

**FIELD DEPENDENT-INDEPENDENT COGNITIVE STYLES AND
LEARNING GOAL ORIENTATION AS CORRELATES OF READING
COMPREHENSION PERFORMANCE AMONG STUDENTS IN
KIAMBU COUNTY, KENYA**

TERESIA WANJIRU KIRAGU

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DECLARATION

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

Signature: _____ Date: _____

Teresia Wanjiru Kiragu

E83/7061 /2003

This research work has been submitted for appraisal with our approval as
University Supervisors

Signature: _____ Date: _____

Dr. Doyne Kageni Mugambi

Educational Psychology Department,

Kenyatta University

Signature: _____ Date: _____

Professor Theresia Kinai

Educational Psychology Department,

Kenyatta University

DEDICATION

I dedicate this work to my late dad and mum, John, and Veronica, who laid a firm foundation which has enabled me to reach this far in academics. Secondly, I dedicate the work to my husband Joshua and my son John, my daughter June and grandson Aiden for supporting me through difficult times while pursuing this degree. God bless you all.

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LIST OF ABBREVIATIONS AND ACRONYMS

EGRA	Early Grade Reading Assessment
FD	Field Dependent
FI	Field Independent
GEFT	Group Embedded Figures Test
IRB	Institution Review Board
KCSE	Kenya Certificate of Secondary Education
MANOVA	Multivariate Analysis of Variance
NACOSTI	National Commission for Science, Technology, and Innovation
NAEP	National Assessment of Educational Progress
USA	United States of America

ABSTRACT

The research issue addressed by this study is that for a long time, secondary school teachers in Kenya have primarily ignored the cognitive learning styles of students in their pedagogical strategies. Scholarly efforts to address this problem have focused on factors other than cognitive factors. The study aimed to establish the relationship between Field Dependent-Field Independent cognitive learning styles and reading comprehension performance, to examine the relationship between learning goal orientations and reading comprehension performance, to establish if there are differences in reading comprehension performance of Form Two students with FD and FI cognitive learning styles, to establish if there are differences in reading comprehension performance of Form Two students with mastery and performance goal orientations, to examine if there are gender differences in FD and FI cognitive styles towards reading comprehension performance and to establish if there are gender differences in learning goal orientation towards reading comprehension performance among Form Two students in Kiambu County. The study was anchored on the FD-FI theory of cognitive styles by Witkin (1976) and the achievement goal orientation theory by Elliot & Church (1997). The researcher used a correlation research design. The target population was 8142 Form Two students from 176 public day secondary schools in Kiambu County. Public day secondary schools were selected using purposive sampling, and the students were selected using proportionate stratified sampling and simple random sampling. The sample size was 20 public day secondary schools representing 11%, and 860 students representing 10.6%. The study used three research instruments namely; a modified group embedded figures test, goal orientation questionnaire and an English comprehension test. A pilot study was carried out in two public day schools with a sample of 30 students to establish the reliability and validity of the research tools. Data analysis involved Pearson correlation and t-test testing the research hypotheses using the SPSS program Version 27. The results indicated that there was a positive significant correlation between FD cognitive learning style and reading comprehension score, $r(404) = .48, p < .00$. The findings also revealed that there was a significant relationship between field independent cognitive learning style and reading comprehension performance, $r(452) = .32, p < .01$. There was a significant positive relationship between learning goal orientation and reading comprehension performance, $r(856) = .14, p < .05$. It was established that the mean score difference in reading comprehension performance of respondents with FD and FI cognitive learning styles was statistically significant, $t(854) = -2.13, p < .05$. The mean difference in reading comprehension performance of respondents with mastery and performance goal orientation was not statistically significant, $t(825) = -1.28, p > .05$. The study results indicated that female respondents had a higher mean in FD cognitive learning style than male respondents, while male respondents had a higher mean in FI scores than female respondents. The study recommends that curriculum designers and learning content developers should include cognitive learning styles in learning books to educate secondary school students on the importance of these styles in educational achievement. Teachers, parents, and all other stakeholders should train students on skills required to develop learning goal orientation to enhance reading comprehension performance. Teachers should use diverse teaching methods to cater for cognitive learning styles to improve reading comprehension performance.

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter discusses the study's background, the problem statement, and the purpose of the study. It also presents the research objectives, hypotheses, significance of the study, limitations and delimitations, assumptions, theoretical framework, conceptual framework, and operational definition of terms.

1.2 Background to the Study

In most world cultures, language is used as a communication tool and in problem-solving both in and outside school. Language majorly exists in two forms: written language, often in print form and spoken language. Reading comprehension plays a significant role in helping people to understand, use, and communicate using print or written language. In school achievement, reading comprehension is fundamental to enhanced learning and strategic information processing (Lianne et al., 2010). For learners to effectively respond to academic needs, they need to read and understand instructional materials in teaching and learning. Learning progress is significantly shaped by the students' ability to comprehend what they read. Even during assessment, reading comprehension is very critical if the learners are to score quality grades.

The inability to read and understand will make it impossible for students to participate productively in this competitive 21st century. Therefore, the importance of reading comprehension in educational settings, and particularly for learners in secondary schools, cannot be underrated. In high school, learners

are expected to read and comprehend, text from different subjects in order to be able to analyse, apply and discuss the knowledge as part of their studies. It is therefore imperative that they are able to comprehend what they are reading.

There is widespread knowledge of the significant role that reading comprehension plays in school achievement. In spite of this knowledge, poor performance in reading comprehension remains a challenge across many countries worldwide (Al-Jarrah & Ismail, 2018). For instance, in the USA, Spenser et al. (2014) pointed out that about 10%-15% of school-going children experience below-average achievement in reading comprehension. Lee et al. (2007) reported that fourth-grade learners in the USA were struggling with reading comprehension difficulties because they could not attain the basic levels of reading comprehension performance. Unsatisfactory performance in reading comprehension among the said learners implies that they may not excel in subsequent learning grades. The gloomy picture of declining performance in reading comprehension in the country was also brought out by Strauss (2017). It was reported that reading comprehension performance among children in fourth grade has declined since 2001. The country lagged behind other developed countries in reading comprehension scores in the international reading exam ranking.

Similarly, Lesaux and Kieffer (2010) reported that among 399 sixth-grade students who participated in a research in USA, 66% of them were classified as struggling readers who could not satisfactorily comprehend what they were reading. The poor performance in reading comprehension was characterized by insufficient knowledge and vocabulary in the English language. Everyday

speech prevents the students from classifying strange words and relating to their contextual use. This poor performance in reading comprehension was not limited to early grades in the US but also to other parts of the world.

A 2019 national report for reading and mathematics in the US showed that high school students had difficulties with reading comprehension, where higher percentages of learners in Grade 12 performed poorly in reading comprehension compared to 2015 (Nation's Report Card, 2019). Findings from other studies seemed to underscore this state of affairs. For example, Smith and Johnson (2019) researched on North American high school learners' reading comprehension skills to address challenges of reading comprehension. The researchers found a worrying downward trend in the population's reading comprehension. There was an achievement gap in the student's ability to comprehend written materials. The study found that only 55% of those involved in the study attained satisfactory reading comprehension scores.

Likewise, to address the challenge of reading comprehension underachievement among some students in Australia, Thompson and Johnson (2016) examined the correlation between students' socio-economic status (SES) and their reading comprehension skills of secondary schools. The study showed that students from higher socio-economic status performed better than their counterparts from low socio-economic status. These researchers emphasized the need for focused secondary school interventions to close the achievement gap. This calls for additional studies, to pinpoint correlates of reading comprehension in order to identify and recommend the right interventions.

Poor reading comprehension performance prompted a study by Akbari et al. (2019) in Iran, which examined the impact of student's self-regulated learning and reading comprehension achievement. The results showed student's reading comprehension improved due to effective use of self-regulated learning strategies such as establishing goals, keeping track of their progress, and reflecting on their learning. Reading comprehension was also enhanced using meta-cognitive methods, such as pre-reading preparation and post-reading evaluation. These findings showed that cognitive variables can be manipulated to improve reading comprehension performance among students.

Reading comprehension performance has also been reported to be an issue of concern among Chinese learners. Chen et al. (2018) conducted a research in China and reported that reading comprehension is a challenge among some students with only 45% of them showing adequate reading comprehension skills. This research shows that a significant number of students perform below standard in reading comprehension in English language in China.

Comparably, in other Asian countries, such as in Thailand, Chawwang (2008) examined reading comprehension performance and found that most of the sampled students experienced difficulties in English reading comprehension. This problem was associated with inadequate vocabulary. Al-Jarrah and Ismail (2018) reported that reading comprehension difficulties were significant challenges among students in Malaysia. It was revealed that the significant problem was failure to recognize text. The problem of inadequate skill in reading comprehension affects English language proficiency and academic achievement.

In Africa, Awe (2014) reported that secondary school learners demonstrated poor reading comprehension performance in Nigeria. The researcher established that only 61.5% of the sampled students performed well in reading comprehension; 60%, 38%, and 66% performed well in creative, evaluative, and inferential reading, respectively. Moreover, Ambatchew (2011) raised concerns over the declining quality of education in Ethiopia which was attributed to the inability of students to benefit from lessons due to insufficient reading comprehension. Despite the government and non-governmental organizations' efforts, poor reading comprehension performance remains one of the major stumbling blocks to quality education. For more than a decade, there has been no significant improvement in the students' reading comprehension performance.

Locally, Wanjala (2016) reported that secondary school students face problems when answering comprehension questions, contributing to a variation in general academic performance. The researcher noted that although the English language is taught from earlier years of education, several secondary school students lack mastery of reading comprehension skills. Lack of proficiency in reading comprehension negatively affects KCSE performance and future academic performance. Piper et al. (2015) argued that emphasizing English reading fluency in Kenya is inefficient because learners have little reading comprehension.

In Kiambu County, the reading comprehension problem in secondary schools is an issue of concern, as demonstrated by empirical evidence. Research by Karanja (2015) that explored the influence of reading difficulties on school

performance revealed that 90% of the teachers of English had challenges in teaching reading comprehension. It was not surprising then, that the performance in English reading for many of the students was below average. Gitonga (2014) reported that inadequate learning resources negatively affected the language competence skills of learners in day secondary schools in Kiambu County. Most of the day, secondary schools consistently performed below average in KCSE, a state, which the researcher attributed to poor language skills such as reading comprehension. The KCSE mean English scores in 2016, 2017, and 2018 were 3.9, 4.3, and 4.6, respectively. As shown in Table 1.1 below, most candidates scored a D+ and below in the three years.

Table 1.1

Kiambu County KCSE Grades in English from the Year 2016 to 2018

Year	Grades								
	A	A-	B+	B	B-	C+	C	C-	D+ and below
2016	10	86	457	1011	1732	2143	2731	2614	18431
2017	11	96	449	980	1817	2297	2605	2820	17723
2018	35	162	651	1243	2214	2960	2842	3181	16747

Source: County Government of Kiambu (2022)

Owing to the high premium attached to learning outcomes and reading comprehension performance in Kiambu County, it is a matter that cannot be left to chance. Educational scholars have linked poor English reading comprehension performance to teacher factors, lack of teaching and learning resources, students' attitudes toward reading, and cognitive aspects (Mugo, 2011; Mwaniki, 2015; Runo et al., 2010).

The cognitive factors reported to have a significant predictive index on reading comprehension performance include attitude, meta-cognition, goal orientation, memory ability, and learning cognitive styles. For instance, Mwaniki (2015) established that reading comprehension performance was significantly related to meta-cognitive knowledge and strategies. Earlier, Cromley and Azevedo (2011) demonstrated that reading comprehension performance was significantly associated with meta-cognitive strategy. However, the studies used samples of children drawn from primary schools.

The studies also did not focus on the specific domains of cognitive strategies such as FD cognitive strategies, FI cognitive strategies, scanning, levelling and sharpening, conceptual differentiation, and goal orientation. Therefore, there was need to investigate the link between the specific domains of cognitive learning styles and reading comprehension performance for more conclusive results in this field. To address this concern, this research investigated FD-FI cognitive learning styles and learning goal orientation as correlates of reading comprehension performance.

The constructs FD and FI in learning emerged in psychology in the 1950s through Witkin, who proposed that individuals rely either on internal sensations or external cues to perceive the world. In reading comprehension, the proponent of FD and FI cognitive learning styles was interested on how a learner can overcome the effects of irrelevant, extraneous environmental factors while consciously focusing on the learning material or activity that involves reading. Collins et al. (1992) stated that FD learners experience difficulties in focusing on the learning task or activity and overcoming the effects of irrelevant

environmental factors, while FI students can readily focus on the learning activity or task and can overcome the impact of environmental factors.

Regarding perception and information processing during reading, FI learners are analytical thinkers. They organize and process information critically and exhibit a higher tendency to comprehend and retain information. These learners employ problem-solving and structuring techniques, organization, and analysis in reading comprehension situations. FD learners are often referred to as global learners. They use a global approach and are more holistic in learning (Collins et al., 1992). Much of the reading comprehension experiences are based on social frames of reference.

Research findings have revealed a positive association between FD and FI cognitive styles, reading comprehension performance (Nozari and Siamian, 2015), and academic performance (Onyekuru, 2015). Studies have reported mixed findings regarding the differences in performance between FD and FI students. One body of research has demonstrated that FI students perform better in English language than FD students (Hickson & Baltimore, 1996; Oludipe, 2014), while another body of research has established that FD students perform better than FI students (Sellah et al., 2018; Sheykhi & Mohamadi, 2017).

The findings that FI learners performed better than FD learners may be because FI students are hardworking and persistent in finding answers. FI students are said to be more reflective and prefer working alone, a characteristic that may be attributed to acquiring more knowledge on reading comprehension. Onyekuru (2015) reported that FI cognitive style was pronounced among male students

while FD cognitive style was pronounced among female secondary school students in Nigeria. Rezai and Noori (2013) established gender differences in FD-FI cognitive learning styles where males were FD while females were FI. These mixed and contradictory findings necessitated more research, especially in reading comprehension, the foundation for school learning.

Another factor that has not been extensively investigated locally but would be influencing reading comprehension is learning goal orientation. According to Pintrich (2000), learning goal orientation refers to the motive or purpose that makes a student pursue an achievement task. Early conceptualizations of learning goal orientation dichotomized the concept into performance and mastery goals. A student with a mastery learning goal focuses on the learning task to better his reading comprehension skills. In contrast, a student with performance goal focuses on a learning task to outperform other students. Due to the inconsistent results, researchers obtained regarding the dichotomies of learning goals, the construct was expanded to include avoidance and approach. Elliot and Church (1997) proposed that performance learning goals should be categorized into performance approach and avoidance.

Recent literature presents a shift in learning goal orientation models, with one perspective proposing that mastery goals should consist of an avoidance dimension and the other perspective indicating that students may exhibit different goal orientations depending on the circumstances. This debate and continued research have introduced other goals, such as social goals, work avoidance, and extrinsic goals, into the model. In this study, the researcher focused on performance and mastery goals to address the problem of reading

comprehension performance in secondary schools. Mastery goal orientation is characterized by taking reading comprehension tasks to improve competence skills and understand and acquire new knowledge. In comparison, learners with performance learning goal orientation take a reading comprehension task to outperform others, show competence and superiority, and avoid demonstrating a lack of ability (Pintrich, 2000).

Related studies on the association between learning goal orientations and reading comprehension performance present mixed findings. Documented literature on learning goal orientation has primarily focused on general academic achievement as the outcome variable. Usoroh et al. (2015) studied how learning goal orientation and academic performance relate and found that the two variables are significantly associated. Specifically, mastery and performance learning goal orientations greatly influenced academic achievement. A study by Zarei and Gilanian (2014) established the influence of learning goal orientation on language learning strategies. The findings showed that learning goal orientation significantly influenced language learning strategies. Similar results were obtained by Ng'ang'a et al. (2018). However, the studies focused on overall academic achievement, and some did not focus on the sub-categories of learning goal orientation.

Related studies on the relationship between FD-FI cognitive learning styles, learning goal orientation, and reading comprehension performance mainly focused on samples from outside Kiambu County. Some of the studies used experimental designs with relatively small samples that discredited the external validity of the findings. Furthermore, there seems to be a divergence on how the

variables contribute to reading comprehension performance due to mixed results. Most of the studies that have been conducted on cognitive learning styles and learning goal orientation focused on general academic performance. To this end, the below-average performance in English in Kiambu County has not received much scholarly interest. The highlighted issues necessitated the present study that was conducted in Kiambu County. The study focused on FD-FI cognitive styles and learning goal orientation as correlates of reading comprehension performance to provide empirical evidence that may be used to help students realize the goals of education.

1.3 Statement of the Problem

The critical problem this research sought to study is the below average performance in reading comprehension evidenced by below average performance in English in Kiambu County. Between 2016 and 2018, most of the day, secondary school students scored grade D+ and below. This problem may be associated with the traditional instructional method, where the teacher usually gives learning instructions. In this method, the students are typically taught together in turns by different teachers in a classroom without regard of the unique cognitive learning styles, FD and FI, and learning goal orientation that learners possess. Under this circumstance, the students are compelled to alter their cognitive techniques to suit the approach used by their teachers.

There is no empirical evidence of the teachers' effort to categorize the learners based on their cognitive learning styles to integrate them with instructional strategies. This may be counterproductive if the student's cognitive learning styles are not given attention and incorporated into teaching methods. This

situation may be associated with the perennial below-average performance in English in public day secondary schools in Kiambu County.

The large number of students getting low grades in English in Kiambu County is a matter that needs to be investigated to find out the factors associated with it to arrest the situation. Poor performance in English will jeopardize social and economic development due to the wastage of financial and human resources. Students who perform poorly in English in KCSE usually score low general mean grades because the other subjects apart from Kiswahili are tested using English. The affected students will not transit to higher learning institutions and, in most cases, have limited employment opportunities. Consequently, their potential to contribute to realizing the big four agenda will be suppressed significantly as healthcare professionals and Vision 2030.

Efforts that have been made to address this problem have focused mainly on recall and comprehension in language learning and e-learning (Faruk, 2014; Sabet & Mohammad, 2013; Yu, 2006). Furthermore, most of the studies were conducted in areas outside Kiambu County. Locally, the constructs of FD and FI in educational settings are unexplored. To address this problem and bridge the gap in literature, this study examined FD-FI cognitive learning styles and learning goal orientation as correlates of reading comprehension performance among Form Two learners.

1.4 Purpose of Study

This research examined the relationship of FD-FI cognitive learning styles on the reading comprehension performance of Form Two students in Kiambu

County. The study also explored if learning goal orientation influences the students' reading comprehension performance.

1.5 Objectives of the Study

The following objectives guided the study.

- i. To establish the relationship between FD-FI cognitive learning styles and reading comprehension performance among students in Kiambu County.
- ii. To examine the relationship between learning goal orientation and reading comprehension performance among students in Kiambu County.
- iii. To establish if there are differences in reading comprehension performance of Form Two students with FD and FI cognitive learning styles in Kiambu County.
- iv. To establish if there are differences in reading comprehension performance of Form Two students with mastery and performance goal orientation in Kiambu County.
- v. To examine if there are gender differences in FD and FI cognitive learning styles toward reading comprehension among students in Kiambu County.
- vi. To establish if there are gender differences in learning goal orientation towards reading comprehension among students in Kiambu County.

1.6 Alternative Hypotheses

The following were the alternative research hypothesis for this study.

Ha₁: There is a relationship between FD-FI cognitive learning styles and reading comprehension performance among students in Kiambu County.

Ha₂: There is a relationship between learning goal orientation and reading comprehension performance among students in Kiambu County.

Ha₃: There is a difference in reading comprehension performance of Form Two students with FD and FI cognitive learning styles in Kiambu County.

Ha₄: There is a difference in reading comprehension performance of Form Two students with mastery and performance goal orientations in Kiambu County.

Ha₅: There are gender differences in FD and FI cognitive learning styles toward reading comprehension performance among secondary school students in Kiambu County.

Ha₆: There are gender differences in learning goal orientation towards reading comprehension among secondary school students in Kiambu County.

1.7 Significance of the Study

The results of this research provide valuable information to school administrators on the importance of cognitive styles and goal orientation on reading comprehension performance and support the teachers in their endeavours to enhance learning. The results can also be used by practicing

teachers of English to categorize the students based on their cognitive learning styles and goal orientation to employ instructional strategies that best work for each category of students. This will go a long way in improving learning and performance in English. Curriculum developers can find the results relevant in developing learning materials that suit the cognitive learning styles of students to improve learning outcomes. The research findings are also intended to add to the literature on the cognitive domains as correlates of reading comprehension performance that will inform further research.

1.8 Limitations and Delimitations of the Study

1.8.1 Limitations of the Study

Several methods could have been used to collect student data, but this study used self-reports and reading comprehension tests. Self-reports are not 100% honest, but the researcher mitigated this by explaining the purpose of the study. The correlation design poses the limitations of the third variable problem, causality, and directionality. Therefore, the study only focused on the relationships among the study variables. As a result, the study findings may be generalized to public secondary schools in other counties but with caution due to the limitations highlighted.

1.8.2 Delimitations of the Study

The research took place in public day secondary schools among Form Two students in Kiambu County. Therefore, the study results may be generalized to other students and similar secondary schools but with caution. In the KCSE exam of 2013, when the ranking was allowed, 8 out of 10 sub-counties were

ranked above position 200 out of 280 in the country (MoE, 2013). According to KCSE 2018 statistics, public day secondary schools in Kiambu County were the worst affected by poor academic achievement, especially in English (Kiambu County KCSE Statistics, 2018). The study involved Form Two students because they were within the recommended age of the FD-FI cognitive styles test and goal orientation scale (Anderson et al., 2003; Wyss, 2002). Furthermore, this group gave the researcher adequate time to collect data compared to the form three and four students, who are usually busy with increased learning content and preparation for the national examination.

1.9 Assumptions of the Study

The study assumed that the students involved would accurately report their FD-FI cognitive learning styles and learning goal orientations. The score of the student on reading comprehension would be a true reflection of the student's reading comprehension ability. There was a linear relationship between FD-FI cognitive learning styles, learning goal orientations, and reading comprehension performance.

1.10 Theoretical and Conceptual Framework

1.10.1 Theoretical Framework

The study was informed by two theories to explain FD-FI cognitive styles and learning goal orientation because these variables are distinct and, therefore, would not be explained by one theory.

a. Field Dependence-Independence Theory of cognitive Styles (Witkin, 1976)

According to Witkin (1976), learning strategies involve choosing how a learner aims to handle a learning task or behave in each learning situation. Therefore, they are affected by the cognitive style applied. The type may be temporary or permanent; as a result, its strength influences the learner's choice of the learning strategy to be applied while learning English. Cognitive processes of thought, perception and memory have been used to classify learners' cognitive styles. The approach employs the sub-levels of the cognitive style on the one hand and the other, the complexity of the idea being learned (Witkin, 1976). According to this theory, the primary approach to the cognitive style involves FD and FI cognitive styles.

These two cognitive learning styles explain how learners recognize and attend to new learning patterns. They demonstrate how a student identifies a pattern in a learning activity, processes it, and retains it in the memory. Based on this observation, Witkin argued that learners who employ field-dependent techniques follow the visual field examples presented. In contrast, field-independent learners break up the visual field presented and create their patterns in learning. This led to the discovery that field-independent learners, compared to field-dependent ones, got a higher potential in constructing knowledge, and act autonomously, have more interpersonal and social orientation, among others. Being FD or FI does not mean one is superior to the other (Witkin, 1976).

Informed by this theory, knowledge of the cognitive learning styles of learners, FD or FI, learning English is supposed to be designed to accommodate all these styles to equip the student with the capability to use English as a viable means of communication, both in written and oral. In achieving the desired goal of

mastering written and verbal communication, learners do not reach the same levels despite getting the same treatment from one teacher. The disparity can be traced back to other factors that influence performance besides the regular teaching from the same teacher. Among many other factors that may have influenced reading comprehension performance in English include the cognitive factors discussed: FD and FI cognitive learning styles.

Several studies have used this theory to examine reading comprehension predictions among learners. In his quest to establish the association between FD and FI and reading comprehension performance, Salmin-Nodoushan (2007) reported that there was a significant difference among the cognitive styles in test performance in semi-proficient, proficient, and reasonably proficient learners but no difference in the low proficient learners. Ahmady and Yamini (1992), in their research on FD-FI and listening comprehension, reported that memory, meta-cognitive, social, and cognitive strategies were strongly associated with cognitive style. In contrast, compensatory and affective strategies were not correlated to FD. Based on this empirical evidence informed by this theory, the current study considered this theory to be the most appropriate in explaining the link between FD and FI cognitive learning styles and reading comprehension performance among form two students.

b. Achievement Goal Orientation Theory (Elliot & Church, 1997)

The proponents of this theory suggested that to retain the content learned, students must have the intrinsic will to learn. This theory provides a pivotal framework to enhance learners' motivation and to show their effects on performance, engagement, and learning in an academic setting (Elliot & Church,

1997). Pintrich and Schunk (1996) observed and reported that achievement goals mean engaging in each achievement behaviour and responding to the achievement situation to appear competent or avoid unfavourable judgment. Mastery and performance goals are the two main goals studied in achievement goal theory. Mastery-oriented learners are motivated to enhance their competence in mastering and comprehending the learning materials, thus gaining knowledge, and developing new skills (Pintrich & Schunk, 1996). Therefore, they strive to improve their skills and gain comprehension to be successful.

In contrast, Zimmerman (1994) observed and reported that performance goal-oriented students' main concern is to be judged as capable, outperform others, outshine others, be placed in the hierarchy, and avoid negative ones. Such learners consider their achievement by comparing their reading comprehension performance. Thus, they focus on performing better than others and try not to be poorer. Elliot (1999) proposed a trichotomous framework as performance goals were discovered to be related to adaptive and maladaptive outcomes. The framework led to the division of performance learning goals to performance-avoidance and performance approach goals (Elliot, 1999). Learners with a performance approach compete with others to emerge at the top, while performance avoidance-oriented ones focus on not appearing weak and poor compared to the others. Due to the ongoing debate on the sub-categories of achievement goals and the emergency of many recent sub-categories, the proposed study focused on the initial dichotomy of achievement goals.

Researchers whose quest was to find out if there exists a relationship between learners' mastery or performance goal orientation and reading comprehension performance anchored on this theory, demonstrated that the learner's goal orientation strongly influences their reading comprehension achievement (Tercanlioglu & Demiröz, 2015). Cognitive psychologists have established a significant association between reading comprehension performance and the student's achievement goals. Meece and Miller (1999) reported that learners showing high mastery goals attempt to understand a given text fully to enhance their reading comprehension skills. The theory was suitable for this research because the researcher conceptualized that mastery and performance goal orientations are motivations that underlie secondary school students' motivation toward reading comprehension. Therefore, it provided the most relevant theoretical underpinning to examine the nature of the associations among the variables.

1.10.2 Conceptual Framework

Reading comprehension performance was the outcome variable. The indicator of reading comprehension performance was reading comprehension test scores. Field-dependent and field-independent cognitive styles and learning goal orientation were the predictor variables. Learning goal orientation was measured at mastery and performance goals, each with approach and avoidance domains. It was conceptualized that the student's reading comprehension scores were related to cognitive learning styles, FD, FI, and learning goal orientation. Gender was the intervening variable. The gender of the students was either male or female.

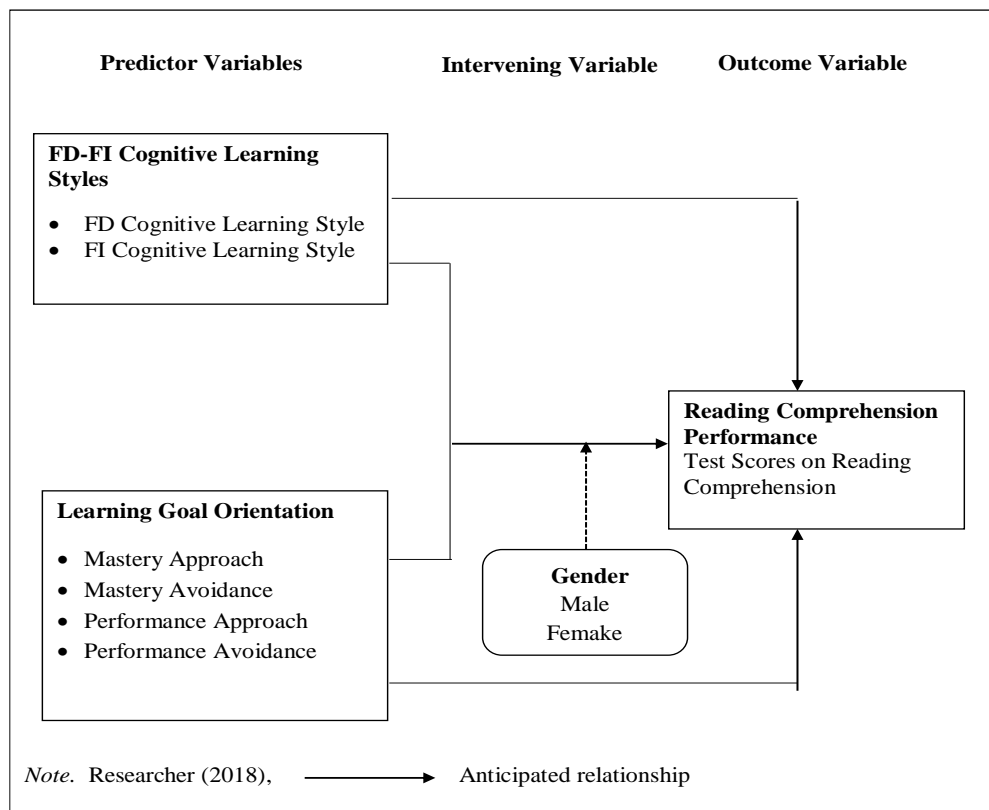


Figure 1.1
Schematic Representation for the Relationship between FD-FI Cognitive Learning Styles, Learning Goal Orientation, and Reading Comprehension Performance

1.11 Operational Definition of Terms

Field-Dependent Cognitive Learning Styles	The student's score on inability to differentiate reading comprehension details from other information around it
Field-Independent Cognitive Learning Styles	The student's score on the tendency to separate reading comprehension details from the immediate environment
Gender	The biological sex of the student which will be either male or female
Learning Goal Orientation	The student's score on motivation for learning either for enhancing competence or displaying competence
Mastery Goal	The student's intrinsic motivation to score highly to improve in reading comprehension performance
Performance Goal	The student's score on motivation to avoid displaying incompetence in reading comprehension
Reading Comprehension performance	The student's score on the English passage test

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

A review of related literature is presented as per the study objectives as follows; the relationship between FD and FI, and reading comprehension, the association between mastery and performance goal orientations and reading comprehension performance, differences in reading comprehension performance of students with FD and FI cognitive Learning styles , differences in reading comprehension performance of students with mastery and performance goal orientation, gender differences in FD and FI cognitive Learning styles towards reading comprehension and gender differences in learning goal orientation towards reading comprehension. The chapter ends with a summary of the literature review and gap identification.

2.2 Relationship between FD and FI Cognitive Learning Styles and Reading Comprehension Performance

The association between FD and FI cognitive learning styles and reading comprehension performance has not received much scholarly attention. Nozari and Siamian (2015) designed a study to examine the link between FD and FI cognitive learning styles and reading comprehension performance among secondary school students. The study used a multistage selection technique to sample 305 students consisting of both boys and girls. The selected students completed the GEFT and English test. Data were analyzed using regression analysis, and the findings indicated that FD and FI cognitive learning styles were related to the changes in reading performance scores. The reported value for FD

cognitive style was 8.8%, while that of the FI cognitive style was 9.2%. From the results obtained, it was concluded that the higher the FI, the higher the reading comprehension scores, but the extent to which FI cognitive learning style was related to reading comprehension performance was unclear, a gap the current study sought to fill.

Relatedly, Masoud and Mehrnoush (2015) examined the difference between FD and FI cognitive learning styles concerning the quality of translation. The study used a quantitative research methodology with a sample of 297 university students. The respondents were male and female senior students enrolled in a translation course. Language proficiency tests, cognitive styles inventory, rating rubrics, and text-to-translate were used to obtain information from the students. The statistical analysis revealed that learners with FI cognitive learning styles performed better than those with FD. The study did not examine the link between FD and FI cognitive learning styles and reading comprehension performance, which was the main objective of the current study.

Other scholars have studied the influence of cognitive styles on writing performance. One such research was executed by Nazanin and Afghari (2007) to examine FD and FI's effect on university students' writing scores. The researchers involved 89 students (75 females and 14 males) majoring in English. The standard Group Embedded Figures test was used to categorize the students into FD and FI groups.

Next, the learners were tasked to do a write-up on argumentation and narration. The collected data were analyzed using t-test, MANOVA, and Scheffe statistical

procedures. The results revealed significant differences in writing performance between the two FD and FI strata. FI students outperformed FD students in the domains tested. However, the study failed to investigate the association between cognitive learning styles and learning outcomes, a concern the present study addressed.

Rezaee et al. (2019) conducted a research study examining the association between FD-FI cognitive learning styles and reading comprehension performance in Iran. The sample consisted of 180 university students who were aged between 16 to 20 years. The researchers used GEFT to categorize the students into FD and FI. Then the respondents took a reading comprehension test containing global and local reading comprehension tests. The researchers subjected the data to Pearson correlation analysis to determine the association between the variables. The results showed that there was a significant relationship between FD cognitive learning style and performance in reading comprehension performance. The results also revealed that FI's cognitive learning style and reading comprehension performance were significantly related.

The Role of Field Dependent and Field Independent cognitive learning styles in learning and teaching cognitive style identifies how individuals react to different situations. They include stable attitudes, preferences, or habitual strategies that distinguish the individual styles of perceiving, remembering, thinking, and solving problems. Individuals dynamically process and modify incoming information, organizing and assimilating current knowledge within the memory structure. This method adds to the individual's intellectual development and

extends the range of cognitive abilities that have been increasing throughout life. Zhang and Sternberg (2005) proposed a Threefold Model of Intellectual Styles in which they defined “intellectual styles” as individuals’ selected methods of processing information and dealing with tasks. They also stated that “intellectual style” is an all-encompassing term for different style constructs, including cognitive, learning, thinking, and teaching styles.

The nature of styles and strategies provides information about children’s cognitive techniques. This information can be used to improve the learning activities offered to children, the teaching of children, and children’s learning in school. One dimension of cognitive learning style is field dependence versus independence (FD-FI), which describes the individual’s perceiving, remembering, and thinking as they comprehend, store, transform, and process information. It distinguishes between field-dependent (FD) and field-independent (FI) students in a classroom situation, their learning behaviours, social conditions, and how FD-FI influences reading in the early childhood classroom, including the cognitive styles’ characteristics defined by the individual’s way of understanding, thinking, remembering, judging, and solving problems. An individual’s cognitive learning style determines the cognitive strategies applied in various situations and must be considered when teaching students. Some teaching strategies and materials may increase or decrease achievement and learning based on students’ cognitive learning styles. Thus, FD-FI cognitive learning styles have implications for teaching and learning.

In Australia, Ge (2021) conducted a study to determine the association between FI-FD cognitive and reading styles. The sample size for this study was 42 students who spoke English as a non-local language. Quantitative data were collected using questionnaires. The data were then analyzed using SPSS V25 to obtain descriptive and inferential statistics. The study established a significant relationship between FD-FI and working memory with the student's English reading skills. This shows that FD-FI and working memory influence students' English reading skills. This study's sample size was relatively small to generalize the results to secondary school students in Kenya. The current study used a larger sample size to arrive at more inclusive results, which showed that FD-FI cognitive learning styles are related to the English performance of secondary school students in Kenya.

Another study was carried out by Sellah et al. (2018) in Kenya to determine whether cognitive styles could be used to predict students' academic achievement in public secondary schools in Kenya. The study design adopted was correlational, and from the study population of all extra-county schools that had been elevated recently to national school status, two hundred ninety-three students, six teachers, and six academic masters were selected. The literary masters were interviewed using an interview guide, while the others were issued with questionnaires to fill out. The qualitative data were analyzed using thematic analysis, while quantitative data were analyzed using SPSS. The study established that the sequential-global dimension was a significant predictor of the performance of the students in Chemistry subject in KCSE. The study focused on Chemistry, a STEM subject; therefore, the results would not be

generalized to English performance. The present study focused on the English language, and the results confirmed that cognitive learning styles play a significant role in performance in the subject.

A study was conducted by Siahaan et al. (2022) to determine if collaborative learning methodologies grounded on Moodle and cognitive learning styles are related to students' reading skills. This study was carried out at a university in Indonesia. The study adopted an experimental research design to achieve study objectives. The sample size for this study was 39 students chosen from two different classes. The sample size was divided into twenty students and nineteen groups, respectively. The group of twenty received online learning, and the nineteen students were given one-on-one learning as the control group. Each of these two groups had FD and FI students. The classes were selected using a purposive sampling technique. Quantitative data were collected from the respondents using GEFT to identify FD and FI learners and multiple-choice reading test tools. The data collected were analyzed using data reduction, presentation, and conclusion methods. It was established that the cognitive learning styles influenced the students' reading skills and whether they received CSR. The major shortcoming of this study was the adoption of an experimental design in which the results might be affected by experimenter bias. The current study adopted a correlation research design and established that FD-FI cognitive learning styles are correlated to reading comprehension performance among form two students in Kenya.

Another related study was carried out by Chuang et al. (2021) to determine whether playing video games influenced the learners' reasoning capability. This study adopted pre-test and post-test experimental research designs. The quantitative data collected was then analyzed using multivariate analyses. The results revealed that learners who played video games for some time had an increased reasoning capability compared to those who did not. Such students were able to improve their information search strategies when playing any video game. Furthermore, the study established that FI learners had better reasoning capabilities than FD learners. Despite achieving the study objectives, the study did not demonstrate how the cognitive processes were related to performance. This study examined how FD and FI cognitive learning styles influence reading comprehension performance, and the results showed that the variables were significantly correlated.

Another similar study was carried out by Dwi Susandi et al. (2019) to determine the influence of cognitive styles on students' creativity skills and ability to solve mathematical problems. The research design employed was qualitative. The subject under investigation was chosen using purposive sampling methodology. The grouping of the subjects in either FD or FI cognitive styles was done using GEFT. The study involved a sample size of two students chosen with the help of a mathematics teacher. Interviews, exams, and triangulation were this study's primary data collection tools. The data were then analyzed using the FRISCO technique, which involves reducing data, presenting data, and drawing conclusions based on the findings. It was established that the FI students had better skills in solving mathematical problems than the FD student. The major

shortcoming of this study was the use of a minimal sample size of two students (one with FI cognitive style and another with FD cognitive style). The conclusions may not necessarily reflect the overall results if a larger sample size was used. The current study used a larger sample size and established that FI and FD cognitive learning styles significantly influence the reading comprehension performance of secondary school students in Kenya.

Zhang (2023) investigated the relationship between FI and FD cognitive styles and the strategies adopted for learning in their second language. The study adopted a literature review methodology. The study established that both FI and FD cognitive styles and learning strategies influenced students' learning of the second language. Therefore, teachers need to identify individual cognitive styles to balance how they teach their learners and ensure everyone benefits and understands what is being taught. The major shortcoming of this study was that it relied on secondary data, which may be distorted, affecting the results' reliability. The present study used primary data and established a significant relationship between FD and FI cognitive learning styles and reading comprehension performance.

In another study, Addinna et al. (2019) investigated the effect of learning cognitive strategies on performance in visualization among university students. GEFT was used to categorize the students into FD and FI. The study used a quasi-experimental research design since assigning the respondents to either FD or FI randomly was impossible. A total of 54 students were involved in the research. Cluster sampling was used to group the participants into experimental

and control groups, each with 28 and 26 students. The results showed that FD students had low performance in reading comprehension. Setyosari et al. (2019) examined the association between cognitive learning styles and academic outcomes among geography students. The subjects of the study were 128 students. The students were placed into two groups of FD and FI using GEFT. The study findings revealed significant differences in performance among the students with FD and FI cognitive learning styles.

In Nigeria, Onyekuru (2015) explored the link between FD-FI cognitive learning styles and academic performance among students sampled from secondary schools in Rivers State. The researcher used cluster sampling to select 16 secondary schools from which a sample of 320 students was obtained. The GEFT test was administered to the sampled students, and then the scores were then used to categorize the learners as either field-independent or field dependent. The results revealed that 28.13% of the sampled male students were field dependent, while 21.25% of the respondents were field independent. It was also revealed that FD students had a higher achievement mean score in sciences while FI students had a superior score in arts than FD students. The study focused on the association between FD and FI cognitive learning styles and performance in arts and sciences. Therefore, there was a need to focus on reading comprehension performance to compare the findings.

Locally, the correlation between FD and FI cognitive learning styles and reading comprehension performance has not been directly investigated. In a related study, Musya (2015) examined the correlation between cognitive learning styles

and academic chemistry outcomes among secondary school students. A sample of two hundred form three students responded to questionnaires. The students were selected from public secondary schools in Kitui County in the Mwingi North constituency. Half of the students were selected from high-achieving secondary schools, and the rest from average and low-achieving schools. Data were collected and analyzed using SPSS (Statistical Package for Social Sciences). The study findings showed that a considerable percentage of males showed FI cognitive style and performed better in Chemistry than their counterparts; a higher percentage of females employed FD cognitive style and performed dismally compared to their peers. Since the study focused on achievement in Chemistry as the outcome variable, the current study focused on reading comprehension performance to support or discredit the findings.

2.3 Relationship between Learning Mastery and Performance Goals Orientations and Reading Comprehension Performance

Studies on the association between learning mastery and performance goal orientations and performance have reported divergent findings. Zarei and Gilanian (2014) studied the association between goal orientation and language learning strategies in Iran. The study selected 145 university students specializing in teaching and translating English. Data were collected using a motivated strategies questionnaire and related language learning strategies. The data collected was analyzed through stepwise multiple regression analysis, and the results indicated a significant relationship between learning strategies for language and goal orientation. Since the research involved university students and focused on language learning strategies, there was a need to conduct

research among secondary school students focusing on reading comprehension performance to compare the results.

In an experimental study, Stec (2015) explored the association between goal orientation and academic achievement among third-grade USA students. The researcher used convenience sampling to select 23 students (11 females and 12 males) to participate in the study. The study used flip charts, a goal orientation scale, readers' response prompts, and rate of reflection levels in data collection. The study results showed no significant correlations between the participants' initial goal orientations and performance on written responses.

A study was conducted by Wang et al. (2021) to determine the association between performance goal orientation, learning motivation, and academic adjustment and established that learning motivation mediated the relationship between learning mastery and performance-avoidance goals on academic adjustment. The study involved five hundred and seventy-eight undergraduates and focused on performance goal orientation, learning motivation, and academic adjustment. The present study focused on learning mastery, performance goal orientation, and reading comprehension performance. Furthermore, the study was conducted among undergraduate students, so the findings may not be generalized to secondary school students. The present study provides additional literature from a secondary school perspective that enhances the generalization of the results.

Wolgast and Keller-Schneider (2023) conducted a study to determine whether learners' goal orientations were associated with how they will relate with their

peers. The study was carried out in Switzerland. The study intended to compare mastery and performance goal orientations and how they influence peer relationships. The sample size for this study was two hundred and four students, and a longitudinal research design was employed to achieve the study objectives. The data collected were analyzed using cross-lag structural-equation modelling. The researchers established that mastery goal orientation positively influenced the learners' perception of their peers, and the reverse was confirmed to be never true. Performance goal orientation had an impact on how the learners viewed peer associations. The study did not investigate the relationship between mastery and performance goal orientation, and reading comprehension performance, a gap the present study filled. Furthermore, being a longitudinal study, the initial sample may have been affected due to attrition which affects the predictability factor. This limitation was addressed by the present study, using a correlational research design.

In Canada, Shi (2022) investigated the relationship between the strategies used for learning among the students and their goal orientations. The study used a quantitative research design. The quantitative data were collected from undergraduate, master, and Ph.D. students. It was established that mastery goal orientation had a positive and significant relationship with all learning strategies. The major shortcoming of this study was that it focused on the relationship between goal orientation and learning strategy without measurable indicators of learning outcomes. The current study investigated the relationship between learning mastery, performance goal orientation, and reading comprehension performance and established that these variables were significantly related.

In Nigeria, Moses (2019) conducted a study to determine whether a significant relationship exists between cognitive, metacognitive learning strategies and academic achievement among secondary school students. The study involved three hundred and seventeen students from public secondary schools. Their mathematics and English language end-of-term results were obtained from their respective schools, while data on cognitive and metacognitive learning strategies were collected using questionnaires. Data analysis was carried out using AMOS software V24. The study found that cognitive and metacognitive learning strategies had a negative and significant relationship with students' academic achievement, where their goal orientation acted as the mediator in this relationship. This study focused on the mediating role of goal orientation on the relationship between cognitive, metacognitive learning strategies and academic achievement in Mathematics and the English language. The present study provides empirical evidence on the relationship between learning mastery, performance goal orientations, and reading comprehension performance in the Kenyan context. The results indicate that learning goal orientation is significantly related to reading comprehension performance.

Another similar study was carried out by Li et al. (2021) to determine whether there exists a relationship between academic success, success goal orientation, and intellectual well-being. The researchers adopted a cross-sectional research design with three thousand five hundred and eleven participants from 4 medical learning institutions. Questionnaires were used to collect quantitative data from the selected students. The data collected were analyzed using SPSS V.22 to obtain descriptive and inferential statistics. The results revealed that mastery and

performance-avoidance goal orientations differed significantly concerning academic success. The study recommended boosting mastery goals among undergraduate students to help them improve their academic success and well-being. The study employed a cross-sectional research design and focused on mean differences in mastery and performance-avoidance goal orientations. The present study adopted a correlational research design to fill the gap in the relationship between learning goal orientation and reading comprehension performance.

In the lake region of Kenya, Mose et al. (2019) conducted a study to determine whether goal orientation could predict learning preparedness among undergraduate students. The study was conducted in public universities where the researchers investigated the relationship between mastery goal orientation, performance-avoidance goal orientation, and learning preparedness among undergraduate students. Three universities, 372, 20 lecturers, three deans, and three guidance and counselling staff were selected to participate in this study using a mixed method technique. The quantitative data were collected using questionnaires, while qualitative data were collected using interview schedules. The quantitative data were then analyzed using SPSS, while qualitative data were analyzed using the thematic analysis technique. It was established that mastery goal orientation influenced learning preparedness among undergraduates. Equally, performance goal orientation impacted learning preparedness among the learners. This led to the conclusion that mastery goal orientation and performance goal orientation could be used to predict learning preparedness among undergraduate students. This study involved undergraduate

students; thus, the findings may not be generalized to secondary school students. The study also did not relate mastery goal orientation and performance goal orientation with reading comprehension. The present study aimed to fill these two gaps.

Edwards (2014) researched to examine the unique effect of learning goals on academic outcomes among students. A sample of 79 university students aged 25.5 years participated in the research. Learning goal orientation was assessed using the achievement goal orientation questionnaire. The results revealed a significant association between performance goal orientation and self-efficacy, interest, and learning. Another research by Abd-El-Fatta (2018) explored the effect of achievement goals on academic outcomes. The study sampled 350 high school students to complete an achievement goals questionnaire. The results of hierarchical cluster analysis showed that achievement goal orientation significantly influenced academic achievement.

A research by Botsas and Padelladu (2019) investigated the influence of goal orientation and the strategies employed in reading comprehension among primary school pupils in Greece. The sample size entailed 122 pupils drawn from the 5th and 6th grades. The goal orientation scale employed in data collection focused on performance approach, performance avoidance, and mastery goal orientations. Reading comprehension strategy was measured using a reading text of 172 words. The results indicated a significant association between goal orientation and reading comprehension strategy use.

A correlational study by Ghavam et al. (2011) investigated the association between achievement goals and metacognitive reading strategies used among university students. One hundred and three students were sampled to complete the achievement goals questionnaire and reading strategies inventory. The collected data were subjected to Pearson correlation analysis, and the study findings showed a significant association between mastery goal orientation and metacognitive reading strategy. It was also revealed that performance goal orientation was not significantly associated with the meta-cognitive reading strategy. The findings were contradictory as other studies reviewed showed that there was no significant association between goal orientation and academic performance hence the need for this study to contribute to this debate.

A correlational study by Samareh and Kezri (2016) in Nigeria investigated the correlation between goal orientations and academic engagement among paramedical university students. The researchers randomly selected 360 students to provide information. Data collection involved the use of goal orientation and academic engagement questionnaires. The Pearson correlation analysis and structural equation modelling results revealed that mastery goals were significantly associated with intellectual engagement. Most published literature on goal orientations looked at academic achievement as the outcome variable. Therefore, there was a need to investigate the association between goal orientations and other learning outcomes, such as reading comprehension performance, a concern this study sought to address.

Locally, the link between goal orientation and reading comprehension performance has not received much attention. However, research has been

conducted on the correlation between goal orientation and academic performance. Other scholars have also focused on metacognitive strategies and reading comprehension performance. Ng'ang'a et al. (2018) investigated the association between goal orientation and academic performance among secondary school students in Kiambu County. The study employed mixed methods research design while guided by the goal orientation theory. The researchers used purposive sampling techniques and simple random sampling to select 665 students to complete the achievement goals questionnaire and 40 students for interviewing, respectively. The results of Pearson correlation analysis indicated that goal orientation domains were significantly associated with academic performance. The results are essential in explaining school achievement from the student's goal orientation perspective, but there was a need to establish the association between the domains and reading comprehension performance.

2.4 Differences in Reading Comprehension Performance of Students with FD and FI Cognitive Learning Styles

Little has been done on the differences in reading comprehension performance of students with FD and FI cognitive learning styles, but several related studies in this field have been conducted. For example, Nisiforou and Parmaxi (2016) surveyed the Greece University of Cyprus to discover cognitive abilities' effects on learning strategies to transform CALL (Computer Assisted Language Learning). A sample of 18 learners aged between 19 and 34, taken from agricultural, engineering, and multimedia disciplines, participated in the study. Their cognitive learning style was evaluated using HFT (Hidden Figure Test).

A reading comprehension test followed this to check their analytic skills, and finally, presentation skills were tested. After analysis of the collected data, the study findings indicated that FD students differed from the FI students in analytical and presentation skills. The FD learners performed better than the FI learners. The study used university students and focused on analytical and presentation skills. There was need to find out if there were differences in reading comprehension performance of FD and FI among form two students.

In Iran, Heidari (2022) investigated whether there existed differences in vocabulary understanding based on FD and FI learning styles. The study involved 94 Iranian language learners. The study employed GEFT to determine the FD and FI learners. The students were then placed in groups to test their vocabulary understanding. The data were then analyzed, and the findings were as follows: FI learners performed better than FD learners on the receptive test, but the difference was not significant; there was a substantial difference on a productive test where FI did better than the FD students; the conduct of the FI students was far much better than the FD students when the practical test was compared with the receptive test. Students with FI learning styles outperformed FD in almost every aspect, indicating a relationship between the different learning styles and vocabulary understanding. The study focused only on vocabulary understanding which may not be adequate to judge the existence of the relationship. The present study investigated overall reading comprehension compared to the FI and FD learning styles and provided empirical evidence to guide future studies.

Another similar study was carried out by Par (2018) to determine the association between reading skills and FI and FD cognitive styles. The study involved 60 undergraduate students who had passed the critical reading unit earlier. GERT was given to all these students to determine whether the 60 students belong to the FD or FI learning styles. Equally, the reading skills were determined by administering a critical reading comprehension test. Their results revealed a significant difference between the students categorized as FID or FI based on their learning styles and essential reading skills. This indicates the need to adopt the right reading texts based on students' learning styles to help them build on their critical reading skills. The study used a relatively small sample of university students from Iran, limiting the generalization of the results to secondary school students in Kenya.

In Indonesia, Verawati et al. (2021) conducted a study to determine whether reflective practices were efficient for coaching pre-service teachers based on the FI and FD cognitive styles. The study adopted a quasi-experimental research design. Physics teachers were involved in the study where GEFT was used to categorize them into FI or FD learning styles. Critical thinking skills were measured using essential essays of thinking. The results from the reports were analyzed using SPSS to obtain descriptive and inferential statistics. The study found that reflective practices were very efficient in training pre-service teachers since they equipped them with critical thinking skills, an essential requirement in solving physics problems. The major shortcoming of this study is the adoption of a quasi-experimental research design which lacks randomization in the

selection, and hence random variations limit the generalization of results. The present study addressed this gap by employing a correlation research design.

In China, Wang (2017) conducted a study to determine the differences between FD and FI learning styles in teaching English language among college students. The study found that FD students love collaborative and participative approaches in their learning and hate the embarrassment that can come when they do not know how to answer some questions. This is a vital issue that college teachers should beware of to ensure that FD students have smooth learning throughout their studies. The FD students also require adequate support from their peers since they are sensitive to their environment. This calls for the teachers to be strategic in how they can help this category of students work with the FI students.

On the other hand, FI students are good enough to distinguish between various issues for themselves with little support from the teachers and are not affected by their social environment. They like working alone in most cases and are very happy when recognized individually for their achievement. They love competing and outdoing others the most. This calls for the teachers to be sensitive to their needs to encourage them to develop a positive learning environment. Because of these differences between FD and FI students, the teachers balance their classes to ensure everyone is happy and comfortable. This study focused majorly on differences between FD and FI students, and little was done on differences in their reading comprehension performance. The present study addressed this gap.

Srikongchan et al. (2021) conducted a similar study to determine if the backward instructional technique improves learners' creativity using lateral thinking. This study adopted a quasi-experimental research design. Sixty students were involved in this study and divided into two equal groups of FD and FI students. The study established that all the respondents had improved their critical thinking when taught backward instructional techniques with lateral thinking methodology. This indicates that a back instructional approach can help students improve their critical thinking and thus should be considered when dealing with such categories of students. The study used a quasi-experimental research design with a relatively small sample, limiting the generalization of the results to secondary school students in Kenya, a gap filled by the present study using correlational research design.

Little has been done in Kenya on the differences in reading comprehension performance of students with FD and FI cognitive learning styles. The available studies did not directly focus on the differences in reading comprehension performance of students with FD and FI cognitive learning styles. For instance, Anyiendah et al. (2021) conducted a study in Vihiga County to determine whether background knowledge impacted on comprehension reading among primary school pupils. The study adopted Solomon's Four-Group Design. Data were collected from pupils in class six and their English language teachers. It was established that the deployment of pupils' background knowledge had a positive and statistically significant relationship with comprehension reading. This indicates that the two variables are interrelated. However, this study was carried out among class six pupils, and their findings may not be generalized to

high school students due to age differences. Moreover, the study did not provide evidence of the differences in reading comprehension performance of students with FD and FI cognitive learning styles. The present study addressed these gaps.

Another research by Boccia et al. (2017) conducted in Italy investigated the effects of cognitive styles on learning outcomes. GEFT was used to collect data from 54 respondents to identify their cognitive techniques, and PTSOT (Perspective Taking/Spatial Orientation Test) to determine their orientation skills. After data analysis, it was found that cognitive styles interacted with gender on rote learning and map drawing. Females classified as field dependent performed poorly than their male counterparts. This showed that cognitive style affected learning and retrieval of the content. The study concluded that cognitive style is vital while forming a mental map of the environment, and field-independent individuals showed a more extraordinary ability than field-dependent individuals. The findings are significant, but it is unclear if the trend is the same concerning reading comprehension performance, an issue the current study aimed to address.

In another similar study conducted in Iran, Niroomand and Rostampour (2014) investigated the impact of FD cognitive styles on Lexical knowledge. EFL (English as Foreign Language) students were subjected to VST (Vocabulary Size Test) and GEFT. The study reported that cognitive styles of FD students affected their performance in English as a foreign language; other interactions, such as gender differences, also influenced vocabulary knowledge. The researchers concluded that understanding students' cognitive learning styles

enables the instructor to develop appropriate materials to assist learners in enhancing their competence.

Similarly, Sheykhi and Mohamadi (2017) explored how EFL learners possessing different cognitive learning styles increase their ability in reading comprehension and develop metacognitive skills in Iran. Sixty participants were randomly recruited and sat for a Preliminary English Test to check their language proficiency level. A GEFT was then administered, which separated FD from FI students. A pre-test and a post-test in reading comprehension were then undertaken. Information was collected, and analysis was done using a t-test and ANCOVA. The results indicated that FD learners performed better after the pre-test than FI students. The study concluded that there is need for proper planning on cognitive strategy training in teaching language. Since the study used students sampled from a cultural context different from the Kenyan one, it was necessary for related research using a sample of Form Two students in Kenya.

Srivastava and Asthana (2014) examined socio-cultural variables' effects on primary school children's cognitive style. The study used 200 (100 males and 100 females) students aged between 7-9 years in classes 2-4 in several public primary schools across Varanasi. The researchers used speech feature toolbox to separate the FD student from the FI students. A personal data sheet collected social-cultural information involving gender, caste, and locale. The collected data were analyzed, and the results showed a significant relationship between FI and students who came from urban areas. However, it was unclear if there were differences in performance for FD and FI students.

In Africa, literature on differences in reading comprehension achievement of students with FD and FI cognitive styles is scarce. A related study by Oludipe (2014) investigated the link between students' cognitive learning styles and physics performance in Nigeria. The researcher sampled 107 Senior Secondary III learners from four secondary schools in Ogun state. They were then subjected to SICOST (Sigel's Cognitive Style Test), and the results indicated that most of the boys were FI and performed better than girls who were FD. Since the study focused on physics performance, there was need for the current research to focus on reading comprehension performance to fill the gap.

Arisi (2011) did a study in Nigeria to explore the effect of learners' cognitive styles on their academic achievement. The research was planned and structured to investigate the impact of cognitive techniques on academic achievement on one hand and gender differences on cognitive styles on the other hand. The study involved 192 (87 males and 105 females) students selected from 4 secondary schools. The data collected were analyzed using percentages, and the hypothesis was tested using ANCOVA. The study findings were as follows: there was no significant link between academic achievement and gender and no critical link between cognitive styles and students' gender. It was also reported that the performance of the FD students was better than the FI students.

In Kenya, Sellah et al. (2018) studied the association between cognitive learning styles and performance among national secondary school learners. The target population was all students in 66 national schools promoted from different county schools between 2011 and 2012. The study sampled six schools from three counties. The respondents were 293 students, six heads of departments,

and six teachers. Data collected were subjected to Pearson correlation, regression, and ANOVA. The findings showed that most of the student's cognitive styles matched the teacher's; 25% of the students showed a 100% resemblance of their cognitive style with that of their teacher. From the findings, it was unclear how the different cognitive learning styles influenced academic outcomes. The current research intended to find if there are differences in reading comprehension achievement of students with FD and FI cognitive learning styles.

In a related study, Musya (2015) examined the association between cognitive styles and academic outcomes among high school learners in Kitui County. The research aimed to investigate the relationship, if any, between students' cognitive style and performance in Chemistry. Using random sampling, 200 form three students were selected from different schools. The respondents were issued with a questionnaire that collected personal information, end of term performance in Chemistry, and GEFT was used to identify their cognitive styles. The data were analyzed using SPSS involving computation of mean scores and standard deviations in Chemistry. Pearson Moment Correlation Coefficients were used to find out the correlation coefficients. The findings revealed that FD and FI cognitive styles influenced chemistry performance, where FI students performed better than their counterparts. Since the study focused on chemistry and science and was conducted in Kitui County, conducting a related research in Kiambu County was necessary, concentrating on reading comprehension performance to compare the results and contribute to literature to bridge the gap.

2.5 Differences in Reading Comprehension Performance of Students with Mastery and Performance Learning Goal Orientations

Much of the documented literature presented mixed findings on learners' academic performance differences with mastery and performance goal orientations. For example, Dekker et al. (2016) completed a study on goal orientation differences in academic achievement and the role played by meta-cognitive strategies. The study used 735 students aged 10 to 19 years who were subjected to reading the vignettes reflecting four goal orientations. The research found that students with mastery goal orientation performed better than students who showed performance-avoidance goal type. Through mediation analysis, the study reported that students' goal orientation significantly affected their academic achievement and level of meta-cognitive strategies. However, the study did not report on the differences in reading comprehension, a gap this study addressed.

In another study, Barzegar (2012) explored the association between learners' goal orientation and academic achievement in Thailand. A total of 200 first-year students taking psychology were assessed to identify their goal orientation using a questionnaire formulated by Elliot and Church (1997), while Pintrich MSLQ was administered to determine the learners' motivational strategies. The results indicated a significant relationship between mastery goals on deep cognitive and metacognitive strategies, positively influencing learners' academic performance. The study examined the student's general academic performance, while the current study examined reading comprehension performance to close the gap.

Sakiz (2011) studied the relationship between goal orientations and college students' academic outcomes in Turkey. The sample consisted of 98 teacher trainees at the University of Istanbul. Data were collected using questionnaires and analyzed using structural equation modelling. The research found mastery goal orientation significantly affected the student's academic achievement. In contrast, performance goal-oriented students were significantly negatively related to academic self-seeking behaviour.

In Kenya, Atieno (2015) investigated the factors influencing reading skills in public secondary schools. The study adopted a descriptive survey design to achieve its study objectives. Using purposive random sampling, ten public secondary schools were selected for this study. Fifty pupils and ten teachers were determined using a disproportionate random sample to participate in data collection. The data were collected using questionnaires and observation schedules. The quantitative data were analyzed using SPSS, while qualitative data were analyzed using content analysis. It was established that proper usage of meta-cognitive strategies improved reading comprehension among the learners. The study failed to provide the differences in reading comprehension performance of students with mastery and performance goal orientations, a gap filled by the present study.

In Greece, Sideridis et al. (2016) conducted a study to determine the influence of performance-oriented climate in a school environment and reading achievement. The study involved students with various learning challenges. The researchers selected sixty-two respondents to participate in this study from grade five to grade nine. The classroom climate was tested using patterns of adaptive

learning styles, while the reading achievement was obtained using the normative reading methodology. The data obtained were analyzed based on catastrophe theory. The study established that classrooms with performance goal orientation did better in reading vocabularies. The mastery classroom had no significant influence on the reading of vocabulary among the participants. The study involved learners with learning disabilities, and the findings may not be generalized to those without learning disabilities. The current study filled this gap and provided evidence for students without any learning disabilities in the Kenyan context.

In Taiwan, He (2001) conducted a study to determine the differences between the different types of goal orientations and English as a first Language reading among college students. The study involved 38 students who were randomly selected. The students were then categorized as either mastery-oriented or combined mastery and performance-oriented. The researcher established that the different goal orientations had different English as a first Language reading. The combined category could recall what was taught, while the mastery group focused less on understanding the vocabulary. The study focused on college students and used a relatively small sample. The current research bridged this gap by providing information on the differences in reading comprehension performance of students with mastery and performance goal orientations in Kenyan secondary schools.

Ruishi et al. (2021) investigated the different types of goal orientations and how they influence language performance in China. The study was conducted among secondary school English as a first language learner. The study adopted a non-

experimental quantitative research design to achieve its study objectives. Five schools were randomly selected, and three hundred and sixty students were randomly picked to participate in this study. Quantitative data were collected using questionnaires from the students chosen. The data were then analyzed using SPSS V.27. The study established that mastery approach and avoidance had a positive, moderate and significant association with language achievement.

In contrast, performance approach and avoidance revealed a lower negative but significant relationship with language achievement. The study was conducted in China, a country with different economic and socio-cultural backgrounds. Furthermore, the education system in China is different from that of Kenya. The current study provides evidence from secondary schools in Kenya to fill the gaps.

In another study, Shi (2022) investigated the association between the strategies used for learning among the students and their goal orientations. The study used a quantitative research design to determine its study objectives. The quantitative data was collected from the learners in the university undertaking English language courses at different levels. It was established that performance differences exist among English language learners for those using performance-approach goals and mastery goal orientation. The most preferred approach that yielded better results was the mastery goal orientation. The major shortcoming of this study is that it focused on the relationship between goal orientation and learning strategy. The current study investigated the relationship between learning mastery, performance goal orientation, and reading comprehension performance and provided empirical evidence from a Kenyan setting.

Another similar study was conducted by Li et al. (2021) to determine whether there exists a relationship between academic success, success goal orientation, and educational well-being. The researchers used a cross-sectional design with 3511 participants from 4 medical learning institutions. Questionnaires were used to collect quantitative data from the selected students. The data collected were analyzed using SPSS V.22 to obtain descriptive and inferential statistics. The results revealed that the students with mastery goal orientation did better than those who utilized performance-avoidance goal orientations regarding academic success. The study recommended boosting mastery goals among undergraduate students to help them improve their academic success and well-being. The study involved college students; therefore, the results may not apply to secondary school students in Kenya, a gap addressed by this study.

Regionally, Jowkar et al. (2011) conducted a study in Nigeria to explore the association between achievement goal orientations and academic resilience. The research involved 606 (307 males and 297 females) secondary school students. The youth development module scale and achievement goal questionnaire were used to collect data. Pearson Correlation, Simultaneous Multiple Regression, and factor analysis were used to analyse collected data, and the findings indicated that the mastery approach significantly predicted home/peer care subscales. The performance approach considerably predicted home care, which led to the conclusion that achievement goal orientations play a critical role in learners' academic achievement. Academic achievement is a global concept, and therefore, it was necessary to focus on its sub-domains, such as reading

comprehension performance, to make a scholarly contribution to this body of knowledge.

Research by Ng'ang'a et al. (2018) studied the link between learners' goal orientation and academic outcomes in Kiambu County. The target group was all three students in the year 2017. The Gatundu South constituency was selected through purposive sampling, 12 schools were singled out, and 665 respondents filled out questionnaires. Out of the 665, 40 students were purposively selected for interviewing. Participants' grades from their respective schools' records provided the learner's academic achievement. Qualitative data were collected and analyzed thematically, and quantitative data was diagnosed with the aid of the SPSS program. The study revealed that mastery and performance goal orientation significantly affect academic achievement, the highest being performance-avoidance. The findings of the prior studies were significant as they formed a basis upon which this study explored differences in reading comprehension performance of learners with mastery and performance goal orientations to bridge the gap.

2.6 Gender Differences in Learning Goal Orientation Towards Reading Comprehension

Gender differences in learning goal orientation towards reading comprehension have been directly examined. Diaconu-Gherasim et al. (2018) studied how gender, intelligence perception, and goal orientation affect learners' academic performance in Romania. The research used a sample of 362 seventh-grade learners (55.8% females) to evaluate the end of the-semester exam's intelligence perception, goal orientations, and academic achievement. The study concluded

that girls scored higher on mastery goals and intelligence perception concerning achievement than boys. The study also showed no significant association between learners' goal orientation intelligence perception and academic achievement.

In Georgia, Boyd (2017) investigated gender differences in goal orientation. This study adopted three research designs descriptive, cross-sectional, quantitative, and quasi-experimental. The sample size for this study was 1724 university students. The quantitative data were collected using questionnaires issued to the selected respondents. The data collected were then analyzed using SPSS to obtain inferential statistics. This study's findings revealed that the researchers focused only on gender differences in goal orientation. The present study examined gender differences in goal orientation toward reading comprehension. Furthermore, the study was conducted in Georgia, a more developed country with a better education system than Kenya. The present study provides evidence from a Kenyan perspective.

A similar study was carried out by Shi (2022) to determine the relationship between the strategies used for learning among the students and their goal orientations. The study used a quantitative research design to achieve its study objectives. The quantitative data were collected from the learners in the university undertaking English language courses at different levels. It was established that mastery goal orientation had a positive and significant relationship with all types of learning strategies and that female students had a higher mastery goal orientation than their counterparts. This study focused on the relationship between goal orientation and learning strategy. Therefore, there

was a need to investigate the relationship between mastery goal orientation and performance goal orientation in reading comprehension performance and provide empirical evidence from a Kenyan setting.

In Turkey, Sahin et al. (2016) studied sex, age differences, and goal orientations among college students. A sample of 250 male and 386 female students were sampled in this study (61% were female, with a mean age of 15.67). A 2x2 achievement goal orientation scale was administered, and the research hypothesis was tested using an analysis of variance. The study concluded that there were no significant differences in achievement goal orientations between girls and boys but further pointed out that with age differences, older learners had less mastery oriented than younger ones. .

Alomair and Almethen (2021) investigated the teacher's view on the influence of gender on reading comprehension. The study involved ten female teachers selected from international schools with at least two years of teaching. Only those who had been teaching both male and female students were involved in this study. The data were collected mainly through interviews. The data collected were analyzed using the thematic analysis technique, and the findings revealed a statistically significant gender difference in reading comprehension where factors such as the student's age or socio-cultural issues contributed to these gender differences noted between the male and female students. The research involved ten teachers, a relatively small sample size that may not be generalized to secondary school students. The present study filled this gap using a larger sample size in the Kenyan context.

In Nigeria, Alice et al. (2016) examined the Borno State senior secondary school students' gender differences in mathematics and English language academic performance. The study was based on the Hierarchical model Elliot and Church (1997) postulated. It employed a correlational research design where a sample of 827 (414 males and 413 females) selected from 18 schools across the state were used. Data analysis was done using MANOVA and it was found that boys performed better than girls in English and showed no gender differences in mathematics. There was a positive association between gender and learning goal orientation inclined towards males students.

Another related study by Olafunk and Elizabeth (2020) investigated how male and female students differed in their attitudes toward reading comprehension. This study employed a meta-analysis of the available literature. The study established that girls are better than boys in language performance, but the difference was non-significant. Having adopted the meta-analysis of the available literature, the design is associated with several challenges, including the inclusion of studies that were limited in scope and design to be generalized to secondary school students in Kenya. A similar study was carried out by Oda and Abdul-Kadhim (2017) to determine gender differences in reading comprehension. The study involved 154 students selected from various colleges. All these students were issued questionnaires to respond to, and the data collected were then analyzed using SPSS to obtain descriptive and inferential statistics. It was established that non-statistically significant differences exist between male and female students on literal, inferential, and appreciative reading comprehension levels. On the critical level, a statistically significant

difference was established where the female students did better than the male students on this scale. The findings of this study were based on data collected from college students from a different country which may not apply to that of the present country where the current study was undertaken because of the differences in several issues, including economic and educational systems. The recent research was necessary to provide additional literature from a Kenyan setting.

In Tanzania, Maro (2018) examined gender differences in achievement goal orientation based on physical education. The study involved four hundred students who had been engaged in physical education. Quantitative data were collected using questionnaires and then analyzed using inferential and descriptive statistics. The results revealed a statistically significant difference in goal orientations between male and female students in favour of male students. The male students believed PE helps them with social status and health-related issues such as staying fit, while the females indicated PE would help them with social responsibility. During the actual involvement in the physical education lesson, there were no significant gender differences in satisfaction and enjoyment. The study focused on gender differences in goal orientations in physical education, while the current study provides evidence of gender differences in goal orientations toward reading comprehension.

Locally, literature is scarce on gender differences in goal orientation among secondary school students. Ileri (2015) conducted a study in Embu County to find how academic identity and achievement goal orientation were associated with educational outcomes. The study used an explanatory sequential mixed

method design that targeted form three Embu County students. Three hundred and ninety students from ten public schools were selected randomly and issued with a comprehensive questionnaire. Learners' grades from their exams were used to gather information on academic achievement. The collected data (quantitative) analysis entailed multiple regression, t-test, and Pearson's Correlation. The study found a significant influence of goal orientation on academic performance. Concerning gender differences, the study reported that boys scored higher in academic identity while girls scored higher in approach achievement goal orientation. The study recommended that parents and teachers propagate academic achievement identity and approach goal orientation. Informed by these findings, the current research investigated if there were gender differences in goal orientation towards reading comprehension performance to close the gap.

2.7 Gender Differences in FD and FI Cognitive Learning Styles Towards Reading Comprehension

A study by Boccia et al. (2017) conducted in Italy investigated the effects of cognitive styles on learning outcomes. GEFT was used for data collection from a sample of 54 respondents to identify their cognitive techniques and PTSOT (Perspective Taking/Spatial Orientation Test) to determine their orientation skills. After data analysis, it was found that cognitive styles interacted with gender on rote learning and map drawing. Females classified as field-dependent performed poorly than their male counterparts. This showed that cognitive learning style affected learning and retrieval of the content. The study concluded that cognitive techniques are vital while forming a mental map of the

environment, and field-independent individuals showed more remarkable ability than field-dependent individuals. The findings are significant, but it is unclear if the trend is the same concerning reading comprehension performance, a gap the current research aimed to address.

Another study was conducted by Hung and Wang (2021) to determine the impact of FD and FI cognitive styles and gender on how to identify and correct bugs while developing applications. The study involved forty learners studying C++ programming language. GEFT was used to classify the learners as either FD or FI. It was established that the FI and FD students identified and corrected errors differently. It was also found that male students took longer to identify and fix bugs than their female counterparts. This is a clear indication that there are gender differences based on their cognitive learning styles and how they solve problems. This study involved students studying programming languages, and therefore, there was a need for the present study to provide details on students dealing with reading comprehension in secondary schools in Kenya. Furthermore, the study was conducted in Taiwan, a country with a different socio-cultural and economic background to that of Kenya, and the present study filled this gap from a Kenyan context.

In another related research conducted in Iran, Niroomand and Rostampour (2014) investigated the impact of FD cognitive styles and gender differences on learning English. EFL (English as Foreign Language) students were subjected to VST (Vocabulary Size Test) and GEFT. The study reported that the cognitive styles of FD students affected their performance in English as a foreign language; other interactions, such as gender differences, also influenced

vocabulary knowledge. The researchers concluded that understanding students' cognitive style of learning and gender enables the instructor to come up with appropriate materials to assist learners in enhancing their competence.

Arisi (2011) conducted a study in Nigeria to investigate the effect of learners' cognitive style and gender on their academic performance. The research aimed at investigating the impact of cognitive techniques on educational outcomes on one hand and gender differences on cognitive styles on the other hand. The study involved 192 (87 males and 105 females) students selected from 4 secondary schools. The data collected were analyzed using percentages, and the hypothesis was tested using ANCOVA. The study findings were as follows; there was no significant association between cognitive styles and academic achievement, and there was no significant association between cognitive techniques and students' gender. It was also reported that FD learners performed better than FI learners.

In another research, Idika (2017) examined the impact of FD and FI cognitive styles and gender on performance in Chemistry subjects. The study involved 208 students chosen from public secondary schools in Ibadan. The study employed a survey research design. The data were collected using questionnaires issued to the selected students. The data collected were then analyzed using SPSS to obtain descriptive and inferential statistics. It was established that there existed significant differences between FD and FI students on performance in chemistry, where students with FI cognitive style recorded higher performance than those with FD cognitive style. However, no significant gender differences were obtained based on these scores. The study recommended adopting a teaching style that suits all the available students in class. This study focused on

performance in chemistry subject. Therefore, there was need for the current research to provide empirical evidence for gender differences in FD and FI cognitive learning styles toward reading comprehension.

Niroomand and Rostampour (2014) conducted another study to determine whether gender impacted vocabulary knowledge among English First learners in Iran based on the FD and FI cognitive styles. The study involved 82 undergraduate students, both male and female students. The researchers utilized vocabulary size test to test understanding of the vocabulary, while the student's cognitive style was tested using GEFT. To determine the effect of gender based on their cognitive styles on vocabulary knowledge, the researchers used ANOVA. It was established that gender did not influence vocabulary knowledge based on students' cognitive style category. This study was conducted at a university in Iran, a country with a different socio-economic background than Kenya. Furthermore, the findings were from university students and may not be generalized to secondary schools. The present study filled these gaps by providing literature on a Kenyan setting involving secondary school students.

In Kenya, Oginga (2020) carried out a study to determine gender differences in cognitive styles. The study was carried out in public secondary schools. The study employed descriptive research design, and quantitative data were collected from form three students selected using stratified sampling techniques. The form three class was chosen using random and purposive sampling techniques. The cognitive styles were identified using GEFT. The student's performance was obtained from their previous exams. The data were analyzed using SPSS to get descriptive and inferential statistics that helped answer the research questions.

The study established that gender did not significantly impact on the students' cognitive styles. This study did not provide information on gender differences in FD and FI cognitive styles toward reading comprehension, a gap this study aimed to fill.

Another similar study by Musya (2015) examined the association between cognitive styles and academic outcomes among high school learners in Kenya. The research aimed to find the association between students' cognitive style and academic achievement in Chemistry. Using simple random sampling, 200 form three students were selected from different schools. The respondents were issued with a questionnaire that collected personal information. End of term performance in Chemistry and GEFT was used to identify their cognitive styles. Data were analyzed using SPSS involving computation of mean scores and standard deviations in Chemistry. Pearson Moment Correlation Coefficients were used to find out the correlation coefficients. The findings revealed that FD and FI cognitive styles influenced chemistry performance, where FI students performed better than their counterparts. The study findings also showed that most male learners were FI while most female students were FD. Since the study focused on chemistry and was conducted in Kitui County, there was need to conduct similar research in Kiambu County to concentrate on reading comprehension performance to compare the results and contribute to literature to bridge the gap.

2.8 Summary of Literature Review and Gap Identification

Related literature indicated that FD and FI cognitive styles were related to the changes in achievement scores. Most research focused on the association

between FD and FI cognitive learning styles and general learning outcomes. Therefore, there was a need to focus on reading comprehension performance to close the gap. Findings on the correlation between learning goal orientations and performance were mixed. Other studies reported a significant association between language learning strategies and goal orientations, while others found that performance goal orientation was not considerably associated with the meta-cognitive reading strategy. These contradictory findings necessitated the need for this study to contribute to this debate. Little has been done on the differences in reading comprehension performance of students with FD and FI cognitive styles. Most related studies in this area involved university students and focused on different achievement domains. Therefore, there was need to find out if there were differences in reading comprehension performance of FD and FI learning goal orientations among form two students.

Concerning differences in reading comprehension achievement of students with mastery and performance goal orientations, most studies reported that student goal orientation significantly affected their academic achievement and level of meta-cognitive strategies. However, the studies did not focus on the differences in reading comprehension, a gap the current study sought to fill. Gender differences in FD and FI cognitive styles and goal orientation toward reading comprehension have not been directly examined. The findings of related studies were contradictory as other studies had reported no significant gender differences while others reported substantial gender differences, a gap the current study addressed.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology, design, variables, location, target population, sampling procedures, and sample size. It also presents the research instruments, data collection procedures, data analysis, and logistical and ethical considerations.

3.2 Research Methodology

This research used quantitative research methodology, which entails collecting data using questionnaires to test theories by analysing relationships among the variables under study (Babbie, 2010). The researcher collected quantitative data using a modified GEFT questionnaire, achievement goal orientation scale, and English comprehension test. The collected data were explored using quantitative data analysis techniques to establish the nature of the association between FD-FI cognitive learning styles, learning goal orientations, and reading comprehension performance. This methodology was appropriate for this research because the researcher aimed to collect numerical data, analyze it, and then generalize it across secondary school students with similar characteristics to those sampled to explain the selected correlates of reading comprehension performance.

3.3 Research Design

The researcher used a correlational research design. This design is employed when the independent variables cannot be manipulated (Kothari & Garg, 2014).

Correlation research design is a quantitative technique of research in which two or more variables from the same subjects are studied to determine if there is a covariance or relationship (Kothari & Garg, 2014). Using this design, the researcher sought to establish the relationship between FD-FI cognitive learning styles, learning goal orientation, and reading comprehension performance. This method was suitable for this study because FD and FI cognitive learning styles and goal orientation cannot be manipulated due to ethical issues such as isolating the students based on their cognitive learning styles and limited expertise on the part of the researcher to conduct an experimental study successfully. Correlational research design has been successfully used to study the factors affecting academic performance among Kiambu County secondary school learners. Mwangi (2015) used this design to examine the association between resilience and academic performance, and the results were in line with the findings of earlier studies. In another research, Ngunu (2019) used that same design to study selected correlates of academic achievement, and the researcher verified the study hypotheses.

3.4 Variables of the Study

The study variables were categorized into predictor, outcome, and intervening variables. The predictor variables were FD-FI cognitive learning styles and learning goal orientation. FD consists of concrete experiences and active experimentation, while FI consists of reflective observation and abstract conceptualization. Measurement of cognitive learning styles was done at an interval scale.

Learning goal orientation consisted of two levels: mastery and performance goals. Mastery and performance goals were further categorized into approach and avoidance goals. Learning goal orientation was also measured at an interval scale. The outcome variable entailed performance recorded in comprehension reading derived from a predetermined reading comprehension test (Appendix C). The intervening variable was the gender of the student, which was categorized into male and female.

3.5 Location of the Study

The locale of this research was Kiambu County. Most public sub-county day secondary schools in the county reportedly struggled with deteriorating academic achievement (Mwangi, 2015). The county was suitable for this study because academic performance in most public sub-county day secondary schools was below average (Ng'ang'a, 2018). According to KNEC statistics (2018), the County was ranked 36 and 38 in KCSE in 2017 and 2018, respectively. Furthermore, most of the last 200 public day secondary schools in KCSE in 2016, 2017, and 2018 were from Kiambu County. A study by Chege (2012) found that reading comprehension had a significant positive association with academic performance. Therefore, dismal academic performance in some secondary schools in Kiambu County may be attributed to poor reading comprehension, hence the need for this study to address the problem. Even though some scholars have tried to address this problem, no attempt was made to determine the relationship between FD-FI cognitive learning styles, learning goal orientation, and reading comprehension performance.

3.6 Target Population

This research's target population was the 176 public sub-county day secondary schools in Kiambu County in 2019, with a population of 8142 Form Two students. The study targeted public day secondary schools because statistics indicated that this category of schools was ranked at the bottom in national examinations. For example, in 2017 most of the bottom 100 secondary schools in the KCSE ranking were from this county (KNEC, 2018). The study targeted form two students because they were within the recommended age of 10 years and above for FD-FI cognitive styles test and goal orientation scale (Anderson et al., 2003; Wyss, 2002).

3.7 Sampling Techniques and Sample Size Determination

3.7.1 Sampling Techniques

The public day secondary schools were selected using purposive sampling because available statistics showed that the schools have been consistently performing below average in national examinations. Out of 176 public day secondary schools, 20 of them were obtained using simple random sampling based on Mugenda and Mugenda (2013) principle which recommends appropriate sample size of 10% or more. The schools were given codes from 1 to 174 and then the research assistants were instructed to write the numbers on small pieces of papers. Two schools were excluded from the study because they were involved in the piloting of the research instruments. They were then folded and put in a bowl for reshuffling. To select the twenty schools, twenty pieces of papers were randomly selected from the bowl. Purposive sampling was also used to select Form Two classes in each school. Simple random sampling was used

to select one stream from the group of streams for multiple streams schools. The students were selected using proportionate stratified sampling to ensure that both boys and girls were given equal chances of participating in the study.

3.7.2 Sample Size Determination

Table 3.1 below shows the sampling frame of the study.

Table 3.1

Target Population and Sample Size

Target	Population		Sample Size		
	Schools	Students	Schools	Boys	Girls
		Boys			
		Girls			
176	4030	4112	20 (11%)	420(10.4%)	440(10.7%)
Total	8142		20 (11%)	860 (10.6%)	

The sample of the students was selected from public day secondary schools. Sample selection was based on Mugenda and Mugenda (2013) sampling principle, which states that a sample size of between 10% and 20% is considered appropriate to give reliable results. Using this principle, 20-day secondary schools were randomly selected from a target population of 176 schools. The sample of the schools constituted of 11% of the target population. The target population of the students was 4030 boys and 4112 girls. A sample of 420 boys and 440 girls was selected, representing 10.4% and 10.7%, respectively. The sample size consisted of a total of 860 students, which represented 10.6% of the total target population.

3.8 Research Instruments

The research entailed three instruments: a modified Group Embedded Figures Test (GEFT), a Goal Orientation Questionnaire and an English comprehension test.

3.8.1 Modified Group Embedded Figures Test (GEFT)

The researcher used FD/FI Questionnaire by Robert Wyss (2002), adapted from the Group Embedded Figures Test (GEFT) to categorize the students (Appendix B). Due to the complexity of the GEFT scale, the scale's constructs were simplified to categorize the respondents into either FD or FI. Guided by the adapted GEFT used by Musya (2015) in a study that examined the association between cognitive learning styles and academic achievement, the researcher developed an 18-item scale. The scale was categorized into FD and FI cognitive learning styles, each with nine items.

3.8.2 Achievement Goal Orientation Questionnaire

This questionnaire measured the student's goal orientation toward reading comprehension. Achievement Goal Questionnaire-Revised (AGQ-R) was developed by Elliot and Murayama (2008) and had a reliability coefficient of 0.84. The scale consists of 12 items each for performance and mastery goals, measured on a five-point Likert scale (Appendix B). The respondents were asked to rate their achievement goal orientation on a scale ranging from *Strongly Agree (5)* to *Strongly Disagree (1)*. The items measured the domains of goal orientation: 1, 3 and 7 measured mastery approach, 5, 11 and 9 measured mastery avoidance, 2, 4 and 8 measured performance approach and 6, 10 and 12 measured performance avoidance. To come up with the scores of each sub-scale,

the researcher calculated the sum of the scores of the items in each sub-scale. Each sub-scale (mastery approach, mastery avoidance, and performance approach and performance avoidance) consisted of three items. The expected minimum score in each sub-scale was three, while the maximum was 15. The sum of the mastery approach and mastery avoidance sub-scales was computed to obtain the mastery goal orientation scores. The scores of performance goal orientation were obtained through a similar way. The expected highest score for performance and mastery goals was 30, while the lowest was 6.

3.8.3 English Comprehension Test

The researcher adapted the English Comprehension test from Pavement Form Two English Examination Term III 2016. The passage is about peer pressure and has eight paragraphs. To measure the reading comprehension of the respondents, they were required to answer six multiple-choice questions (Appendix C). Initially, the test consisted of open-ended questions, but the researcher developed four choices for each question. This was done to ensure that scoring was objective and to make it possible to generate quantitative data that would be used to test the research hypotheses.

3.9 Pilot Study

A pilot study was carried out in two schools representing 10% of the sample size to test the reliability and validity of the research tools. The sample size for the pilot study was 30 students who were proportionately sampled from the two schools. The sampling frame for the pilot study was guided by Connelly (2008), who suggested that a sample size of 10-30 respondents is appropriate for a pilot study. The schools involved in the pilot study were not involved in the actual

study to avoid prior exposure to the study questions, which would affect the study's external validity.

3.9.1 Reliability of the Research Instruments

a. Modified Group Embedded Figures Test (GEFT)

The researcher used the test-retest technique to ascertain the reliability of the research instrument. The results are presented in Table 3.2.

Table 3.2

Reliability Coefficient for FD-FI Scale

		Test 1	Test 2
Test 1	Pearson Correlation	1	.77
	Sig. (2-tailed)		
	N	30	30
Test 2	Pearson Correlation	.77	1
	Sig. (2-tailed)		
	N	30	30

As indicated in Table 3.2, the correlation between the test and re-test scores was .77. The correlation coefficient was within the recommended range of 0.7 and above (Kothari & Garg, 2014). Masoud and Mehrnoush (2015) used a modified GEFT and reported a reliability coefficient of .61.

Before the pilot study, the FD/FI statements were measured on a five-point Likert scale (A-E) starting from 3, 2, 1, 2 to 3. The respondents were provided with the following instructions.

“In each item provided, tick one box that best describes you. Boxes A and E imply that the statement describes you. Boxes B and D would imply that the statement is less likely to describe

you. Box C implies that the statement does not concern you as an individual.”

However, when the respondents were given the questionnaire to fill out, some indicated that they used both FD-FI cognitive learning styles simultaneously. To avoid this confusion during the actual study, the instructions were reviewed to read as follows.

“Read all the statements in part I and II, then decide which side best describes you. You are required to respond to questions on one side only. Check one box in each item that matches your character best. Box A would imply that the statement best describes who you are. Box B indicates that the sentence is more like you, while Box C indicates that the sentence is less like you.”

The students were also asked to indicate ambiguous statements. After the corrections were done, the questionnaire was administered to another cohort of students selected from the same schools.

The pilot study was conducted in two public day secondary schools in Kiambu County. The sample consisted of 30 students (16 girls and 14 boys). The questionnaire consisted of 18 items concerning FD and FI. It places a person on a scale between FD and FI. The expected highest score for FD/FI was 27. The students were classified as FD or FI based on the category with the highest score. The reliability coefficient of the test was 0.77.

b. Achievement Goal Orientation Questionnaire

Elliot and Murayama (2008) conducted a study among university students to establish internal consistency and confirm the correlation of the factors of the scale. The results showed that the factor loadings ranged from .73 to .93. Each statistic met the criteria for a fitting model ($\chi^2(48, N = 229) = 78.32, p < .01$). A pilot study conducted in two schools representing 10% of the sample size aimed at testing the reliability and validity of this scale. The reliability coefficients of the pilot study are presented in Table 3.3.

Table 3.3

Reliability Coefficients for LGO Scale

LGO Sub-Scale	Alpha coefficients (Validation)	Alpha coefficients (Pilot Study)
Mapp	.79	.71
Mav	.82	.81
Papp	.86	.78
PAv.	.89	.73
Overall	.84	.76

Note. LGO = Learning Goal Orientation; MApp= = Mastery Approach; MAV = Mastery Avoidance; PApp = Performance Approach; PAv = Performance Avoidance.

The results indicate that the subscales' reliability coefficients were within the acceptable range of .70 or more. Principal components analysis was done to ascertain the construct validity of the LGO scale. The results showed that all the factor loadings ranged from .61 to .73. Elliot and Murayama recommended that factor loadings greater than .50 are acceptable.

c. English Comprehension Test

Question one in the original reading comprehension test read, “Why *did the author start smoking?*” However, when the test was pretested, it was established that it had low discrimination and item difficulty indexes. To achieve acceptable item discrimination and difficulty indices, the item was revised to read, “Why *did the author start smoking bhang?*” The pilot study showed that item discrimination and difficulty indices were within the acceptable range. The other five items passed the inclusion criteria, and therefore, they were not altered. A test-retest technique was used to examine the instruments' reliability, and the results obtained are presented in Table 3.4 below.

Table 3.4

Test Re-test Reliability Coefficient for Reading Comprehension Test

		Test 1	Test 2
Test 1	Pearson Correlation	1	.71
	Sig. (2-tailed)		
	N	30	30
Test 2	Pearson Correlation	.71	1
	Sig. (2-tailed)		
	N	30	30

The results indicate that the correlation coefficient of the test and retest scores was greater than .70 and therefore acceptable as recommended by Biemer et al. (2009).

3.9.2 Validity of the Research Instruments

The content and face validity of the research tools were ascertained from beginning to end by expert judgment and peer review. The research instruments

were presented to the university supervisors for a specialist opinion regarding content and face validity during proposal development. However, no correction was recommended at this stage because the tools were standardized. After the pilot study, the researcher identified some of ambiguous items. The items were corrected as advised by the supervisors to enhance the content validity of the research instruments. Competent peers also reviewed the tools to corroborate the opinion of the supervisors.

3.10 Data Collection Techniques

The sampled schools were listed down and then given codes for easy identification of the questionnaires during data coding. In some schools, the researcher delivered the data collection instruments in person, accompanied by the research assistants. Upon getting permission from the school principal, simple random sampling was employed to select the students to be involved in the study. It took about 15 minutes to orient the sampled students on what they were expected to do, and they were allowed to fill out the research instruments. In some schools, the researcher requested the class teachers for assistance in collecting data. The teachers followed the instructions on what the students were expected to do. In such schools, the research instruments were delivered, and the teachers were allowed to collect data at their convenience. The filled research instruments were collected later. This data collection technique was the most appropriate for this study because it was cost-effective and enabled the researcher to reach more respondents than other techniques.

3.11 Data Analyses

All the research instruments were checked for completeness, and out of 860 questionnaires administered, four were excluded because they had more than five items that were not filled in. The remaining questionnaires were coded into a data book and entered into the SPSS computer program Version 29. Preliminary treatment of the data involved checking for any missing data and outliers. Missing values were replaced, and outliers were deleted before analysis. Descriptive data were analyzed using frequencies, percentages means and standard deviations. Assumptions for the statistical tests were tested using scatter plots, histograms, kurtosis, and skewness. The results were presented using tables. Inferential statistics were used to test the following hypotheses.

H₀₁: There is no significant relationship between FD-FI cognitive learning styles and reading comprehension performance among Form Two students in Kiambu County. Statistical test: Pearson Product Moment Correlation.

H₀₂: There is no significant relationship between learning goal orientations and reading comprehension performance among Form Two students in Kiambu County. Statistical test: Pearson Product Moment Correlation

H₀₃: There is no significant differences in reading comprehension performance of Form Two students with FD and FI cognitive learning styles in Kiambu County. Statistical Test: Independent samples T-test.

H₀₄: There is no significant difference in reading comprehension performance of Form Two students with mastery and performance goal orientations in Kiambu County. Statistical Test: Independent samples T-test.

H₀₅: There are no significant gender differences in FD and FI cognitive learning styles toward reading comprehension among secondary school students in Kiambu County. Statistical Test: Independent samples T-test.

H₀₆: There are no significant gender differences in learning goal orientations towards reading comprehension among secondary school students in Kiambu County. Statistical Test: Independent samples T-test.

3.12 Logistical and Ethical Considerations

3.12.1 Logistical Considerations

An authorization letter was obtained from the graduate school to conduct the study. After clearance from the graduate school, the researcher applied for a research permit from NACOSTI. After getting the research permit, the researcher assembled the materials and other resources required during the study and sought an authorization letter from the Director of Education in Kiambu County. The researcher booked appointments with the principals of the sampled schools to agree on the most appropriate time to conduct the study. The respondents were briefed about the purpose of the research and then got their informed consent.

3.12.2 Ethical Considerations

The respondents voluntarily participated in the study and were not required to write their names or any other information that could reveal their identity. The

researcher ensured that the questionnaires were framed without embarrassing questions and that all ethical guidelines, such as informed consent, were strictly followed. The researcher assured the respondents of the confidentiality of the information they would provide.

CHAPTER FOUR
PRESENTATION OF FINDINGS, INTERPRETATION AND
DISCUSSION

4.1 Introduction

The chapter discusses the general and demographic information of the respondents. It also presents the research findings under the following sub-headings.

- i. Relationship between FD-FI cognitive learning styles and reading comprehension performance.
- ii. Relationship between learning goal orientations and reading comprehension performance.
- iii. Differences in reading comprehension performance of students with FD and FI cognitive learning styles.
- iv. Differences in reading comprehension performance of Form Two students with mastery and performance goal orientations.
- v. Gender differences in FD and FI cognitive styles towards reading comprehension among Form Two students.
- vi. Gender differences in learning goal orientations towards reading comprehension among Form Two students.

4.2 General and Demographic Information

This section presents a descriptive analysis of the questionnaire return rate, gender and age of the students involved in the research.

4.2.1 Return Rate

The sample of this study comprised 20 public day secondary schools in Kiambu County, 420 boys and 440 girls. All the schools were involved in the study, and from each school, 21 boys and 22 girls were randomly sampled to complete the questionnaire and take the reading comprehension test. Table 4.1 below shows the distribution of questionnaires, reading comprehension tests administered, and the return rate.

Table 4. 1

Return Rate of the Research Instruments

Target Questionnaires administered			Returned Questionnaires					
Schools	Students		Schools		Students			
	Boys	Girls	F	%	F	%	F	%
20	420	440	20	100	419	99.8	437	99.3
Total	860		20	100	856		99.6	

Note. F – Frequency; % - Percentage; RCT – Reading Comprehension Test.

Table 4.1 above indicates that 420 questionnaires and reading comprehension tests were administered to boys, and 440 questionnaires and reading comprehension tests were administered to girls. During data cleaning, four questionnaires, one from a boy and three from a girl, were discarded because more than four items in FD and FI scales and goal orientations questionnaire were not filled. Therefore, 419 and 437 questionnaires and reading comprehension tests for boys and girls were used in data analysis. This translated

to a 99.8% return rate for boys and 99.3% for girls. The total return rate was 99.6%, with boys having a higher return rate than girls.

4.2.2 Demographic Data of the Respondents

The background information of the respondents collected was gender and age.

Table 4.2 shows the gender of the respondents.

Table 4. 2

Gender of the Respondents

Gender	Frequency	Percent
Male	419	48.9
Female	437	51.1
Total	856	100.0

Table 4.2 indicates that 419 (48.9%) were boys, while 437 respondents representing 51.1%, were girls. The results suggest that the number of girls involved in the study was slightly higher than that of boys. This difference is attributed to the fact that in secondary schools in Kiambu County, the number of girls enrolled is marginally higher than that of boys.

The researcher then examined gender distribution across the age categories, and the results are presented in Table 4.3.

Table 4. 3

Respondents' Gender and Age Cross Tabulation

		<u>Age</u>						<u>Total</u>
		16-18		19-20		21 and above		
Gender	Male	366	42.8%	45	5.2%	8	0.9%	419
	Female	415	48.5%	20	2.3%	2	0.2%	437
Total		781	90.3%	65	7.5%	10	1.1%	856

Table 4.3 indicates that most respondents were aged between 16 and 18 years. Four hundred and fifteen girls representing 48.5%, and 366 boys, equivalent to 42.8% were aged between 16 and 18. Those aged between 19 and 20 years were 45 boys (5.2%) and 20 girls (2.3%). Only eight boys (0.9%) and two girls (0.2%) were aged 21 and above. The findings indicate that most respondents were in the recommended age bracket (16-17 years) for Form Two students. The few students who were 19 years and above might have delayed in school due to several factors such as sickness, financial challenges, and truancy. Most of the boys were older than the girls, 19 years and above. This disparity may be attributed to the less attention the boys are getting on education matters. Some of them are not consistent in school attendance, making them repeat classes. Others may drop out of school and then return or get suspended because of indiscipline which delays them in proceeding to the next class. Regarding the issue this study sought to address, the findings indicate that all the respondents were at the right age in cognitive development and were expected to perform well in reading comprehension.

The distribution of the respondents across age categories was analyzed, and the findings were shown in Table 4.4 below.

Table 4.4

Age Categories of the Respondents

Age category (years)	Frequency	Percent
16-18	781	91.2
19-20	65	7.6
21 and above	10	1.2
Total	856	100.0

Table 4.4 shows that 781 (91.2%) respondents were aged 16-18. Only ten (1.2%) were aged 21 years and above, while 65 (7.6%) were between 19 and 20. The findings indicate that most respondents were within the required age of 16-18 years of Form Two students. Many respondents were much older than expected due to some of the factors discussed in Table 4.3.

4.3 Relationship between FD-FI Cognitive Learning Styles and Reading Comprehension Performance

This section presents the descriptive statistics of the scores of cognitive learning styles, reading comprehension scores, hypothesis testing and discussion of the results.

4.3.1 Descriptive Statistics for Cognitive Learning Style Scores

To understand the distribution of the respondents' cognitive learning style based on gender, the data were explored as presented in Table 4.5 below.

Table 4.5

Respondents' Gender and Cognitive Learning Style Cross Tabulation

		FD and FI				Total	
		FD		FI		<i>F</i>	%
		<i>F</i>	%	<i>F</i>	%		
Gender	Male	205	23.9	214	25	419	48.9
	Female	199	23.2	238	27.9	437	51.1
Total		404	47.1	452	404	452	52.9

Note: FI – Field Independent; FD – Field Dependent; F- Frequency; % - Percentage

Table 4.5 above shows that 452 respondents (52.9%) had field-independent cognitive learning styles, while 404 respondents (47.1%) had field-dependent cognitive learning styles. Concerning cognitive learning style and gender, 214

boys (25%) had field-independent learning orientation, while 205 (23.9%) had field-dependent learning orientation. Of the girls, 238 (27.9%) had FI cognitive learning style, while 199 (23.2%) had FD cognitive learning style. The results indicate that the number of respondents with FD and FI cognitive learning styles was almost equal.

The researcher also analyzed the distribution of the respondents with FD and FI cognitive learning styles across the age categories, and the results were as shown in Table 4.6 below.

Table 4. 6

Respondents' Cognitive Learning Styles across the Age Categories

		FI and FD				Total	
		FD		FI		F	%
	Age	F	%	F	%	F	%
	16-18	371	43.3	410	47.9	781	91.2
	19-20	29	3.4	36	4.2	65	7.6
	21 and above	4	0.5	6	0.7	10	1.2
	Total	404	47.2	452	52.8	856	100

Note: FI – Field Independent; FD – Field Dependent; %- Percentage; F-Frequency

Regarding the distribution of respondents based on cognitive learning styles across the age categories, Table 4.6 above shows that 410 respondents representing 47.9% and 371 respondents (43.3%) with FI and FD learning orientations were aged between 16 and 18 years. The respondents aged between 19 and 20 years with FI and FD learning orientations were 36 (4.2%) and 29 (3.4%), respectively. The respondents with FI and FD learning goal orientations aged 21 years and above were 6(0.7%) and 4 (0.5%), respectively. The results indicate a slightly higher number of respondents with FI learning orientation than those with FD learning orientation in the age category of 16-18 years. The

same trend was observed in all the age categories. These findings contradict the results of Zhang (2010), who found that cognitive learning styles change with age. However, the age differences noted in this study were not significant to affect the cognitive learning styles of the respondents.

4.3.2 Descriptive Analysis of Reading Comprehension Scores

The descriptive statistics for the combined reading comprehension scores are presented in Table 4.7 below.

Table 4.7

Descriptive Statistics for Reading Comprehension Scores

	N	Range	Minimum	Maximum	Mean	SD	Sk	Kur
T Score	856	55.30	17.32	72.62	50.00	10.00	-.58	0.3

Note. SD – Standard deviation; Sk – Skewness; kur- Kurtosis

The mean of reading comprehension T- scores was 50, with a standard deviation of 10. The maximum score was 72.62, and the minimum score was 17.32. The skewness coefficient of -.58 indicates that the scores were near normal distribution.

Descriptive analysis of reading comprehension scores was done based on gender, age and cognitive learning style, and Table 4.8 shows the results obtained.

Table 4.8

Description of Reading Comprehension Scores by Age, Gender, and Cognitive Learning Style

		Mean	SD	Min	Max	Sk	Kurt
Gender	Male	47.77	10.13	17.32	72.62	-.422	.316
	Female	50.22	9.88	17.32	72.62	-.74	.32
Age	16-18	50.06	10.02	17.32	72.62	-.61	.38
	19-20	48.66	9.89	26.54	72.62	-.085	-.37
	21 and above	54.70	8.69	35.75	63.41	-.99	1.19
Cognitive style	FD	50.77	9.46	17.32	72.62	-.70	.48
	FI	49.31	10.42	17.32	72.62	-.46	.18

Note. N = 856; SD = Standard deviation; Min = Minimum; Max = Maximum; Sk. = Skewness; Kurt = Kurtosis

The results in Table 4.8 show that female students' reading comprehension mean score was 50.22(*SD* = 9.88). The maximum score for female respondents was 72.62, while the minimum score was 17.32. On the other hand, the mean reading comprehension score for male respondents was 47.77 (*SD* = 10.13), with 72.62 as the maximum score and 17.32 as the maximum score. The results of the respondents on reading comprehension performance concerning age indicate that the mean score of the students aged 16-18 years was 50.06 (*SD* = 10.02). The maximum score was 72.62, while the minimum score was 17.32. The mean score of the respondents aged between 19-20 years was 48.66 (*SD* = 9.89). The maximum score was 72.62, while the minimum score was 26.54. The respondents aged 21 years and above scored a mean of 54.70 (*SD* = 8.69). The maximum score for this group was 63.41, while the minimum score was 35.75. The findings showed that the respondents aged 21 and above scored the highest mean compared to those in other age groups.

Regarding the cognitive learning styles and reading comprehension performance, the results shown in Table 4.9 indicate that respondents with field-dependent cognitive learning styles scored a mean of 50.77 with a standard deviation of 9.46. The maximum score was 72.62, while the minimum score was 17.32. The reading comprehension mean score of the respondents with field-independent cognitive learning style was 49.31, with a standard deviation of 10.42. The maximum score was 72.62, while the minimum score was 17.32. The results show that respondents with field-dependent cognitive learning styles performed slightly better than those with field-independent cognitive learning styles. Similar findings were reported by Onyekuru (2015) in research carried out among secondary school students. The researcher found that students with field-dependent cognitive learning styles had higher scores in sciences, while students with field-independent cognitive learning styles scored better in arts than those with field-dependent cognitive learning styles. The results may be attributed to the experiences gained in the field, which is denied for the control group. This is associated with the postulation of social cognitive learning theory, where exposure and expertise play a crucial role in learning.

Reading comprehension scores were categorized into; low, moderate, and high. A score below 40 was classified as low, 41-59 as average and 60 and above as high. The results are presented in Table 4.9 below.

Table 4.9

Levels of Reading Comprehension Scores

	Frequency	Percent
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Low	147	17.2
Moderate	575	67.2
High	134	15.7
Total	856	100.0

The results showed that 575(67.2%) respondents, who were the majority had an average score in reading comprehension performance. The respondents with low and high levels of reading comprehension performance were 147 (17.2%) and 134 (15.7%), respectively.

4.3.3 Hypothesis Testing

The first objective of this study was to find out the relationship between FD-FI cognitive learning styles and reading comprehension performance among form two students in Kiambu County.

The researcher tested the following null hypotheses:

H0₁: There is no significant relationship between FD cognitive learning style and reading comprehension performance.

H0₂: There is no significant relationship between FI cognitive learning style and reading comprehension performance.

The hypotheses were tested using Pearson product-moment correlation analysis, and the results are presented in Table 4.10 below.

Table 4. 10

Correlation between FD-FI Cognitive Learning Styles and Reading Comprehension Score

		Reading comprehension score
FD score	Pearson Correlation	.48*
	Sig. (2-tailed)	.00
	N	404
FI score	Pearson Correlation	.32*
	Sig. (2-tailed)	.01
	N	452

Note. FD - Field Dependent; FI - Field independent

The correlation of cognitive learning styles was done at FD and FI levels. The findings revealed a significant relationship between field-dependent cognitive learning style and reading comprehension performance ($r(404) = .48, P = .00$). Based on the results, the researcher rejected the null hypothesis. The results also indicated a significant positive correlation between field-independent cognitive learning style and reading comprehension score, $r(452) = .32, P = .01$. The researcher hypothesized no significant association between field-independent cognitive learning style and reading comprehension performance. Since the correlation is significant, the null hypothesis was rejected, and the alternative one was adopted. Therefore, increased field-independent scores lead to increased reading comprehension scores and vice versa.

4.3.4 Discussion of the Results

The findings of this study support the results of other studies conducted in the area but contradict the findings of other researchers regarding the relative contribution of FD and FI cognitive learning styles to academic performance. Nisiforou and Parmaxi (2016) conducted a study in Greece among university students to investigate the effect of cognitive learning styles on performance in computer-assisted language learning. The results showed that students with FD cognitive learning orientation performed better than students with FI cognitive

learning orientation. The findings are consistent with the results of the present study. Therefore, this indicates that cognitive learning styles influence the students' academic performance regardless of the level of learning and culture.

The current study found that most respondents used FI cognitive learning style. Analysis of the levels of reading comprehension scores showed that most of the students had average scores. The reading comprehension means the score of students with FD cognitive learning orientation was higher than that of students with FI cognitive learning orientation. The results demonstrate that cognitive learning styles affect reading comprehension performance. FD cognitive learning style enhanced reading comprehension performance better than FI cognitive learning style. The results depict cognitive theory's postulation, focusing on gaining knowledge through experiences. The group in FD cognitive learning style has more exposure and experiences than the FI.

Nozari and Siamian (2015) established that FD and FI cognitive styles significantly influenced reading performance. The research found that students with FI cognitive style did better than those with FD. These results indicate the presence of a relationship between students with FD and FI cognitive styles, but the results contradict those of the current study. Similar results were reported by Masoud and Mehrnoush (2015), who established an association between FD and FI cognitive styles and the quality of translation. The students with FI cognitive style were better translators than the FD-reliant students. The contradictory findings may be associated with contextual differences in which the studies were carried out.

In Iran, similar results as those of the present study were reported by Rezaee et al. (2019). The researchers established a significant relationship between FD cognitive learning style and performance in reading comprehension performance. These findings agree with those of the present study. Ge (2021) surveyed to determine the association between FD-FI cognitive styles and reading skills. The study established a significant relationship between FD-FI and working memory with the student's English reading skills. Siahaan et al. (2022) demonstrated that cognitive learning styles influenced the students' reading skills. This relationship was mediated by CSR, which was positive for those who received CSR support and negative for those who did not. The study conducted by Chuang et al. (2021) established that both FD and FI cognitive styles influenced students' reasoning capacity, indicating a relationship between these two variables. Those with FI cognitive styles had better reasoning capacity than the FD students. However, these findings were inconsistent with those of the present study.

In another study, Sheykhi and Mohamadi (2017) established a significant positive association between cognitive learning style and reading comprehension performance. The study also found that FD students performed better in reading comprehension than FI students. The findings imply that the degree to which a learner can overcome the effects of environmental distractors is related to academic performance. For instance, FD learners find it challenging to focus on the learning task in a learning environment with distractors. Therefore, the learning environment should be free from irrelevant, extraneous

environmental factors for this category of learners to perform well in reading comprehension.

On the other hand, FI can focus on the learning task amid environmental distractors. FD learners use a global approach to learning, while FI learners are analytical thinkers who process information critically. The differences in reading comprehension performance among learners with FD and FI cognitive learning styles may be attributed to the fact that FD uses a holistic approach to learning, making them understand the learning content better than FI students.

Based on these findings, the below-average performance in the English language in most day secondary schools in Kiambu County may be attributed to FI cognitive learning orientation which gives the students little opportunity to understand the content. Reading comprehension requires the learners to employ a global and holistic approach, a characteristic of learners with FD cognitive learning style. In this approach, the immediate environment plays a significant role in learning and reading comprehension. Therefore, since learners with FI cognitive learning style cannot overcome the effects of environmental factors, they learn very little, leading to a below-average performance in English that is experienced in Kiambu County.

Dwi Susandi et al. (2019) established that FD and FI cognitive styles influenced the students' problem-solving skills. Zhang (2023) also found that both FD and FI cognitive styles and learning strategies influenced students' learning of a second language. Addinna et al. (2019) revealed the existence of a significant association between FI and FD students and their performance in reading

comprehension. Setyosari et al. (2019) reported the presence of a relationship between geography students on those with FI and FD cognitive styles and their academic performance. A study conducted by Onyekuru (2015) in Nigeria also established that FI and FD cognitive styles impacted students' science performance, where FI students performed better than the FD.

Another group of researchers has demonstrated that FI students perform better academically than FD students. Oludipe (2014) reported that there was a significant association between cognitive learning styles and performance in Physics. The research conducted among secondary school students also revealed that FI students performed better in physics than FD students. The contradictory findings may be attributed to the different subjects that were studied. Most concepts in Physics are abstract and therefore require a reflective learning approach which is a characteristic of FI students.

On the other hand, learning English requires a global learning approach characteristic of FD students. Therefore, FD students perform better than FI students in reading comprehension, while FI students perform better than FD students in Physics. The differences in performance among students with different learning styles can be attributed to the fact that other subjects require different cognitive learning styles.

A limited number of studies in this field have been conducted locally. The few available have established an association between FD and FI cognitive styles and academic performance. Musya (2015) demonstrated an association between FD and FI students and their performance in Chemistry. The study carried out

by Sellah et al. (2018) also revealed that cognitive style (sequential-global dimension) was a significant predictor of students' performance in chemistry. All these findings at a local level are consistent with the present study's findings, which demonstrate that FD and FI cognitive learning styles are basic constructs in learning and academic achievement.

4.4 Relationship between Learning Goal Orientation and Reading Comprehension Performance

The second objective of this study was to examine the association between learning goal orientation and reading comprehension performance. This section presents descriptive statistics for learning goal orientation, hypothesis testing and discussion of the findings.

4.4.1 Descriptive Analysis of the Respondents' Learning Goal Orientation Scores

The respondents were categorized as having mastery goal orientation or performance goal orientation using their scores on the achievement goal orientation scale. Respondents with a higher score in the mastery goal orientation sub-scale than in the performance goal orientation subscale were categorized into mastery goal orientation. On the other hand, respondents with a higher score in the performance goal orientation sub-scale than in the mastery goal orientation sub-scale were classified as having performance goal orientation. The respondents with equal mastery and performance goal orientation scales scores were assigned code 0 and excluded in subsequent analyses. Respondents with mastery goal orientation were given code 1, while

those with performance goal orientation were given code 2. The results were as shown in Table 4.11 below.

Table 4. 11

Categories of Learning Goal Orientation

	Frequency	Percent
No Response	28	3.3
Mastery	275	32.1
Performance	553	64.6
Total	856	100.0

The results indicate that 275 respondents representing 32.1%, had mastery learning goal orientation, while 553 respondents representing 64.6%, had performance learning goal orientation. Twenty-eight students (3.3%) were not categorized as having mastery or performance goal orientation because they had equal scores in mastery and performance goals sub-scales. The results indicate that most participants who participated in the research had performance goal orientations.

Regarding the gender of the students and the type of learning goal orientation, the findings are presented in Table 4.12 below.

Table 4. 12

Type of Learning Goal Orientation by Gender

		Type of Learning Goal Orientation				Total	
		Mastery	%	Performance	%		%
Gender	Female	146	53.09	259	46.84	419	48.95
	Male	129	46.91	294	53.16	437	51.05
Total		285	100.00	553	100.00	856	100.00

The results show that 146 female students (53.09%) and 129 male students (46.91) had mastery goal orientation, while 259 female students (46.84%) and

294 male students (53.16) had performance goal orientation. The results indicate that most students with mastery goal orientation were female, while most male students had performance goal orientation.

Mastery and performance goal orientations were further sub-divided into approach and avoidance goals. Table 4.13 presents the proportion of students with performance approach and performance-avoidance goal orientations.

Table 4. 13

Distribution of Students in Performance Goals Sub-scales

	Frequency	Percent
Performance avoidance	246	44.49
Performance approach	307	55.51
Total	553	100.00

From Table 4.13 above, the findings show that the majority of the students, 307(55.51%), were better in approach goal orientations performance compared to a smaller proportion, 246(44.49%), in the avoidance goal orientations performance.

The researcher further analyzed the respondents' distribution based on performance in the mastery goal orientation. The findings are presented in table 4.14 below.

Table 4. 14*Distribution of Students in Mastery Goals Sub-scales*

	Frequency	Percent
Mastery avoidance	125	45.4
Mastery approach	150	54.6
Total	275	100.0

The findings in Table 4.14 above shows that most of the students, 150(54.6%), were better in mastery approach goal orientation performance compared to the 125(45.4%) who did better in mastery avoidance goal orientation. This implies that while the mastery approach is applied in educational instruction, the understanding and preference between the two mastery approaches may be significantly different.

The study findings on the type of mastery approach LGO were presented using Table 4.15 below.

Table 4. 15*Types of LGO and Gender Cross Tabulation*

	Gender				Total
	Male		Female		
	Freq	%	Freq	%	
Performance approach	133	43.32	174	56.68	307
Mastery approach	64	42.67	86	57.33	150
Performance avoidance	137	55.69	109	44.31	246
Mastery avoidance	71	56.8	54	43.2	125

The study results in Table 4.15 above illustrates that most of the students, 307, with male 113(43.32%) and females, 174(56.68%), preferred the performance approach LGO. Comparatively, the performance-avoidance LGO was second, with 246 comprising 137 males (55.69%) and 109 females (44.31%). The

mastery category was the least, with the lead in the mastery approach LGO at 150 and 125 for mastery avoidance LGO. The study results show that the females were better in the mastery and performance approaches while the males were better in the performance and mastery avoidance approaches. This depicts the gender differences in performance in reading comprehension in Kiambu County.

In another analysis, results on descriptive statistics on learning goal orientation were presented using Table 4.16 below.

Table 4. 16

Descriptive Statistics for Respondents' Learning Goal Orientation Scores

<i>M</i>	<i>SD</i>	Min	Max	<i>Sk</i>	<i>Kur</i>
49.88	6.51	21.00	60.00	-0.98	-0.74

Note: N= 856. Sk = skewness; Kur = kurtosis; M = mean

The study results in Table 4.16 above shows a mean of 49.88 for learning goal orientation scores with an *SD* = 6.51. The test scores lie between a minimum of 21 and a maximum of 60. This implies that the test in reading comprehension would have expected a minimum score of 21 and a maximum of 60. The Table also presents the distribution of the scores using skewness coefficient of -0.98 and kurtosis coefficient of -0.74. Both coefficients were below the criteria for normality threshold of 3, implying that the data was normally distributed. A further analysis was carried out following the study findings and the division of learning goal orientation into two; mastery and performance goals by Pintrich (2000).

The descriptive statistics for mastery and performance goals are presented in Table 4.17 below.

Table 4.17

Descriptive Statistics for Mastery and Performance Goal Orientation Scores

<i>Category</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Sk</i>	<i>Kur</i>
Performance	553	25.91	3.64	6	30	-0.43	2.57
Mastery	275	23.96	3.98	10	30	-0.62	-0.21

Note: *N*= 828. *Sk* = skewness; *Kur* = kurtosis; *M* = mean; *SD*= Standard deviation; *Min*-Minimum; *Max*-Maximum

Table 4.17 above shows that performance goal orientation had a mean score of 25.91 with a standard deviation of 3.64. This was from a sample size of 553 students. The table shows a minimum and maximum score for performance goal orientation at 6 and 30. The Table shows a mastery of goal orientation mean score = 23.96 and a standard deviation of 3.98. The scores of mastery goal orientation lay between 10 and 30. The Table illustrates skewness and kurtosis coefficients of both performance and mastery goal orientations below three (Performance score *Sk* = -0.43, *Kur* = 2.57; mastery score *Sk* = - 0.62, *Kur* = - 0.21). This confirms that the data distribution was almost normal, which infers reliability for using the data.

In a further investigation, the researcher conducted a comparative analysis of the mean scores in reading comprehension between performance and mastery goal orientations. The study findings are shown in Table 4.18 below.

Table 4.18

Descriptive Statistics for Reading Comprehension Scores by Type of Learning Goal Orientation

Type of LGO	Mean	N	SD
Performance	49.67	553	9.75
Mastery	50.32	275	10.12

Note. LGO-Learning goal orientation; N-Sample size; SD- Standard deviation

The results indicate that the mean score of respondents with performance learning goal orientation was 49.67 ($SD = 9.75$). The mean score of reading comprehension performance of respondents with mastery learning goal orientation was 50.32 ($SD = 10.12$). The findings revealed that students with mastery learning goal orientation performed better in reading comprehension than students with performance learning goal orientation. Similar results were reported by Dekker et al. (2016) in research conducted among secondary school students. It was established that students with performance goal orientation showed dismal performance compared to those with mastery goal orientation. Sakiz (2011) also reported that mastery goal orientation positively influenced academic achievement, while performance goal orientation negatively affected academic achievement. The differences in students' academic performance with mastery and performance goal orientations may be associated with the students pursuing learning goals with different motives. Learning aims to enhance competence in mastery goal orientation, whereas performance goal orientation aims at getting favourable judgement in performance goal orientation. Students who seek to strengthen competence in learning understand the learning content

better than those who seek favourable verdicts hence the difference noted in reading comprehension performance among students with mastery and performance goal orientation.

Reading comprehension scores were categorized into low, moderate, and high and Table 4.19 below presents the findings on learning goal orientation and reading comprehension performance.

Table 4.19

Reading Comprehension Levels and LGO Cross Tabulation

		Type of learning goal orientation				Total	
		.00 Mastery %		Performance %			
Reading comprehension levels	Low	7	49	65.33	91	16.45	147
	Moderate	19	188	68.36	368	66.55	575
	High	2	38	13.81	94	17.00	134
Total		28	275	100.00	553	100.00	856

The findings indicate that 65.33% of the respondents with mastery goal orientation had low performance in reading comprehension, 68.36% had average performance, and 13.81% had high performance. On the other hand, 16.45% of the respondents with performance goal orientation had low performance in reading comprehension, 66.55% had moderate performance, and 17% had high performance.

Each of the two domains of learning goal orientation was divided into two levels, as shown in Table 4.20 below.

Table 4.20*Descriptive Statistics for the Subscale Scores of LGO*

LGO Sub Scale	Mean	SD	Min	Max	Sk	Kur
MAPP	12.64	1.79	5	15	-0.02	1.47
MAV	11.32	2.93	3	15	-0.71	-0.32
PAPP	13.17	1.86	3	15	-0.54	2.10
PAV.	12.75	2.50	3	15	-0.61	2.46

Note. $N = 828$; LGO = Learning Goal Orientation; Sk = skewness; Kur = kurtosis; MAPP= Mastery Approach; MAV = Mastery Avoidance; PAPP = Performance Approach; PAV = Performance Avoidance.

Mastery approach goal orientation was divided into mastery avoidance and mastery approach. The mean score on the mastery approach sub-scale was 12.64 ($SD = 1.79$). The maximum score was 15, while the minimum score was 5. The average of the scores on the mastery avoidance sub-scale was 11.32 ($SD = 2.93$). The maximum score was 15, while the minimum score was 3. In the two sub-scales of mastery goal orientation, the expected maximum score was 15, while the minimum was 3. Performance goal orientation was also divided into performance approach and performance-avoidance. The mean score on the performance approach sub-scale was 13.17 ($SD = 1.86$). The maximum and minimum scores were 15 and 3, respectively. On the performance-avoidance sub-scale, the mean score was 12.75 ($SD = 2.50$), with 3 and 15 as the minimum and maximum scores, respectively. The skewness coefficients for all the scores in the sub-scales of the achievement goal orientation scale are within the recommended range of -1 or +1. Therefore, the results indicate that the scores

were near a normal distribution because even the kurtosis coefficients were below 3.

Concerning the sub-scales of LGO and performance in reading, Table 4.21 shows the results obtained.

Table 4.21

LGO Sub Scales and Reading Comprehension Performance

LGO Sub Scale	Mean	SD	Min	Max	Sk	Kur
MAPP	50.17	10.36	17.32	72.62	-.58	.23
MAV	49.88	9.72	17.32	72.62	-.57	.23
PAPP	49.99	10.77	17.32	72.62	-.43	.17
PAV.	49.55	9.49	17.32	72.62	-.73	.53

Note. $N = 828$

Table 4.21 above indicates that the reading comprehension performance mean score for students with mastery approach LGO was 50.17 ($SD = 10.36$). The minimum score was 17.32, while the maximum score was 72.62. Students with mastery avoidance scored a mean of 49.88 with a standard deviation 9.72. The minimum and maximum scores of students with this type of LGO were 17.32 and 72.62, respectively. The mean score of students with performance approach LGO was 49.99 ($SD = 10.77$), with a minimum score of 17.32 and a maximum score of 72.62. Students with performance-avoidance LGO scored a mean of 49.55 ($SD=9.49$), with 17.32 and 72.62 as the minimum and maximum scores, respectively.

Table 4. 22*Reading Comprehension Levels and Types of Mastery Goals*

		MAPP		MAV		Total
		<i>F</i>	%	<i>F</i>	%	
Reading comprehension levels	Low	24	47	27	53	51
	Moderate	51	43	68	57	119
	High	75	71	30	29	105
Total		150	55	125	45	275

Note. *f* – Frequency; % - percentage; MAPP-Mastery Approach; MAV-Mastery Approach

The results show that 47% of the students with low performance in reading comprehension had mastery approach LGO, while 53% had mastery avoidance LGO. Regarding students with moderate performance, 43% had mastery approach LGO, while 57% had mastery avoidance LGO. Among the students with high reading comprehension performance, 71% had mastery approach LGO, while 30% had mastery avoidance LGO. The results show that students with mastery approach LGO performed slightly better than students with mastery avoidance LGO.

Performance goal orientation was categorized into performance approach and performance-avoidance, and the levels of performance in reading based on the two categories are presented in Table 4.23 below.

Table 4.23

Reading Comprehension Levels and Performance Goals Levels Cross tabulation.

		PAPP		PAV		Total
		<i>F</i>	%	<i>F</i>	%	
Reading	Low	60	58.82	42	41.18	102
Comprehension	Moderate	192	53.78	165	46.22	357
levels	High	55	58.51	39	41.49	94
Total		307	55.51	246	44.48	553

Note. *f* – Frequency; % - percentage; PAPP-Performance Approach; PAV-Performance Approach

Table 4.23 above shows that 58.82% of the students with low performance in reading comprehension had performance approach LGO, while 41.18% had performance avoidance LGO. Among the students with moderate performance in reading comprehension, 53.78% had performance approach LGO, while 46.22% had performance avoidance LGO. For the students with high performance in reading comprehension, 58.51% had performance approach LGO, while 41.49% had performance avoidance LGO. The findings show that students with performance approach LGO performed slightly better than students with performance-avoidance LGO.

4.4.2 Hypothesis Testing

The second objective of this study was to examine the association between learning goal orientations and performance in reading comprehension. Based on this, the researcher came up with the following null hypothesis.

H0₂: There is no statistically significant association between learning goal orientations and performance in reading comprehension.

The hypothesis testing for this objective entailed bivariate Pearson correlation analysis, and the results are presented in Table 4.24.

Table 4.24

Correlation between Learning Goal Orientation and Reading Comprehension Performance

		Reading Comprehension T Score
LGO total score	Pearson Correlation	.14**
	Sig. (2-tailed)	.00
	<i>N</i>	856

Note. LGO - Learning Goal Orientation; N- Sample size

The results showed that learning goal orientation and reading comprehension performance had a significant and positive relationship, $r(856) = .14, p < .05$. The study statistics informed rejection of the null hypothesis. The findings imply that a positive change in learning goal orientation scores leads to a significant positive change in reading comprehension scores. Therefore, students with significantly better scores in learning goal orientation had better reading comprehension scores than students with low scores. Learning goal orientation is a form of motivation which means that students with high scores in learning goal orientation are highly motivated to learn. In contrast, students with low scores in LGO have low motivation. This explains the difference in reading comprehension performance among students with different scores and types of LGO.

Since learning goal orientations were categorized into mastery goal orientation and performance goal orientation, further analysis of the learning goal orientation against performance in reading comprehension was carried out. This was through a relationship analysis using related null hypotheses presented below.

H0_{2a}: There is no statistically significant association between mastery goal orientation and reading comprehension performance.

H0_{2b}: There is no statistically significant association between performance goal orientations and reading comprehension performance.

The data were subjected to Pearson correlation, and the findings are presented in Table 4.25 below.

Table 4. 25

Correlations between Mastery and Performance Goal Orientation and Reading Comprehension

		Reading Performance T score
Mastery Goal Orientation	Pearson Correlation	.15**
	Sig. (2-tailed)	.00
	N	275
Performance Goal Orientation	Pearson Correlation	.10**
	Sig. (2-tailed)	.00
	N	553

Table 4.25 above shows that there was a positive and significant correlation between mastery goal orientation and performance in reading comprehension, $r(275) = .15, p < .05$. It was also established that performance goal orientation and reading comprehension performance were significantly correlated, $r(553)$

= .10, $p < .05$. The findings support the results which indicated that students with mastery goal orientation performed better in reading comprehension than students with performance goal orientation. The concept of mastery focuses on understanding and improving confidence, while the latter focus on showing the output. Focusing on confidence is a long-term aspect that is retained, unlike performance, which may get lost.

This study used a 2×2 learning goal orientation model that consists of mastery and performance goal orientation, each with two levels: approach and avoidance. Therefore, analysing how each level contributes to reading comprehension performance was essential. Table 4.26 below presents the correlation matrix.

Table 4.26

Correlation Matrix for the Scores in LGO Subscales

		T Score	MAPP	MAV	PAPP	PAV
T Score	Pearson Correlation	1				
	Sig. (2-tailed)					
MAPP	Pearson Correlation	.23**	1			
	Sig. (2-tailed)	.00				
MAV	Pearson Correlation	.17*	.29**	1		
	Sig. (2-tailed)	.04	.00			
PAPP	Pearson Correlation	.11**	.32**	.25**	1	
	Sig. (2-tailed)	.001	.00	.00		
PAV	Pearson Correlation	.11**	.25**	.13**	.18**	1
	Sig. (2-tailed)	.00	.00	.00	.00	

Note. N= 828; MAPP-Mastery Approach; MAV-Mastery Avoidance; PAPP-Performance Approach; PAV-Performance Avoidance.

The results indicate that the scores in the sub-scales of learning goal orientation were significantly related to performance in reading comprehension. The findings also showed that the scores in the sub-scales were significantly correlated, but multi-collinearity indices were within the acceptable range of less than 0.3.

To establish how the levels of learning goal orientation predicted reading comprehension performance, the researcher conducted multiple regression analyses. Before running the regression analysis, the researcher tested the assumptions, and the results are presented in Appendix E. The results showed that the data set met the criteria for regression analysis.

Table 4.27

Regression Model Summary

Model	<i>R</i>	<i>R</i> Square	Adjusted <i>R</i> Square	Std. Error of the Estimate
1	.46 ^a	.26	.21	9.89

Table 4.27 above indicates that the multiple correlation coefficient of 0.46 was moderate. The findings imply that the levels of learning goal orientation moderately predicted reading comprehension performance. The coefficient of *R* square was 0.26, and when converted to a percentage, it became 26%. The results imply that the levels of learning goal orientation explained the 26% variance in reading comprehension performance. The rest (74%) is explained by other factors such as the quality of teaching, IQ, learning context and attitude.

Table 4.28*ANOVA Summary Table*

Model	Sum Squares	of <i>Df</i>	Mean Square	<i>F</i>	Sig.
Regression	2194.19	4	548.55	5.60	.00
Residual	83305.81	824	97.89		
Total	85500.00	828			

Table 4.28 above indicates that the regression model significantly predicted reading comprehension performance, $F = 5.60$, $P < .05$. The regression coefficients for the independent variables are shown in Table 4.29 below.

Table 4.29*Regression Coefficients*

Model	Unstandardized Coefficients		Standardized Coefficients	<i>T</i>	<i>Sig.</i>
	B	Std. Error	Beta		
(Constant)	36.61	3.03		12.09	.00
MAPP	.42	.21	.08	1.98	.04
MAV	.39	.14	.01	2.45	.01
PAPP	.27	.20	.05	1.34	.01
PAV	.10	.16	.10	0.28	.78

Note. $N = 828$

Table 4.29 indicates mastery, avoidance, and performance approaches significantly predicted reading comprehension performance. Performance avoidance goal orientation did not significantly predict reading comprehension. Using the regression coefficients obtained, the following prediction equation for reading comprehension performance from the levels of learning goal orientation was developed.

$$\hat{y} = 0.42MAPP + 0.39MAV + 0.27PAPP + 0.10PAV + 36.61$$

From the equation, the mastery approach learning goal orientation had the highest predictive index of 0.42, followed by mastery avoidance with a predictive index of 0.39 and then the performance approach with an index of 0.27. Performance avoidance had the least predictive value of 0.10. All the regression coefficients were positive, implying that an increase in the scores of the learning goal orientation results in an increase in reading comprehension performance.

4.4.3 Discussion of the Results

The researcher postulated that there was no relationship between learning goal orientation and performance in reading comprehension. When the collected data were subjected to bivariate Pearson correlation analysis, the results showed a significant relationship between learning goal orientation and reading comprehension performance. The findings were consistent with some of the effects of past research work conducted in this area and contradictory to the results of other studies. A study by Zarei and Gilanian (2014) in Iran established a significant relationship between goal orientation and language learning strategies. The study was conducted among university students majoring in English language and translation. Even though the study did not focus on reading comprehension performance, the findings demonstrate that learning goal orientation is a fundamental psychological construct in school achievement both at the secondary and university level. This is because goal orientation is an aspect of motivation, and research has shown that motivation is pivotal in academic achievement (Pintrich & Schunk, 1996).

Similarly, a study by Wang et al. (2021) established that learning motivation significantly mediated the relationship between learning mastery, performance-avoidance goals, and academic adjustment. In Sweden, Wolgast and Keller-Schneider (2023) found that mastery goal orientation influenced the perception of learners towards their peers in a positive way, which in turn affected their academic performance positively. The results were consistent with those of the present study. Another study by Moses (2019) in Nigeria found that cognitive and meta-cognitive learning strategies had a negative and significant relationship with students' academic achievement, where their goal orientation acted as the mediator in this relationship. These results contradicted those of the present study. The results suggest a link between learning goals and reading comprehension.

In their study, Li et al. (2021) also established that mastery goal orientation positively influenced academic success, while performance-avoidance goal orientation had a negative relationship with academic success among students. Edwards (2014) showed a significant association between performance goal orientation and self-efficacy, interest, and learning, which agrees with the present study's results. Another similar study conducted by Fatta (2018) reported that achievement goal orientation significantly influenced academic achievement. Botsas and Padelladu (2019) found a significant association between goal orientation and reading comprehension strategy use, congruent with the present study's results.

Another research conducted in Nigeria by Samareh and Kezri (2016) investigated the association between goal orientation and academic engagement

among university students. The findings showed that mastery goal orientation was significantly correlated with academic concentration. Similar results were also reported by Was and Beziat (2015). The researchers established a positive and significant correlation between goal orientation and academic achievement. In both cases, the samples consisted of university students. The findings also confirm the importance of learning goal orientation in educational contexts. The descriptive analysis of learning goal orientations among the students in the current study indicated that most students had performance goal orientation. Correlational analysis revealed that performance goal orientation has a weak predictive power on reading comprehension performance. This is attributed to the focus on performance goal orientation which involves showing abilities to take a task. Therefore, based on the findings of this study, the problem of below-average performance in English may be attributed to the type of learning goal orientation adopted by the students.

At the local level, the study conducted by Mose et al. (2019) in the lake region of Kenya established that mastery goal orientation and performance goal orientation could predict learning preparedness among undergraduate students indicating a relationship. These findings agree with the present study showing that learning goal orientation is essential in academic performance. Ng'ang'a et al. (2018) studied the association between goal orientation and the academic achievement of learners in secondary schools. The sample consisted of 665 students, and the results showed that the domains of learning goal orientation were significantly related to academic achievement. The results demonstrated that goal orientations were critical in educational attainment. Even though the

study focused on general academic performance, the results confirm the importance of learning goals in academic success. The current study confirmed the importance of learning goal orientation, as Ng'ang'a et al. (2018) demonstrated. Learning goal orientation focuses on the self-desire to gain new skills. This is critical for personal development as self-interest in learning makes it easier to acquire skills.

The current study's findings were contrary to the results of a study conducted by Stec (2015) which showed no significant correlation between goal orientation and performance in written responses. The study sample consisted of 12 male and 11 female third-grade students. The negative results may be associated with the small sample and the children's age. Using a sample of university students, Ghavam et al. (2011) reported a positive association between mastery goal orientation and meta-cognitive reading strategy. However, the study found that performance goal orientation was negatively related to meta-cognitive reading strategy. The findings may be attributed to the fact that performance goal orientation is a form of extrinsic motivation which does not significantly enhance the development of cognitive skills. Cognitive skills call for more learning experiences that go beyond extrinsic motivation.

4.5 Differences in Reading Comprehension Performance of Form Two Students with FD and FI Cognitive Learning Styles

This section presents the descriptive statistics of FD and FI cognitive learning styles, hypothesis testing and discussion of the results.

4.5.1 Descriptive Analysis of the Scores of FD and FI Cognitive Learning Styles

The third objective of this research was to determine if there were differences in reading comprehension performance of form two students with FD and FI cognitive learning styles. The following hypothesis was advanced.

H0₃: There is no significant difference in the reading comprehension performance of students with FD and FI cognitive styles.

To achieve this, the researcher computed the mean reading comprehension performance of respondents with FD and FI learning goal orientations which were then used to test the hypothesis.

Table 4.30

Descriptive Statistics of Reading Comprehension Performance by Cognitive Style

	Cognitive Style	<i>F</i>	%	Mean	Std. Deviation
Reading	FD	404	47.20	50.77	9.46
Comprehension scores	FI	452	52.80	49.31	10.42

Table 4.30 shows that the respondents with FI cognitive learning style were 452 (52.8%), while those with FD cognitive learning style (47.2%). The results indicate that respondents with FI cognitive learning style were the majority. The mean score of reading comprehension performance of respondents with FI cognitive learning style was 49.31 ($SD = 10.42$). Respondents with FD cognitive learning style scored a mean of 50.77 ($SD = 9.46$).

Table 4.31*Reading Comprehension Levels and FD and FI Cross Tabulation*

		FD		FI		Total
		<i>F</i>	%	<i>F</i>	%	
Reading comprehension levels	Low	60	40.82	87	59.18	147
	Moderate	277	48.17	298	51.83	575
	High	67	50.00	67	50.00	134
Total		404	47.20	452	52.80	856

According to Table 4.31 above, 59.18% of the students with low performance in reading comprehension had FI cognitive learning style, while 40.82% had FD cognitive learning style. Among the students with moderate performance in reading comprehension, 51.83% of the students had FI cognitive learning style, while 48.17% had FD cognitive learning style. An equal proportion (50%) of the students with FD and FI cognitive learning styles had high reading comprehension performance.

4.5.2 Hypothesis Testing

To test whether the mean differences were statistically significant, the researcher used T-test and the results are presented in Table 4.32 below.

Table 4.32*Results of Independent Samples T-Test*

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	<i>F</i>	Sig	<i>T</i>	<i>Df</i>	Sig	Mean Diff.	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	5.73	.02	-2.13	854	.034	-1.45	.68	-2.79	-.11
Equal variances not assumed			-2.13	853.80	.033	-1.45	.68	-2.79	-.12

The findings revealed that the mean score difference in reading comprehension performance of respondents with FD and FI cognitive learning styles was statistically significant, $t(854) = -2.13, p = 0.03$. Therefore, the null hypothesis was rejected. The findings imply that students with FD cognitive learning style performed better in reading comprehension than students with FI cognitive learning style. Witkin (1976) stated that students who use FD cognitive learning style have a higher potential to construct knowledge, are more social and act autonomously. These would be the reasons why FD students performed better than FI students.

4.5.3 Discussion of the Results

This study showed that FD students performed significantly better in reading comprehension than FI students. The results were in support of scholarly literature that was reviewed. Nisiforou and Parmaxi (2016) in their study among

university students in Greece, examined the effect of cognitive learning styles on computer-assisted language learning. The findings showed that FD students differed significantly from FI students in analytical and presentation skills. Students with FD cognitive learning style performed better than students with FI cognitive learning style. The results indicate that students who use FD cognitive learning style perform better than FI students in different subjects, cultures and at varying levels of learning. This is associated with the concepts under which cognitive learning best takes place. The field experiences allow exploring while exposing the learner to new means of acquiring comprehension reading skills.

In another research, Sheykhi and Mohamadi (2017) investigated the differences in students' reading comprehension performance with different cognitive learning styles. The study employed an experimental design, and the results indicated that FD learners performed better than FI students. The researchers concluded that students' cognitive learning strategy was essential in language learning. Onyekuru (2015) established that FD students had a higher achievement mean in sciences while FI students had a higher achievement mean in arts. The results may be attributed to the fact that learning sciences require cognitive styles that are practical and holistic and that can apply the knowledge in real-life situations, characteristics that are associated with FD students. On the other hand, learning arts does not necessarily require practical and analytical aspects. This is because the concepts learnt in most art subjects derive their learning experiences from real-life situations.

A study by Chinien and Boutin (2008) investigated the importance of incorporating cognitive learning strategies in formative evaluation. The results showed that FI students were more confident in the formal evaluation than those with FD cognitive learning styles. On the other hand, FD students exhibited high anxiety levels and were less confident. The researchers noted that the feedback of FD and FI students differed quantitatively and qualitatively. However, these findings were based on the evaluation process and did not report on learning outcomes to discredit other scholars' conclusions.

Similar findings were reported by Luk (2002) in a study conducted among distance learning students. The researcher used a sample of Bachelor of Health Nursing Course students. The findings showed that FI performed significantly better than FD students. The current study reported contradictory findings, maybe because of the different study modes used by the samples used in the studies. This study used a sample of students attending regular classes, while Luk used a sample of distance-learning students. In distance learning, the social interactions among students and teachers are minimal. Since FD students tend to learn more and remember socially contextualized materials, distance learning was a disadvantage, leading to low achievement compared to FI students.

In Iran, Omid et al. (2015) used a sample of university students to explore the relationship between FD and FI cognitive styles and performance in translation. The findings contradict the results of the current study. The sample consisted of 27 male and 73 female students. The study established that FI students performed better than FD students. However, the study focused on translation,

while the current study focused on reading comprehension. The differences in the learning task might have contributed to the contradictory findings.

In the same country, Heidari (2022) investigated whether there exist differences in vocabulary understanding based on FD and FI learning styles. The study arrived at three conclusions. First, the study found that FI learners performed better than FD learners on receptive tests, but the difference was insignificant. Secondly, there was a significant difference in productive tests where FI did better than the FD students. Thirdly, the FI students' conduct was far better than the FD students when the effective test was compared with the receptive test. These three findings indicate differences in reading comprehension performance between FD and FI students. Furthermore, Niroomand and Rostampour (2014) reported that the cognitive styles of FD students affected their performance in English as a foreign language. This indicates the presence of differences among FD and FI students in their performance in English, including communication with other students.

The role of cognitive learning styles on mathematics achievement has also been explored. Budiyo and Slamet (2017) conducted a study investigating the influence of the interaction between learning approaches and cognitive styles on mathematics achievement. The quasi-experimental study used a sample of 279 students. The results showed that students with FI cognitive learning styles performed better than those with FD. FI students tend to restructure the content in the learning task to suit their needs. These students are good in analysis, identifying information and details.

On the contrary, FD students are more sensitive to environmental factors and identify and take information as it is presented. The characteristics of FI students favoured them in learning mathematics, and hence performed better in mathematics than FD students. The results of this research were contrary to the findings of the current research. The differences in the findings of the studies may be attributed to the different subjects examined. Different subjects require different cognitive styles in learning the content.

Another study by Par (2018) to determine the association between reading skills and FD and FI cognitive styles established a significant difference between the students categorized as either FD or FI based on their learning styles and critical reading skills. In China, Wang (2017) established that FD students like collaborative and participative approaches in their learning, and they hate the embarrassment that can come when they do not know how to answer some questions directed to them. FD students also require adequate support from their peers since they are sensitive to their environment. On the other hand, FI students can distinguish between various learning issues for themselves with little support from the teachers and are not primarily affected by their social environment. They like working alone in most cases and are very happy when recognized individually for their achievement. This is a clear indication of the differences between FD and FI students, results which agree with the findings of this study.

The study in Italy by Boccia et al. (2017) established that cognitive styles affected learning and retrieval of the content among students. It was also

reported that field-independent students showed greater ability than field-dependent students. In Nigeria, Oludipe (2014) conducted a similar study and found that most of the boys were FI and performed better than FD girls, indicating the differences in the performance of FD and FI students in English. Arisi (2011) conducted a similar study in the same country and established that the commission for the FD students was better than the FI students, clearly indicating the differences between these two categories of students. All these findings are consistent with the results of the present study.

Sellah et al. (2018) studied the association between cognitive learning styles and performance among national secondary school learners at the local level. The study reported differences between FD and FI students, where FI students performed better academically than FD students. Musya (2015) examined the association between cognitive styles and academic outcomes among high school learners in Kitui County. The study revealed that FD and FI cognitive styles influenced Chemistry performance, where FI students performed better than their counterparts. These findings were inconsistent with the results of the present study.

4.6 Differences in Reading Comprehension Performance of Students with Mastery and Performance Goal Orientations

This section presents descriptive statistics of mastery and performance goal orientations, hypothesis testing, and a discussion of the results.

4.6.1 Descriptive Analysis of Reading Comprehension Scores by Learning Goal Orientation Type

The respondents were categorized into mastery or performance goal orientation based on the scores. Respondents whose scores were equal in the two sub-scales were excluded. Table 4.33 presents the descriptive analysis results.

Table 4. 33

Descriptive Statistics of Reading Comprehension Performance by Goal Orientation Type

Type of LGO	Mean	N	SD
Performance	49.67	553	9.75
Mastery	50.32	275	10.12

Note. LGO- Learning Goal Orientation; N-Sample Size

The reading comprehension mean score of respondents with performance goal orientation was 49.67 ($SD = 9.75$). Table 4.33 also indicates that the mean score of reading comprehension performance of students with mastery goal orientation was 50.32, with a standard deviation of 10.12. The results revealed that respondents with mastery goal orientation performed better than those with performance goal orientation. To establish whether the mean difference was statistically significant, the data were subjected to independent samples t-test.

The researcher also analyzed the levels of reading comprehension performance based on the types of LGO, and the results are shown in Table 4.34 below.

Table 4. 34

Reading Comprehension Performance Levels and LGO Types

		Type of learning goal orientation				Total
		Mastery	%	Performance	%	
Reading comprehension levels	Low	49	35.00	91	65.00	140
	Moderate	188	33.81	368	66.19	556
	High	38	28.79	94	71.21	132

Table 4.34 shows that 35% of the students with low performance in reading comprehension had mastery LGO while 65% had performance LGO. Most students (66.19%) with moderate performance in reading comprehension had performance LGO, while 33.81% had mastery LGO. Regarding students with high performance in reading comprehension, 28.79% had mastery LGO, while 71.21% had performance LGO.

4.6.2 Hypothesis Testing

The fourth objective of this research was to determine if there was a significant difference in performance in reading among students with mastery and performance goal orientations in Kiambu County. The following hypothesis was advanced.

H₀₄: There is no significant difference in students' reading comprehension performance with mastery and performance goal orientations.

The hypothesis was tested using an independent samples t-test, and the results are presented in Table 4.35 below.

Table 4. 35

Results of Independent Samples T-Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	<i>F</i>	Sig.	<i>T</i>	<i>Df</i>	Sig. (2-tailed)	Mean Diff.	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.06	.00	-1.28	825	.19	-.92	.72	-2.32	.48
Equal variances not assumed			-1.29	640.45	.19	-.92	.71	-2.31	.47

Table 4.35 above indicates that the mean difference in reading comprehension performance of respondents with mastery and performance goal orientation was not statistically significant, $t(825) = -1.28, p > .05$. The findings imply that even though the respondents with mastery goal orientation performed better in reading comprehension than those with performance goal orientation, the mean difference was not statistically significant. The findings mean that the difference in reading comprehension performance among students with mastery and performance LGOs was not meaningful.

4.6.3 Discussion of the Results

The study sought to determine if there were significant differences in performance in reading comprehension among students with mastery and performance goal orientations. The results showed mean differences in performance between the two groups of students, but the difference was not statistically significant. The results supported the findings of Dekker et al. (2016), who established that learners with mastery goal orientation performed

better in academics than learners with performance goal orientation. The study used a sample of 735 students aged 10 to 19 years. Through mediation scrutiny, it was established that learning goal orientation affected the student's academic performance. Contrary to the results of the current study, Dekker et al. (2016) found a significant relationship between goal orientation and academic achievement. Empirical evidence that has associated the different types of learning goal orientations with different levels of academic achievement has presented inconsistent findings.

Most of these studies were conducted using samples of students drawn from classrooms in different cultures. Classroom situations and general learning environments are unique and influence the students' motivational processes differently (Zimmerman, 1994). School factors, home factors, and the student's prior learning experiences influence the students to adopt either mastery or performance goal orientation. Students with mastery and performance goal orientation also responded differently to learning situations (Kaplan & Middleton, 2002). In this study, students with performance goal orientation performed better than students with mastery goal orientation.

In another study, Keys et al. (2012) used a sample of 7th and 8th-grade students to investigate the relationship between LGO and performance in reading comprehension. The researchers found a significant relationship between LGO and mathematics performance. When the domains of LGO were examined, it was established that MGO significantly predicted mathematics performance. However, performance goal orientation did not significantly predict

mathematics performance. Students with mastery goal orientation performed better in mathematics than students with performance goal orientation. Elliot and Church (1997) argued that positive attitudes, persistence, high levels of intrinsic motivation and better retention of learned information characterize students with mastery goal orientation. The researchers noted such characteristics were lesser among students with PGOs.

The differences in academic performance between students with MGO and PGO may be attributed to the differences in learning approaches and strategies used by the two categories of learners. The current study established that most of the students had PGOs, and the results of inferential analysis showed that PGO had a weaker predictive index than mastery goal orientation. Therefore, the below-average performance in English among Form Two students from day secondary schools in Kiambu County may be associated with learning goal orientation. The majority of the students were found to have PGO.

In Turkey, Sakiz (2011) reported that MGO was positively related to achievement in reading comprehension. In contrast, PGO was negatively associated with academic performance. Contrary to these findings, Jowkar et al. (2011) established that MGO and PGO were significantly related to academic performance. The academic performance of students with mastery and performance goal orientations did not differ significantly. Based on these results, the literature on learning goal orientation and academic achievement is still not settled. However, the current study's findings link the problem addressed to performance goal orientation. The study found that most students had

performance learning goal orientation. The results of the correlation analysis showed that performance goal orientation weakly correlated with reading comprehension performance compared to mastery goal orientation.

In Thailand, Barzegar (2012) explored the association between learners' goal orientation and academic achievement in Thailand. The study established a significant relationship between mastery goals on using deep cognitive and metacognitive strategies and learners' academic performance. In their study, Sideridis et al. (2016) established that classrooms with performance goal orientation did better in reading vocabularies. The mastery climate had no significant influence on vocabulary reading among the participants. In Taiwan, He (2001) conducted a similar study and reported that different goal orientations significantly influenced reading English as a first Language. The combined category (mastery and performance goal orientations) could recall what was taught, while the mastery group focused less on understanding vocabulary.

In a similar study in China, Ruishi et al. (2021) established that mastery approach and avoidance had positive, moderate, and significant associations with language achievement, while performance approach and performance-avoidance revealed a lower negative but significant relationship. Another study conducted by Shi (2022) to investigate the association between the strategies used for learning among the students and their goal orientations established differences in performance among English language learners for those using performance-approach goals and mastery goal orientation. The most preferred approach that yielded better results was mastery goal orientation. Li et al. (2021)

reported similar results where students with mastery goal orientation did better than those who utilized performance-avoidance goal orientation regarding academic success. All these findings indicate the differences between different goal orientations and academic performance.

At the local level, Ng'ang'a et al. (2018) studied the link between learners' goal orientation and academic outcomes in Kiambu County. The study revealed that mastery and performance goal orientation significantly affect academic achievement, the highest being performance avoidance. This indicates the differences in academic performance based on the different goal orientations.

4.7 Gender Differences in FD and FI Cognitive Styles Towards Reading Comprehension

To establish if there were gender differences in FD and FI cognitive learning styles towards reading comprehension, the following hypothesis was advanced.

Objective five aimed to establish if there were gender differences in FD and FI cognitive learning styles toward reading comprehension.

4.7.1 Hypothesis Testing

The researcher sought to test the following hypothesis:

H₀₅ There are no significant gender differences in FD and FI cognitive styles toward reading among Form Two students in Kiambu County.

Table 4.36 below presents male and female respondents' FD and FI mean scores.

Table 4.36

FD and FI Mean Scores by Gender

		Gender	<i>N</i>	Mean	<i>SD</i>	<i>SE</i> Mean
FD score	Total	Male	205	20.82	2.82	.19
		Female	199	21.27	2.88	.20
FI score	Total	Male	214	20.05	2.98	.20
		Female	238	19.80	2.98	.19

The results indicate that male students had a higher FI mean score of 20.05($SD=2.98$) than their female counterparts, who scored a mean of 19.80($SD=2.98$). On the other hand, the results show a slightly higher mean score of 21.27($SD = 2.88$) for female respondents on FD cognitive style compared to their counterparts who scored a mean of 20.82 ($SD =2.82$). To establish if the mean difference was statistically significant, the researcher conducted a t-test, and the results are presented in Table 4.37 below.

Table 4.37

Independent Samples T-Test

		t-test for Equality of Means		
		<i>T</i>	<i>Df</i>	Sig. (2-tailed)
FD Total score	Equal variances assumed	-1.57	402	.11
	Equal variances not assumed	-1.57	401.03	.11
FI Total score	Equal variances assumed	.88	450	.37
	Equal variances not assumed	.88	444.84	.37

Table 4.37 above indicates that the mean difference in FI scores between male and female respondents was not statistically significant, $t(450) = .88, p > .05$. Similarly, the results also revealed that the mean difference in FD scores

between male and female respondents was not statistically significant, $t(402) = -1.57, p > .05$). Therefore, the researcher retained the null hypothesis.

4.7.2 Discussion of the Results

The study findings revealed that the mean difference between male and female respondents in field-dependent (FD) and field-independent (FI) cognitive learning style scores was not statistically significant. The male student who performed well in reading comprehension exhibited higher FI, while the female students had a higher FD. The findings were consistent with the results of other studies conducted earlier. Umah (2020) reported that male respondents had higher performance scores in FI, while female respondents had higher scores in FD cognitive learning style. Another study by Olagbaju (2020) among Nigerian high school students revealed that girls performed well in field-independent cognitive learning style while boys had higher scores in field independent cognitive learning style. Verawati et al. (2020) reported that students with FI cognitive learning style often outperformed those with FD. Their findings showed that male students outperformed female students with lower FI scores. This can be attributed to the individual differences that could be a favourite for boys.

In Nigeria, Idika (2017) carried out a study to determine the impact of FI and FD cognitive styles and gender on the performance in Chemistry. The study reported no significant gender differences based on these scores between the FD and FI students. Arisi (2011) conducted a similar study in the same country and found no significant association between cognitive styles and students' gender. These results agree with the findings of the present study.

Another study by Niroomand and Rostampour (2014) established that gender did not influence vocabulary knowledge based on students' cognitive style category. In Kenya, a study by Musya (2015) examined the association between cognitive styles and academic outcomes among high school learners. The researcher established that FD and FI cognitive styles influenced Chemistry performance where FI students performed better than their counterparts. It was also reported that the majority of the male learners were FI. In contrast, most of the female students were FD, indicating that gender could have played some role in influencing Chemistry performance. These findings were inconsistent with those of the present study.

Another study carried out by Hung and Wang (2021) to determine the impact of FD and FI cognitive styles and gender on how to identify and correct bugs while developing applications reported that male students took a long time to identify and fix bugs than their female counterparts. This indicated gender differences based on their cognitive learning styles and how they solve problems. The results did not agree with those of the present study.

4.8 Gender Differences in Learning Goal Orientation Towards Reading Comprehension

This section presents descriptive statistics on gender differences in learning goal orientation towards reading comprehension, gender differences in mastery goal and performance goal towards reading comprehension, hypothesis testing and discussion of the results.

4.8.1 Gender Differences in Learning Goal Orientation Towards Reading Comprehension

The study aimed to establish if there were gender differences in learning goal orientation toward reading. The descriptive statistics of learning goal orientation scores are presented in Table 4.38 below.

Table 4.38

Description of Learning Goal Orientation by Gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean
LGO	Male	419	49.70	6.62	.32
	Female	437	50.04	6.42	.31

The results indicate that female respondents scored a mean of 50.04 ($SD=6.42$), slightly higher than male students, which was 49.70 ($SD=6.62$). The researcher advanced the following hypothesis testing to establish if the mean difference was statistically significant.

H₀₆ There are no significant gender differences in learning goal orientation towards reading comprehension among Form Two students in Kiambu County.

The hypothesis was tested using a t-test and the results are presented in Table 4.39 below.

Table 4.39*Independent Samples T-Test*

		t-test for Equality of Means		
		<i>T</i>	<i>Df</i>	Sig. (2-tailed)
Learning Goal Orientation scores	Equal variances assumed	-.75	854	.45
	Equal variances not assumed	-.75	849.42	.45

Table 4.39 shows that the mean difference in learning goal orientation between male and female respondents was not statistically significant ($t(854) = -.75, p > .05$). Therefore, the null hypothesis was retained. The findings show that female respondents scored slightly higher mean than male respondents but the difference was not statistically significant.

4.8.2 Gender Differences in Mastery Goal and Performance Goal towards Reading Comprehension

To establish if there were gender differences in mastery goal performance and performance goal scores, the researcher first computed descriptive statistics of the scores, and the scores are presented in Table 4.40 below.

Table 4. 40

Descriptive Results of Mastery Goal and Performance Goal Orientation by Gender

	Gender	N	Mean	Std. Dev.
Mastery goal	Male	419	23.93	4.13
	Female	437	23.98	3.83
Performance goal	Male	419	25.79	3.65
	Female	437	26.05	3.55

As shown in Table 4.40 above, male students scored a mean of 23.93($SD=4.13$), slightly lower than that of female students, 23.98 ($SD=3.83$) in mastery goal performance. Similarly, the performance goal score for the male students was 25.79 ($SD=3.65$), slightly lower than that of female students, which was 26.05 ($SD=3.55$).

A t-test was conducted, and the results are presented in Table 4.41 below to establish if the mean difference was statistically significant.

Table 4.41

Independent Samples T-Test

		t-test for Equality of Means		
		<i>T</i>	<i>Df</i>	Sig. (2-tailed)
Mastery Learning Goal Orientation	Equal variances assumed	-.19	854	.84
Performance Learning Goal Orientation	Equal variances not assumed	-.19	842.45	.84
Mastery Learning Goal Orientation	Equal variances assumed	-1.05	854	.29
Performance Learning Goal Orientation	Equal variances not assumed/	-1.05	850.05	.29

Table 4.41 above shows the mean difference in mastery learning goal orientation between male and female students was not statistically significant, $t(854) = -.19, p > .05$. The results also revealed that the mean difference in performance learning goal orientation between the male and female respondents was also not statistically significant $t(854) = -1.05, p > .05$. The findings imply that even though female respondents scored a higher mean than male respondents in both mastery learning goal orientation and performance goal orientation, the difference was not statistically significant.

4.8.3 Discussion of the Results

The research aimed to establish if there were gender differences in learning goal orientation towards reading comprehension performance among form two students. The results showed that the mean difference in learning goal orientation towards reading comprehension performance between female and male students was not statistically significant. The results were in line with past studies conducted in this area. A survey by Benati et al. (2020) conducted among college English Language Learners (ELL) students established that female students had a greater mastery goal orientation tendency than male students, attributed to their higher self-efficacy in learning English. Another study by Ramos et al. (2020) among secondary school students established that female learners were more goal-oriented in learning compared with their male counterparts in both high-ability and average-ability students.

The study findings revealed that female students reported slightly higher mastery goal and performance goal orientation levels. However, the gender differences in mastery learning goal orientation and performance goal orientation between female and male students were not statistically significant. These findings are consistent with the results of Asian and Akta (2020). The research used a sample of 642 high school students, and the findings revealed that female students had higher mastery goal orientation scores than male students. Sun et al. (2019) study findings among Chinese students also reported that girls had a higher score on mastery goals and intelligence perception concerning achievement than boys. Furthermore, Honicke et al. (2020) found high levels of performance goal orientation among female students compared to

their male counterparts. They concluded that mastery and performance goal orientation made it easier for the students to remember learned concepts increasing their reading capabilities.

A study by Diaconu-Gherasim et al. (2018) in Romania concluded that girls had a higher score on mastery goals and intelligence perception regarding achievement than boys. The study also showed no significant association between learners' goal orientation intelligence perception and academic achievement. Sahin et al. (2016) established no significant differences in achievement goal orientation between girls and boys, which agreed with the present study's results. Results contradicting those of the present study were reported by Boyd (2017) in Georgia, who established a statistically significant gender difference in goal orientation in favour of female students. Another similar study by Shi (2022) demonstrated that mastery goal orientation had a positive and significant relationship with all types of learning strategies and that female students had a higher mastery goal orientation than their male counterparts.

The scholars in Africa have equally contributed to gender differences in learning goal orientation towards reading comprehension, with mixed results being reported when comparisons are made with the results of the current study. For instance, Olafunke and Elizabeth (2020) established that girls had better English language performance than boys in Nigeria, but the difference was insignificant. The results were consistent with the results of the present study. In their research, Alice et al. (2016) established a significant gender difference in learning goal

orientations in favour of male students. The results were inconsistent with those of the present study.

Maro et al. (2018) established a statistically significant difference in goal orientations between male and female students in physical education lessons in Tanzania. The difference was in favour of male students. The male students believed PE helped them with social status and health-related issues, such as staying fit, while the females indicated that PE enabled them on social responsibility. During the actual involvement in the physical education lesson, there were no significant gender differences in satisfaction and enjoyment. In Kenya, Ileri (2015) conducted a study in Embu County to determine the association between achievement goal orientation and academic outcomes. The study established that there were significant gender differences in achievement goal orientation, findings that contradict those of the present study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study, the implications of the findings, and the conclusion based on the findings. The chapter ends with recommendations presented in two sections: policy and further research recommendations.

5.2 Summary of the Study

The study was conducted to find the association between FD-FI cognitive learning styles, learning goal orientations, and reading comprehension performance. The study also explored if there were significant differences in reading comprehension performance of students with FD and FI cognitive learning styles and students with mastery and performance goal orientations.

The study examined the relationship between FD-FI cognitive learning styles and reading comprehension performance among Form Two students. Descriptive analysis of the data collected revealed that students with FD cognitive learning style performed better in reading comprehension than those with FI cognitive learning style. It was also established that the scores in reading comprehension performance of most of the students were moderate. Correlation analysis results showed positive and significant correlations between FD-FI cognitive learning styles and reading comprehension performance. The correlation between FD's cognitive learning style and reading comprehension performance was higher. Therefore, students with FD cognitive learning styles

are expected to perform better in reading comprehension than those with FI cognitive learning styles.

The study investigated the association between learning goal orientation and reading comprehension performance in the second objective. The results showed a positive and significant relationship between learning goal orientation and reading comprehension performance. Further correlation analysis of the two-goal orientations revealed that mastery and performance goal orientations were positively and significantly related to reading comprehension performance. However, mastery goal orientation had a higher correlation coefficient than performance goal orientation. The four sub-scales, mastery avoidance, performance approach, and performance avoidance, had positive and significant correlations with reading comprehension performance. The domains of mastery goal orientation had higher correlation coefficients than the domains of performance goal orientation. The levels of mastery and performance goal orientations significantly predicted reading comprehension performance.

In another objective, the study sought to establish if there were differences in reading comprehension performance of form two students with FD and FI cognitive learning styles. When the reading comprehension scores of the two groups were analyzed, it was established that students with FD cognitive learning styles had a higher mean score than students with FI cognitive learning styles. The results of independent samples t test showed that the mean score difference in reading comprehension performance of students with FD and FI cognitive learning styles was statistically significant.

Concerning differences in reading comprehension performance of the students with mastery and performance goal orientation, it was established that students with performance goal orientation showed lesser comprehension reading achievement than those with mastery goal orientation. Students with mastery goal orientation scored a higher mean in reading comprehension performance than students with performance goal orientation. Inferential analysis using independent samples t-test showed that the mean score difference in students' reading comprehension performance with mastery and performance goal orientation was not statistically significant.

The study also aimed to determine if there were gender differences in FD and FI cognitive learning styles and goal orientation toward reading comprehension among secondary school students in Kiambu County. Regarding gender differences in FD and FI cognitive learning styles, the study results indicated that female respondents had a higher mean in FD cognitive learning style than male respondents. Male respondents had a higher mean in FI scores than female respondents. When the results were subjected to an independent samples t-test, it was revealed that the mean score differences in FD and FI cognitive learning styles between female and male students were not statistically significant.

Concerning gender differences in goal orientation, it was established that female respondents scored a higher mean in mastery learning and performance learning goal orientation than their male counterparts. The results were also subjected to an independent samples t-test, and it was found that the mean difference was not statistically significant. The study did not find significant gender differences in FD and FI cognitive learning styles and goal orientation towards reading

comprehension among secondary school students in Kiambu County. Therefore, the null hypothesis was retained, meaning there were no gender differences in FD and FI cognitive learning styles and goal orientation toward reading comprehension.

5.3 Conclusion

The study concludes that the correlation coefficient was higher for students with FD cognitive learning style in reading comprehension performance. The results imply that students with FD cognitive learning style performed better in reading comprehension than students with FI cognitive learning style. Comparatively, the students with FI cognitive learning style performed relatively lower in reading comprehension.

The analysis revealed a significant association between performance goal orientation and reading comprehension performance. However, the correlation between mastery goal orientation and reading comprehension performance was higher, implying that students with mastery goal orientation performed better in reading comprehension than students with performance goal orientation. The study established a statistically significant difference in reading comprehension performance between students with FD and FI cognitive learning styles. FD students performed better than FI students.

It was established that the mean difference was statistically significant regarding differences in students' reading comprehension performance with mastery goal orientation and performance goal orientation. Students with mastery goal orientation performed better than students with performance goal orientation.

The study's findings indicated that the gender differences in FD and FI cognitive learning styles and goal orientation towards reading comprehension were not statistically significant among secondary school students in Kiambu County. The study findings failed to confirm significant gender differences in FD and FI cognitive styles and goal orientation towards reading among secondary school students in Kiambu County.

5.4 Recommendations

Based on the study findings, the following recommendations are made.

5.4.1 Policy Recommendations

- i. The study established a statistically significant association between FD-FI cognitive learning styles and reading comprehension performance. Based on the results, it is recommended that curriculum designers and the developers of learning content should include cognitive learning styles in course content to educate secondary school trainee teachers on the importance of FD cognitive learning style in reading comprehension performance and how to develop it.
- ii. Teachers, parents, and all other stakeholders should train students on skills required to develop mastery learning goal orientation to enhance reading comprehension performance.
- iii. The study found a statistically significant difference in performance in reading comprehension of students with different cognitive learning styles. The study recommends using diverse teaching methods catering to cognitive learning styles to improve reading comprehension performance.

- iv. It was established that there was a significant mean difference in students' reading comprehension performance with mastery and performance goal orientation. Therefore, the study recommends that students be guided to develop mastery goal orientation to improve reading comprehension performance.

5.4.2 Recommendations for Further Research

- i. The study established a statistically significant association between cognitive learning styles and reading comprehension performance. These findings are attributed to self-reports and the reading comprehension test method used in data collection. Further research may explore other methods that can be used to collect data from the students as the self-reports are associated with various weaknesses making them less efficient.
- ii. The study established that learning goal orientation was significantly related to reading comprehension performance. These results were guided by the correlational study design. Due to the associated weakness of correlation studies, including the limitations of the third variable problem, causality, and directionality, further research may focus on other methodologies, including casual comparative, to explore more about this relationship.
- iii. The study findings revealed a statistically significant difference in reading comprehension performance between students with FD and FI cognitive learning styles and those with mastery and performance goal orientation. The researcher used correlational research design, and therefore future

research should adopt an experimental design to create more knowledge in this area.

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APPENDICES

Appendix A: Consent Form

I am Teresia Wanjiru Kiragu, a Post Graduate student at Kenyatta University pursuing a Ph.D. in Educational Psychology. I am conducting a study in Kiambu County concerning field-dependent and field-independent cognitive learning styles and learning goal orientation as correlates of reading comprehension performance among students. Participation is voluntary, and the study has been approved by the Institutional Review Bureau of Kenyatta University, implying that it does not pose any harm to the respondents. Ethical guidelines will be observed in the letter, and the information obtained will be used only for this study. The results will be discussed in summary form without revealing the identity of the respondents. You are free to choose to participate or decline; if you decide to participate, you can withdraw at any time without penalty. If you agree to participate, kindly sign below.

Sign..... Date.....
Code.....
Teresia Wanjiru Kiragu **E83/7061/2003** Sign.....
Date.....

	noise and confusion while studying English.								
2.	I enjoy analysing subject content and thematic issues personally in order to understand it better	3	2	1		I find it tedious to analyze the subject content and thematic issues	3	2	1
3.	I feel I must understand every word of what I read or hear in every subject in class	3	2	1		I don't mind reading or listening on the subject teaching without understanding every single word as long as I 'catch' the main idea.	3	2	1
4.	I think individual study is the key to effective subject learning.	3	2	1		I think discussion is the key to effective subject learning.	3	2	1
5.	I prefer working alone to working with other people.	3	2	1		I really enjoy working with other people in pairs or groups.	3	2	1
6.	Receiving feedback from other people really doesn't affect my learning at all.	3	2	1		I find feedback useful as a means of	3	2	1

					understanding my problem areas.			
7.	I usually look for solutions to my learning challenges by thinking through and acting on my skills and experiences	3	2	1	I usually seek to know what other people would handle similar challenges and try out the various ways of solving them	3	2	1
8.	I usually pick my books and read even when my classmates are relaxing in the fields	3	2	1	I can read well when my classmates are settled and focused for individual studies around me	3	2	1
9.	I don't like it when other activities interfere with my learning timetable	3	2	1	I like it when I'm exposed to various activities in between my learning timetable to break the monotony of continuous studying	3	2	1
	TOTAL				TOTAL			
	FI score				FD Score			

Section C: Achievement Goal Orientation Questionnaire

Use the following scale and tick for each statement to indicate how much you disagree or agree with each of the statements. Strongly Disagree = 1, Disagree =2, Neutral=3, Agree=4 and strongly Agree= 5

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. My aim is to completely master the material presented in this class.					
2. I am striving to do well compared to other students.					
3. My goal is to learn as much as possible.					
4. My aim is to perform well relative to other students.					
5. My aim is to avoid learning less than I possibly could.					
6. My goal is to avoid performing poorly compared to others					
7. I am striving to understand the content as thoroughly as possible					
8. My goal is to perform better than the other students.					
9. My goal is to avoid learning less than it is possible to learn.					
10. I am striving to avoid performing worse than others					
11. I am striving to avoid an incomplete understanding of the course material					
12. My aim is to avoid doing worse than other students					

Appendix C: Students' Reading Comprehension Test

Read the following paragraph to answer the next six questions.

Peer pressure

I was about nine years old when my friend Mureng'a and I decided to try smoking. We had been watching the boys at the market place puffing at cigarettes, and we thought they looked 'cool': Being 'cool' was all we wanted. It meant hanging out with the popular boys. The fact that our parents disapproved of the things the 'popular boys engaged in did not matter. It was more critical for us to be accepted by the boys than obey our parents.

Mureng'a and I pooled our meagre pocket money to buy our first cigarettes. We could only afford one cigarette. We did not need more anyway. After school, we quickly went to the kiosk and asked for a cigarette. The shopkeeper did not ask any questions. After all, adults often send many children of our age to buy cigarettes. We then made our way to the nearby playground. It was pretty deserted. We hid behind some bushes and lit up. We took turns puffing at the cigarette. Although we did not inhale, we felt so grown up. From that day, our pocket money was reversed for cigarettes.

After a while, we wanted the 'popular boys' to know we were good enough to join them. Benga, the natural leader, was not particularly impressed when Mureng'a casually approached him and requested a light. 'What are you doing with that?' he suggested. 'I bet you do not inhale.' Mureng'a took that as a challenge, 'I do,' he said, trying to be as calm as possible. Deep inside, he dreaded what was coming.

'Go on, let's see you do it,' Benga said, lighting Mureng'a's cigarette. Mureng'a had no choice but to inhale. Being an amateur, Mureng'a swallowed the acrid smoke and started coughing violently. I was visibly worried for Mureng'a. The popular boys laughed and walked away, leaving the two of us behind.

After a bout of violent coughing, Mureng'a could breathe easily again. Rather than put us off, the smoking incident made us even more determined to do whatever the popular boys did. We practised inhaling until we could do it without even wincing. We forced the poison into our lungs until they got used to its sooty onslaught.

When we felt ready, we recklessly smoked in the presence of the popular boys to be accepted. They did. We were the new pair in the crowd. However, there was another challenge: alcohol. We had to prove that we could take alcohol like they did. We began to practice in readiness for the initiation. Soon, we hoped we could take alcohol like they did.

Looking back, I realize that I ruined my life to be accepted by the other boys. Now they are nowhere to be found. Smoking has cost me even more as my health deteriorates due to lung cancer. If I were to walk back in time, I would ban cigarette smoking. I would warn my friends about what I have experienced: that bad company corrupts good morals.

Questions

Tick one option

1. Why did the author start smoking bhang?
 - A. It was good to smoke
 - B. He was idle
 - C. He wanted the company of his peers
2. He did not smoke bhang
Apart from smoking, what else did the popular boys do?
 - A. Took liquor
 - B. Went to the field to play
 - C. Visited the marketplace
 - D. Walked home together
3. Why did the author and his friend defy their parents?
 - A. To look good before the peers
 - B. The parents were misunderstanding
 - C. To conform to the popular peer group
 - D. They did not defy the parents
4. How did the author and friend finance their habits?
 - A. They borrowed the money
 - B. They used their savings
 - C. The parents gave them
 - D. The friends gave them the money
5. Where did the author and friend go to smoke their cigarette?
 - A. In the open field
 - B. At the marketplace
 - C. At the shops
 - D. They hid behind some bushes
6. What happened to Mureng'a when he first inhaled cigarette smoke?
 - A. He fainted
 - B. He coughed violently
 - C. Nothing happened
 - D. He felt 'cool.'

Appendix D: Descriptive Statistics of the Scores of the Study Variables

Table D. 1

Descriptive Statistics for FI Scores

	N	Minimum	Maximum	Mean	SD
FIQ1	452	1.00	3.00	2.1394	.76251
FIQ2	452	1.00	3.00	2.3451	.69231
FIQ3	452	1.00	3.00	2.2544	.76472
FIQ4	452	1.00	3.00	2.2788	.76636
FIQ5	452	1.00	3.00	2.1173	.77200
FIQ6	452	1.00	3.00	2.0907	.83078
FIQ7	452	1.00	3.00	2.4403	.68462
FIQ8	452	1.00	3.00	2.0863	.83922
FIQ9	452	1.00	3.00	2.2146	.80214

Table D. 2*Descriptive Statistics for FD Scores*

	N	Minimum	Maximum	Mean	SD
FDQ1	404	1.00	3.00	2.6460	.61894
FDQ2	404	1.00	3.00	2.0000	.70094
FDQ3	404	1.00	3.00	1.9777	.87252
FDQ4	404	1.00	3.00	2.4926	.71665
FDQ5	404	1.00	3.00	2.5025	.67753
FDQ6	404	1.00	3.00	2.2970	.75605
FDQ7	404	1.00	3.00	2.3762	.76332
FDQ8	404	1.00	3.00	2.5074	.71318
FDQ9	404	1.00	3.00	2.2401	.81504

Table D. 3*Descriptive Statistics for Learning Goal Orientation Scores*

	N	Minimum	Maximum	Mean	SD
Performance goal orientation	856	1.00	5.00	3.9685	1.05195
Performance goal orientation	856	1.00	5.00	4.4428	.83575
Performance goal orientation	856	1.00	5.00	4.4895	.73819
Performance goal orientation	856	1.00	5.00	4.2722	.90714
Performance goal orientation	856	1.00	5.00	3.6273	1.38333
Performance goal orientation	856	1.00	5.00	4.3949	1.00905
Performance goal orientation	856	1.00	5.00	4.1951	.86276
Performance goal orientation	856	1.00	8.00	4.4544	.82945
Mastery goal orientation	856	1.00	5.00	3.7442	1.28826
Mastery goal orientation	856	1.00	5.00	4.1437	1.12042
Mastery goal orientation	856	1.00	5.00	3.9486	1.06389
Mastery goal orientation	856	1.00	5.00	4.2068	1.11785

Table D. 5*Factor Analysis Correlation Matrix for LGO*

Item	1	2	3	4	5	6	7	8	9	10	11	12
1	1.000	.168	.712	.179	.240	.124	.681	.140	.271	.097	.208	.121
2	.168	1.000	.172	.632	.123	.239	.123	.714	.146	.112	.149	.176
3	.712	.172	1.000	.206	.102	.169	.754	.217	.132	.065	.112	.054
4	.179	.632	.206	1.000	.183	.235	.108	.852	.232	.207	.115	.222
5	.240	.123	.102	.183	1.000	.176	.176	.097	.813	.247	.831	.206
6	.124	.239	.169	.235	.176	1.000	.124	.245	.236	.745	.237	.833
7	.681	.123	.754	.108	.176	.124	1.000	.110	.241	.190	.263	.197
8	.140	.714	.217	.852	.097	.245	.110	1.000	.093	.212	.111	.264
9	.271	.146	.132	.232	.813	.236	.241	.093	1.000	.310	.733	.308
10	.097	.112	.065	.207	.247	.745	.190	.212	.310	1.000	.323	.774
11	.208	.149	.112	.115	.83	.237	.263	.111	.733	.323	1.000	.279
12	.121	.176	.054	.222	.206	.833	.197	.264	.308	.774	.279	1.000

Table D. 6

Collinearity Diagnostics for the Levels of LGO

Model	Dimension	Eigenvalue	Condition Index	Variance (Constant)	Proportions MAPP	MAV	PAPP	PAV
	1	4.915	1.000	.00	.00	.00	.00	.00
	2	.041	10.958	.03	.01	.84	.04	.00
1	3	.023	14.483	.02	.12	.06	.00	.87
	4	.012	20.069	.00	.47	.08	.71	.13
	5	.009	23.992	.94	.40	.03	.24	.01

a. Dependent Variable: RC_T_SCORE

Appendix E: Normality and Linearity Plots

Figure E 1 Histogram for FD-FI Scores

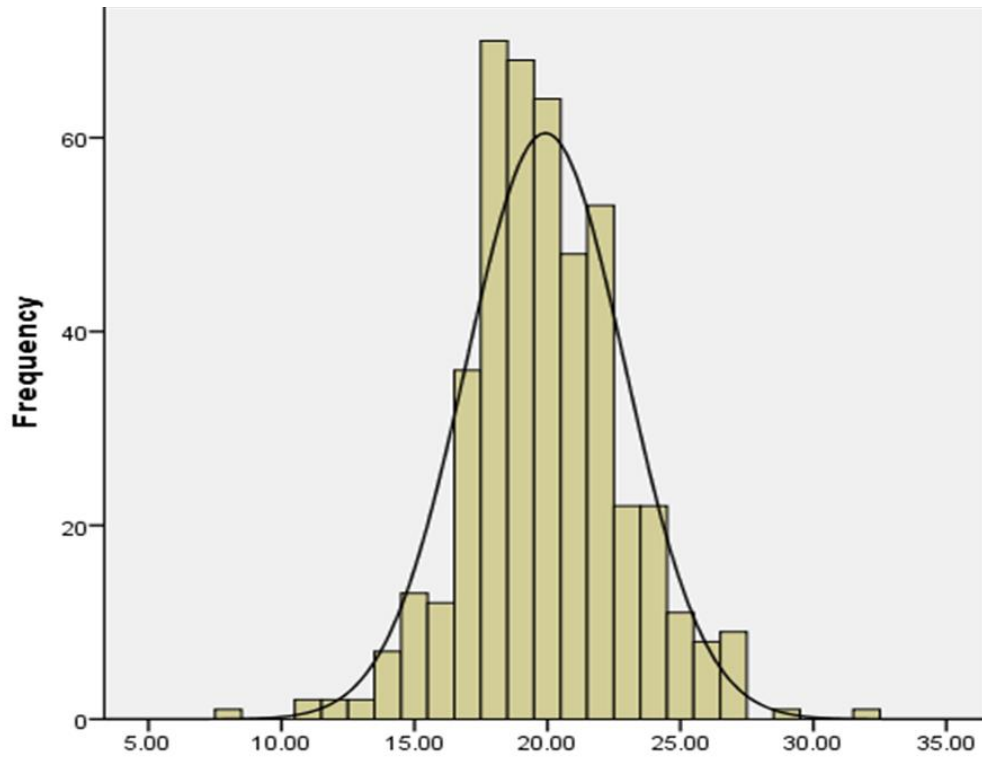


Figure E 2 Histogram for Learning Goal Orientation Scores

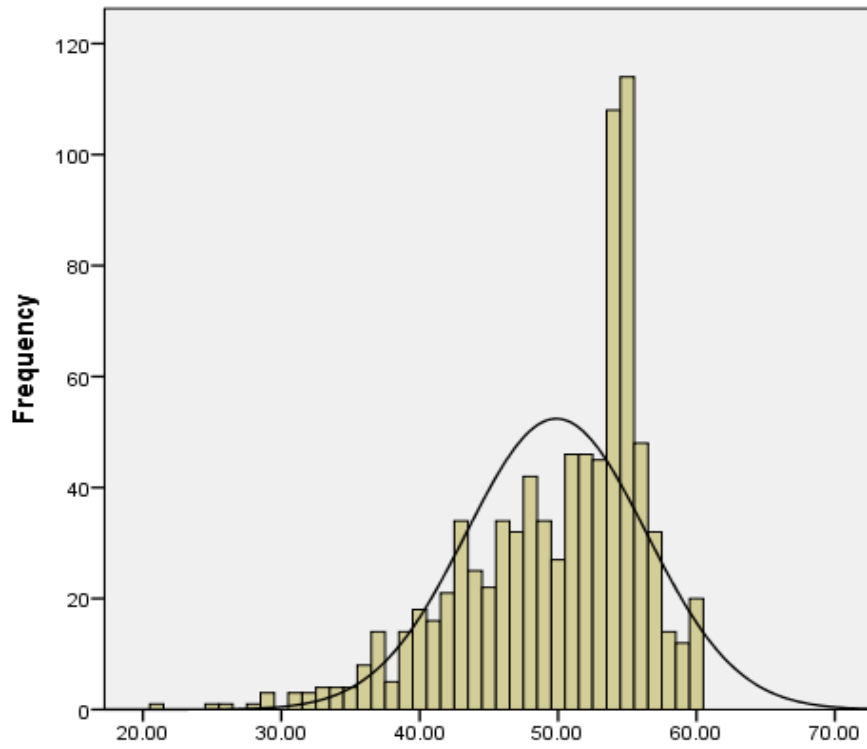


Figure E 3 Histogram for Reading Comprehension scores

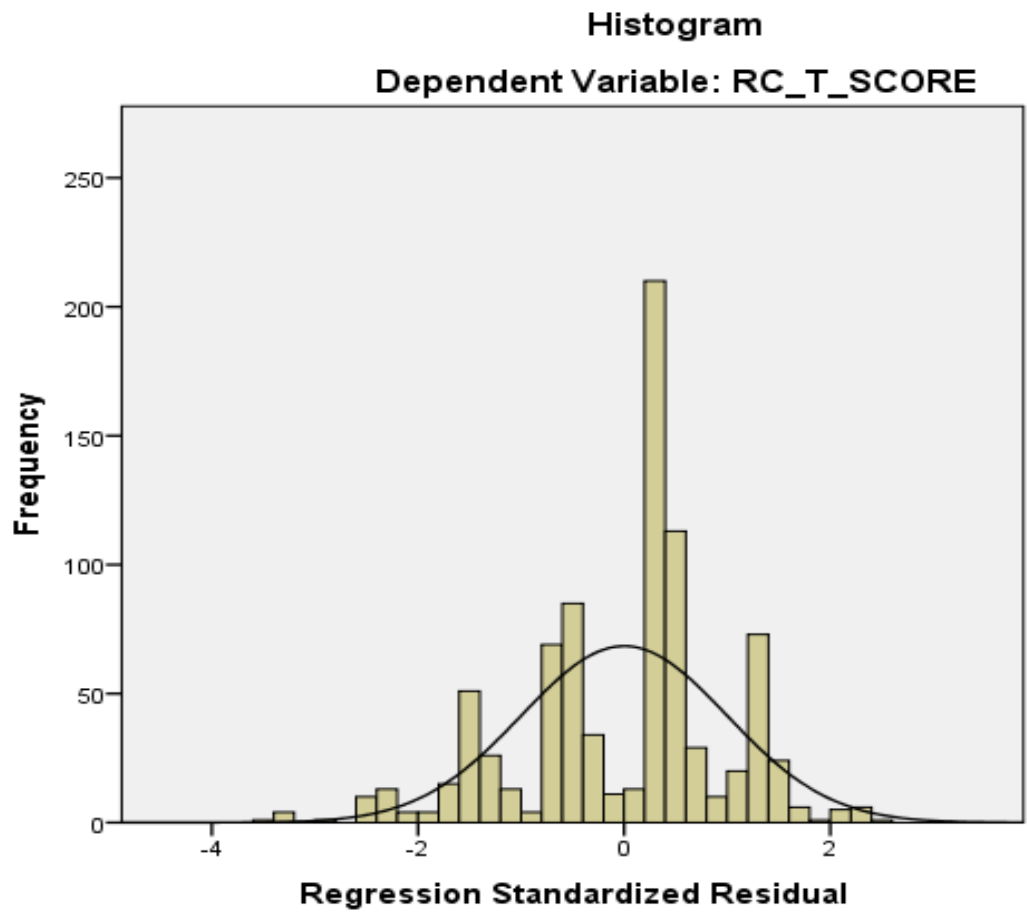
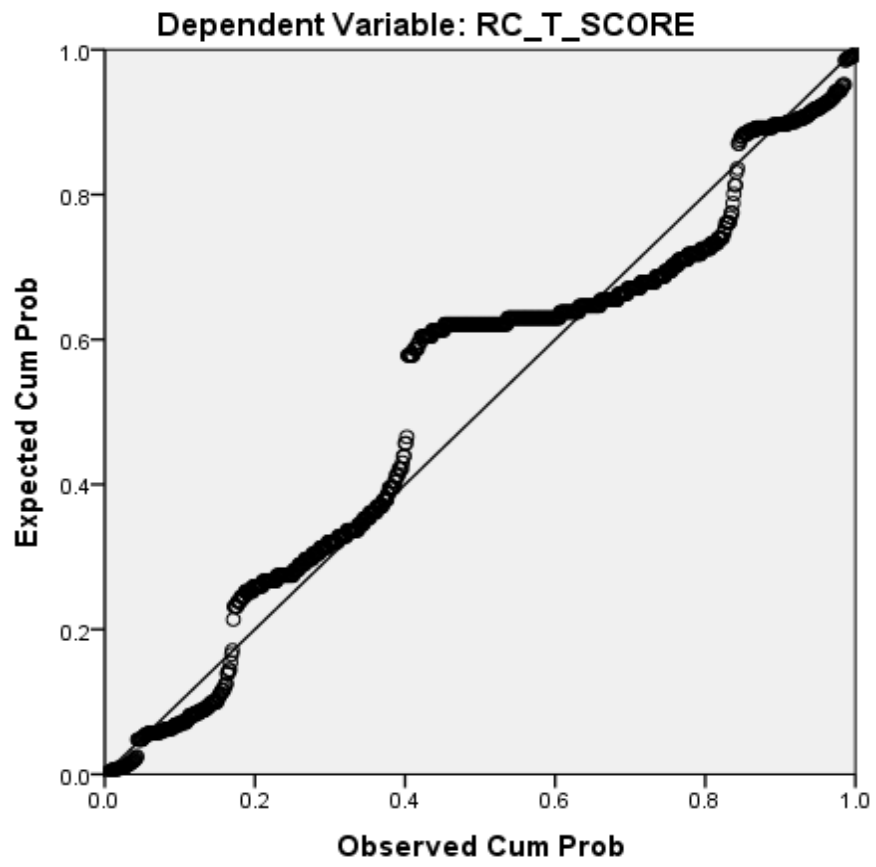


Figure E 4 Normal P-P plot of regression standardized residual dependent variable

Normal P-P Plot of Regression Standardized Residual



Appendix F: Research Licence

 
REPUBLIC OF KENYA
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 2019/01 Date of Issue: 20 September 2019

RESEARCH LICENSE



This is to certify that **Ms. TERESA KIMANI** of **Kenya University**, has been licensed to conduct research in Kisumu on the topic: **FIELD DEPENDENT INDEPENDENT COGNITIVE SKILLS AND SPATIAL ORIENTATION AS CORRELATES OF RELIANT COMPASSION IN PERFORMANCE AMONG FORM TWO STUDENTS IN KILIMBI COUNTY, KENYA** for the period ending: **20 September 2020**.

License No: **TKCOST/01/2019**

ORCID
Applicant Identification Number



Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

Verification QR Code



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Appendix G: Research Authorization Letters


KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57550

Our Ref: E83/7061/03 Date: 11th September, 2019

The Director General,
National Commission for Science, Technology & Innovation,
P.O. Box 30623-00100,
NAIROBI

Dear Sir/Madam,

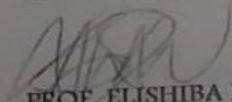
RE: RESEARCH AUTHORIZATION FOR MS.TERESIA KIRAGU- REG. NO. E83/7061/03

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

Ms. Kiragu intends to conduct research for Ph.D. thesis entitled, "Field Dependent- Independent Cognitive Styles and Goal Orientation as Correlates of Reading Comprehension Performance among Form Two Students in Kiambu County, Kenya".

Any assistance given will be highly appreciated.

Yours faithfully,


PROF. ELISHIBA KIMANI
DEAN, GRADUATE SCHOOL

RM/cao

Appendix H: Map of Kiambu County

