playing” and some items were negatively worded such as “I don’t like getting a book for a present”. The participants were required to choose the answer that best described how they felt about reading from a choice of five options ranging from strongly agree = 5, agree = 4, unsure = 3, disagree = 2 and strongly disagree = 1 for positively worded items and vice versa for negatively worded items.
The lowest possible score in the ERAS was 20 and the highest was 100. For purposes of creating categories of two types of attitudes negative and positive, the lowest possible score (20) was subtracted from the highest possible score (100) to get 80 which was then divided into two to get 40. This 40 was then added to the lowest possible attitude score (20) to get 60 as the ceiling for the first category of attitude type (negative). Pupils with an attitude score of between 20 (lowest) to 60 were deemed to have negative attitudes towards reading while those with a score above 61 all the way up to the maximum possible score of 100 were deemed to possess positive attitudes towards reading.

3.5.3 Pilot Study

The pilot study was conducted on a random sample of 40 standard six pupils (20 boys, 20 girls) from one primary School in Dagoretti division. The school used for the pilot study did not take part in the main study. The pilot study was necessary so as to pretest the research instruments and ensure that they were clearly worded, the items were understandable, the time allocated was enough and also to enhance the validity and reliability of the instruments.

During the pilot study, the researcher administered the research instruments in a similar manner and sequence like what would later happen in the main study. The researcher keenly noted the average time taken by the pupils to answer the questions.
The researcher enquired from the pupils whether there were items that were difficult to understand. These ones were marked and later reworded and others rephrased. The researcher also requested the teacher of English in this school to go through the English reading comprehension passage and the questionnaires and give opinion on whether the items were understandable or not. After this, the suggestions and feedback collected during the pilot study was incorporated into the instruments for the main study.

The pilot study also helped to determine and enhance the validity of the research instruments. In their original metacognition questionnaire, Jager, Jansen and Reezigt (2004) had reported content and construct validity of the questionnaire when they used it with learners of similar age and level of schooling as those in the present study. Despite this, the instrument’s validity was subjected to further check in the current context. Consultations with experts in the English and Educational Psychology departments, Kenyatta University helped in ensuring that only the items that represented the construct metacognition were included in the questionnaire.

The reliability of the questionnaires was also determined during the pilot study. In their original metacognition questionnaire, Jager, Jansen and Reezigt (2004) had reported a reliability coefficient of 0.80. Since the questionnaire was modified to suit local settings, it was necessary to check its reliability in the current context.
Towards this end, the split-half method was used during the pilot study. The metacognition questionnaire had two sub-scales namely, the metacognitive knowledge and metacognitive strategy use. The reliability of each sub-scale was checked by splitting the items in each sub-scales into two halves using the odd / even method and then correlating the obtained scores to get a reliability coefficient. The reliability coefficient obtained for metacognitive knowledge and metacognitive strategy use was 0.79 and 0.75 respectively as shown in Table 3.2.

When they created and used ERAS with a similar age group, McKenna and Kear (1990) reported an internal consistency of 0.89. It is important to mention here that the same instrument (ERAS) albeit in a modified manner has been used locally before by Runo (2010) with standard five pupils from public primary schools. In her study, Runo (2010) gave the reliability coefficient as 0.79. Despite this reported reliability of ERAS especially in local settings, the split-half method was also used on this questionnaire during the pilot study to check its reliability in the current context. The reliability coefficient obtained was 0.80 as shown in Table 3.2.
Table 3.2

*Cronbach’s Alpha Reliability Coefficients for the Instruments*

<table>
<thead>
<tr>
<th>Scale / Sub-scale</th>
<th>Number of items</th>
<th>Cronbach’s Reliability Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacognitive Knowledge</td>
<td>20</td>
<td>0.79</td>
</tr>
<tr>
<td>Metacognitive Strategy use</td>
<td>20</td>
<td>0.75</td>
</tr>
<tr>
<td>ERAS</td>
<td>20</td>
<td>0.80</td>
</tr>
</tbody>
</table>

*Note.* ERAS = Elementary Reading Attitude Survey

3.6 Data Collection

This section discusses the research protocol followed as well as the actual data collection procedures. Various ethical considerations made so as not to violate the rights of the participants are also included.

3.6.1 Logistical and Ethical Considerations

After obtaining Research authorization from the Kenyatta University Graduate School, the researcher applied for research authorization and research permit from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher then reported to the County Commissioner and County Education Officer Nairobi area for further directions and assistance. Later, initial contact was made with the various heads of the sampled schools to brief them on the broad
aims of the study and to request for their permission and cooperation during the study. It was agreed that the actual data collection would take place during normal classroom time.

The researcher was keen to protect the rights of free will, confidentiality, privacy and well-being of the research participants. Towards this end, the consent of the participants was sought through their parents / guardians. This consent was obtained through a letter by the researcher to the parents / guardians requesting them to allow their children to participate in the study (See Appendix I). Only those pupils whose parents / guardians had consented were allowed to participate. Those left out were assured that non-participation would not affect their academic standing. The participants were also assured that their answers would remain confidential and would only be used for the purposes of the current study.

3.6.2 Actual Data Collection
The instruments were administered during the normal class hours. After ensuring that all the participants had pens and were comfortable, the researcher provided each participant with the English comprehension passage and the accompanying 10 multiple-choice reading comprehension test. The researcher spelt the instructions after which the participants read the passage and then answered the questions in an average of 20 minutes. The answer sheets were collected immediately.
The metacognitive strategy use questionnaire followed immediately. The researcher once again explained the instructions to the participants thoroughly and used some examples to differentiate between the terms agree / disagree and strongly agree / strongly disagree. The researcher also demonstrated how to tick the answers and emphasized the need for honesty and completing all the questions. The participants took an average of 7 minutes to answer the questions. This order was important because the participants were supposed to refer to the passage they had just read, remember and report the various reading strategies they had used to aid their comprehension. The other parts of the questionnaire (attitudes towards reading and the metacognitive knowledge sub-scale) followed. The participants took on average 15 minutes. Every participant was allowed to finish answering all the questions after which the researcher thanked the participants and collected the answer sheets for scoring.

3.7 Data Analysis
The quantitative data obtained from the instruments was coded for statistical analysis using the Statistical Package for Social Sciences (SPSS). After coding, the data was first cleaned to ensure there were no incomplete entries or outliers that may contaminate the results. Descriptive and inferential statistics were used in the presentation and analysis of the results. Descriptive statistics were used to describe and summarize the data collected. The relevant inferential statistics were employed to test the following null hypotheses at $\alpha =0.05$ level of significance.
H₀₁: There is no significant relationship between metacognition and reading comprehension performance - Pearson Product Moment Correlation Coefficient was used because data was at the interval scale of measurement and it was a bivariate correlational analysis.

H₀₂: There is no significant relationship between attitudes towards reading and reading comprehension performance - Pearson Product Moment Correlation Coefficient was used.

H₀₃: There are no significant gender differences in pupils’ metacognition and attitudes towards reading – the t-test for independent samples was used to test the hypothesis. This was because the two groups (boys and girls) were mutually exclusive and did not influence each other in their scores.

H₀₄: There are no significant age differences in pupils’ metacognition and attitudes towards reading – Analysis of Variance was used to test this hypothesis. The test statistic is suitable when testing for differences among groups or categories. In this case, it was used to test for differences in various age groups in the participants.

H₀₅: There is no significant interaction effect of metacognition and attitudes towards reading on reading comprehension performance - Multiple regression analysis was considered the best statistical test to use because of its dual advantage. First, it is able to perform an analysis of variance that gives the interaction effect of the predictor variables on the outcome variable. Secondly, should the interaction be significant and the researcher
gets interested in obtaining the relative predictive weights of each variable on the outcome variable, then the same statistical test can be used.
CHAPTER FOUR

FINDINGS, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

In this chapter, the researcher has presented the study findings, interpretations and discussions in line with the research objectives stated in chapter one. The demographic data of participants is presented first using some selected descriptive statistics. This is followed by the return rate of the research instruments. In presenting the results, the relevant descriptive statistics for each objective are given first followed by the specific inferential statistical analysis used to test the null hypotheses. This is then followed by a discussion of the findings. An exploratory analysis of the findings is presented at the end of the chapter.

4.2 General and Demographic Information

This section gives the general information on the return rate of the research instruments as well as the participants’ schools, age and gender.

4.2.1 Return Rate of the Research Instruments

The original sample size was 320 participants as shown in Table 3.1. However, the return rate was not 100% as expected. Responses from 10 participants were discarded during data cleaning. This was because 7 of the participants had ticked some answers twice while 3 did not complete the comprehension passage questions. This was despite the fact that instructions on how to answer the
comprehension questions and fill the questionnaire were clearly spelt out during data collection. The researcher therefore analysed data from 310 participants as is presented in Table 4.1.

Table 4.1

*Return Rate of the Research Instruments*

<table>
<thead>
<tr>
<th>Schools</th>
<th>Target Return Rate</th>
<th>Actual Return Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>A</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>B</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>C</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>D</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>E</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>F</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>G</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>H</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>%</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

*Note. N = 310*

Results in Table 4.1 show that out of the 320 originally sampled participants, the data used in this study was only from 310 participants. This accounted for 96.88% of the participants. The remaining participants accounting for 3.13% did not answer all the questions as required and others ticked two answers instead of one. Only two schools out of the 8 sampled (D and H) had a 100% return rate. In terms of gender, the males had a higher actual return rate of 97.5% with 156 out of 160
fully completing the questionnaires while the females had a lower one of 96.25% with 154 out of 160 completing the questionnaires fully.

4.2.2 Demographic Data of Participants

The participants’ ages ranged from 10 to 16 years as shown in Table 4.2. The mean age was 12 years ($SD =1.05$). This was expected because the entry age at standard one is six years and so most pupils in standard six are between 11 to 12 years. The Kurtosis indicates a normal distribution in the ages of the participants.

Table 4.2

<table>
<thead>
<tr>
<th>Overall Age Description of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>Age (Years)</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
</tr>
</tbody>
</table>

Note. Min = Minimum; Max = Maximum; $M$ = Mean; $SD$ = Standard Deviation; Sk = Skewness

In order to compare and further analyse the ages of the participants, the researcher divided them into three age categories. Table 4.3 shows the three age categories.
Table 4.3

Participants’ Age Categories (Years)

<table>
<thead>
<tr>
<th>Age Category (Years)</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>107 (34.5)</td>
</tr>
<tr>
<td>12-13</td>
<td>179 (57.7)</td>
</tr>
<tr>
<td>14+</td>
<td>24 (7.7)</td>
</tr>
<tr>
<td>Total</td>
<td>310 (100)</td>
</tr>
</tbody>
</table>

*Note. N = 310; f = frequency; ( ) indicates %*

Table 4.3 indicates that 34.5% of the participants were aged between 10 and 11 years while the highest number of participants (57.7%) fell in the category 12-13 years. Only 7.7% of the participants were above 14 years. The three age categories were then tabulated per school in 4.4.

Results in Table 4.4 indicate that 57.7% of the participants were in the age category 12-13 years hence corroborating the results of the overall age description in Table 4.2 that indicates that the mean age was 12 years. 34.5% of the participants were aged between 10 and 11 years and only 7.7% were aged 14 years and above. In terms of schools, C had over half of its pupils (6.8%) in the 10-11 year age category compared to all the other schools who had most of their pupils in the 12-13 year age category.
Table 4.4

*Age Categories of Participants Per School*

<table>
<thead>
<tr>
<th>Public Pry. Schools</th>
<th>Age Category (Years)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10-11</td>
<td>12-13</td>
</tr>
<tr>
<td>A</td>
<td>17 (5.5)</td>
<td>19 (6.1)</td>
</tr>
<tr>
<td>B</td>
<td>15 (4.8)</td>
<td>22 (7.1)</td>
</tr>
<tr>
<td>C</td>
<td>21 (6.8)</td>
<td>16 (5.2)</td>
</tr>
<tr>
<td>D</td>
<td>16 (5.2)</td>
<td>22 (7.1)</td>
</tr>
<tr>
<td>E</td>
<td>4 (1.3)</td>
<td>29 (9.4)</td>
</tr>
<tr>
<td>F</td>
<td>14 (4.5)</td>
<td>22 (7.1)</td>
</tr>
<tr>
<td>G</td>
<td>8 (2.6)</td>
<td>24 (7.7)</td>
</tr>
<tr>
<td>H</td>
<td>12 (3.9)</td>
<td>25 (8.1)</td>
</tr>
<tr>
<td>Total</td>
<td>107 (34.5)</td>
<td>179 (57.7)</td>
</tr>
</tbody>
</table>

*Note. N= 310; Pry. = Primary; ( ) indicates %*

After tabulating the age categories, the participants’ age categories were cross-tabulated with gender and the results are indicated in Table 4.5. It can be observed from Table 4.5 that most males (31.3%) and females (26.5%) were in the age category 12 -13 years within which the mean age of 12 years falls.
Table 4.5

Gender and Age Category Cross Tabulation

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age Category (Years)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10-11</td>
<td>12-13</td>
</tr>
<tr>
<td>Male</td>
<td>n</td>
<td>36 (11.6)</td>
</tr>
<tr>
<td>Female</td>
<td>n</td>
<td>71 (22.9)</td>
</tr>
<tr>
<td>Total</td>
<td>n</td>
<td>107 (34.5)</td>
</tr>
</tbody>
</table>

*Note. N = 310; ( ) indicates %

The female participants were younger compared to their male counterparts as evidenced by the 22.9% of females and 11.6% of males being in the 10-11 year age category. This is however reversed in the 14+ age category where there were more males (7.4%) than females (0.3%).

The results presented in the preceding tables indicate that in as much as the participants were from one class level (standard six), there were disparities among them in terms of age. This is evidenced by the fact that some pupils were as young as 10 years whereas others were 16 years. This may imply that there may be certain personal, school and societal factors contributing to these age differences. At a personal level, some pupils may have enrolled in schools late due to factors such as illness, instability within homes, poverty or even ignorance on the part of parents. At a school level, pupils may play truant or become indisciplined hence
obtain low grades that may consequently force them to repeat classes. It is also possible that some schools may not be motivating enough for learners who may keep dropping out and going back. At a general societal level, there may be no role models to emulate or the general attitude towards education may be negative.

Another possible explanation could be the consequences of free primary school education. Introduced in Kenya in the year 2003, the policy allowed every child, regardless of age to attend school. This made pupils who had hitherto dropped out of school due to lack of school fees to go back. Those that went back may just have resumed classes at the point where they had stopped meaning they would always be older than their counterparts. Whatever the reason for the age differences, it must be pointed out that such age differences were likely to have implications on pupils’ metacognition and attitudes towards reading.

In terms of gender and age, Table 4.5 shows that there were more boys in the older age category (14+) compared to girls. Infact, only 1 girl was 14+ years compared to 23 boys. There were more girls in the youngest age category (10-11). The implications of these results may be that girls tend to start school earlier than boys. It may also be that fewer girls compared to boys play truant or exhibit indiscipline levels disruptive enough to warrant being chased from school. Their learning is therefore likely to be uninterrupted compared to that of boys. This too may have implications on the variables of interest.
4.3 Relationship between Metacognition and Reading Comprehension Performance

The first objective of this study was to determine the relationship between metacognition and reading comprehension performance. To achieve this, the researcher first obtained the relevant descriptive statistics which were then followed by specific inferential statistical analysis for hypothesis testing.

4.3.1 Descriptive analysis of Participants’ Metacognition and Reading Comprehension Performance

Participants’ metacognition and reading comprehension scores were analyzed to get the range, mean, standard deviation and skewness. The descriptive statistics on participants’ metacognition are presented in Table 4.6.

Table 4.6

<table>
<thead>
<tr>
<th></th>
<th>Overall Description of Participants’ Metacognition Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>310</td>
</tr>
</tbody>
</table>

*Note.* Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness

As shown in Table 4.6, the minimum metacognition score was 52 while the maximum was 184. This was against the expected minimum and maximum of 40 and 200 respectively. The mean score was 136.15 (*SD* = 21.24). The coefficient of
skewness was found to be -0.37 meaning that many participants rated themselves highly on the metacognition scale. The participants’ metacognition scores were then compared across schools and the results are presented in Table 4.7.

Table 4.7

<table>
<thead>
<tr>
<th>Public Primary Schools</th>
<th>n</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>39</td>
<td>100.00</td>
<td>182.00</td>
<td>140.46</td>
<td>18.25</td>
<td>0.33</td>
</tr>
<tr>
<td>B</td>
<td>39</td>
<td>103.00</td>
<td>166.00</td>
<td>130.56</td>
<td>15.48</td>
<td>0.09</td>
</tr>
<tr>
<td>C</td>
<td>38</td>
<td>120.00</td>
<td>174.00</td>
<td>146.71</td>
<td>13.73</td>
<td>0.01</td>
</tr>
<tr>
<td>D</td>
<td>40</td>
<td>104.00</td>
<td>184.00</td>
<td>145.68</td>
<td>18.83</td>
<td>-0.15</td>
</tr>
<tr>
<td>E</td>
<td>37</td>
<td>103.00</td>
<td>169.00</td>
<td>130.43</td>
<td>18.05</td>
<td>0.31</td>
</tr>
<tr>
<td>F</td>
<td>38</td>
<td>69.00</td>
<td>181.00</td>
<td>144.63</td>
<td>25.45</td>
<td>-0.57</td>
</tr>
<tr>
<td>G</td>
<td>39</td>
<td>52.00</td>
<td>152.00</td>
<td>120.41</td>
<td>22.33</td>
<td>-1.01</td>
</tr>
<tr>
<td>H</td>
<td>40</td>
<td>71.00</td>
<td>179.00</td>
<td>130.45</td>
<td>21.15</td>
<td>-0.26</td>
</tr>
</tbody>
</table>

*Note. N = 310; Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness*

The minimum metacognition score expected was 40 and the maximum 200. Results in Table 4.6 reveal that the overall mean metacognition score was 136.15. Data in Table 4.7 indicates that 4 schools (B, E, G and H) obtained mean scores
below the overall mean (130.56, 130.43, 120.41 and 130.45 respectively). The researcher used the data obtained to categorize the participants into three groups depending on whether they had low, moderate or high levels of metacognition. Those with scores 40-93 were categorized as having low levels of metacognition while those with 94-147 and 148-200 were categorized as having moderate and high levels of metacognition respectively. The results of this categorization are presented in Table 4.8.

Table 4.8

*Participants’ Levels of Metacognition*

<table>
<thead>
<tr>
<th>Levels of metacognition</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>9 (2.9)</td>
</tr>
<tr>
<td>Moderate</td>
<td>212 (68.4)</td>
</tr>
<tr>
<td>High</td>
<td>89 (28.7)</td>
</tr>
<tr>
<td>Total</td>
<td>310 (100)</td>
</tr>
</tbody>
</table>

*Note.* $N = 310; f =$ frequency; ( ) indicates %

Table 4.8 reveals that 2.9% of the participants had low levels of metacognition. Majority of the participants were categorized as having moderate levels of metacognition and 28.7% had high levels of metacognition. After getting the levels of metacognition, the researcher focused on the descriptive analysis of reading comprehension performance scores. The participants’ total score in the
reading comprehension passage test were transformed into z-scores and then into T-scores school by school as shown in Table 4.9.

Table 4.9

| Combined Participants’ Reading Comprehension Performance T-Scores |
|-------------------------|---|---|---|---|
| N | Min | Max | M | SD |
| T Score | 310 | 19.74 | 71.39 | 50.00 | 9.89 |

*Note.* Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation

Data in Table 4.9 shows that the minimum and maximum T-scores were 19.74 and 71.39 respectively. The mean was 50 (SD = 9.89). The researcher was interested in observing differences in the reading comprehension T-scores across the sampled schools. The range, mean, standard deviation and skewness of the transformed T-scores per school are presented in Table 4.10.

Table 4.10 reveals that participants in 4 schools (A, B, C and D) obtained reading comprehension scores above the overall mean of 50 (SD = 9.89). Participants in the remaining 4 schools obtained reading comprehension T-scores below the overall mean. School C obtained the highest mean score which was 58.46 (SD = 7.30) in the reading comprehension test. Participants in School E obtained the lowest mean scores of 45.15 (SD = 8.31). Participants in schools B, C, D, E and H obtained scores that were negatively skewed implying that many participants in those schools performed relatively well on the English reading comprehension test.
Table 4.10

*Mean Reading Comprehension T-Scores Per School*

<table>
<thead>
<tr>
<th>Schools</th>
<th>n</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>39</td>
<td>36.48</td>
<td>30.98</td>
<td>67.46</td>
<td>51.68</td>
<td>9.64</td>
<td>.05</td>
</tr>
<tr>
<td>B</td>
<td>39</td>
<td>31.92</td>
<td>35.54</td>
<td>67.46</td>
<td>50.39</td>
<td>9.85</td>
<td>-.00</td>
</tr>
<tr>
<td>C</td>
<td>38</td>
<td>22.80</td>
<td>44.66</td>
<td>67.46</td>
<td>58.46</td>
<td>7.30</td>
<td>-.21</td>
</tr>
<tr>
<td>D</td>
<td>40</td>
<td>36.48</td>
<td>26.42</td>
<td>62.90</td>
<td>50.70</td>
<td>8.02</td>
<td>-1.03</td>
</tr>
<tr>
<td>E</td>
<td>37</td>
<td>27.36</td>
<td>30.98</td>
<td>58.34</td>
<td>45.15</td>
<td>8.31</td>
<td>-.08</td>
</tr>
<tr>
<td>F</td>
<td>38</td>
<td>36.48</td>
<td>30.98</td>
<td>67.46</td>
<td>48.86</td>
<td>9.14</td>
<td>.31</td>
</tr>
<tr>
<td>G</td>
<td>39</td>
<td>41.04</td>
<td>26.42</td>
<td>67.46</td>
<td>45.36</td>
<td>10.33</td>
<td>.21</td>
</tr>
<tr>
<td>H</td>
<td>40</td>
<td>45.60</td>
<td>21.86</td>
<td>67.46</td>
<td>49.33</td>
<td>11.24</td>
<td>-.34</td>
</tr>
</tbody>
</table>

*Note. N = 310; Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness*

The results in Table 4.10 are a reflection of Table 4.7 and seem to give a bearing on the first objective of this study which was to establish the relationship between metacognition and reading comprehension performance. Primary schools whose mean metacognition scores were high also posted correspondingly high reading comprehension mean scores. For example, Table 4.7 shows primary school C as having the highest metacognition mean scores (146.7). This is matched by a correspondingly high mean score of 58.46 in reading comprehension performance of as shown in Table 4.10. Conversely, primary school G with the lowest
metacognition mean score (120.41) had a low reading comprehension mean score of 45.36. These results therefore show that when metacognition mean scores go up, the reading comprehension performance mean scores also go up. The researcher went ahead to find out the direction and magnitude of this confirmed relationship.

4.3.2. Hypothesis Testing

To establish if the relationship between metacognition and reading comprehension performance was significant or not, the following null hypothesis was advanced;

$H_{01}$: There is no significant relationship between metacognition and reading comprehension performance.

To test this hypothesis, data was subjected to a bivariate correlational analysis using the Pearson’s Product Moment Correlation Coefficient and the results were as presented in Table 4.11.
Table 4.11
*Correlation between Metacognition and Reading Comprehension Performance*

<table>
<thead>
<tr>
<th></th>
<th>Reading Comprehension Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Comprehension Score</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
</tr>
<tr>
<td>Metacognition Score</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
</tr>
</tbody>
</table>

*Note. N = 310*

It had been hypothesized that there is no significant relationship between metacognition and reading comprehension performance. Table 4.11 reveals that there was a significant and positive relationship between metacognition and reading comprehension performance ($r (308) = .41, p < .05$). The results indicate that when metacognition scores go up, there is a corresponding rise in reading comprehension scores. The results imply that pupils who possess metacognitive knowledge and strategies are likely to perform well in reading comprehension tasks. In fact, the results corroborate the findings in Table 4.10 in which schools that obtained high metacognition mean scores also obtained correspondingly high reading comprehension mean scores. Based on these results, the null hypothesis was therefore rejected and the alternative one was adopted.

Having found that a positive and significant relationship existed between pupils’ metacognition and reading comprehension scores, the researcher got interested in finding out if the mean reading comprehension scores were significantly different
across the three levels of metacognition. The three levels of metacognition with their corresponding reading comprehension mean scores are shown in Table 4.12. As expected and based on literature review, pupils with high metacognition levels obtained high mean reading comprehension scores while those with low metacognition mean scores obtained low reading comprehension mean scores.

Table 4.12

<table>
<thead>
<tr>
<th>Level of Metacognition</th>
<th>n</th>
<th>Mean Reading Comprehension Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>89</td>
<td>54.96</td>
</tr>
<tr>
<td>Moderate</td>
<td>212</td>
<td>48.47</td>
</tr>
<tr>
<td>Low</td>
<td>9</td>
<td>37.06</td>
</tr>
</tbody>
</table>

*Note. N = 310*

To determine whether the mean differences in reading comprehension scores across the three levels of metacognition were significant or not, One-Way Anova was performed and the results presented in Table 4.13.

Table 4.13

<table>
<thead>
<tr>
<th>T score</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>4193.52</td>
<td>2</td>
<td>2096.76</td>
<td>24.10</td>
<td>.00</td>
</tr>
<tr>
<td>Within Groups</td>
<td>26706.48</td>
<td>307</td>
<td>86.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30900.00</td>
<td>309</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 310; SS = Sum of Squares; df = degrees of freedom; MS = Mean Squares; F = critical value of F; Sig. – significance*
The data in Table 4.13 shows that there were significant mean differences in reading comprehension performance among pupils with the three different levels of metacognition \((F = 24.10, p < .05)\). Given the results in Tables 4.10 and 4.11, these results may have been expected because pupils with low levels of metacognition may not be expected to read and comprehend with like those with high levels of metacognition. A post-hoc analysis was therefore performed using the Tukey’s Honestly Significant Difference (HSD) to find out which groups introduced significant differences. The results are presented in Table 4.14.

Table 4.14

*Post-Hoc Analysis of Comprehension T-Scores across the Three Levels of Metacognition*

<table>
<thead>
<tr>
<th>(I) Levels of Metacognition Score</th>
<th>(J) Levels of Metacognition Score</th>
<th>Mean Difference (I-J)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Moderate</td>
<td>-11.41*</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-17.90*</td>
<td>.00</td>
</tr>
<tr>
<td>Moderate</td>
<td>Low</td>
<td>11.41*</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-6.50*</td>
<td>.00</td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
<td>17.90*</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>6.50*</td>
<td>.00</td>
</tr>
</tbody>
</table>

Table 4.14 shows that the mean difference in reading comprehension score was significantly different across the three levels of metacognition with pupils categorized as having high levels of metacognition getting higher mean scores than those categorized as having moderate and low levels of metacognition. The
pupils categorized as having low levels of metacognition posted correspondingly low reading comprehension mean scores.

As stated in chapter three, metacognition has two sub-scales namely metacognitive knowledge and metacognitive strategy use. Descriptive analysis was performed with the aim of summarizing the participants’ range, mean, standard deviation, skewness and kurtosis on each of the two sub-scales of metacognition. The results were as presented in Table 4.15.

Table 4.15

*Descriptive Statistics of Metacognitive Knowledge and Metacognitive Strategy Use*

<table>
<thead>
<tr>
<th>Sub-scale</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
<th>Kur</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK</td>
<td>76</td>
<td>20</td>
<td>96</td>
<td>69.95</td>
<td>13.05</td>
<td>-0.06</td>
<td>2.47</td>
</tr>
<tr>
<td>MSU</td>
<td>78</td>
<td>28</td>
<td>96</td>
<td>66.21</td>
<td>11.70</td>
<td>.05</td>
<td>.22</td>
</tr>
</tbody>
</table>

*Note. N = 310; Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness; MK = Metacognitive Knowledge; MSU = Metacognitive Strategy Use*

Table 4.15 reveals that the minimum metacognitive knowledge score was 20 while the maximum was 96. This was in comparison to the minimum metacognitive strategy use score that was 28 and the maximum was 96. The mean score for metacognitive knowledge was 69.95 ($SD = 13.05$) while that of metacognitive
strategy use was 66.21 (SD = 11.70). The coefficient of skewness was found to be -0.06 for metacognitive knowledge and 0.05 for metacognitive strategy use.

The negative skewness reported in Table 4.15 means that many participants rated themselves highly on metacognitive knowledge questionnaire compared to strategy use questionnaire. It is important to note that metacognitive strategy use is guided by metacognitive knowledge. A pupil cannot use a strategy that they do not know about. But, a student may have knowledge of a suitable strategy to use while reading but not use it. In this case, the results may imply that in as much as the pupils reported that they knew the strategies to use while reading, they may not have reported having used them while reading the comprehension passage. This is likely to have negative implications on their reading comprehension score. The metacognitive knowledge and metacognitive strategy use scores were also compared across the sampled schools and the results are presented in Table 4.16.

The results in Table 4.16 show that metacognitive knowledge scores were higher than the metacognitive strategy use in all the sampled schools except school H which had higher average scores in metacognitive strategy use score by 1.35. School G had the lowest mean scores in both metacognitive knowledge and metacognitive strategy use. The results corroborate the findings in Table 4.15 that show an overall higher mean scores in metacognitive knowledge compared to metacognitive strategy use.
Table 4.16

*Metacognitive Knowledge (MK) and Metacognitive Strategy Use (MSU) Scores across Schools*

<table>
<thead>
<tr>
<th>Schools</th>
<th>MK</th>
<th>MSU</th>
<th>N</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
<th>Kur</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>39</td>
<td>MK</td>
<td>53.00</td>
<td>41.00</td>
<td>94.00</td>
<td>71.79</td>
<td>11.06</td>
<td>-0.69</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>39</td>
<td>MSU</td>
<td>63.00</td>
<td>29.00</td>
<td>92.00</td>
<td>68.66</td>
<td>11.61</td>
<td>-0.60</td>
<td>2.49</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>39</td>
<td>MK</td>
<td>50.00</td>
<td>42.00</td>
<td>92.00</td>
<td>67.08</td>
<td>9.90</td>
<td>0.29</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>39</td>
<td>MSU</td>
<td>41.00</td>
<td>43.00</td>
<td>84.00</td>
<td>63.49</td>
<td>8.80</td>
<td>-0.14</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>38</td>
<td>MK</td>
<td>24.00</td>
<td>67.00</td>
<td>91.00</td>
<td>76.55</td>
<td>7.14</td>
<td>0.58</td>
<td>-0.82</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>38</td>
<td>MSU</td>
<td>37.00</td>
<td>50.00</td>
<td>87.00</td>
<td>70.16</td>
<td>9.90</td>
<td>-0.41</td>
<td>-0.73</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>40</td>
<td>MK</td>
<td>37.00</td>
<td>54.00</td>
<td>91.00</td>
<td>76.83</td>
<td>8.45</td>
<td>-0.58</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>40</td>
<td>MSU</td>
<td>56.00</td>
<td>40.00</td>
<td>96.00</td>
<td>68.85</td>
<td>13.56</td>
<td>0.16</td>
<td>-0.21</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>37</td>
<td>MK</td>
<td>40.00</td>
<td>49.00</td>
<td>89.00</td>
<td>66.24</td>
<td>10.19</td>
<td>0.08</td>
<td>-0.70</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>37</td>
<td>MSU</td>
<td>45.00</td>
<td>43.00</td>
<td>88.00</td>
<td>64.19</td>
<td>10.26</td>
<td>0.06</td>
<td>-0.13</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>38</td>
<td>MK</td>
<td>76.00</td>
<td>20.00</td>
<td>96.00</td>
<td>74.95</td>
<td>14.73</td>
<td>-1.4</td>
<td>3.90</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>38</td>
<td>MSU</td>
<td>45.00</td>
<td>45.00</td>
<td>90.00</td>
<td>69.68</td>
<td>12.95</td>
<td>0.05</td>
<td>-1.08</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>39</td>
<td>MK</td>
<td>63.00</td>
<td>20.00</td>
<td>83.00</td>
<td>61.64</td>
<td>16.87</td>
<td>-1.03</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>39</td>
<td>MSU</td>
<td>49.00</td>
<td>28.00</td>
<td>77.00</td>
<td>58.77</td>
<td>10.47</td>
<td>-0.48</td>
<td>1.04</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>40</td>
<td>MK</td>
<td>72.00</td>
<td>20.00</td>
<td>92.00</td>
<td>64.55</td>
<td>14.04</td>
<td>-1.37</td>
<td>3.65</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>40</td>
<td>MSU</td>
<td>58.00</td>
<td>38.00</td>
<td>96.00</td>
<td>65.90</td>
<td>11.48</td>
<td>0.48</td>
<td>0.68</td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 310; Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness; Kur = Kurtosis*
The researcher became interested in finding out how metacognitive knowledge and metacognitive strategy use correlated with each other and with reading comprehension scores. A bivariate correlation analysis was done using Pearson’s Product Moment Correlation Co-efficient and the results were as shown in Table 4.17.

Table 4.17

Inter-correlation Matrix for Metacognitive Knowledge and Metacognitive Strategy Use with Reading Comprehension T-scores

<table>
<thead>
<tr>
<th></th>
<th>Metacognitive Knowledge Scores</th>
<th>Metacognitive Knowledge Scores</th>
<th>Reading Comprehension T-Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacognitive Strategy use Scores</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metacognitive Knowledge Scores</td>
<td>.47**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Reading Comprehension T-Scores</td>
<td>.28**</td>
<td>.41**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. $N = 310$

Table 4.17 shows that a significant correlation was found between metacognitive knowledge and metacognitive strategy use ($r (308) = .47$, $p < .05$). This may be because metacognitive strategy use as already stated, relies on metacognitive knowledge and therefore pupils were likely to use strategies that they knew. The more the strategies that they knew, the more likely they were to use them while reading a text.
When correlated with reading comprehension scores, metacognitive knowledge had a higher positive and significant correlation ($r (308) = .41, p < .05$) compared to metacognitive strategy use ($r (308) = .28, p < .05$). This may be surprising given that it would be expected that actual strategy use should have a higher and significant correlation to reading comprehension scores than just the knowledge. The results imply that pupils knew the strategies to use but may not have used them while reading the comprehension passage or if they did, then, they may not have reported using them. Further analysis using multiple regression was done to determine the best predictor of reading comprehension performance from the two sub-scales of metacognition namely, metacognitive knowledge and metacognitive strategy use and the results are presented in Table 4.18.

Table 4.18

Beta Coefficients for Metacognition sub-scales

<table>
<thead>
<tr>
<th>Model</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>24.50</td>
<td>.00</td>
</tr>
<tr>
<td>Metacognitive Strategy Use Scores</td>
<td>.11</td>
<td>.07</td>
</tr>
<tr>
<td>Metacognitive Knowledge Scores</td>
<td>.36</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. Dependent variable: Reading Comprehension T-scores
Predictors: Metacognitive Knowledge and Metacognitive Strategy Use
SE = Standard Error of the Estimate
$R^2 = .17$; SE = 9.09
Table 4.18 shows that metacognitive strategy use does not significantly predict reading comprehension performance. However, metacognitive knowledge significantly predicts reading comprehension performance. From Table 4.18, a resultant model of prediction was identified and represented in equation 1.

**Equation 1**

\[ \hat{y} = 24.50 + .36 \text{ (MK)} \quad (R^2 = .17) \quad p < .05 \]

Where \( \hat{y} \) is the predicted reading comprehension score and MK is the participants’ metacognitive knowledge score.

It is observed from equation 1 that the best and significant predictor of reading comprehension performance was metacognitive knowledge (comprehension performance was metacognitive knowledge (= .36, \( p < .05 \)). The results mean that for every standard deviation change in metacognitive knowledge, reading comprehension scores increased by 0.36 points. The model explains that metacognitive knowledge accounted for 17% variance in reading comprehension scores. These results imply that apart from metacognitive knowledge (which accounted for 17% of reading comprehension scores), there were other factors affecting reading comprehension scores of pupils. These factors may include factors within the learners such as attitudes towards reading and school, motivation and the Intelligence Quotient (IQ) of pupils. Others may be factors within the general milieu of the pupils such as exposure to different texts and role modelling in terms of a reading culture.
4.3.3. Discussion of the Results

The first objective of this study was to establish the relationship between metacognition and reading comprehension performance. The study found a significant and positive relationship between metacognition and reading comprehension performance as seen in Table 4.11. The higher the participants’ metacognition mean scores, the higher their reading comprehension mean scores. Significant differences in reading comprehension scores of pupils with different levels of metacognition were also found as shown in Table 4.14. Pupils with high metacognition mean scores obtained high reading comprehension scores.

A significant correlation was found between the two sub-scales of metacognition (metacognitive knowledge and metacognitive strategy use) as seen in Table 4.17. This implies that metacognitive knowledge and metacognitive strategy use go hand in hand in reading comprehension tasks. The proper use of a strategy before, during and after reading is dependent on one’s awareness or knowledge of the same. One must know about a strategy before they can use it to aid their comprehension. In one of the theories that guided this study, Flavell (1979) postulated that skilled readers are more aware of their abilities as readers, of the nature and goals of a reading passage and of the strategies that they can employ to achieve these goals.
Although both sub-scales of metacognition were found to be significantly correlated with each other and to reading comprehension performance, Equation 1 shows that the best predictor of reading comprehension performance was metacognitive knowledge. This may be because, a reader cannot use a strategy that they do not know about. Learners may also know about a strategy but not use it and this may affect their reading comprehension scores. In some instances, learners may fail to report use of a certain strategy because it may have become automatic and hence may use it unconsciously.

These findings are consistent with those of Anastasiou and Griva (2009) who studied pupils of similar class level and ages in Greece and found out that metacognitive strategy use awareness made a unique contribution to reading comprehension. Learners who reported awareness of metacognitive strategies had higher reading comprehension scores compared to those that did not. They also agree with those of Rahman, Jumani, Chaudry, Chisti and Abbasi (2010) who found that metacognitive awareness or knowledge was significantly correlated with the reading performance of students.

The results also corroborate the research findings of Lau and Chan (2003) who compared good and poor readers in the way they use their metacognitive strategies. They found out that the good readers had consistently high scores compared to the poor readers. Apart from having low levels of metacognition, the
poor readers also had lower intrinsic motivation in reading than had good readers. The earlier study and the current one therefore agreed on the fact that skilled readers possess important metacognitive knowledge and strategies that are very necessary in improving reading performance.

These results support earlier findings by Mohamed (2002) that metacognition is highly related to reading efficiency and comprehension performance in English. They are also consistent with those of Ortlieb and Norris (2012) who found out that using a think-aloud strategy during reading significantly increased learners’ comprehension of science concepts. The results seem to echo what many earlier studies (Anastasiou & Griva, 2009; Kirmizi, 2011; Rahman, Jumani, Chaudry, Chisti, & Abbasi, 2010) had found out, that is, metacognition is necessary for reading comprehension. The knowledge and actual use of strategies before, during and after reading is a prerequisite to any successful reading.

Locally, Dinga (2011) reported a positive correlation between strategy use and the ability to comprehend text. These findings therefore seem to suggest that irrespective of differences in study locations, methodology and cross-cultural differences, metacognition is a vital aspect of reading comprehension. Pupils who know the various strategies to use before, during and after reading and actually use them are likely to comprehend their texts better than those who do not.
In conclusion, these results imply that, it is one thing to have the knowledge about how various reading tasks are undertaken but another thing to actually use that knowledge in form of strategies to enhance reading comprehension. The participants may have reported that they knew the strategies to use before, during and after reading to gain comprehension but they may not have used all the known strategies effectively while reading the passage. This may help to explain the mismatch between metacognitive strategy use scores and reading comprehension scores observed in Table 4.17. This gap between knowing what to do while reading and doing it effectively needs to be bridged so that learners are able to comprehend instructional texts.

4.4 Relationship between Attitudes towards Reading and Reading Comprehension Performance

The researcher sought to determine the relationship between attitudes towards reading and reading comprehension performance. First, the relevant descriptive analysis were done and then the specific inferential statistical analysis for hypothesis testing.

4.4.1 Descriptive Analysis of Participants’ Attitudes towards Reading

This analysis was based on the score obtained from the Elementary Reading Attitude Survey (ERAS). The range, mean, standard deviation, skewness and Kurtosis were as presented in Table 4.19.
Table 4.19

Description of the Participants’ Attitude towards Reading Scores

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Range</td>
<td>Min</td>
<td>Max</td>
<td>M</td>
<td>SD</td>
<td>Sk</td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>-----</td>
<td>-----</td>
<td>----</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>310</td>
<td>65</td>
<td>31.00</td>
<td>96.00</td>
<td>72.13</td>
<td>10.86</td>
<td>-.36</td>
</tr>
</tbody>
</table>

Note. Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness; Kur = Kurtosis

The data in Table 4.19 show that the minimum and maximum scores were 31 and 96 respectively. This was against the minimum score possible in the ERAS which was 20 and the maximum which was 100. The mean score was 72.13 (SD = 10.86) with a range of 65. The distribution of these scores was found to be negatively skewed (-0.36) meaning that majority of the participants had a positive attitude towards reading. The skewness and kurtosis were both below 1 implying a normal distribution. The researcher went further and examined how the participants’ attitudes towards reading scores varied across the sampled schools. Table 4.20 presents the participants’ attitudes towards reading scores across the schools.

Table 4.20 reveals that schools G and F had the minimum and maximum mean attitude scores respectively. Four schools A, B, G and H had attitude mean scores that were below the overall mean of 72.13 (SD =10.86) while schools C, D, E and F had mean scores above the overall mean. Interestingly, all the sampled schools except H had attitude mean scores that were negatively skewed meaning that they reported having more positive attitudes towards reading than negative ones.
**Table 4.20**

*Participants’ Attitudes towards Reading Scores across Schools*

<table>
<thead>
<tr>
<th>Schools</th>
<th>N</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
<th>Kur</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>39</td>
<td>42.00</td>
<td>47.00</td>
<td>89.00</td>
<td>72.00</td>
<td>9.66</td>
<td>-.35</td>
<td>-.13</td>
</tr>
<tr>
<td>B</td>
<td>39</td>
<td>45.00</td>
<td>43.00</td>
<td>88.00</td>
<td>71.67</td>
<td>10.32</td>
<td>-.56</td>
<td>.04</td>
</tr>
<tr>
<td>C</td>
<td>38</td>
<td>40.00</td>
<td>52.00</td>
<td>92.00</td>
<td>76.74</td>
<td>8.90</td>
<td>-.69</td>
<td>.27</td>
</tr>
<tr>
<td>D</td>
<td>40</td>
<td>40.00</td>
<td>52.00</td>
<td>92.00</td>
<td>75.53</td>
<td>10.43</td>
<td>-.35</td>
<td>-.58</td>
</tr>
<tr>
<td>E</td>
<td>37</td>
<td>44.00</td>
<td>48.00</td>
<td>92.00</td>
<td>73.11</td>
<td>11.76</td>
<td>-.35</td>
<td>-.84</td>
</tr>
<tr>
<td>F</td>
<td>38</td>
<td>44.00</td>
<td>52.00</td>
<td>96.00</td>
<td>74.79</td>
<td>10.23</td>
<td>-.01</td>
<td>-.00</td>
</tr>
<tr>
<td>G</td>
<td>39</td>
<td>53.00</td>
<td>31.00</td>
<td>84.00</td>
<td>63.72</td>
<td>11.20</td>
<td>-.33</td>
<td>.59</td>
</tr>
<tr>
<td>H</td>
<td>40</td>
<td>37.00</td>
<td>51.00</td>
<td>88.00</td>
<td>69.70</td>
<td>9.48</td>
<td>.04</td>
<td>-.81</td>
</tr>
</tbody>
</table>

*Note. N = 310; Overall M = 72.13; Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness; Kur = Kurtosis*  

The participants’ attitudes towards reading scores were further used to categorize them into two categories namely those with positive and negative attitudes. An attitude score of between 20 (lowest) to 60 was treated as a negative one while a score above 61 all the way up to the maximum possible score of 100 was treated as positive (see the cut-off scores in page 50). The reading comprehension mean t-scores for the two groups are also shown in Table 4.21.
Table 4.21

Types of Attitudes towards Reading and Reading Comprehension T-Scores

<table>
<thead>
<tr>
<th>Type of attitude</th>
<th>n</th>
<th>Mean t-Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>48 (15.5)</td>
<td>46.85</td>
<td>11.17</td>
</tr>
<tr>
<td>Positive</td>
<td>262 (84.5)</td>
<td>50.58</td>
<td>9.7</td>
</tr>
</tbody>
</table>

Note. N =310; ( ) indicates %

From Table 4.21, it is evident that 84.5 % of the participants reported having positive attitudes towards reading hence the negative skewness observed in the attitude mean scores. The participants who reported having a positive attitude towards reading obtained higher reading comprehension scores of 50.57 compared to 46.84 obtained by those who rated themselves as having negative attitudes towards reading. Based on this, the researcher conducted a t-test for independent samples to find out whether the apparent differences in mean reading comprehension scores were significantly different across the two types of attitudes or not. The results are illustrated in Table 4.22.

Table 4.22

Differences in Reading Comprehension Mean Scores across the Types of Attitudes

<table>
<thead>
<tr>
<th>t-score</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variances assumed</td>
<td>-2.40</td>
<td>308</td>
<td>.02</td>
<td>-3.73</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>-2.17</td>
<td>60.63</td>
<td>.03</td>
<td>-3.73</td>
</tr>
</tbody>
</table>
Table 4.22 reveals that there were significant differences in reading comprehension scores between the two groups \( (t (308) = -2.40, p < .05) \). This may have been expected based on literature review. Most studies reviewed showed that when learners have a positive attitude towards reading, they are likely to persevere on the face of difficult reading tasks until they achieve comprehension (Martinez, 2006).

### 4.4.2 Hypothesis Testing

The second objective of this study was to find out the relationship between attitudes towards reading and reading comprehension performance. In line with this objective, the following null hypothesis was advanced:

\[ H_{02}: \text{There is no significant relationship between attitudes towards reading and reading comprehension performance.} \]

To test this hypothesis, a bivariate correlational analysis using Pearson Product Moment Correlation Coefficient was performed and the results are shown in Table 4.23.

Results in Table 4.23 show that there was a positive and significant relationship between attitudes towards reading and reading comprehension performance \( (r (308) = .22, p < .05) \). This means that the attitude towards reading held by the participants affected their reading comprehension scores positively or negatively.
Table 4.23

Relationship between Attitudes towards Reading and Reading Comprehension Performance

<table>
<thead>
<tr>
<th>Attitude Scores</th>
<th>Pearson Correlation</th>
<th>( t )-scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude Scores</td>
<td>1</td>
<td>.22*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.00</td>
</tr>
<tr>
<td>( N )</td>
<td>310</td>
<td>310</td>
</tr>
</tbody>
</table>

The results in Table 4.23 indicate that the higher the pupils’ attitude towards reading score, the higher the corresponding reading comprehension score. It had been hypothesized that there was no significant relationship between attitudes towards reading and reading comprehension performance. Based on these findings, the null hypothesis was rejected and the alternative one accepted.

4.4.3 Discussion of the Results

The second objective of the study was to find out the relationship between attitudes towards reading and reading comprehension performance. A positive and significant relationship between attitudes towards reading and reading comprehension performance was found as Table 4.23 shows. These findings mean that pupils with high scores in attitude towards reading scale also had high reading comprehension scores. Similarly, those who had low scores on attitude towards reading had correspondingly low reading comprehension scores.
The results imply that positive attitudes towards reading held and reported by the participants may have made them react favourably to the reading passage in terms of increased levels of interest as well as persistence even when comprehension challenges occurred. It may also have made them to purposefully and deliberately interact with the reading passage in terms of employing various strategies to achieve comprehension (Sweet & Snow, 2002). The opposite may hold true for participants with negative attitudes towards reading who may have read the passage just for the sake of reading and may therefore not be interested in looking for understanding.

These findings are in line with the Mathewson’s model of attitude influence upon reading and learning to read (1994) that guided this study. The model had postulated that when learners hold positive attitudes towards reading, they are likely to have more intention to read as opposed to those with negative attitudes. This intention to read may lead to more reading and acquisition of helpful strategies that aid in reading comprehension. This may explain why participants with positive attitudes towards reading also got high reading comprehension scores in the current study.

These findings corroborate earlier research findings by Maweu (2005) and Vundi, Nasongo and Majanga (2011) that concluded that a learner’s attitude towards a subject greatly influences their performance in the same. The results are consistent with those of Mohamed (2002) who found a significant positive correlation
between reading attitude and reading proficiency. They also agree with earlier findings by McKenna, Kear, and Ellsworth (1995) who found a positive significant relationship between attitudes towards reading and reading proficiency among children of similar age. The findings are also in tandem with those of Sallabas (2008) who also found a low level correlation between students’ reading comprehension skills and attitude towards reading.

Based on the above discussion, it can be concluded that the type of attitude that a learner has towards reading determines their reading comprehension scores. Consequently, it is necessary to inculcate positive attitudes towards reading in pupils so that their reading comprehension can be enhanced. However, it is also worth noting that in as much as attitudes towards reading are important in reading comprehension, there are other factors that also come into play either singly or in combination to influence reading comprehension. These include but are not limited to metacognitive knowledge and strategies, reading ability and motivation to read. A learner who has a positive attitude towards reading but does not feel motivated to read may not do well in comprehension tasks. Similarly, a learner who has a positive attitude towards reading but is not aware of the metacognitive strategies to use to remediate comprehension when it breaks down may not gain comprehension from text.
4.5 Gender differences in Metacognition and Attitudes towards Reading

The third objective in this study was to test if there were gender differences in metacognition and attitudes towards reading. This was a broad objective and therefore, it was split into two objectives for the purpose of analysis. The first part dealt with gender differences in metacognition and the second part with gender differences in attitudes towards reading.

4.5.1 Gender differences in Metacognition

The participants’ metacognition scores had been used to group participants into three categories of low, moderate and high levels of metacognition. A cross-tabulation of these three levels with gender was done and findings shown in Table 4.24.

Table 4.24

Levels of Metacognition and Gender of the Participants

<table>
<thead>
<tr>
<th>Levels of Metacognition</th>
<th>Gender of participants</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Low</td>
<td>5 (1.6)</td>
<td>4 (1.3)</td>
</tr>
<tr>
<td>Moderate</td>
<td>113 (36.5)</td>
<td>99 (31.9)</td>
</tr>
<tr>
<td>High</td>
<td>38 (12.3)</td>
<td>51 (16.5)</td>
</tr>
<tr>
<td>Total</td>
<td>156 (50.3)</td>
<td>154 (49.7)</td>
</tr>
</tbody>
</table>

Note. N = 310; f = frequency; ( ) indicates %
The results in Table 4.24 show that almost an equal number of boys and girls were found within the category of low metacognition which in total had the fewest number of participants standing at only 2.9%. Most of the participants (68.4%) fell in the moderate category with boys being the majority at 36.5% compared to the girls who were 31.9%. More girls however were in the high metacognition level representing 16.5% of the participants. This slightly higher number of girls with high metacognition could have introduced the slightly higher overall mean scores in metacognition. A Chi-square test run to determine if the frequencies in the various categories were significant or not showed that there were no significant differences in the frequencies ($\chi^2 = 2.92, df = 2, p > 0.05$).

As earlier stated, metacognition had two sub-scales namely metacognitive knowledge and metacognitive strategy use. The researcher was interested in comparing the scores of both males and females in the two sub-scales. The results were as follows in Table 4.25.

**Table 4.25**

*Gender Differences in Metacognitive Knowledge and Metacognitive Strategy Use*

<table>
<thead>
<tr>
<th>Gender</th>
<th>$n$</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>$M$</th>
<th>$SD$</th>
<th>Sk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>MSU</td>
<td>156</td>
<td>67.00</td>
<td>29.00</td>
<td>96.00</td>
<td>65.84</td>
<td>11.59</td>
</tr>
<tr>
<td></td>
<td>MK</td>
<td>156</td>
<td>74.00</td>
<td>20.00</td>
<td>94.00</td>
<td>68.82</td>
<td>12.51</td>
</tr>
<tr>
<td>Female</td>
<td>MSU</td>
<td>154</td>
<td>68.00</td>
<td>28.00</td>
<td>96.00</td>
<td>66.58</td>
<td>11.85</td>
</tr>
<tr>
<td></td>
<td>MK</td>
<td>154</td>
<td>76.00</td>
<td>20.00</td>
<td>96.00</td>
<td>71.08</td>
<td>13.52</td>
</tr>
</tbody>
</table>

*Note. N = 310; Min = Minimum; Max = Maximum; $M$ = Mean; $SD$ = Standard Deviation; Sk = Skewness; MSU = Metacognitive Strategy Use; MK = Metacognitive Knowledge*
Results from Table 4.25 reveal that there were gender differences in the means of metacognitive knowledge and metacognitive strategy use. The metacognitive strategy use (MSU) mean scores were 65.84 (SD = 11.59) and 66.58 (SD = 11.85) for boys and girls respectively. Girls also had relatively higher metacognitive knowledge (MK) mean score of 71.08 (SD = 13.52) compared to that of boys which was 68.82 (SD = 12.51). The negative skewness in the females’ MK and MSU shows that they rated themselves highly in these two sub-scales. The males also rated themselves highly in MK as shown by the negative skewness.

4.5.2. Hypothesis Testing

The third null hypothesis read as follows:

H03. There are no significant gender differences in pupils’ metacognition and attitudes towards reading.

This hypothesis was in two parts and was therefore split to give way to two supplementary hypotheses as follows:

H03.1. There are no significant gender differences in pupils’ metacognition.

H03.2. There are no significant gender differences in pupils’ attitudes towards reading.

To test the first supplementary hypothesis, the pupils’ metacognition scores were first summarised in terms of means, standard deviations and skewness as presented in Table 4.26.
Table 4.26

Summary of Gender Differences in Metacognition

<table>
<thead>
<tr>
<th>Gender</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacognition Score</td>
<td>Male</td>
<td>156</td>
<td>134.66</td>
<td>20.28</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>154</td>
<td>137.67</td>
<td>22.13</td>
</tr>
</tbody>
</table>

Note. N = 310; M = Mean; SD = Standard Deviation; Sk = Skewness

Table 4.26 reveals that the metacognitive scores for both males and females were negatively skewed meaning that both rated themselves highly in terms of their metacognition. The mean metacognition score was 134.66 (SD = 20.28) and 137.67 (SD = 22.13) for males and females respectively. Females therefore had a relatively higher metacognition mean score than males. To test whether the observed differences in metacognition mean scores between males and females were significant or not, an Independent samples t-test was performed and the findings were as shown in Table 4.27

Table 4.27

Independent Samples t-test for Gender Differences in Metacognition

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>-1.25</td>
<td>308</td>
<td>.21</td>
</tr>
</tbody>
</table>

Note. MS = Metacognition Score
Results in Table 4.27 show that although females had a slightly higher mean in metacognition than males, the differences in means were not significant (\( t = -1.25, df =308, p > .05 \)). The null hypothesis was therefore retained and the alternate one rejected.

### 4.5.3 Discussion of Results

The third objective in this study was to test if there were gender differences in metacognition and attitudes towards reading. The study found gender differences in metacognition that favoured girls but they were not significant (Table 4.27). This means that although girls obtained higher metacognition mean scores compared to boys, the differences in the metacognition mean scores were not statistically significant. This may be due to the fact that the study sample consisted of pupils from a cosmopolitan urban setting where both boys and girls may be exposed to similar experiences in terms of their reading culture. This implies that no gender may be superior in terms of exposure to different text structures that consequently determine the metacognitive abilities acquired.

Although prior research has given inconclusive findings regarding gender differences in metacognition, most of the findings report differences in favour of females. The results of the current study seem to corroborate the earlier findings by Sperling et al. (2002, cited in Topçu & Yılmaz-Tüzün, 2009) who investigated gender differences in metacognitive skills (knowledge of cognition and regulation
of cognition) and revealed insignificant gender differences. The findings are also consistent with those of Liliana and Lavinia (2011) who found gender differences in some aspects of metacognition but they were not significant. The current findings also agree with those of Rahman, Jumani, Chaudry, Chisti and Abbasi (2010) who failed to find significant gender differences in metacognition of tenth grade Pakistan students in chemistry.

Most of the studies report insignificant differences in metacognition that favour females. Theodosiou, Mantis and Papaioannou (2008) have noted that there is generally a superiority of females over males in problem-solving strategies. If reading for comprehension can be compared to solving a problem, then the females may have planned well before reading and monitored their reading using various strategies to achieve the goal of comprehension. This may explain why even in the reading comprehension performance, they were better than males.

The findings are however contrary to those of Topçu and Yılmaz-Tüzün (2009) who studied children of similar ages and found significant differences in metacognition that favoured girls in a science text. These significant differences could be due to the different nature of the subjects of study. The metacognitive strategies employed while reading an English passage like the one used in this study may not necessarily be the same ones used to understand science concepts hence the differences in the findings.
4.5.4 Gender Differences in Attitudes towards Reading

The attitude towards reading scores had been used to categorize participants into two categories namely; those with positive attitudes and those with negative types of attitudes. A cross-tabulation of these two types of attitudes and gender was performed and the results were as shown in Table 4.28.

Table 4.28

<table>
<thead>
<tr>
<th>Type of Attitude</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Negative</td>
<td>24 (7.7)</td>
<td>24 (7.7)</td>
</tr>
<tr>
<td>Positive</td>
<td>132 (42.6)</td>
<td>130 (41.9)</td>
</tr>
<tr>
<td>Total</td>
<td>156 (50.3)</td>
<td>154 (49.7)</td>
</tr>
</tbody>
</table>

Note. N = 310; \( f \) = frequency; ( ) indicates %

Table 4.28 indicates that there were not much differences between males and females in terms of their attitudes towards reading. An equal number of males and females reported having a negative attitude towards reading (7.7% for both males and females). In the category of positive attitude, males were slightly more by 0.7% as they were 42.6% compared to females who were 41.9%. Overall both males and females rated themselves highly in the attitude scale hence the high percentage of those with positive attitudes towards reading. A Chi-square test run to determine if the frequencies in the various categories were significant or not
showed that there were no significant differences in the frequencies \( \chi^2 = 0.02, df = 1, p > 0.05. \)

4.5.5 Hypothesis Testing

The second supplementary hypothesis was:

\( H_{03.2}: \) There are no significant gender differences in pupils’ attitudes towards reading.

To test this hypothesis, the attitude towards reading scores were first summarised as follows in Table 4.29

Table 4.29

Summary of Gender Differences in Attitude towards Reading

<table>
<thead>
<tr>
<th>Gender</th>
<th>( n )</th>
<th>( M )</th>
<th>( SD )</th>
<th>Sk</th>
<th>Kur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes towards Reading Scores</td>
<td>Male</td>
<td>156</td>
<td>71.56</td>
<td>10.64</td>
<td>-.26</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>154</td>
<td>72.70</td>
<td>11.08</td>
<td>-.47</td>
</tr>
</tbody>
</table>

Note. \( N = 310; M = \) Mean; \( SD = \) Standard Deviation; \( Sk = \) Skewness; \( Kur = \) Kurtosis

The attitude towards reading mean scores for both males and females were then analysed using the Independent samples t-test and the results were as shown in Table 4.30.

Table 4.30

Independent Samples t-test for Gender differences in Attitudes towards Reading

<table>
<thead>
<tr>
<th>Variable</th>
<th>( t )</th>
<th>( df )</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards Reading</td>
<td>-9.21</td>
<td>308</td>
<td>.36</td>
</tr>
</tbody>
</table>
Results in Table 4.30 reveal that there were no significant gender differences in the participants’ attitude towards reading scores ($t = -0.92$, $df = 308$, $p > .05$). This means that in as much as the attitude towards reading scores for females were slightly higher than those for males, the differences were not statistically significant. It had been hypothesized that there were no significant gender differences in pupils’ attitudes towards reading. Based on the findings presented that show lack of significant gender differences, the second supplementary hypothesis was retained.

Although, it was not part of the study objectives, the researcher became curious and sought to find out if there were significant gender differences in the outcome variable which was reading comprehension performance. The findings are tabulated in 4.31.

Table 4.31

<table>
<thead>
<tr>
<th>Gender</th>
<th>$n$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>156</td>
<td>48.31</td>
<td>9.57</td>
</tr>
<tr>
<td>Female</td>
<td>154</td>
<td>51.71</td>
<td>10.16</td>
</tr>
</tbody>
</table>

*Note. $N = 310$; $M = Mean; SD = Standard Deviation*
Table 4.31 shows that females had higher mean reading comprehension test scores (t-scores) of 51.71 (SD = 10.16) than the males’ 48.31 (SD = 9.57). An independent samples t-test for these mean differences was conducted to check whether they were significant or not. The findings are shown in Table 4.32.

Table 4.32

*Independent Samples t-test for Mean Differences in Reading Comprehension Performance*

<table>
<thead>
<tr>
<th>Variable</th>
<th>t</th>
<th>df</th>
<th>Sig.(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Comprehension Performance</td>
<td>-3.03</td>
<td>308</td>
<td>.00</td>
</tr>
</tbody>
</table>

*Note. N =310; df = Degrees of Freedom*

Table 4.32 reveals that significant mean differences in favour of females were found (t = -3.03, df = 308, p < .05). These results mean that females were better in mean reading comprehension scores than males. This was surprising given the fact that no significant gender differences had been found in pupils’ metacognition and attitudes towards reading yet the two variables had significant relationships with reading comprehension performance. The results point to other factors that may singly or in combination with others influence the females’ reading comprehension performance. These may include the age of pupils, motivation levels and even the IQ.
4.5.6 Discussion of Results

Although there were differences between males and females in their attitudes towards reading scores, Table 4.30 shows that they were not significant. These results may be explained from the point of view that the pupils were from a cosmopolitan urban setting where there may be no special and distinct gender roles that may impact on their reading attitudes. These findings are in tandem with those of Logan and Johnston (2009) who also failed to find significant gender differences in attitudes towards reading as well as in reading ability. The results however show that females were significantly better in reading comprehension performance than boys. These results seem to lend some credence to earlier studies that have reported girls to be better than boys in reading performance.

The results however seem to disagree with most previous findings that report significant gender differences in attitudes towards reading. Most researchers in reading comprehension tend to find significant gender differences in favour of girls. In fact, Petscher (2010) opines that females begin school with higher attitudes towards reading than males, regardless of grade level or socio-economic status. In the United Kingdom for example, a female reading advantage due to attitude towards reading has been reported in the 57 countries that participate in the Programme for International Student Assessment (PISA). The current findings are also inconsistent with those of Oakhill and Petrides (2007) who reported results that favoured girls. McKenna, Kear, and Ellsworth (1995) also found that
the gap between girls’ positive attitudes and boys’ negative attitudes towards reading widened as they got older and that females had more consistent positive academic attitudes than boys across all grades.

The lack of consensus between results of the current study and most previous studies could be explained by the fact that home, schooling and cultural milieu of the participants in the current study may be quite different from those of participants used in previous studies. As earlier stated in chapter one, most Kenyans have not embraced a reading culture and only read when they must read usually to help them pass examinations and not for leisure. Since attitudes are learned, the participants (both boys and girls) used in the current study may not have sufficient role models from whom they can imitate and cultivate the habit of reading which if constantly practiced may help one create a wealth of reading strategies that can affect reading outcomes positively.

4.6 Age Differences in Metacognition and Attitudes towards Reading
The fourth objective in this study was to test if there were age differences in metacognition and attitudes towards reading. Being a broad objective, it was necessary to split it into two objectives for ease of analysis. The first part will deal with age differences in metacognition and the second part will deal with age differences in attitudes towards reading.
4.6.1 Age Differences in Metacognition

The participants’ ages had earlier in Table 4.3 been organized into three categories (10-11, 12-13 and 14+) for ease of analysis. These were cross tabulated with the three levels of metacognition (high, moderate and low) earlier categorized in Table 4.8. The results are presented in Table 4.33.

Table 4.33

A Cross-tabulation of Age Categories and Levels of Metacognition

<table>
<thead>
<tr>
<th>Age category (Years)</th>
<th>Levels of Metacognition</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>10 – 11</td>
<td>1 (0.9)</td>
<td>63 (58.9)</td>
</tr>
<tr>
<td>12 -13</td>
<td>7 (3.9)</td>
<td>128 (71.5)</td>
</tr>
<tr>
<td>14+</td>
<td>1 (4.2)</td>
<td>21 (87.5)</td>
</tr>
<tr>
<td>Total</td>
<td>9 (2.9)</td>
<td>212 (68.4)</td>
</tr>
</tbody>
</table>

*Note. N = 310; ( ) indicates %

Results in Table 4.33 indicate that overall, very few participants (2.9%) were in the low metacognition level compared to the moderate one where more participants (68.4%) were found. The younger participants in the category 10 to 11 years had 40.2% of them in the high metacognition level compared to the 12 to 13 years category that had 24.6%. The 14 year plus category had 87.5% in the moderate level. To check if the frequencies were significant or not, a Chi-square test was run and the results showed that there were significant difference in the frequencies between age categories and levels of metacognition ($\chi^2 = 14.58, df = 4, p < .05$).
4.6.2 Hypothesis Testing

The fourth objective in this study was to test if there were age differences in metacognition and attitudes towards reading. To achieve this goal, the following null hypothesis was stated:

H$_{04}$: There are no significant age differences in pupils’ metacognition and attitudes towards reading.

This was a broad hypothesis consisting of two parts and it was therefore split into two to give way to two supplementary hypotheses as follows;

H$_{04.1}$: There are no significant age differences in pupils’ metacognition.

H$_{04.2}$: There are no significant age differences in pupils’ attitudes towards reading.

To test the first supplementary hypothesis, a summary of mean metacognition scores for the different age categories was done first. The results are presented in Table 4.34

Table 4.34

<table>
<thead>
<tr>
<th>Age Category (Years)</th>
<th>N</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>S D</th>
<th>Sk</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>107</td>
<td>129.00</td>
<td>52.00</td>
<td>181.00</td>
<td>142.37</td>
<td>20.40</td>
<td>-.70</td>
</tr>
<tr>
<td>12-13</td>
<td>179</td>
<td>115.00</td>
<td>69.00</td>
<td>184.00</td>
<td>133.97</td>
<td>21.03</td>
<td>-.31</td>
</tr>
<tr>
<td>14+</td>
<td>24</td>
<td>75.00</td>
<td>90.00</td>
<td>165.00</td>
<td>124.75</td>
<td>19.19</td>
<td>.25</td>
</tr>
</tbody>
</table>

Note. $N = 310$; Min = Minimum; Max = Maximum; $M = $ Mean; $SD = $ Standard Deviation; Sk = Skewness
Table 4.34 reveals differences in mean metacognition scores across the three age categories with age category 10-11 having the highest mean of 142.37 \((SD = 20.40)\) and 14+ age category having the lowest score of 124.75 \((SD = 19.19)\). To determine whether the mean differences in metacognition scores observed were significant across the three age categories, one-way analysis of variance was performed and the results were as presented in Table 4.35.

Table 4.35

*One-Way ANOVA for Age Differences in Metacognition*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>(F)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>8117.22</td>
<td>2</td>
<td>4058.61</td>
<td>9.49</td>
<td>.00</td>
</tr>
<tr>
<td>Within Groups</td>
<td>131257.35</td>
<td>307</td>
<td>427.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>139374.57</td>
<td>309</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. \(N = 310\); SS = Sum of Squares; df = Degrees of Freedom; MS = Mean Squares; \(F\) = Critical value of F*  

Results in Table 4.35 show that there were significant mean differences in the participants’ total metacognition scores based on their age categories \((F = 9.50, df = 2, p < .05)\). These results imply that metacognition is influenced by the age of the pupils. It had been hypothesized that there would be no significant age differences in pupils’ metacognition scores. However, based on the results in
Table 4.35, where significant differences in metacognition due to age were found, the null hypothesis was rejected and the alternative one accepted.

To check which age category introduced the significant difference or where the differences lay, a post-hoc analysis using Tukey HSD was performed and the results were as shown in Table 4.36.

Table 4.36

Post-Hoc Analysis of Age Differences in Metacognition

<table>
<thead>
<tr>
<th>(I) Age Category (Years)</th>
<th>(J) Age Category (Years)</th>
<th>Mean Difference (I-J)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>12-13</td>
<td>8.41*</td>
<td>.00</td>
</tr>
<tr>
<td>10-11</td>
<td>14+</td>
<td>17.62*</td>
<td>.00</td>
</tr>
<tr>
<td>12-13</td>
<td>10-11</td>
<td>-8.41*</td>
<td>.00</td>
</tr>
<tr>
<td>12-13</td>
<td>14+</td>
<td>9.22</td>
<td>.10</td>
</tr>
</tbody>
</table>

Note. Dependent Variable = Total Metacognition Score

Results in Table 4.36 show that the significant differences were brought about by the age category 10-11 years which had a significantly higher mean in metacognition scores compared to the other two age categories.

The researcher was also interested in testing for differences in the scores of the two sub-scales of metacognition namely metacognitive knowledge and metacognitive strategy use that could be attributed to age. To do this, the mean
metacognitive knowledge scores across the different age categories were first calculated and the results were as shown in Table 4.37.

Table 4.37

Mean Metacognitive Knowledge Scores for Different Age Categories

<table>
<thead>
<tr>
<th>Age Category (Years)</th>
<th>n</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>107</td>
<td>76.00</td>
<td>20.00</td>
<td>96.00</td>
<td>73.41</td>
<td>12.21</td>
<td>-1.32</td>
</tr>
<tr>
<td>12-13</td>
<td>179</td>
<td>72.00</td>
<td>20.00</td>
<td>92.00</td>
<td>68.59</td>
<td>13.18</td>
<td>-1.14</td>
</tr>
<tr>
<td>14+</td>
<td>24</td>
<td>52.00</td>
<td>42.00</td>
<td>94.00</td>
<td>64.58</td>
<td>12.49</td>
<td>.13</td>
</tr>
</tbody>
</table>

Note. N = 310; Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness

Table 4.37 shows differences in mean metacognitive knowledge scores across the three age categories with age category 10-11 having the highest mean score of 73.41 (SD = 12.21) and 14+ age category having the lowest mean score of 64.58 (SD = 12.49). The negative skew in the mean scores of the age categories 10-11 and 12-13 reveals that both categories rated themselves highly in terms of their metacognitive knowledge unlike the 14+ age category that had a positive skew. To determine whether the mean differences in metacognitive knowledge scores observed were significant across the three age categories, analysis of variance was performed and the results were as presented in Table 4.38.
Table 4.38

*Age Differences in Metacognitive Knowledge Scores*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2303.10</td>
<td>2</td>
<td>1151.55</td>
<td>7.02</td>
<td>.00</td>
</tr>
<tr>
<td>Within Groups</td>
<td>50334.97</td>
<td>307</td>
<td>163.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>52638.07</td>
<td>309</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 310; SS = Sum of Squares; df = Degrees of Freedom; MS = Mean Squares; F = Critical value of F*

Results in Table 4.38 show that there were significant mean differences in metacognitive knowledge due to age ($F = 7.02$, $df = 2$, $p < .05$). Since this did not reveal which age categories were better in terms of metacognitive knowledge, a post-hoc analysis using Tukey HSD was performed and the results were as shown in Table 4.39. The results reveal significant mean differences in metacognitive knowledge due to age. The 10-11 years age category obtained significantly higher metacognition scores than the older participants.
Table 4.39

*Post-Hoc Analysis for Age differences in Metacognitive Knowledge*

<table>
<thead>
<tr>
<th>(I) Age Category (Years)</th>
<th>(J) Age Category (Years)</th>
<th>Mean Difference (I-J)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>12-13</td>
<td>4.82*</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>14+</td>
<td>8.83*</td>
<td>.01</td>
</tr>
<tr>
<td>12-13</td>
<td>10-11</td>
<td>-4.82*</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>14+</td>
<td>4.01</td>
<td>.32</td>
</tr>
</tbody>
</table>

*Note.* Dependent Variable = Metacognitive Knowledge

The metacognitive strategy use scores were also subjected to One-Way Anova to check whether there were significant differences due to age and the results were as shown in Table 4.40.

Table 4.40

*Age Differences in Metacognitive Strategy Use*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1812.27</td>
<td>2</td>
<td>906.13</td>
<td>6.86</td>
<td>.00</td>
</tr>
<tr>
<td>Within Groups</td>
<td>40515.11</td>
<td>307</td>
<td>131.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>42327.37</td>
<td>309</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* $N = 310$; $SS = $Sum of Squares; $df = $Degrees of Freedom; $MS = $Mean Squares; $F = $Critical value of $F
Table 4.40 shows that there were significant mean differences in metacognitive strategy use due to age ($F = 6.86$, $df = 2$, $p < .05$). This implies that metacognitive strategy use is influenced by the age of a pupil. This may be in terms of the maturation of the brain that allows for more complex cognitive processes. The data was further subjected to a post-hoc analysis using the Tukey HSD to detect the age group responsible for the significant differences observed in the initial analysis. These results were as tabulated in 4.41.

Table 4.41

*Post-Hoc Analysis of Age Differences in Metacognitive Strategy Use*

<table>
<thead>
<tr>
<th>(I) Age Category (Years)</th>
<th>(J) Age Category (Years)</th>
<th>Mean Difference (I-J)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>12-13</td>
<td>3.59*</td>
<td>.03</td>
</tr>
<tr>
<td>10-11</td>
<td>14+</td>
<td>-3.59*</td>
<td>.03</td>
</tr>
<tr>
<td>12-13</td>
<td>14+</td>
<td>8.80*</td>
<td>.00</td>
</tr>
<tr>
<td>12-13</td>
<td>10-11</td>
<td>5.21</td>
<td>.10</td>
</tr>
</tbody>
</table>

*Note.* Dependent Variable = Metacognitive Strategy use Scores

The results in Table 4.41 show that the 10-11 year category obtained significantly higher scores in metacognitive strategy use than the other two age categories. This may be surprising given that older pupils are expected to have acquired a repertoire of metacognitive strategies that they can use to facilitate reading comprehension. The results imply that being older does not necessarily equip one
with metacognitive strategies. The metacognitive strategies are acquired through a deliberate effort of interacting with different text structures as one progresses through school. So, a pupil who is older but has not been exposed to enough texts may not have the necessary metacognitive strategies to use while reading.

**4.6.3 Discussion of Results**

The participants in this study were from public primary schools where the recommended enrolment age in standard one is 6 years. A pupil in standard six was therefore expected to be 11 years of age or 12 years. However, as already observed in Table 4.32, a high number of participants (34.5%) were in the age category 10 to 11 years. That the results in terms of metacognition should favour them was surprising given the fact that some researchers have opined that metacognition improves with age. This according to Schneider (2008) is due to the development of the brain that triggers other changes such as regulation of behavior.

It is also assumed that the older participants have been exposed to more reading experiences where they are more likely to have come across many different types of texts with different text structures and strategies hence boosting their reading proficiency. Topçu and Yılmaz-Tüzün (2009) indeed found out that older students had more domain specific metacognition in their science courses as compared to the younger ones. The current study did not however agree with these assertions as
the younger participants in the 10-11 age category obtained higher scores in metacognition and its two sub-scales namely metacognitive knowledge and metacognitive strategy use.

The current findings however are in agreement with those of Sperling, Howard, Miller and Murphy (2002) who found that general metacognition does not necessarily increase with age. They found a tendency for younger students to earn higher metacognition scores than older students. This can possibly be explained by the fact that those who were above the mean age may have experienced some delay and frustration in their formal schooling due to factors such as, but not limited to truancy, late entry, class retention and poverty. These factors may limit the learners’ capacity in terms of metacognitive knowledge and strategies taught or acquired through numerous reading experiences in and out of class. Being older also does not necessarily mean a lot of interaction with reading materials and so, one may not have acquired the necessary metacognitive strategies.

4.6.4 Participants’ Age and Attitudes towards Reading

The participants’ age categories and mean attitudes towards reading scores were cross-tabulated as shown in Table 4. 42. The youngest participants in the age category 10-11 years had the highest mean scores of 74.17 (SD =10.28) while the oldest participants in the age category 14+ had the lowest attitude score mean of 64.46 (SD = 9.25) Despite this, the attitude mean scores for all the age categories
were negatively skewed indicating that all the age categories rated themselves highly in terms of their attitudes towards reading.

Table 4.42

*Description of Age Categories and Attitudes Towards Reading*

<table>
<thead>
<tr>
<th>Age Category (Years)</th>
<th>n</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
<th>Kur</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>AS</td>
<td>107</td>
<td>31.00</td>
<td>89.00</td>
<td>74.17</td>
<td>10.28</td>
<td>-0.99</td>
</tr>
<tr>
<td>12-13</td>
<td>AS</td>
<td>179</td>
<td>43.00</td>
<td>96.00</td>
<td>71.94</td>
<td>10.97</td>
<td>-0.11</td>
</tr>
<tr>
<td>14+</td>
<td>AS</td>
<td>24</td>
<td>45.00</td>
<td>80.00</td>
<td>64.46</td>
<td>9.25</td>
<td>-0.33</td>
</tr>
</tbody>
</table>

*Note. N = 310; AS = Attitude Score; Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness; Kur = Kurtosis*

The attitude towards reading scores had been used to categorize participants into two categories namely; those with positive attitudes and those with negative types of attitudes. A cross-tabulation of these two types of attitudes and age categories was performed and the results were as tabulated in 4.43.

The results tabulated in 4.43 reveal that more positive attitudes towards reading were reported in the 10-11 year age category (89.7%) followed by the 12-13 year category (83.8%). The older pupils in the 14+ age category reported the least favourable attitudes towards reading (66.7%).
Table 4.43
Cross-tabulation of Age Categories and Type of Attitude

<table>
<thead>
<tr>
<th>Age Category (Years)</th>
<th>Types of attitude</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>10-11</td>
<td>11 (10.3)</td>
<td>96 (89.7)</td>
</tr>
<tr>
<td>12-13</td>
<td>29 (16.2)</td>
<td>150 (83.8)</td>
</tr>
<tr>
<td>14+</td>
<td>8 (33.3)</td>
<td>16 (66.7)</td>
</tr>
<tr>
<td>Total</td>
<td>48 (15.5)</td>
<td>262 (84.5)</td>
</tr>
</tbody>
</table>

Note. N = 310; ( ) indicates %

A Chi-square test revealed that there were indeed significant differences in the type of attitude across the age categories ($\chi^2 = 8.13$, $df = 2$, $p < .05$). These results imply that younger pupils are likely to read more due to their positive attitudes towards reading. Consequently, they are also likely to acquire metacognitive strategies that can aid their reading comprehension.

4.6.5 Hypothesis Testing

The second supplementary hypothesis was:

$H_{04.2}$: There are no significant age differences in pupils’ attitudes towards reading.

To test this hypothesis, One-Way Anova was performed on the participants’ mean differences in attitude towards reading scores vis a vis their ages and the results were as presented in Table 4.44.
Table 4.44

*Age Differences in Attitudes towards Reading*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1863.58</td>
<td>2</td>
<td>931.79</td>
<td>8.27</td>
<td>.00</td>
</tr>
<tr>
<td>Within Groups</td>
<td>34599.25</td>
<td>307</td>
<td>112.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>36462.84</td>
<td>309</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 310; SS = Sum of Squares; df = Degrees of Freedom; MS = Mean Squares; F = Critical value of F*

Table 4.44 shows that there were significant mean differences in attitude towards reading scores due to age \( (F= 8.27, df = 2, p < .05) \). To test which age group (s) brought about the significant difference, a post-hoc analysis using Tukey HSD was done and the results were as reported in Table 4.45.

The results in Table 4.45 indicate that there were significant differences in attitudes towards reading due to age. The results were in favour of the younger participants and specifically the 10 to 11 year category which had better attitudes towards reading than the 12 to 13 year category and the 14+ year category. The 12 to 13 year category when compared to the 14+ year category was also better. These results may imply that the younger pupils may be experiencing success in school and hence their attitudes towards reading may be positive. This is in comparison to the older pupils who for one reason or another may be struggling through school hence their attitudes towards reading may be negative. The
consequences of these findings is likely to be reflected in the reading comprehension scores of these different age categories with the younger ones expected to do better.

Table 4.45

Post-Hoc Analysis of Age Differences in Attitude towards Reading

<table>
<thead>
<tr>
<th>(I) Age Category (Years)</th>
<th>(J) Age Category (Years)</th>
<th>Mean Difference (I-J)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>12-13</td>
<td>2.23</td>
<td>.20</td>
</tr>
<tr>
<td>14+</td>
<td>10-11</td>
<td>-2.23</td>
<td>.20</td>
</tr>
<tr>
<td>12-13</td>
<td>14+</td>
<td>7.48*</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. Dependent Variable: Attitude Scores

The 14+ year category had significantly poor results in terms of their attitude towards reading scores. Since the younger participants in the 10 to 11 year age category had significantly higher metacognition and attitude towards reading scores, the researcher decided to check whether this translated into positive outcomes in terms of reading comprehension performance. The data obtained was therefore subjected to one-way ANOVA and the results were as shown in the Table 4.46
Table 4.46

*Age Differences in Reading Comprehension Performance*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3741.42</td>
<td>2</td>
<td>1870.71</td>
<td>21.15</td>
<td>.00</td>
</tr>
<tr>
<td>Within Groups</td>
<td>27158.58</td>
<td>307</td>
<td>88.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30900.00</td>
<td>309</td>
<td>10.89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 310; SS = Sum of Squares; df = Degrees of Freedom; MS = Mean Squares; F = Critical value of F*

The results in Table 4.46 reveal that there were significant mean differences in reading comprehension T-score due to age category ($F = 21.15, df = 2, p < .05$). This does not however reveal which age category was better. To get this, a post-hoc analysis using Tukey HSD was used and the results presented in Table 4.47.

Table 4.47

*Post-hoc Analysis of Age Differences in Reading Comprehension Performance*

<table>
<thead>
<tr>
<th>(I) Age Category (Years)</th>
<th>(J) Age Category (Years)</th>
<th>Mean Difference (I-J)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-11</td>
<td>12-13</td>
<td>6.81*</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>14+</td>
<td>9.64*</td>
<td>.00</td>
</tr>
<tr>
<td>12-13</td>
<td>10-11</td>
<td>-6.81*</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>14+</td>
<td>2.83</td>
<td>.35</td>
</tr>
</tbody>
</table>
Results in Table 4.47 show that the differences in reading comprehension mean scores were significantly in favour of 10 to 11 year age category. This means that the higher metacognition and attitudes towards reading scores reported by this age group helped them to comprehend the passage.

4.6.6 Discussion of Results

These results seem to support what was already stated in chapter one that metacognition and attitudes towards reading are related. The youngest participants in the 10-11 year category did not only obtain significantly higher attitudes towards reading scores than the 12-13 and 14+ age category, but they also had higher metacognition scores. This may be due to the fact that possession of metacognitive knowledge and strategies to use before, during and after reading may translate into positive reading outcomes that enhance the pupils’ confidence, motivation and attitude towards reading. This is as opposed to pupils with no repertoire of metacognitive knowledge and skills to use while reading. In the face of challenging reading tasks, they are likely to get frustrated, give up or develop negative attitudes towards reading.

Research findings support the notion that metacognitive strategies, when used effectively, result in increased learning and achievement (Bransford, Brown & Cocking, 2000). Positive attitudes towards reading may also lead to more reading which helps one acquire experience in text structure and use of strategies
necessary for reading comprehension. These results are in tandem with those of Black (2006) who found out that older Australian students’ attitudes towards academic reading were more negative overall. In the present study, the younger participants (10 to 11 year category) posted significantly more positive attitudes towards reading than their older counterparts. McKenna, Kear, and Ellsworth (1995) have shown that there is usually a steady decline in attitudes towards reading as pupils progress through primary school. In their study, they found out that by grade six, students had become largely indifferent to reading. This trend they say, starts in grade four and has come to be referred to as the ‘great slump’ in the United Kingdom.

Although this may not adequately explain why despite being in the same class, the younger pupils in the present study had better attitudes towards reading, it nevertheless sheds some light on the fact that the attitudes of the older pupils may have deteriorated over time. This is because the older pupils may have been in school longer due to reasons related to poverty, absenteeism and truancy. This may be further compounded by other frustrations such as inability to read, continuous poor academic performance and the subsequent repercussions such as class retention.

The results were however inconsistent with those of Mitchell and Ley (1996) who found a small but steady increase in positive attitudes toward reading for students
in grades nine through twelve, with grade 12 students having significantly higher scores than their peers in grade 9. This deviation from results of the current study may be due to the fact that home and schooling conditions in western countries where the study was undertaken are different from those in Kenya. This may be in terms of the psycho-social and economic support given to the learners that may be lacking in the older participants of the current study hence their frustration and lack of interest in reading. The study was also conducted with older students in high schools who know the value of reading and who have possibly interacted more with reading materials hence garnering more strategies that they can use to aid comprehension. This may in turn have affected their attitudes towards reading positively unlike the participants of the current study who as the findings reveal, were not able to use metacognitive strategies effectively.

4.7. The Interaction Effect of Metacognition and Attitudes towards Reading on Reading Comprehension Performance

The fifth objective of this study sought to find out if the two predictor variables interacted significantly to produce reading comprehension performance or not. Towards this end, a combined descriptive analysis of the metacognition and attitudes towards reading scores was done and then the hypothesis tested.
4.7.1 Descriptive Analysis of Interaction Effect of Metacognition and Attitudes Towards Reading on Reading Comprehension Performance

This analysis was based on the scores of the two predictor variables from the questionnaire. The range, mean, standard deviation and skewness of metacognition and attitudes towards reading were as presented in Table 4.48.

Table 4.48

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Sk</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>310</td>
<td>132</td>
<td>52.00</td>
<td>184.00</td>
<td>136.15</td>
<td>21.24</td>
<td>-.37</td>
</tr>
<tr>
<td>ATRS</td>
<td>310</td>
<td>65</td>
<td>31.00</td>
<td>96.00</td>
<td>72.13</td>
<td>10.86</td>
<td>-.36</td>
</tr>
</tbody>
</table>

Note. N = 310; Min = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness; MS = Metacognition Score; ATRS = Attitude Towards Reading Score.

The data in Table 4.48 shows that the minimum MS and ATRS were 52 and 31 respectively while the maximum scores for the same were 184 and 96 respectively. The mean scores for MS and ATRS were 136.15 (SD =21.24) and 72.13 (SD = 10.86) respectively. The distribution of scores for both scales was found to be negatively skewed (-0.37 and-0.36 respectively) meaning that majority of the participants reported having high levels of metacognition as well as a positive attitude towards reading.
4.7.2 Hypothesis Testing

To determine the interaction effect of metacognition and attitudes towards reading on reading comprehension performance, it was hypothesized that:

H$_{05}$: There is no significant interaction effect of metacognition and attitudes towards reading on reading comprehension performance.

To test whether the interaction effect of the two predictor variables on reading comprehension performance was significant or not, the metacognition and attitudes towards reading scores as well as the reading comprehension T-scores were subjected to multiple regression analysis and the results presented in Table 4.49

Table 4.49

<table>
<thead>
<tr>
<th>Model</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2979.10</td>
<td>2</td>
<td>1489.55</td>
<td>16.80</td>
<td>.00</td>
</tr>
<tr>
<td>1 Residual</td>
<td>27220.90</td>
<td>307</td>
<td>88.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30200.00</td>
<td>309</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 310; SS = Sum of Squares; df = Degrees of Freedom; MS = Mean Squares; F = Critical value of F*

Observations from Table 4.49 reveal that there was a significant interaction effect between metacognition and attitudes towards reading in producing reading comprehension performance (F= 16.80, p < .05). Separately, each of the predictor
variables had a positive and significant relationship with the outcome variable. It was therefore not surprising that when combined, the two predictor variables would have a significant interaction effect on reading comprehension performance. Based on these findings, the null hypothesis was rejected and the alternative one accepted.

The researcher was also interested in finding the relative predictive weights of metacognition and attitudes towards reading on reading comprehension performance. This data was therefore subjected to further regression analysis and the results were as shown in Table 4.50.

Table 4.50

*Predictive Values of Metacognition and Attitudes towards Reading on Reading Comprehension Performance*

<table>
<thead>
<tr>
<th>Model&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td>32.23</td>
<td>8.07</td>
</tr>
<tr>
<td>1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Metacognition Scores</td>
<td>.35</td>
<td>5.26</td>
</tr>
<tr>
<td></td>
<td>Attitude Scores</td>
<td>-.06</td>
<td>-.95</td>
</tr>
</tbody>
</table>

*Note.* <sup>a</sup>R<sup>2</sup> = .10; Adjusted R<sup>2</sup> = .90; SE =9.42

Table 4.50 reveals that metacognition had a significant predictive value for reading comprehension performance unlike attitudes towards reading that did not significantly predict reading comprehension performance. From Table 4.50, a resultant model of prediction was identified and represented in equation 2.
Equation 2

\[ \hat{y} = 32.23 + .35 \text{ (MS)} \quad (R^2 = .10) \quad p < .05 \]

Where \( \hat{y} \) is the predicted reading comprehension score and MS is the participants’ metacognition score. It is observed from equation 2 that the best and significant predictor of reading comprehension performance was metacognitive knowledge (predictor of reading comprehension performance was metacognition scores (\( \beta = .35, p < .05 \) compared to attitude towards reading scores (\( \beta = -.06, p < .05 \)). The results mean that for every standard deviation change in metacognition scores, reading comprehension scores increased by 0.35 points. The model explains that metacognition scores accounted for 10% variance in reading comprehension scores.

The researcher then subjected the various levels of metacognition and attitudes towards reading to further regression analysis to determine their predictive weights on reading comprehension performance. Metacognition had two levels namely metacognitive knowledge and metacognitive strategy use. Attitudes towards reading were also in two levels namely positive and negative. The results of this analysis are shown in Table 4.51.
Table 4.51

Regression Analysis for Levels of Metacognition and Attitudes Towards Reading on Reading Comprehension Performance

<table>
<thead>
<tr>
<th>Type of Attitude</th>
<th>Model</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>Regression</td>
<td>788.45</td>
<td>2</td>
<td>394.22</td>
<td>3.83</td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>4634.77</td>
<td>45</td>
<td>102.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5423.22</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>Regression</td>
<td>2450.68</td>
<td>2</td>
<td>1225.34</td>
<td>14.27</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>22241.37</td>
<td>259</td>
<td>85.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24692.05</td>
<td>261</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 310; SS = Sum of Squares; df = Degrees of Freedom; MS = Mean Squares; F = Critical value of F

\(^a\) Predictors: (Constant), Metacognitive Knowledge Scores, Metacognitive Strategy Scores

Results in Table 4.51 show a significant interactive effect between positive attitudes towards reading and the levels of metacognition. There was no significant interaction effect between negative attitudes towards reading and the two levels of metacognition. Further regression analysis was done to get the relative predictive values of the various levels of metacognition and attitudes towards reading on reading comprehension performance. The results were as shown in Table 4.52.
Table 4.52

*Predictive Values of Metacognition and Attitudes Towards Reading on Reading Comprehension Performance*

<table>
<thead>
<tr>
<th>Type of Attitude</th>
<th>Model</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.02</td>
<td>.13</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>Metacognitive Strategy Use Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.38</td>
<td></td>
<td>2.57</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td></td>
<td>28.93</td>
<td>6.98</td>
</tr>
<tr>
<td>Positive</td>
<td>1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.11</td>
<td>1.65</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td>Metacognitive Strategy Use Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.25</td>
<td></td>
<td>3.88</td>
<td>.00</td>
</tr>
</tbody>
</table>

*Note.*<sup>a</sup>R² = .15; Adjusted R² = .11; SE = 10.15  
<sup>b</sup>R² = .10; Adjusted R² = .09; SE = 9.27

The results in Table 4.52 show that when positive and negative attitudes towards reading are combined with metacognitive knowledge, they significantly predict reading comprehension performance. However, when the same positive and negative attitudes are combined with metacognitive strategy use, they do not significantly predict reading comprehension performance. From Table 4.52, a resultant model of prediction for negative attitudes towards reading was identified and represented in equations 3.
Equation 3

\[ \hat{y} = 31.69 + .38 \text{ (MK)} \ (R^2 = .11) \ p < .05 \]

Where \( \hat{y} \) is the predicted reading comprehension score and MK is metacognitive knowledge. It can be observed from equation 3 that metacognitive knowledge had an insignificant predictive value for reading comprehension performance when combined with negative attitudes towards reading (\( \beta = .38, \ p < .05 \)). The predictive values for reading comprehension performance are lower when negative attitudes are combined with metacognitive strategy use. (\( \beta = .02, \ p < .05 \)). From the same Table 4.52, a resultant model of prediction for positive attitudes towards reading was identified and represented in equation 4.

Equation 4

\[ \hat{y} = 28.93 + .25 \text{ (MK)} \ (R^2 = .10) \ p < .05 \]

Where \( \hat{y} \) is the predicted reading comprehension score and MK is metacognitive knowledge. Equation 4 reveals that metacognitive knowledge had a higher and significant predictive value for reading comprehension performance when combined with positive attitudes towards reading (\( \beta = .25, \ p < .05 \)). However, when positive attitudes are combined with metacognitive strategy use, the predictive values are lower and insignificant (\( \beta = .11, \ p < .05 \)).
4.7.3 Discussion of Results

The results show that positive attitudes towards reading are important in reading comprehension tasks. Learners who reported having positive attitudes towards reading as well as metacognitive knowledge did very well in reading comprehension. This may be because the learners may have constantly monitored, evaluated and regulated their reading keeping in mind all the metacognitive strategies that they knew so that when comprehension broke down, they persisted and remediated it using the strategies. These results are consistent with those of Khonamri (2009) who found that significant positive correlations existed between metacognitive knowledge and learners’ beliefs about reading that facilitated comprehension. Ozsoy, Memis and Zoysc (2011) found no significant relationship between metacognition and reading attitudes of low and medium achievers but a significant relationship for high achievers.

The results also seem to echo what Martinez (2006) had earlier opined that metacognitive knowledge can improve attitudes and enhance persistence and motivation in the face of challenging reading tasks. The participants in this case may have felt motivated to go on reading since they knew that they had the knowledge of what to do in case they failed to understand. However, it was surprising that the same positive attitudes towards reading when combined with metacognitive strategy use did not predict reading comprehension significantly. Most studies (Anastasiou & Griva, 2009; Bransford, Brown & Cocking, 2000;
Cromley & Azevedo, 2011) have shown that the use of metacognitive strategies during reading often leads to positive reading outcomes. This may mean that despite the positive attitude and the metacognitive knowledge possessed, the learners may not have effectively utilized the metacognitive strategies.

The results also showed that even when the attitudes towards reading were negative but they were combined with metacognitive knowledge, the learner still did well in reading comprehension. This may imply that metacognitive knowledge may not be affected by a learner’s attitude towards reading. As long as a learner knows what is expected of them and knows what to do before, during and after reading, then they may still do well in reading comprehension. However, when the same negative attitudes towards reading were combined with metacognitive strategy use, the prediction power of reading comprehension became insignificant. This may be explained by the fact that a learner with a negative attitude towards reading may possess the metacognitive knowledge of the various strategies to use to aid comprehension but, they may not use such strategies effectively. Due to the negative attitudes held, the use of such metacognitive strategies may not even persist in the face of challenging reading tasks. Such learners are likely to get frustrated, give up, abandon the strategies and just continue reading and finish without comprehending.

Metacognitive strategy use is very important in reading tasks. However, a reader cannot use what they don’t know. This means that metacognitive knowledge is the
prerequisite to the deliberate use of the metacognitive strategies. This may explain why in the current study, reported strategy use even when combined with positive attitudes towards reading may have lower predictive values as compared to metacognitive knowledge even when combined with negative attitudes towards reading. This may also be because positive attitudes towards reading without the necessary knowledge of how to use metacognitive strategies effectively may not aid comprehension significantly.

The learners in this case may have reported that they used metacognitive strategies but they may not have used them effectively to aid understanding hence the insignificant predictive values on reading comprehension performance. The other explanation for the insignificant role of metacognitive strategy use in predicting reading comprehension could be because of the difficulties involved when reporting metacognitive thoughts. The use of metacognitive strategies may have become automated and unconscious and therefore not very easy to report to others.

These findings may also mean that apart from the reported attitudes towards reading and metacognition, there may be other factors that singly or in combination affected the participants’ reading comprehension performance. These may include pupils’ IQ, inability to know when and how to effectively use a strategy, reading ability, interest, academic motivation, self-efficacy as well as the
general cultural milieu in which the participants live which may have impacted on their reading comprehension abilities.

4.8 Exploratory Analysis

The present research findings reveal that there were significant differences in participants’ metacognition and attitudes towards reading due to gender and age. Although it was not part of the study objectives, the researcher got interested in finding out whether the sampled schools also differed significantly in terms of metacognition, attitudes towards reading and reading comprehension performance.

4.8.1 School Differences in Metacognition, Attitudes towards Reading and Reading Comprehension Performance

The metacognition, attitudes towards reading and reading comprehension mean scores per school as well as their standard deviations are presented in Table 4.53. Primary school C had the highest mean scores in metacognition, attitudes towards reading and reading comprehension performance which was 146.71 ($SD = 13.73$), 76.74 ($SD = 8.90$) and 58.46 ($SD = 7.31$) respectively. This was in contrast to primary school G that had the lowest mean scores in metacognition, attitudes towards reading and reading comprehension performance which were 120.41 ($SD = 22.33$), 63.72 ($SD = 11.20$) and 45.36 ($SD = 10.33$) respectively.
Table 4.53

**Metacognition, Attitudes Towards Reading And Reading Comprehension Mean Scores Across Schools**

<table>
<thead>
<tr>
<th>Schools</th>
<th>N</th>
<th>MMS</th>
<th>SD</th>
<th>ATRMS</th>
<th>SD</th>
<th>RCMS</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>39</td>
<td>140.46</td>
<td>18.25</td>
<td>72.00</td>
<td>9.66</td>
<td>51.68</td>
<td>9.64</td>
</tr>
<tr>
<td>B</td>
<td>39</td>
<td>130.56</td>
<td>15.48</td>
<td>71.67</td>
<td>10.32</td>
<td>50.39</td>
<td>9.85</td>
</tr>
<tr>
<td>C</td>
<td>38</td>
<td>146.71</td>
<td>13.73</td>
<td>76.74</td>
<td>8.90</td>
<td>58.46</td>
<td>7.31</td>
</tr>
<tr>
<td>D</td>
<td>40</td>
<td>145.68</td>
<td>18.83</td>
<td>75.53</td>
<td>10.43</td>
<td>50.70</td>
<td>8.02</td>
</tr>
<tr>
<td>E</td>
<td>37</td>
<td>130.43</td>
<td>18.05</td>
<td>73.11</td>
<td>11.76</td>
<td>45.15</td>
<td>8.31</td>
</tr>
<tr>
<td>F</td>
<td>38</td>
<td>144.63</td>
<td>25.45</td>
<td>74.79</td>
<td>10.23</td>
<td>48.86</td>
<td>9.14</td>
</tr>
<tr>
<td>G</td>
<td>39</td>
<td>120.41</td>
<td>22.33</td>
<td>63.72</td>
<td>11.20</td>
<td>45.36</td>
<td>10.33</td>
</tr>
<tr>
<td>H</td>
<td>40</td>
<td>130.45</td>
<td>21.15</td>
<td>69.70</td>
<td>9.48</td>
<td>49.33</td>
<td>11.24</td>
</tr>
</tbody>
</table>

*Note. N = 310; MMS = Metacognition Mean Scores; ATRMS = Attitudes Towards Reading Mean Scores; RCMS = Reading Comprehension Mean Scores*

### 4.8.2 Testing for Differences in Metacognition, Attitudes towards Reading and Reading Comprehension Performance across Schools

Although there was no hypothesis set for this section, the descriptive statistics lend themselves to one so that the researcher could test if there were significant differences across schools in all the variables of interest. The data obtained in Table 4.53 was therefore subjected to analysis of variance and the results were as shown in Table 4.54.
Table 4.54

*School Differences in Metacognition, Attitudes towards Reading and Reading Comprehension Performance*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>Between Groups</td>
<td>24713.45</td>
<td>7</td>
<td>3530.49</td>
<td>9.30</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>114661.13</td>
<td>302</td>
<td>379.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>139374.57</td>
<td>309</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS</td>
<td>Between Groups</td>
<td>4576.65</td>
<td>7</td>
<td>653.81</td>
<td>6.20</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>31886.19</td>
<td>302</td>
<td>105.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36462.84</td>
<td>309</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCS</td>
<td>Between Groups</td>
<td>4630.60</td>
<td>7</td>
<td>661.51</td>
<td>7.61</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>26269.40</td>
<td>302</td>
<td>86.99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30900.00</td>
<td>309</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 310; SS = Sum of Squares; df = Degrees of freedom; MS = Mean Squares; F = Critical Value of F; MS = Metacognition Score; AS = Attitude towards Reading Score; RCS = Reading Comprehension Score*

The results in Table 4.54 show that there were very significant mean differences in metacognition scores, attitude towards reading scores and the reading comprehension scores \((F= 9.30, df = 7, p < .05; \ F= 6.20, df =7, p < .05\text{ and } F= 7.61, df =7, p < .05\text{ respectively}) among the schools sampled for the study. The researcher then sought to find out which schools introduced the significant differences. To achieve this, further analysis using the Tukey HSD were performed and the results tabulated in 4. 55.
Table 4.55

*Post-Hoc Analysis for School Differences in Metacognition, Attitudes Towards Reading and Reading Comprehension Performance*

<table>
<thead>
<tr>
<th>School</th>
<th>Metacognition Scores</th>
<th>Attitudes towards Reading Scores</th>
<th>Reading Comprehension Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Difference (I-J)</td>
<td>Sig.</td>
<td>Mean Difference (I-J)</td>
</tr>
<tr>
<td>D</td>
<td>1.04</td>
<td>1.00</td>
<td>1.21</td>
</tr>
<tr>
<td>E</td>
<td>16.28*</td>
<td>.01</td>
<td>3.63</td>
</tr>
<tr>
<td>F</td>
<td>2.08</td>
<td>1.00</td>
<td>1.95</td>
</tr>
<tr>
<td>G</td>
<td>26.30*</td>
<td>.00</td>
<td>13.02*</td>
</tr>
<tr>
<td>H</td>
<td>16.26*</td>
<td>.01</td>
<td>7.04</td>
</tr>
<tr>
<td>A</td>
<td>5.21</td>
<td>.94</td>
<td>3.53</td>
</tr>
<tr>
<td>B</td>
<td>15.11*</td>
<td>.02</td>
<td>3.86</td>
</tr>
</tbody>
</table>

The results in Table 4.55 reveal that three primary schools namely, A, D and F had higher mean scores in metacognition scores compared to other schools such as G which had the lowest mean scores in metacognition followed by E and H primary schools. Primary school G however introduced the greatest difference with its poor performance in metacognition. Concerning attitudes towards reading, all primary schools except G had high mean scores. Primary school G therefore introduced the significant differences in attitudes towards reading with its low mean scores. In reading comprehension performance, primary schools A and B obtained higher mean scores compared to H, F, G and E which had the lowest mean scores in that
order hence introducing significant differences in reading comprehension performance.

4.8.3 Discussion of the Results

The results from the preceding Tables (4.53, 4.54 and 4.55) reveal that the primary schools sampled for the study were significantly different in terms of their metacognition, attitudes towards reading as well as in their reading comprehension performance. It is worth noting that the sampled primary schools were from two Educational Zones namely Riruta and Waithaka. Schools A, C, D and H were from Riruta Educational Zone while the remaining (B, E, F and G) were from Waithaka Educational Zone.

When the primary schools are compared in the variables of interest, the schools within Riruta Educational Zone seem to be better than those in Waithaka Educational Zone. For example, primary school D in Riruta Educational Zone obtained the highest metacognition mean scores while school G in Waithaka Educational Zone obtained the lowest mean scores. In terms of attitudes towards reading, school D from Riruta Educational Zone had the highest scores compared to school G in Waithaka Educational Zone which had the lowest. In reading comprehension, the trend continued where the schools with the lowest mean scores were E and G both from Waithaka and A from Riruta Educational Zone had the highest mean score followed by school B from Waithaka Educational Zone. One
primary school namely G in Waithaka Educational Zone consistently obtained the lowest mean scores in metacognition, attitudes towards reading and reading comprehension.

These findings may be due to some factors within the various schools and the two educational zones that may have contributed to these significant differences in metacognition, attitudes towards reading as well as in reading comprehension performance. The two educational zones from which the sampled schools were drawn may differ in facilities, learning experiences, motivation to learn as well as the culture of the schools and the surrounding areas. All these are factors that can impact on learning outcomes of pupils in terms of reading comprehension performance.

Another possible explanation as to why the sampled primary schools in Waithaka Zone obtained lower mean scores in metacognition, attitudes towards reading and reading comprehension compared to their counterparts in Riruta Educational Zone may be due to the fact that Waithaka Zone is home to one of the biggest abattoirs in Nairobi. Over the years, many uneducated locals have been getting casual employment at the abattoirs and seem to be doing well financially. When those still in school look around, they may not feel motivated to read and excel academically since their counterparts who dropped out of school and got jobs at the abattoirs seem to be doing well financially. This may have reduced the
motivation to learn amongst the young people because they know that they do not need academic qualifications to work in the abattoirs. It may also have led to poor role modelling in terms of a reading culture so necessary for development of metacognition and a positive attitude towards reading. Ultimately, this may be negatively affecting not only reading comprehension performance but also the overall academic achievement of pupils as demonstrated by the continuous poor performance of Dagoretti Division in KCPE over the years.
CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction
This chapter summarizes the study findings and shows the implications to the various stakeholders. Conclusions based on the research findings are also drawn and recommendations for policy and further research given.

5.2 Summary
The main goal of this study was to examine how metacognition and attitudes towards reading correlate with reading comprehension performance of standard six pupils of Dagoretti educational division in Nairobi County. The interaction effect and predictive values of metacognition and attitudes towards reading in producing reading comprehension performance were also investigated as well as gender and age differences in pupils’ metacognition and attitudes towards reading. In the exploratory section of the study, school differences in all the variables of interest were tested.

The first objective of the study was to establish the relationship between metacognition and reading comprehension performance. The study findings revealed that there was indeed a positive and significant relationship between the two variables. Further analysis revealed that between the two sub-scales of metacognition that is, metacognitive knowledge and metacognitive strategies, the
former had a higher positive and significant correlation with reading comprehension performance compared to metacognitive strategy use. Therefore in terms of predicting reading comprehension performance, both sub-scales of metacognition had a positive and significant predictive value but the best and most significant predictor of reading comprehension performance was metacognitive knowledge.

The second objective of the study was to find out the relationship between attitudes towards reading and reading comprehension performance. It was found that there was a positive and significant relationship between attitudes towards reading and reading comprehension performance. Pupils with positive attitudes towards reading had significantly better reading comprehension scores than those with negative attitudes towards reading.

The third objective of the study was to test if there were gender differences in metacognition and attitudes towards reading. The study found out that although girls had a slightly higher mean in metacognition scores than boys, the differences in these means were not significant. Similarly, there were no significant gender differences in the participants’ attitude towards reading scores.

The fourth objective of the study was to examine age differences in metacognition and attitudes towards reading. Significant mean differences in the pupils’ total
metacognition scores were found based on their age categories and they favoured the younger pupils in the age category 10-11 years. Further analysis using the two sub-scales of metacognition that is metacognitive knowledge and metacognitive strategy use showed that there were significant mean differences in metacognitive knowledge due to age but still favouring the 10-11 year age category compared to the older pupils. Regarding attitudes towards reading, the study found that there were significant mean differences in attitude towards reading scores due to age. These differences favoured the pupils in the age category 10-11 years.

The fifth objective sought to determine the interaction effect of metacognition and attitudes towards reading on reading comprehension performance. A significant interaction effect between metacognition and attitudes towards reading in producing reading comprehension performance was found. Metacognition had a significant predictive value for reading comprehension performance compared to attitudes towards reading that did not. Further analysis revealed a significant predictive value of both metacognitive knowledge and positive attitudes towards reading on reading comprehension performance. In the exploratory part of the study, significant mean differences in metacognition scores, attitude towards reading scores and the reading comprehension scores were found among the schools and between the educational zones sampled for the study.
5.3 Conclusions

The first objective of the study was to establish the relationship between metacognition and reading comprehension performance. The results of the study confirmed the hypothesized relationship between metacognition and reading comprehension performance. As Table 4.11 shows, metacognition was found to have a positive and significant relationship with reading comprehension performance.

When the two sub-scales of metacognition (metacognitive knowledge and metacognitive strategy use) were analysed, it was found that although both were positively related to reading comprehension performance, metacognitive knowledge is what significantly predicted reading comprehension performance in the case of the participants in the study. This however does not demean the role played by metacognitive strategy use because metacognitive knowledge on its own without being translated into strategies may not help a pupil achieve reading comprehension. Learners should therefore be equipped with both the knowledge and strategies to use before, during and after reading to aid their comprehension. Fouché and Lamport (2011) have in fact asserted that making metacognitive processes more intentional will allow for more purposeful and strategic applications.
The teaching of metacognitive knowledge and effective strategy use should be incorporated into the teaching of reading. This can be done through modelling using a think-aloud process where the teacher of English reads a passage and simultaneously verbalizes the thinking process occurring. This helps the pupils to see the considerations made while reading as well as what to do in the face of challenging instructional texts. After modelling, the pupils can be allowed time to practise reading different passages. This can be followed by a class discussion where pupils share their reading experiences citing the strategies used as well as challenges encountered. Such an exercise not only teaches metacognition but may also help the teacher to detect problem areas for further assistance.

The second objective of the study was to find out the relationship between attitudes towards reading and reading comprehension performance. Results in Table 4.23 reveal that the type of attitude towards reading held by a pupil was significantly related to their reading comprehension performance. This may imply that teachers, parents and the society may need to change the negative attitudes that some pupils have towards reading while at the same time motivating those with positive attitudes towards reading. This can be done by encouraging reading of story books just for its own sake without pegging it to examinations. Teachers of English also need to be friendly and sensitive to the needs of pupils and create a conducive environment for reading. This can be done by the creation of literary-rich classrooms and libraries where pupils can get story books with ease. These
efforts can be complemented by parents who should first and foremost be role models to their children in terms of creating a reading culture. This they can do by creating time for reading for leisure. They can also buy story books for their children and encourage them to read. These efforts may eventually breed a reading culture that the coming generations may imitate and hence improve their reading outcomes.

The third objective of the study was to test if there were gender differences in metacognition and attitudes towards reading. Results in Table 4.27 showed that although girls had slightly higher metacognition and attitudes towards reading scores compared to boys, these differences were not significant. This however does not mean that no intervention programmes for both genders are needed. Such programmes should be geared towards improving the reading ability as well as the overall attitude towards reading of the pupils who were found to have negative attitudes. With such an integrated approach, more pupils may begin to approach reading more positively and benefit from improved reading comprehension.

The fourth objective of the study was to examine age differences in metacognition and attitudes towards reading. The age of pupils was found to be a key factor accounting for pupils’ metacognition and attitudes towards reading as seen in Tables 4.35 and 4.44. Significant age differences were found in regard to metacognition and attitudes towards reading. Tables 4.36 and 4.45 show that these
significant age differences favoured the younger age category of 10-11 years. It is worth noting that the average age of a pupil in standard six in Kenya is 12 years. The 10-11 year olds are therefore pupils who have had a smooth progression in school uninterrupted by truancy, retention, poverty and perhaps sickness among other factors that may have affected the older pupils. As the study confirmed, such pupils were better in terms of their reading performance and attitudes towards reading having benefitted from successful and uninterrupted learning.

There is need therefore for teachers to create conducive learning atmospheres devoid of punishment to avoid truancy and dropping out of pupils. Class retention that often ends up frustrating pupils should be voluntary, if need be, but not forced on learners who thereafter develop negative attitudes towards not just reading but the school as a whole. Pupils from low socio-economic backgrounds may also need support programmes that cater for their school needs to avoid dropping out and back when they are very old.

The fifth objective of the study sought to determine the interaction effect of metacognition and attitudes towards reading on reading comprehension performance. As results in Table 4.49 reveal, both metacognition and attitudes towards reading positively and significantly predicted reading comprehension performance. However, metacognition had a higher predictive value than attitudes towards reading on reading comprehension performance. The positive and
significant interaction between the two predictor variables in producing reading comprehension performance implies that pupils do not just need the knowledge and strategies to use while reading to aid their comprehension but also a positive attitude towards reading.

A positive attitude is needed especially on the face of some challenging reading tasks where the pupil may not out rightly know which strategies to use in order to comprehend. The positive attitude towards reading may therefore make the pupils more patient and resilient as they strive towards remediating lack of understanding. This means that the two variables are complementary and should therefore be developed in pupils for increased reading comprehension. Apart from the teaching of metacognition alongside reading, a positive attitude towards reading needs to be inculcated as already discussed. This may go a long way in improving pupils’ reading outcomes and subsequently their overall academic performance.

In the exploratory analysis, Table 4.54 shows that pupils’ metacognition, attitudes towards reading and reading comprehension performance were found to vary depending on the schools that they attended. The implication of this is that there were significant school differences that affected pupils’ metacognition, attitudes towards reading as well as reading comprehension performance. The schools sampled for the study were from two different educational zones. Further analysis
showed that scores of pupils on the variables of interest in one zone were significantly better than from the other zone. This implies that there could be some factors within one zone that could be promoting the development of metacognition and positive attitudes towards reading. Conversely, some factors in the other zone could be hindering development of the same.

5.4 Recommendations

Based on the study findings, the following recommendations are made for policy and further research.

5.4.1 Policy Recommendations

i. The first objective of the study was to establish the relationship between metacognition and reading comprehension performance. The study findings revealed that there was indeed a positive and significant relationship between the two variables. It is therefore recommended that primary school curriculum incorporate the teaching of metacognition alongside reading to enhance pupil’s reading comprehension performance.

ii. More instructional time should be allocated to reading in primary schools to expose the pupils to different text structures. This will help to develop their metacognition and ultimately improve their reading comprehension.

iii. The second objective of the study was to find out the relationship between attitudes towards reading and reading comprehension performance.
Attitudes towards reading were found to be positively and significantly related to reading comprehension performance. These attitudes deteriorated with the increasing age of the pupils. Measures should be put in place to assist all learners progress through school within the right age and with minimal frustration. Enforcing the rules against class retention would help to ensure that pupils do not develop negative attitudes towards reading and towards school in general.

5.4.2 Recommendations for Further Research

The following suggestions are made for further research;

i. The results from objective one and two show that metacognition and attitudes towards reading were positively and significantly correlated to pupils’ reading comprehension performance. However, reading comprehension performance is not just a function of metacognition and attitudes towards reading. Further research could help to explore other important factors that influence reading comprehension performance and which can be manipulated to aid learners’ reading comprehension.

ii. The second objective of the study was to find out the relationship between attitudes towards reading and reading comprehension performance. Further studies could use other methods such as interviews and focus group discussions to obtain pupils’ attitudes towards reading. This would help to triangulate the results.
iii. The third objective of the study was to test if there were gender differences in metacognition and attitudes towards reading. Further research could examine gender differences in the various elements or processes of metacognition such as planning, monitoring and evaluation. Factors that lead to gender differences in attitudes towards reading could also be examined so as to introduce the necessary intervention strategies to bridge the gap.

iv. The fourth objective of the study was to examine age differences in metacognition and attitudes towards reading. Future research could compare different levels of schooling from primary school through high school and then university in terms of their metacognition and attitudes towards reading. This may provide further understanding on how the two variables are related to reading comprehension performance across the different levels of learning.

v. The current study correlated metacognition and attitudes towards reading with reading comprehension performance in an English passage. Further studies in this area could use different subject areas such as Business Studies, Science or even Kiswahili to check whether similar results will be obtained.
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doi:10.1598/RT.61.2.6


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APPENDICES

APPENDIX I

LETTER TO PARENTS/GUARDIANS SEEKING CONSENT FOR PUPILS’ PARTICIPATION

Elizabeth Mwaniki
Department of Educational Psychology
Kenyatta University
P.O. Box 43844-00100
Nairobi.

12th September, 2014.

Dear Parent/Guardian,
I am a student in the Department of Educational Psychology at Kenyatta University. I am currently undertaking research on reading comprehension amongst standard six pupils. The findings of the research will help improve reading comprehension performance of learners and consequently their overall academic performance. Your son/daughter is in one of the schools selected for the research. I therefore wish to request for your permission to enable him/her participate in the study which will involve reading an English comprehension passage and answering some questions on reading. This will be done during lesson time.
Kindly write your name and sign in the space provided below if you allow your son/daughter to participate in the study. I look forward to your acceptance and to working with your son/daughter.

Yours faithfully,

**Elizabeth Mwaniki.**

……………………………………………………………………………………………

**Parent’s / Guardian’s Consent**

I (Name) ………………………………………………..parent / guardian of
(Name) …………………………………………………………………………..allow my
son/daughter to participate in the research on reading.  

Signature …………………………… Date ……………………………
APPENDIX II

ENGLISH COMPREHENSION PASSAGE AND TEST

Read the following passage carefully and answer the comprehension questions that follow. You will also be asked questions about how and what you did as you read the passage.

Have you ever wondered why some people wake up in the morning and before they can even take a cup of tea, go out to the newspaper vendor and buy a newspaper? I used to wonder about this until I got into the habit of reading newspapers. That is when I realized that they are very rich sources of information. For example, when free education was announced in the country, everyone wanted to get all the information about it. They relied on newspapers to give them the information they needed. The story made headlines and the lead story was all about the children going to school and how the schools were coping.

In newspapers, the main story usually on the first page is called the lead story. This story is usually the one that would be of interest to many readers. Many people will want to look at the headlines before deciding whether to buy the newspaper or not. Newspaper owners and editors therefore try to make the headlines as catchy as possible. There is also a page that is set aside for letters from readers. One can find very interesting letters to the newspaper editor, complaining about something bad that happened to them or congratulating someone on a job well done.
Then there are the humour pages and leisure pages. These are the pages where you can find jokes, puzzles and facts with fun. The jokes make you laugh and the puzzles are a good way to use your leisure time. The facts-with-fun column is very informative. For example, one newspaper reported that sparrows can stay up in the air without landing for a full year. Not many people would know that fact.

Newspapers also carry advertisements. These may be for anything under the sun. They may be for jobs, services or property to let or property for sale. In most cases, advertising is done on very small spaces. The bigger the advertisement, the more money one has to pay for it. This means that the advertisers would have to choose the words and pictures they want to appear in an advert very carefully. They must catch the readers’ attention. This explains why most adverts are brief and to the point.

Cartoons are another good method that newspapers use to make people laugh at their or other people’s foolishness or thoughtlessness. For example, someone once said something really silly. A cartoonist drew a cartoon showing a tongue that was long and winding. Many people found that very funny and laughed about it. Most newspapers also carry a page that has both the picture and name of a dead person. One may sometimes see a friend or a relative who has passed away.
Pictures are an important feature in newspapers. Most stories are illustrated with pictures or colourful photographs that make newspapers very attractive to look at. The front page in most papers will normally carry a very attractive colour picture of a story. The children’s page is very interesting. There are many interesting stories, cartoons, jokes and the crossword puzzles which make children eager to buy and read newspapers.

**Comprehension test**

1. Why do some people like to buy newspapers?
   
   A. To read as they wait for breakfast  
   B. To get information  
   C. To pass time in the morning  
   D. Because it is their habit  

2. What kinds of stories make headlines?
   
   A. Stories about free education  
   B. Very important or interesting stories  
   C. Stories that appear on TV  
   D. Stories about sparrows  

3. Some people look at the headlines before they buy newspapers because the headlines are:

   A. Attractive  
   B. Brief  
   C. Catchy  
   D. Humorous
4. To whom do people write if they have a complaint to make through the newspapers?
   A. Advertiser
   B. Newspaper owner
   C. Editor
   D. Vendor

5. In the leisure pages, one can find all the following except one. Which one?
   A. Jokes
   B. Advertisements
   C. Puzzles
   D. Facts with fun

6. Newspaper owners and editors try to make headlines as **catchy** as possible.

   What does the word catchy mean?
   A. Funny
   B. Attracting humour and laughter
   C. Entertaining
   D. Attracting people’s interest and attention

7. Why are children eager to buy and read newspapers?
   A. Because they want to read about free education
   B. Because they want to see pictures
   C. Because they want to read advertisements
   D. Because of interesting stories, cartoons and jokes
8. Which of the following is true about advertisements?
   A. They must be in the lead story
   B. They are for entertainment only
   C. They are always done on small spaces only
   D. They are brief and to the point

9. Which of the following statements is true about newspapers?
   A. Newspapers only write about dead people
   B. Most newspapers carry stories about sparrows
   C. Newspapers have illustrations to make them interesting
   D. All newspapers carry stories on free education

10. The best title for this passage would be;
    A. Newspaper stories
    B. Sources of information
    C. Newspaper headlines
    D. Newspapers
APPENDIX III

QUESTIONNAIRE FOR PUPILS

PART 1: BACKGROUND INFORMATION

Please fill in the blank spaces or put a tick (√) where appropriate.

Code Number _______________  School: _____________________________

Age ____________________               Boy ☐                   Girl ☐

PART II: METACOGNITIVE STRATEGY USE QUESTIONNAIRE

Read the following statements carefully and tick (√) the answer that best describes what you did while reading the English passage that you have just read. This is not an exam so there is no right or wrong answer. Your answers will not be shown to your teachers. The answers range from strongly agree to strongly disagree.

SA = Strongly Agree
A = Agree
U= Unsure
D = Disagree
SD = Strongly Disagree

<table>
<thead>
<tr>
<th>STATEMENTS</th>
<th>ANSWERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before I started reading, I:</strong></td>
<td></td>
</tr>
<tr>
<td>1  Looked through the passage for a few moments</td>
<td>SA  A  U  D  SD</td>
</tr>
<tr>
<td>2  Did not check for a title or heading</td>
<td></td>
</tr>
<tr>
<td>3  I started reading at once without further thinking</td>
<td></td>
</tr>
<tr>
<td>4  Did not guess what the passage will be about</td>
<td></td>
</tr>
<tr>
<td><strong>During reading, I:</strong></td>
<td></td>
</tr>
<tr>
<td>5  Did not put a single mark on the passage</td>
<td></td>
</tr>
<tr>
<td>6  Thought about the parts I had to read very carefully</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did not check whether I understood the passage till I finished reading</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Did not think much about how the passage will continue</td>
</tr>
<tr>
<td>9</td>
<td>Tried to find out what was important in the passage</td>
</tr>
<tr>
<td>10</td>
<td>Underlined the important words and ideas</td>
</tr>
<tr>
<td></td>
<td><strong>When I felt like I did not understand a part of the passage, I:</strong></td>
</tr>
<tr>
<td>11</td>
<td>Continued reading up to the end</td>
</tr>
<tr>
<td>12</td>
<td>Checked whether difficult words were explained elsewhere in the passage</td>
</tr>
<tr>
<td>13</td>
<td>I ignored the difficult words and sentences</td>
</tr>
<tr>
<td>14</td>
<td>Stopped and read the difficult parts once more</td>
</tr>
<tr>
<td>15</td>
<td>Checked whether there were words that I did not know</td>
</tr>
<tr>
<td>16</td>
<td>I marked the difficult words and sentences</td>
</tr>
<tr>
<td></td>
<td><strong>When I finished reading, I:</strong></td>
</tr>
<tr>
<td>17</td>
<td>Thought about whether I had understood the passage or not</td>
</tr>
<tr>
<td>18</td>
<td>Did not try to remember what the passage was about</td>
</tr>
<tr>
<td>19</td>
<td>Thought about what the writer wanted to say</td>
</tr>
<tr>
<td>20</td>
<td>Did not think about the passage again</td>
</tr>
</tbody>
</table>

**PART III: ATTITUDE TOWARDS READING QUESTIONNAIRE**

Read the following statements carefully and tick (✓) the answer that best describes how you feel about reading. Be honest because there is no right or wrong answer. Your answers will not be shown to your teachers. The answers also range from strongly agree to strongly disagree.

**SA = Strongly Agree**

**A = Agree**

**U = Unsure**

**D = Disagree**
**SD = Strongly Disagree**

<table>
<thead>
<tr>
<th>STATEMENTS</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like reading a book on a rainy day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I like reading for fun at home</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. I don’t like getting a book for a present</td>
<td></td>
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<tr>
<td>4. I enjoy spending my free time reading</td>
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<tr>
<td>5. I like reading a new book</td>
<td></td>
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<tr>
<td>6. I don’t like reading books during the holiday</td>
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<td>7. I like reading instead of playing</td>
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<tr>
<td>8. I like going to the library to read</td>
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<tr>
<td>9. I enjoy reading different kinds of books</td>
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<tr>
<td>10. I like it when the teacher asks me questions about what I read in class</td>
<td></td>
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</tr>
<tr>
<td>11. I am not happy when given reading homework</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>12. I enjoy reading in school</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13. I feel happy when someone reads a book for me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. I am happy when it is time for reading English passages in class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I don’t like reading silently by myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. I like the stories I read in class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Reading is difficult</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. I like using a dictionary as I read</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I like reading loudly in class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I don’t like reading for a test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PART IV: METACOGNITIVE KNOWLEDGE QUESTIONNAIRE**

Read the following statements carefully and tick (√) the answer that best describes what you generally know about reading. Be honest because there is no right or wrong answer. Your answers will not be shown to your teachers. The answers range from strongly agree to strongly disagree.

**SA = Strongly Agree**

**A = Agree**

**U= Unsure**
D = Disagree
SD = Strongly Disagree

<table>
<thead>
<tr>
<th>STATEMENTS</th>
<th>ANSWERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The best thing to do before starting to read a passage is to;</strong></td>
<td></td>
</tr>
<tr>
<td>1 Briefly look through and ask myself what the passage will be about</td>
<td>SA</td>
</tr>
<tr>
<td>2 Count all the paragraphs</td>
<td>A</td>
</tr>
<tr>
<td>3 Think about the title or heading</td>
<td>U</td>
</tr>
<tr>
<td>4 Read the last sentence of the passage to know how it will end</td>
<td>D</td>
</tr>
<tr>
<td><strong>The best thing to do during reading is to;</strong></td>
<td></td>
</tr>
<tr>
<td>5 Read the passage quickly and finish</td>
<td>SD</td>
</tr>
<tr>
<td>6 Ask myself whether I understand the passage</td>
<td></td>
</tr>
<tr>
<td>7 Mark the words or sentences that I do not understand</td>
<td></td>
</tr>
<tr>
<td>8 Try to pick the most important ideas from the passage</td>
<td></td>
</tr>
<tr>
<td>9 Jump to the last sentence to know how the passage will end</td>
<td></td>
</tr>
<tr>
<td>10 Think about what the writer wanted to say</td>
<td></td>
</tr>
<tr>
<td><strong>The best thing to do when I do not understand a word or sentence in a passage is to;</strong></td>
<td></td>
</tr>
<tr>
<td>11 Try to guess the meaning of the word or sentence from the way it is used in the passage</td>
<td></td>
</tr>
<tr>
<td>12 Ignore the difficult words and sentences</td>
<td></td>
</tr>
<tr>
<td>13 Read the first and last sentence of the passage</td>
<td></td>
</tr>
<tr>
<td>14 Continue reading up to the last sentence</td>
<td></td>
</tr>
<tr>
<td>15 Read that part of the passage once again</td>
<td></td>
</tr>
<tr>
<td>16 Look up the meaning or check whether difficult words and sentences are explained elsewhere</td>
<td></td>
</tr>
<tr>
<td><strong>The best thing to do after reading to find out whether I understood the passage is to;</strong></td>
<td></td>
</tr>
<tr>
<td>17 Count all the words that I did not understand</td>
<td></td>
</tr>
<tr>
<td>18 Try to say in my own words what I have read</td>
<td></td>
</tr>
<tr>
<td>19 Read the passage title or heading once again</td>
<td></td>
</tr>
<tr>
<td>20 Try to pick the main idea from the passage</td>
<td></td>
</tr>
</tbody>
</table>

Thank you very much for taking your time to answer the questions.
## APPENDIX IV

### DAGORETTI DIVISION LIST OF SCHOOLS AS AT JULY, 2014

<table>
<thead>
<tr>
<th>Riruta Zone</th>
<th>Waithaka Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Mbagathi Road</td>
<td>Dagoretti Specisl</td>
</tr>
<tr>
<td>2  Shadrack Kimalel</td>
<td>Gitiba</td>
</tr>
<tr>
<td>3  Jamhuri</td>
<td>Kirigu</td>
</tr>
<tr>
<td>4  Kinyanjui Road</td>
<td>Mukarara</td>
</tr>
<tr>
<td>5  Dagoretti Muslim</td>
<td>Mutuini</td>
</tr>
<tr>
<td>6  Gatina</td>
<td>Nduraruua</td>
</tr>
<tr>
<td>7  Kawangware</td>
<td>Nembu</td>
</tr>
<tr>
<td>8  Riruta H.G.M.</td>
<td>Dr. Muthiora</td>
</tr>
<tr>
<td>9  Riruta Satelite</td>
<td>Ruthimitu</td>
</tr>
<tr>
<td>10 Kabiria</td>
<td>Kagira</td>
</tr>
<tr>
<td>11 Toi</td>
<td>Dagoretti Girls Rehab.</td>
</tr>
<tr>
<td>12 Joseph Kangethe</td>
<td>Waithaka Special</td>
</tr>
</tbody>
</table>
APPENDIX V

NAIROBI COUNTY SCHOOLS’ DIVISIONAL ORDER OF MERIT IN

KCPE FROM 2009 TO 2013.

<table>
<thead>
<tr>
<th>POS</th>
<th>2009</th>
<th>MS</th>
<th>2010</th>
<th>MS</th>
<th>2011</th>
<th>MS</th>
<th>2012</th>
<th>MS</th>
<th>2013</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Westlands</td>
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<td>Westlands</td>
<td>260</td>
<td>Westlands</td>
<td>255</td>
<td>Westlands</td>
<td>260</td>
<td>Westlands</td>
<td>266</td>
</tr>
<tr>
<td>2</td>
<td>Langata</td>
<td>262</td>
<td>Langata</td>
<td>255</td>
<td>Embakasi</td>
<td>254</td>
<td>Embakasi</td>
<td>254</td>
<td>Embakasi</td>
<td>257</td>
</tr>
<tr>
<td>3</td>
<td>Makadara</td>
<td>242</td>
<td>Makadara</td>
<td>243</td>
<td>Langata</td>
<td>251</td>
<td>Langata</td>
<td>249</td>
<td>Langata</td>
<td>254</td>
</tr>
<tr>
<td>4</td>
<td>Embakasi/</td>
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<td>Embakasi/</td>
<td>241</td>
<td>Makadara</td>
<td>242</td>
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<td>246</td>
<td>Makadara</td>
<td>253</td>
</tr>
<tr>
<td></td>
<td>Njiru</td>
<td></td>
<td>Njiru</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>Kamukunji</td>
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<td>Kamukunji</td>
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</tr>
<tr>
<td>6</td>
<td>Starehe</td>
<td>231</td>
<td>Kasarani</td>
<td>230</td>
<td>Starehe</td>
<td>225</td>
<td>Kasarani</td>
<td>234</td>
<td>Kasarani</td>
<td>239</td>
</tr>
<tr>
<td>7</td>
<td>Kasarani</td>
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<td>Starehe</td>
<td>224</td>
<td>Kasarani</td>
<td>225</td>
<td>Njiru</td>
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<td>Njiru</td>
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</tr>
<tr>
<td>8</td>
<td>Dagoretti</td>
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<td>Dagoretti</td>
<td>215</td>
<td>Njiru</td>
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<td>Starehe</td>
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<td>Starehe</td>
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</tr>
<tr>
<td>9</td>
<td>-</td>
<td></td>
<td>-</td>
<td></td>
<td>Dagoretti</td>
<td>217</td>
<td>Dagoretti</td>
<td>220</td>
<td>Dagoretti</td>
<td>228</td>
</tr>
</tbody>
</table>

Note. POS = Position; MS = KCPE Mean Score

Source: City Council of Nairobi, Education Department, 2014
APPENDIX VI

MAP OF EDUCATIONAL DIVISIONS IN NAIROBI COUNTY
APPENDIX VII

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke
OUR REF: E88/12968/09

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530
DATE: 8th April 2014

The Permanent Secretary,
Ministry of Higher Education, Science & Technology,
P.O. Box 30040,
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR MS. MWANIKI E. WANJIKU REG. NO. E88/12968/09

I write to introduce Ms. Wanjiku who is a Postgraduate Student of this University. She is registered for Ph.D. Degree programme in the Department of Educational Psychology in the School of Education.

Ms. Wanjiku intends to conduct research for a proposal entitled, “Metacognition and Attitudes towards Reading as Correlates of Reading Comprehension Performance among Standard Six Pupils of Dagoretti Division, Nairobi, Kenya”.

Any assistance given will be highly appreciated.

Yours faithfully,

[Signature]

MRS. LUCY N. MBAABU
FOR: DEAN, GRADUATE SCHOOL
RM/cao
APPENDIX VIII

NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471
2241349, 310571, 2219429
Fax: +254-20-518245, 5182399
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke

Ref: No.

NACOSTI/P/14/1917/2297

Elizabeth Wanjiku Mwaniki
Kenyatta University
P.O. Box 43844-00100
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on
"Metacognition and attitudes towards reading as correlates of reading
comprehension performance among standard six pupils of Dagoretti
Division, Nairobi, Kenya," I am pleased to inform you that you have been
authorized to undertake research in Nairobi County for a period ending 14th
November, 2014.

You are advised to report to the County Commissioner and the County
Director of Education, Nairobi 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: SECRETARY/CEO

Copy to:

The County Commissioner
The County Director of Education
Nairobi County.

APPENDIX IX: RESEARCH PERMIT

THIS IS TO CERTIFY THAT:

MS. ELIZABETH WANJIJKU MWANJI

of KENYATTA UNIVERSITY, 29196-100

Nairobi, has been permitted to conduct research in Nairobi County

on the topic: METACOGNITION AND ATTITUDES TOWARDS READING AS CORRELATES OF READING COMPREHENSION PERFORMANCE AMONG STANDARD SIX PUPILS OF DAGORETTI DIVISION, NAIROBI, KENYA

for the period ending:

14th November, 2014

Applicant's Signature

[Signature]

[Name]

Secretary

National Commission for Science, Technology & Innovation