EFFECTS OF INTERVENTIONS OF SELECTED READING DIFFICULTIES ON ACADEMIC PERFORMANCE AMONG PUPILS FROM PUBLIC PRIMARY SCHOOLS IN NAKURU WEST SUB-COUNTY, NAKURU COUNTY - KENYA

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DECLARATION AND RECOMMENDATION

Declaration by Student

I declare that this thesis is my original work and has not been presented for a degree or any other award in any other university.

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Recommendation by Supervisors

We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

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DEDICATION

I dedicate this thesis to my husband Mr. Nyambok, my mother Mrs. Matunga and my children Benjamin, Neema, Johntroon and Rhoda, thanks for the encouragement.

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ABSTRACT

There are empirical evidences attributing poor academic performance to environmental factors and remedies on the same have been suggested. Little attention has been given to the effects that are brought about by pupil' s intrinsic factors such as reading difficulties and their respective intervention measures. At the center of this study, are intervention measures for selected reading difficulties which are hypothesized to have effects on academic performance. This study was therefore set out to find out the effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools in the Nakuru West Sub-County, Nakuru County, Kenya. In particular, the study examined the effects of word recognition training, phonological decoding, and comprehension monitoring and inculcating cooperative thinking skills as reading interventions on academic performance of pupils in the area. It was guided by the Piaget' s Theory of Cognitive Development, the Double-Deficit Theory, the Cognitive Model of Reading Comprehension and the transformation leadership theory. Both descriptive survey and quasi-experimental research designs were used. The target population comprised of 342 language teachers and 1770 class four pupils; all of which were drawn from 12 public primary schools. From these, the study obtained a sample size of 174respondents who were selected using purposive sampling for class four language teachers while pupils with reading difficulties were selected scientifically using a reading test. Data was collected using a well-structured questionnaire, an observation schedule and through administering a reading test. The instruments were pretested for both content and construct validity and also for reliability using the internal consistency and use of Cronbach reliability coefficient. Data was analyzed with the aid of the Statistical Package for Social Science (SPSS) version 21. Descriptive statistics involving means, modes and standard deviations, and inferential analysis involving Pearson' s Product Moment correlation, regression analysis and ANOVA, were used to analyze data whose results were presented in tables and figures. The results from the tests and the observation schedule were analyzed using content analysis and integrated during interpretations and discussion. The findings revealed that word recognition, comprehension monitoring and cooperative thinking skills traininghad significant effects on academic performance of pupils with reading difficulties. Phonological decoding, however, did not register any significant effect on academic performance. In the combined model, cooperative thinking skills was the only intervention that significantly affected academic performance of primary school pupils. The findings, however, showed that there was significant improvement in reading comprehension test scores after the learners with reading difficulties had received interventions as compared to when they had not received the interventions. Hence, the study concluded that the reading difficulties interventions had the potential of improving academic performance of the learners if well emphasized. The study recommend theneed for the language teachers to emphasize word recognition as an intervention, especially, among learners with reading difficulties in all primary schools. With regard to phonological decoding, teachers need to encourage their pupils to speak in the languages they use in learning to enable them improve on their phonological decoding. Teachers should introduce regular comprehension tests to monitor the pupils reading abilities. There is also need for the teachers to introduce critical thinking skills to learners when doing group work to enable them solve problems in reading. This study has far-reaching implications on academic excellence in all public primary schools in Kenya.

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LIST OF ABBREVIATION

CEM	-	Compensatory Encoding Model
CI	-	Construction Integration
CI	-	Conventional Instruction
DRTA	-	Directed Reading Thinking Activity
EFA	-	Education for All
EFL	-	English as a Foreign Language
FL	-	Foreign Language
GI	-	Group Investigation
IQ	-	Intelligence Quotient
KCPE	-	Kenya Certificate of Primary Education,
KICD	-	Kenya Institute of Curriculum Development
KIE	-	Kenya Institute of Education
L1	-	First Language
MOEST	-	Ministry of Education Science and Technology
OECD	-	Organization for Economic Cooperation and Development
RAN	-	Rapid Automatic Naming
RD	-	Reading Difficulties
SPSS	-	Statistical Package for Social Sciences
STAD	-	Student Team Achievement Divisions
TSC	-	Teachers Service Commission
UNESCO	-	United Nations Education and Scientific Cooperation Organization
USA	-	United States of America
USAID	-	United States Agency for International Development

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Reading is a very important skill in human education. It is a vital communication element for human development. In basic education reading is important in communicating subject matter and understanding content. Therefore, being proficient in reading enables one to have better education outcomes in the formal education process. The present study, however, recognizes that many students worldwide experience reading difficulties and this affects their academic performance. In Kenya, attempts have been made by stakeholders to remedy the reading difficulty problem through various school-based interventions. Therefore, this study is about the effects of these reading difficulties interventions on academic performance of primary school pupils.

Education is an essential element critical to human development. Essentially, it makes the person more robust, manageable and productive in virtually all spheres of life. It imparts both social and technical skills that is invaluable in an increasingly competitive world and is a key factor in wealth creation (Bridgeland, Dilulio & Balfanz, 2009). This has led to the realization that basic education is both a necessity and a fundamental human right worldwide. Subsequently, the goal of achieving basic education for all has been on the international agenda and has been the overarching theme of global education initiatives such as World Declaration on Education for All (EFA) in Jomtien, Thailand in 1990, the Millennium Declaration and the Dakar Framework for Action (Kinyanjui, 2009). Among other issues, the Dakar Framework urged countries to pursue 'improvement in learning achievements' such that the agreed percentage of an appropriate age cohort attains or surpasses a defined level of

necessary learning achievement (UNESCO, 2014; USAID, 2007). The Framework underscored the need for academic performance as a means of educational advancement for learners.

Pupils are nominally evaluated on the basis of their academic performance. This is for the most part a subjective evaluation measured on the basis of the final grade attained at the end of the term or course (Omobolade, 2016). Aba and Makinde (2019) defines academic performance as relating to how learners manage their studies and how they deal with or accomplish different tasks assigned to them by their tutors. According to Muthee and Murungi (2018), the expression academic performance in Kenya refers to the percentage of marks obtained by the pupils in examinations on each of the compulsory subjects at the end of the terms and finally in standard eight class at the end of the primary school cycle. In the present study, academic performance was considered in terms of the level of performance from the standpoint of academic grades in written works and exams at the end of a learning cycle-which was the mid-term tests in this case. The overall percentage on five subjects was calculated from this information. This information was provided by the school authorities.

Academic performance has however remained an elusive as different cohorts of learners perform differently. Determinants of pupils' performance have been the subject of ongoing debate among the educators, academicians and policy makers. It has formed the subject of several studies worldwide over the years such as the early work of Siegfried and Fels (1979 as cited in Onkoba, 2014) among others that sought to examine this issue. Their findings point out to hard work on the pupils, previous schooling, parent' s education, family income and self-motivation as factors that have significant effects on the pupil' s general academic performance. It has also been

argued by Kheirzadeh and Tavakoli (2012) that poor academic performance standards are attributable to low mastery of subject skills. However, most of these studies have explored the academic performance question from an environmental perspective, where the majority adopted motivational or interventionist approach. Little attention has been paid to the pupil' s intrinsic factors such as reading difficulties (RD) despite the fact that Siegfried and Fels (1979) as cited in Onkoba (2014) had pointed out that the pupil' s aptitude is the most important determinant in his or her learning outcomes.

Reading is critical to the academic, economic, and social success of children (McLaughlin, Speirs & Shenassa, 2014). The ability to read is an essential skill for students to master because information is mostly presented in text throughout the world. Educational systems also rely more heavily upon text as students reach higher grade levels (Karanja, 2015). According to Tankersley (2003), reading is a complex process comprising several processes and interlocking skills. Anderson (2010) views reading as a mental process of decoding, which engages the reader' s mind and enables him to derive meaning from text. Reading can thus be viewed as the process of combining textual information together with the material the reader possesses that result in text comprehension. Therefore, reading is not just about the symbols and words but also speaking and thinking (Onkoba, 2014). It is however discouraging, to note that many children still complete schooling without achieving more than basic literacy due to reading difficulties (Murnane, 2007). Studies conducted by Richardson and Lyytinen (2014) and Lyytinen and Erskine (2016) show that majority (80%) of children having learning disabilities manifest an educational problem primarily with regards to reading. The reading problems of all these students have a substantial

impact on their ability to master other subjects in school and ultimately affect their performance.

Reading difficulty is defined from a normative perspective, that is, how a child performs in reading compared with peers or educational expectations (Fletcher, Lyon, Fuchs & Barnes, 2007). A reading disability is a condition in which a sufferer displays difficulty reading. Examples of reading disabilities include: Developmental Dyslexia, Alexia, which refers to acquired dyslexia and Hyperlexia where word-reading ability is well above normal for age and IQ (Ferrer et al., 2010). Common reading difficulties among teenagers with mild disabilities include challenges with word recognition, vocabulary, reading rate and reading comprehension. Adolescents and children who lack proficiency with the content, form, and function of language have reading difficulties. Form in reading difficulties relates to morphologic, phonologic and syntactic skills. Content, on the other hand refers to vocabulary or semantic and the relationship among words while function means a 'student' s ability to use a language for pragmatic social purposes' (Lerner, 2000).

The ability and lack of ability to read have been well-researched for over a century. Early research done by the French neurologist Dejerine in 1896, helped pave the way for further research in the area of reading difficulties. Many theories and possible causes have since surfaced as a result of this groundbreaking research. Most notably, research has identified four specific areas of deficit in relation to reading difficulties. These areas are phonological awareness, rapid automatic naming, visual-orthography, and the newly emerging " double deficit" hypothesis (Jacobs, 2007). Reading problems stem from many causes, and is a complex process as many reading difficulties can exist. Bond, Tinkel and Wasson (1979) as cited in Jacobs (2007)

provide the following general classifications of the more prevalent reading difficulties: faulty word identification and recognition, inappropriate directional habits, deficiencies in basic comprehension abilities, limited special comprehension abilities (such as inabilities to locate and retain specific facts), deficiencies in ability to adapt to reading needs of content fields, deficiencies in rate of comprehension and poor oral reading.

Globally, while substantial research work has been dedicated to neurological factors predisposing the learner to reading difficulty, there are several types of reading difficulties arising from non-neurological factors that are typically found among students. These include; problems related to reading habits; word recognition errors; comprehension errors and miscellaneous symptoms (Mercer, Mercer & Pullen, 2011). Several common problems experienced by some students who suffer from reading difficulties have been cited in previous studies such as Jacobs, (2007); Murnane (2007); and McLaughlin et al., (2014). These include; omitting letters, syllables or words; inserting extra letters, words or sounds; substituting words that look or sound similar; mispronouncing words; reversing word or syllables; transposing letters or words; and repeating words or using improper inflection during oral reading.

UNESCO (2014) estimated that the world' s 650 million primary school age children, at least 250 million were not learning the basics in reading. Further, about 120 million of these had little or no experience of primary school, having not even reached grade 4 while the remaining 130 million were in primary school but had not achieved the minimum benchmarks for learning. Often unable to understand a simple sentence, these learners were ill equipped to make the transition to secondary education owing

to underperformance, a problem precipitated by reading difficulties and that has led to a learning crisis globally.

The learning crisis has costs not only for the future ambitions of children, but also for the current finances of governments. The cost of 250 million children not learning the basics is equivalent to $129 billion, or 10% of global spending on primary education (UNESCO, 2014). Seligman, (2011) reported that approximately 6,000,000 of the 48,000,000 enrolled students in schools in the USA had reading difficulties. In addition, Balfakeh (2009) study in Yemen on pupils reading abilities revealed that students have serious deficiencies in reading skills. According to (ASSER Center, 2009) most Indian children showing up for the class were not learning reading basic skills. Research conducted by Morgan, Farkas, Hillemeier and Maczuga (2009) indicated that children from low socio-economic status household in Sub-Saharan Africa Communities develop reading skills more slowly compared to children from higher SES groups and this affected the learners' academic performance.

The effects of reading difficulties on academic performance have been documented worldwide. For example, a study by Cimmiyotti (2013) in the United States found a correlation between reading and mathematics performance at the early elementary level including grades two through to five. The correlation also appeared to grow in strength at higher grade levels when evaluated in end of term examinations implying that reading difficulties negatively affected the performance outcome in mathematics. A study conducted in Hungary by Gósy, Huntley, Gyarmathy and Beke (2018) on dichotic listening and sentence repetition performance in children with reading difficulties found that children with reading difficulties manifested significantly poorer performance in continuous assessment tests in relation to both tasks. In Japan, a study by Yamashita and Hayashi (2014) revealed that the scholastic self-evaluation

scores of pupils with RD group were significantly lower than that of the non-RD group. Speed in reading single sounds and single words, and the number of reading errors in reading single sounds had significant negative correlations with scholastic self-evaluation scores.

In South Africa, Oberholzer (2015) sought to establish the relationship between reading difficulties and academic performance among a group of foundation phase learners. The study, however, failed to find any significant correlation between reading difficulties and academic performance. These results were not in line with the general opinion supported by the literature, in that the children's reading difficulties did not appear to be impacting negatively on their academic potential in standardized examinations (Cekiso, 2012). Mwanamukubi (2013) study in Zambia found that most of the grade six pupils were not able to read fluently as expected of their grade level. As they read, they committed errors such as mispronouncing, substituting, adding and omitting some words. Though such reading difficulties have been associated with poor academic performance at the examinations (Ganimian & Murnane, 2016) this was not established in the study.

Several studies have also been done in Kenya to investigate the challenges learners experience in reading. For example, Mberia (2002) carried out her research in Gatundu division in rural Thika District, Kenya which focused on decoding abilities of the learners. The study established that intensive reading is not done thoroughly with thoughtful guiding questions to challenge and arouse the pupils' interest to enable them to interpret what they are reading against their own experiences. Onkoba (2014) investigation of the relationship between reading comprehension practices and academic performance found that reading comprehension practices have an influence

on academic performance. However, the study only focused on one construct that is, reading comprehension practices whereas the current study looked into other RD interventions as well. At a slightly higher educational level, Karanja (2015) study on the extent to which reading difficulties affect academic performance of secondary school students revealed that students who had fewer problems with word substitution, omission, mispronunciation and addition scored highly in the end of the term exams. This further underscored the relationship between reading skills and academic performance. This study focused mainly on the word recognition challenges of learners. Moreover, it failed to provide evidence on how the teachers were remedying the problem.

Existing research such as Silva and Crenitte (2016), point out to the promise interventions have on remedying the reading difficulties being experienced by pupils. For example, their study among children at risk for reading difficulties in Brazil demonstrated that phonological decoding intervention program could significantly improve the prerequisite skills of reading and writing in children who are at risk of reading disabilities. A recent study by Han (2015) found evidence suggesting that word recognition was instrumental in improving comprehension skills of children while in the same vein, McCormick and Becker (2010) found that interventions such as direct word study leads to reading improvement for learning in disabled pupils. Ming-San Chang (2013) also established that comprehension monitoring practices were significantly related to students' scores. Similarly, a study by Kyle et al. (2013) revealed that cooperative thinking skills interventions resulted to a substantial increase in reading comprehension. However, local studies have not examined the relationship between interventions used to remedy reading difficulties so as to

improve the academic performance of pupils. This is despite the problem continuing to persist and several recommendations being proposed by scholars.

Nakuru is a cosmopolitan County in Kenya and regarded as one of the most populous with a population of 1,603,325 (2009 Census). The county has 11 constituencies, namely Naivasha Nakuru Town West, Nakuru Town East, Kuresoi South, Kuresoi North, Molo, Rongai, Subukia, Njoro, Gilgil and Bahati (Nakuru County Government, 2017). It is renowned worldwide for its eponymous saline water lake, (Lake Nakuru) which is home to the world' s largest concentration of flamingos. The county is host to Nakuru Town which a few years ago was described by the UN as the fastest growing town in Africa. The town has urbanization rate of 45.8%. Literacy levels in the town are high with approximately 83.2% of the population being able to read and write. Children attending school are about 74.7% (Nakuru County Government, 2017).

In Nakuru North West Sub County, the academic performance in standard eight national examinations, Kenya Certificate of Primary Education (KCPE) of most pupils is at average and below. According to Nakuru West Sub County Education office, (2012), the average KCPE marks attained between 2008 and 2012 had been below average (Nakuru West Sub County Education Office, 2013). In 2012, the highest school mean was 295.19 while the lowest was 185.67 compared to the district mean score of 231.05 for a total of 3120 candidates. According to Nakuru West Sub County Education Office, (2013), the number of KCPE candidates was rising without a corresponding increase in the District Mean score. The continued low academic performance has been a challenge to the District Education Officer and other stakeholders. Several factors have been attributed to this development in previous

studies such as parental factors, socio-economic conditions, and availability of teaching and learning facilities among others. Consequently, several interventions used to remedy the performance problem have also been implemented. However, studies on reading difficulties have not been attributed to the pupil academic performance problem in the area. This provides ground for the present study.

1.2 Statement of the Problem

The Uwezo Assessment report of 2010 and 2011 estimated that around 50 percent of children in grade 4 are not able to read grade 2 level work in Kenya. Evidently, the academic performances among these groups of learners are challenged and require urgent redress. In Kenya, the government through the Ministry of Education has put in place primary school curriculum, structures and systems to enable learners acquire and develop ability to read and write which should eventually translate to good academic performance. The government has in addition provided requisite resources to facilitate access to education by all (MOEST, 2009).

Notwithstanding the heavy investment in this endeavor, many public primary schools in Kenya have continued to perform poorly in the national examinations. This is partly due to learners' challenges in basic reading skills (Karanja, 2015). Ironically, reading in English which forms the language of instruction for almost all subjects in the Kenya school system, is taught at primary school level (pre-unit to class 8) as part of the syllabus and as a basic skill, in addition to listening, speaking and writing skills (Kenya Institute of Education, 2002). The consideration of the Uwezo Assessment report of 2010 and 2011, and the reoccurrence of the poor performance in national examinations in many public primary schools in Kenya, therefore possess serious questions regarding the efficacy of the reading skills interventions, chief of which are

word recognition training, phonological decoding interventions, comprehension monitoring and inculcation of cooperative thinking skills (Onkoba, 2014; Karanja, 2015).

Existing literature indicate dearth of studies in this area, which means little is known concerning the effects of reading skills interventions which would eventually affect the academic performance of public primary school pupils (Ronkováa & Wildová, 2016; Rivera, 2015; Cekiso, 2012). Specifically, no study has been conducted in the low socio-economic urban centre of Western Zone in Nakuru Sub-County, Nakuru County, Kenya. In this sub-county, the public primary school pupils' average academic performance has been between 150 marks to 250 marks out of possible 500 marks (Nakuru County Education Office, 2017). The poor performance is largely attributed to the reading difficulties among many other factors. This presents a gap on the need to examine the reading difficulty interventions that are being used to mitigate this problem which is threatening the future level of education of pupils. The present study, therefore, examined the effects of interventions of reading difficulties on academic performance of primary school pupils in Nakuru West Sub-County, Nakuru County, Kenya.

1.3 Purpose of the Study

This purpose of the study was to find out the effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools in the Nakuru West Sub-County, Nakuru County, Kenya.

1.4 Objectives of the Study

i. To assess the effects of word recognition training on academic performance of primary school pupils in Nakuru West Sub-County

ii. To determine the effects of phonological decoding intervention on academic performance of primary school pupils in Nakuru West Sub-County

iii. To examine the effects of comprehension monitoring on academic performance of primary school pupils in Nakuru West Sub-County

iv. To assess the effects of inculcating cooperative thinking skills on academic performance of primary school pupils in Nakuru West Sub-County

1.5 Hypothesis

Consistent with the outlined objectives, the study sought to test the following null hypotheses.

$H0_1$: Word recognition training does not significantly affect academic performance of primary school pupils in Nakuru West Sub-County

$H0_2$: Phonological decoding intervention does not significantly affect academic performance of primary school pupils in Nakuru West Sub-County

$H0_3$: Comprehension monitoring does not significantly affect academic performance of primary school pupils in Nakuru West Sub-County

$H0_4$: Inculcating cooperative thinking skills does not significantly affect academic performance of primary school pupils in Nakuru West Sub-County.

1.6 Significance of the Study

Addressing reading skills among learners can lead to significant improvements in their academic performance. Therefore, the outcome of the present study is expected to address the concerns of various stakeholders among them the management, teaching staffs of the public primary schools in Nakuru West Sub-County. To the schools' management committee and the head teachers, the outcome of the study

already suggests that there is a real problem that if left fully unaddressed could have detrimental implications on not only the academic performance of the school and pupils, but could also impair their learning progression and career prospects in the future. Therefore, the outcome of this study is important to their decision making to remedy the situation. The teachers and specifically the heads of languages departments in the schools are meant to gain from the outcome of the study in that they will be able to obtain a snapshot of the current challenges in their schools and come up with better interventions strategies or strengthen their current interventions to mitigate the problem.

Other educational stakeholders such as parents will be able to understand the learning challenges their children undergo in school and could supplement the teachers' efforts at home. The society and organizations partnering with the schools such as non-governmental organizations may also benefit from the findings of the study which aims to address their concerns about falling standards of performance through availing information on the efficacy of interventions used in addressing reading difficulties among pupils.

Data and information obtained from this study will also be used to reveal the extent of reading difficulties in primary schools to the Ministry of Education Science and Technology (MOEST) who will find the data useful to evaluating the effects of the policy intervention on reading difficulties and academic performance. The Teachers Service Commission (TSC) as the designated teacher employer and one that has the mandate to evaluate teachers will also find the findings important in evaluating the efficacy of the teaching methods used by their teachers in order to come up with more appropriate actions to address the problem as a matter of urgency. Further, the policy

makers at the MoE, TSC and the Departments of Education at the County levels are also expected to see the need for training more primary schools' teachers on Special Needs Education (SNE) from the study findings in order to help pupils reading difficulties.

The findings are also expected to provide helpful information to Kenya Institute of Curriculum Development (KICD) for use in the development of syllabus for respective academic levels for learners with reading difficulties. The findings of this study are hoped to contribute to new knowledge in the area of educational management specifically in terms of equipping school managers, teachers and future researchers with material on leadership, coordination and monitoring of interventions meant to assist learners in primary school. Finally, the study is meant to provide grounds for further research on both theoretical and empirical grounds to future scholars in this area.

1.7 Scope of the Study

The study focused on the effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools in the Nakuru West Sub-County, Nakuru County, Kenya. As such, the study was confined to only four interventions, that is, word recognition training, phonological decoding intervention, comprehension monitoring and inculcating cooperative thinking skills - all which formed the independent variables of the study.

The study used both primary and secondary data which were collected from class four pupils and English language teachers from public primary schools in Nakuru West Sub-County, Nakuru County, Kenya. The study, however, did not focus on neurological factors predisposing the learner to reading difficulties.

1.8 Limitation of the Study

Although this research was carefully prepared, the researcher was aware of its limitations and shortcomings. First of all, the research was conducted among learners in a low income area of the country where demographic factors could predispose or even prolong the learning difficulties of the learners and this may not necessarily be generalized over other areas of the country. Second, the population of the survey group was small, and might not represent the majority of the students throughout the country. Third, since the questionnaire was designed to measure the students' response to reading skills interventions from a non-neurological point, the accuracy of the findings may not be very high like in the case where standard psychometric instruments were used for neurological test of learning difficulties. In addition, since the assessment of the pre-test and post-test was conducted by the researcher herself, it was unavoidable that in this study, a certain degree of subjectivity could be found. In fact, it would have been sort of objective if a standard test was used.

1.9 Assumptions of the Study

The assumptions of this study were that the public primary schools had pupils having learning difficulties. The study also assumed that language teachers were practicing interventions to mitigate the problem presented by reading difficulties among learners. Finally, the researcher assumed that the responses from the respondents were honest and gave an accurate position of the subject being investigated.

1.10 Operational Definition of Terms

Academic performance - The extent to which a student or a teacher or an institution has achieved short or long term goals of education.

Comprehension - Is the act or capability of understanding things especially what is written or spoken. Comprehending a text is an interactive activity between the text and the reader' s background knowledge.

Cooperative thinking- is a pedagogical approach that promotes student-student interaction via working in small groups to maximize their learning and reach their shared goal.

Intervention measures - Having participants answer standardized questions before and after and measuring.

Learning - is the process of recognizing written or printed words and understanding their meaning.

Phonological decoding– it is the learning process where the learners are taught to appreciate the sounds of words at their basic level as a way of pronouncing and deriving and differentiating meaning.

Reading - is the process of recognizing written or printed words and understanding their meaning.

Reading difficulty - A learning disorder associated with impairment in reading accuracy, speed and comprehension

Rubric- Is a scoring guide used to evaluate the quality of students constructed responses the effect of the intervention as a statistical difference between the two.

Specific learning difficulties (SLD) - Refers to a condition where learners encounter difficulties in acquiring specific skills in academic areas like, basic reading, writing etc.

Survey- It refers to the selection of a relatively large sample of people from a pre-determined population.

Word recognition - is a summation of speed and accuracy of meaning through textual decoding. It is broadly regarded as the core cognitive activity in the reading process.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter discusses literature pertinent to the reading difficulties and interventions sought to address this problem among learners in various parts of the world. The chapter presents the review of empirical literature and theoretical literature. It conludes by providing a conceptual framework and an operationalization framework.

2.2 Academic performance of pupils in Public Primary Schools

An optimal level of academic performance in educational institutions has been a primary interest, not only for the children themselves, but also for other stakeholders such as parents, guardians, teachers and educational administrators. There is an augmented emphasis on the educational achievement of students which can be attributed to the phenomenon of globalization and industrialization (Jamil & Khalid, 2016). The educational trends globally not only underline the necessity of academic attainment, but also emphasizes academic achievement in children because the latter is being seen as the predictor of personal and professional success in later life. Academic success or failure draw a prominent influence on the child' s adolescence years and serve as a crucial indicator of personal adjustment with the former considered to be the basis of wellbeing and happiness (Salmela-Aro & Tynkkynen, 2010).

Academic performance encompasses student performance on summative assessments in subjects (Cimmiyotti, 2013). Adane (2013) defines academic achievement as a successful accomplishment or performance in a particular subject area and is indicated by grades, marks and scores of descriptive commentaries. Generally, academic achievement is characterized into two categories; high and low (Dzulkifli &

Alias, 2012). Academic achievement is conceptualized as an optimal level of performance in academic tasks while low academic achievement is considered to be a deficient or poor performance in academic tasks. The variation in achievement as high or low has led research community to identify factors that may prove to be a breeding ground for high or low achievement (Fazal, Hussain, Majoka & Masood, 2012). These factors are not only related to the children' s dispositional components such as impulsivity, inherent social skills, intellectual functioning, delinquent tendencies, but also encompass their situational variables, such as family environment (Gyansah, Soku & Esilfie, 2015). Both dispositional and situational variables play part in determining a child' s academic achievement.

The declining standards of academic performance are raising serious concerns among stakeholders globally. For instance, in the US, recently released data from the Programmed for International Student Assessment (PISA) which assesses every three years measures on reading ability, math and science literacy and other key skills among students in dozens of developed and developing countries indicate that U.S. students continue to rank around the middle of the pack, and behind many other advanced industrial nations (PISA, 2015). In the most recent tests from 2015 using a different body the Trends in International Mathematics and Science Study (TIMSS), 10 countries (out of 48) had statistically higher average fourth-grade math scores than the U.S., while seven countries had higher average science scores. In the eighth-grade tests, seven out of 37 countries had statistically higher average math scores than the U.S., and seven had higher science scores.

In Australia, the declining academic performance is a cause for alarm (Thomson, 2011). A global report on educational performance shows that Australian 15-year-olds

are getting worse in mathematics, science and reading (PISA, 2015). According to the Australian Council for Education Research that collected the Australian data, the local academic performance was in "absolute decline" (Masters and Geoff, 2016; Hunjan & Blumer, 2016). The study further observed that the proportion of high achievers is decreasing and the proportion of low achievers is increasing, and that the children are no longer learning at the same rates through their school education as they used to. This is obviously unacceptable to governments, as it would be to parents, teachers and everybody across Australia. Also noted was that the school funding had gone up to record levels "yet performance has gone backwards" (Thompson, 2018).

According to the World Development Report of 2018, millions of young students in low and middle-income countries face the prospect of lost opportunity and lower wages in later life because their primary and secondary schools are failing to educate them to succeed in life (World Bank, 2018). Warning of ' a learning crisis' in global education, the World Bank report (2018) said schooling without learning was not just a wasted development opportunity, but also a great injustice to children and young people worldwide. The report argues that without learning, education will fail to deliver on its promise to eliminate extreme poverty and create shared opportunity and prosperity for all. Even after several years in school, millions of children cannot read, write or do basic math (Thompson, 2018). This learning crisis is widening social gaps instead of narrowing them. Young students who are already disadvantaged by poverty, conflict, gender or disability reach young adulthood without even the most basic life skills (UNESCO Institute for Statistics (UIS), 2017).

Although the skills of Brazilian 15-year-olds have improved, at their current rate of improvement, they will not reach the rich-country average score in math for 75 years.

In reading, it will take 263 years (UNESCO, 2018). In rural India, nearly three-quarters of students in grade 3 could not solve a two-digit subtraction such as " 46 – 17" —and by grade 5, half still could not do so. Citing Uwezo (2014), the report observed that when third grade students in Kenya, Tanzania, and Uganda were asked recently to read a sentence such as " The name of the dog is Puppy" in English or Kiswahili, three-quarters did not understand what it said (World Bank, 2018). Evidently, the report shows that there was a serious problem with reading difficulties; however, it fell short of proposing specific interventions to remedy the problem.

While not all developing countries suffer from such extreme learning gaps, many fall far short of levels they aspire to (Larson & Valerio, 2017). Leading international assessments on literacy and numeracy show that the average student in poor countries performs worse than 95 percent of the students in high-income countries—meaning, such a student would be singled out for remedial attention. Many high-performing students in middle-income countries—learners who are always in the top performing quarter in their countries —would rank in the bottom performing quarter in a wealthier country (Kaffenberger & Pritchett, 2017; World Bank, 2018).

The issue of poor academic performance of pupils in Nigeria has been of much concern to the government, parents, teacher and even pupils themselves. The quality of education not only depends on the teacher as reflected in the performance of their duties but also in the effective coordination of the school environment (Ajao, 2011). In Botswana, Maimela (2016) observes that the academic performance of the students in the Primary School Leaving Examinations has been declining since 2004. Much as the Government has put much effort in the matter, it appears they are not sure of what factors really affect student academic performance in the education system. Reading

difficulties were, however, overlooked in these studies despite the fact that reading difficulties have been observed to affect academic performance worldwide.

The situation is not much different in the neighboring Tanzania where Nyandwi (2014) reports that, despite the expansion of the secondary education, the problem of low academic performance and the small number of students joining post-secondary school education and training courses is still a headache. The poor transition rates could be traced to the primary school level where Komba and Wilson (2012) attributed poor academic performance in examinations in the language of instruction (LOI); observing that students were not proficient in English. Further, the incompetence of speaking, writing, and reading in secondary schools has rooted from the level of primary school education, because the curriculums of Government primary schools use Kiswahili as the medium of instruction. However, the studies did not link reading interventions to academic performance.

In Kenya, academic performance trend has been on the decline. A report by the Kenya National Examinations Council (2016a) indicated that the performance in KCPE in the country at the school level and at the national level was on the decline. The overall performance in KCPE fell from above average in 2013 to average in 2015. Further, there was no significant improvement in all non-language subjects, which remained average while the performance in languages declined from above average to average during the same period.

The importance of language performance assessment was underscored by a subsequent report KNEC (2016b) which found that a high correlation between literacy and numeracy, with the correlation between english and mathematics being stronger at 0.72 than that of Kiswahili and Mathematics which was 0.67 (Karogo,

Matei, Kipchirchir, Kawira & Omunyang' oli, 2016). This implies that there is a strong likelihood that pupils who scores highly in English and Kiswahili are also likely to score highly in Mathematics. It was also found that pupils who liked reading performed better in both numeracy and literacy. The report concluded that interventions towards improvement of competency levels in literacy will have a bearing on achievement levels in Numeracy. A previous study done by Runo (2010) on identification of reading disabilities and teacher oriented challenges in teaching reading to standard five in Kenya had also concluded that the learners who scored poorly in the wordlist and reading passage were equally poor performers academically in primary schools. This was in line with her conceptual framework which indicated that both internal and external factors cause reading difficulties, hence poor academic performance.

2.3 Word recognition training intervention and academic performance of pupils

Word recognition is one of the basic processes of reading, which is broadly regarded as the core cognitive activity in the reading process. Indeed, Nation (2013) acknowledges that word recognition is the most commonly " recurring cognitive activity" in reading. Yamashita (2013) defines word recognition as a summation of speed and accuracy of meaning through textual decoding. This definition, further, implies that word recognition involves two sub processes: visual decoding of orthographic forms of words and activating links between graphic and phonological codes (known as word decoding or phonological decoding); and retrieving relevant semantic resources through a word dictionary in the mind referred to as a mental lexicon (known as lexical access or semantic access) (Han, 2014). However, the processes of activating meaning word decoding remain debatable. There are contentions regarding the requirement of phonological information in the process of

activating meaning, and also on whether holistic word recognition is essential in activating meaning (Farnia & Geva, 2012).

Consequently, meaning access has been anchored on two proposed models. According to the first model, activating phonological information is mandatory and essential in retrieving meaning from a mental lexicon regardless of orthographies (Shen & Jiang, 2013). However, the second model postulates that phonological information is not obligatory for lexical access. Retrieval of semantic information can be done through orthographic information or meaning can be activated using phonological codes decoding (Crosson & Lesaux, 2010). The direct lexical route normally enables readers to process familiar words and words of high frequency, whereas the optional route tends to operate when unfamiliar and less frequent words are encountered (or pseudo words) (Grabe, 2010). Research evidence demonstrates that with increasing reading proficiency, the inclination of readers is to adopt the direct route that uses only orthographic and not phonological information to access word meaning when reading (Shen & Jiang, 2013).

Significant research in word recognition in first language (L1) reading exists, with majority of the studies focusing on how children acquire skills for word recognition. Evidence in literature; suggest that word recognition skills are gradually acquired by children in their native language, as speed and accuracy increases with time (Yaghoub, Farnia & Geva, 2012; Han, 2015). Considerable variance has been observed in children' s word recognition skills which are seemingly not explained by the linguistic knowledge of children. The ability of children to recognize words most of the time cannot simply be predicted by their proficiency in oral language (Hamada & Koda, 2010). Existing longitudinal studies involving school children at the elementary levels of education, have reliably established that individual differences in

word recognition ability are stable and can predict the ability of the children to recognize words in later years (Walczyk, Marsiglia, & Johns, 2014). Apart from longitudinal research on the development of word recognition skills among children, the most important question for researchers in L1 word recognition research is to investigate the relationship between word recognition skills and reading comprehension.

Word recognition has been widely acknowledged as one of contributing processes to reading comprehension among children, as " word reading and reading comprehension are highly related; correlations fall within the range of 0.35 to 0.83" (Han, 2015, p. 60). With an increase in children' s reading experience, the role of word recognition in text comprehension tends to decrease (Grabe, 2010). The strength of association between word recognition and text comprehension also varies among good and poor readers. While for skilled readers, the relationship between word recognition and comprehension tends to diminish at the end of primary school (Macalister, 2010); this relationship may still persist among less skilled readers all the way to adulthood (Shen & Jiang, 2013). Among older L1 readers, word recognition has not been consistently observed to affect reading comprehension (Shen & Jiang, 2013).

Empirical evidence has shown that there is disassociation between word decoding skill and reading comprehension, and even when readers have good word decoding ability, they still have comprehension problems (Verhoeven & van Leeuwe, 2009; Nation, 2013). For example, among 799 L1 adult populations, Han (2014) used five measures, namely decoding, spelling, vocabulary, comprehension, and the Author Recognition Test. The results of factor analysis of the five tests showed a comprehension component and a lexical processing component. Nation (2013)

observed that 23.00% of students were below the median on the comprehension component measure, but their lexical processing component scores were above the median. This seems to suggest that lexical processing skill is a necessary but not sufficient requirement for good comprehension.

In proposing a Compensatory Encoding Model (CEM) in L1 reading, Walczyk et al., (2014) tried to clarify the link between word recognition and reading comprehension transcending the children' s initial stage of reading acquisition. The CEM proposes that the link between word recognition potency and reading comprehension tends to be weak or non-significant once reading happens in the absence of time pressure, as strategic readers can employ several methods to resolve their word recognition inefficiencies. However, in the presence of imposing time constraints, like when subjected to a test, the link between word recognition and the level of comprehension can become stronger (Hamada & Koda, 2011).

Further, several studies conducted by Walczyk et al., (2014) among young (but having completed the initial stage of reading acquisition) and mature readers have confirmed this postulation. For example, for adult native English speakers, Walczyk et al. (2014) compared correlations between word recognition and text comprehension in a time constrained (known as time hereafter) reading context and in unconstrained time (known as untimed hereafter) environment, the results showed that in the time constrained reading condition, the degree of lexical access correlated with comprehension but within the unconstrained time condition, the correlation between lexical access and reading comprehension was not significant.

Language one (LI) orthographical backgrounds of foreign language (FL) have long been a spotlight in Florida word recognition analysis. The reasoning behind this line

of analysis is frozen in variations between the writing systems of languages in terms of speech sounds (phonology) which corresponds to basic linguistic units (orthography) (Yamashita, 2013). Different styles of basic linguistic units are distinguished in orthographies: specifically, phonemes, syllables, and morphemes (Han, 2014). Phonemes are the fundamental units in alphabetic languages, like English, French, and Dutch; syllables are the fundamental units in an exceedingly syllabic script system, like Japanese kana; while morphemes are the mimetic units in logogrammatic languages, like Chinese and Japanese Kanji (also called morph syllabic languages) (Shiotsu, 2009; Han, 2015).

Analysis has systematically found proof that word recognition in reading orthographies makes different demands on psychological feature processes (Yamashita, 2013). Reading in alphabetic languages needs readers to apply phonemes and to conduct intra-word analysis; whereas reading in logogrammatic languages places a lot of fewer demands on intra-word segmentation skills. Logogrammatic readers trust less on synchronic linguistics info and additional on holistic visual info (Nation, 2013).

McCormick and Becker (2010) reviewed a research in the US on ‘effective instructional practices with learning disabled students focusing on word recognition and word identification.’ The study found evidence suggesting that direct word study leads to reading improvement for learning disabled pupils, but indirect instruction also provides assistance. In addition, word knowledge instruction not only promotes word learning, but also scan heightens learning disabled students' comprehension.

Karanja (2015) sought to determine the extent to which reading difficulties affect academic performance of secondary school students in Kiambu County, Kenya. The

study established that ninety percent of the teachers of English experienced problems in teaching reading. Sixty per cent of the teachers did not conduct library lessons at all, due to lack of library resources. Another common problem experienced by majority of the teachers was students ignoring or misinterpreting punctuations while reading.

It is evident from the foregoing discussion that much of the literature on word recognition has been done in a foreign context and has mainly focused on the language of the learner. While they give meaningful insight on the importance of word recognition, they did not focus much on academic performance. Therefore, studies on this strategy on academic performance of primary school pupils in developing countries contexts such as Kenya are thus needed.

2.4 Phonological decoding intervention measures and academic performance of Pupils

The most commonly cited skills by both national and international researchers as predictors of the acquisition and development of reading and writing are; phonological awareness, phonological processing, fast access to mental vocabulary and phonological working memory (Lonigan, Purpura, Wilson, Walker & Clancy-Menchetti, 2013). First, learners begin by learning the names of the letters and subsequently the sounds (phones) they create. Once they have learnt the sounds, they combine the sounds (phonology) to make words (Onkoba, 2014). Phonological awareness and knowledge of letters for the three important domains of early literacy must be developed to enhance children' s education that faces the risk of developing reading problems when in preschool stage (Lombarbino, 2012).

It is possible to identify children experiencing reading difficulties at the outset of the literacy process when certain signs manifest during preschool, such as; phonological disorders; language delay; low lexicon level; problem learning numbers, the alphabet, colors, shapes and days of the week; problem learning to jot down their own names, reciting nursery rhymes; and problem with segmentation of words, reading single words, and learning sound-letter relationships (Hulme, Bowyer-Crane, Carroll, Duff & Snowling, 2012). Moreover, three risk profiles are outlined for reading difficulties (Catts & Hogan, 2013).

The first profile involves pupils with phonological disorder, delayed language development or specific language impairment (expressive and/or receptive), with challenges in at least one phonological processing skills, and who exhibit non-verbal intelligence scores below, acceptable or on top of average and absence of primary hearing, visual and motor disabilities (Silva & Crenitte, 2015). This children' s profile presents a family phonological disorder history related to reading difficulties. In the second profile pupils manifest difficulties typical of the primary profile, however with apparently acceptable language development until they encounter the necessity for segmentation of words into smaller units, thereby presenting difficulties at the start of the literacy process, especially those concerning knowledge of letters and sound-letter (phoneme-grapheme) association (Glascoe, 2012). Finally, the third profile refers to learners inadequately exposed in preschool, which translates to worldwide difficulties in pre-academic skills with or lacking phonological disorder history and with history of inadequate exposure to literacy and oral language. Varying levels of non-verbal intelligence and absence of primary hearing, visual and motor disabilities can also be observed in these children (Giess, Rivers, Kennedy & Lombardino, 2012).

It is, therefore, important to understand the causes of reading difficulties before intervening. It is challenging to attempt to solve problems before understanding their cause. As an example, if it can be established that the reading problem arises from lack of phonological awareness and skills in alphabetical coding, it would necessitate teachers to be trained on the letter-sound correspondence techniques of teaching that are anchored on the alphabetical codes Jukes et al. (2017). These teachers can then assist children with reading difficulties. Consequently, several researchers have developed and implemented different strategies to address the phonological challenge that learners have while reading. For instance, a meta-analysis in the US by the National Reading Panel (2014) showed that phonologic awareness instruction during kindergarten significantly affects reading development during first grade. Children receiving phonologic awareness instruction performed nearly one full standard deviation (0.86) above those in the control group. However, most children with reading disabilities are not identified until the third or fourth grade and do not receive appropriate and timely instruction. Glascoe (2012) evaluated children with reading difficulties in the US. The study recommended that children with substantial reading difficulties should receive a full educational assessment. This substantiates evidence that individualized instruction emphasizing increased phonologic awareness can have a favorable long-term effect on academic achievement.

Silva and Crenitte (2015) examined performance of children at risk for reading difficulties submitted to an intervention program in Brazil. The study specifically sought to assess the applicability of a phonological decoding intervention program to children at the risk for reading difficulties. The study revealed that children at risk for reading difficulties submitted to the phonological decoding intervention program showed statistically significant improvement at post-assessment in the performance of

the following skills: letter naming; phoneme-grapheme relationship; phonological awareness; phonological working memory for non-words; phonological working memory for digits in direct order; alphabet recognition in sequence; writing under dictation of words and pseudo words; reading of words and pseudo words. The study, therefore, concluded that the phonological decoding intervention program showed applicability to improve the prerequisite skills of reading and writing of children that have reading challenges.

Oyetunde, Ojo, Korb and Babudoh (2016) carried out a study on strategies that work on improving literacy instructional practices in primary schools in Nigeria. The study focused on pupils' skills in oral language, print awareness, sight word recognition, phonemic awareness, and listening comprehension among pupils. The results revealed that the treatment group significantly outperformed the control group in all nine reading skills sub-tests. The whole language approach was effective in improving all reading skills measured by the study: that is, oral language, print awareness, phonemic awareness, reading fluency including sight word recognition and a reading passage, and listening comprehension.

Children with reading difficulties are thought to have a fundamental deficit in phonologic awareness, that is, the ability to translate individual letters and letter combinations into sounds (Stanovich & Siegel, 2004; Piper, Zuilkowski, Kwayumba & Strigel, 2016). Difficulty with phonologic awareness is a robust predictor of future reading problems in pre-readers (Catts & Hogan, 2013). Jukes et al. (2017) indicates that reading failure is principally caused by failure to obtain phonological awareness and skills in alphabetical coding. Mwanamukumbi (2013) explored factors contributory to causes of reading difficulties among grade six learners and challenges experienced by teachers while teaching them how to read in Chadiza and Chipata

districts of the Eastern province of Zambia. The studies found that majority of the grade six pupils were unable to read fluently the course of their grade level. Mwanamukumbi noted that as pupils continued reading, they committed errors like substituting, mispronouncing, adding and omitting some words. The tutors had their own perceptions of the causes of reading difficulties and these included; language and communication issues, psychological factors among others.

It is clear that studies on phonological interventions in improving reading skills exist but none have explored its linkage with academic performance of primary school pupils and it is thus imperative to fill this critical learning gap by availing more empirical evidence as proposed in this study.

2.5 Comprehension monitoring intervention and academic performance of pupils

The overall purpose of reading is comprehension. Comprehension is what reading is all about. It is the act or capability of understanding things especially what is written or spoken (Reader' s Digest Oxford, 2014). Essentially, its meaning derived from the act of reading. McEwan (2015) observes that each act of comprehension necessitates the reader' s knowledge of the word as well. Comprehending a text is an interactive activity between the text and the reader' s background knowledge. Efficient comprehension needs the power to relate textual material to one understands. Comprehending words, sentences and full text does not just depend on one' s linguistic knowledge (Denton $ Al Otaiba, 2011). What we have a tendency to keep in mind of a text is not necessarily the wording of the text itself rather the meaning derived from it together with the inferences we've created during a single integrated whole (Mol & Bus, 2011).

Reading comprehension as an activity involves three basic stages in succession; pre-reading, in reading and post reading stage (Ganimian & Murnane, 2016). The pre-reading stage is meant for warm up activities that readies the readers for the reading task. An overview meant to increase reading efficiency is built at this stage. Several researchers concur that the pre-reading stage improves learner' s comprehension of a text. The aim of the in-reading stage is to help the learner collate what he/she is reading, internalize the information, knowledge and opinions, follow the order of ideas within the text, to grasp and infer the knowledge contained the text and make confirmations of background knowledge (Kyle, Kujala, Richardson, Lyytinen & Goswami, 2013). At this stage, it is imperative that learners observe and apply comprehension methods like stopping to summarize, asking queries, creating connections and watching comprehension (Hall, 2013). During the post reading stage, readers exercise their ability to summarize, clarify, connect and appraise as an indicator of understanding what they are reading (Richardson & Lyytinen, 2014).

Mol and Bus (2011) explain that proficient text comprehension is influenced by: precise and fluent word reading skills oral language skills (vocabulary, linguistic comprehension); extent of factual and conceptual knowledge; knowledge and ability to use cognitive strategies to enhance comprehension or repair it once it breaks down; reasoning and inferential skills, and motivation to grasp and build interest within the task and materials (Mol & Bus, 2011). In different words, a student' s reading comprehension depends on: the level of knowledge he/she possesses, their thinking ability and their inspiration to carry out " the work" of comprehension (Richardson & Lyytinen, 2014). A pupil should be able to read the words accurately, within the region of ninety-five percent. Moreover, a student should understand the meanings of

ninety to ninety-five percent of the words being read to grasp the meaning (Ojanen, Rominus, Ahonen, Chansa-Kabali, February & Jere-Folotiya, 2015).

The parts of reading comprehension play a significant role in comprehension activities. They embody vocabulary, information, strategies, reasoning and word reading (Wolf, Turner, Jukes & Dubeck, 2018). Word reading includes the reader' s word attack skills and sight words captured within the permanent memory. Word reading fluency plays a crucial role in comprehension for it attracts attention resources off from leaden process like the comprehension methods (Denton & Al Otaiba, 2011). Vocabulary, that is, knowledge of the meaning of a word has emerged to among the strongest predictors of reading comprehension in both English as a primary language (EL1) and English as a second language (ESL) learners (Richardson & Lyytinen, 2014). Inferring results in higher overall comprehension, additional engagement with the text, allows readers to see what lies further than the events of a story. These approaches essentially improve text comprehension. Studies have shown that increasing the reader' s strategy skills cause substantial reading comprehension advantages (Kyle et al., 2013).

Over time, researchers have analyzed academic performance and reading comprehension across the globe and in Kenya seeking to establish the role of language in learners' academic achievement in numerous subjects. For instance, Cummins (1979) as cited in Onkoba (2015) studied language skills of bilinguals and found that that linguistic proficiency at a certain level appeared to be necessary for academic performance as a result of language competency permitting one to use it as for organization of knowledge and as a tool for reasoning. Other early research works also cited in Onkoba (2015), such as, Linvile (1970); Kopiyo (1982); Dawe (1983);

and Muhandiki (1984) found out that reading comprehension significantly affected how pupils performed across several subjects.

Ming-San Chang (2013) examined academic language knowledge and comprehension science text for English language and fluent English speaking students in the US. The study investigated fifth-grade students' thoughts on text difficulty, their knowledge of the features of academic language, and the relationship between academic language and reading comprehension. Forty-five fifth-grade students participated in the study; 18 students were classified as English language learners (ELLs) and 27 students were fluent-English speakers. The findings of the study revealed that vocabulary not grammar discourse features was significantly related to students' comprehension scores. Similarly, in the United Kingdom, MacGregor and Price (1999) cited in Chaseling, Boyd, Robson and Brown (2014) carried out a study on the relationship between reading comprehension and academic performance involving a sample of more than 1500 students, aged 11 to 15, who were in their 1st to 4th years of algebra learning. The study observed that vocabulary, number and symbol sense, as well as the ability to read and comprehend, word problems were important factors affecting achievement in mathematics. Ombra (2010) findings were, however, contrary to the previous studies as results on his study on deteriorating performance of Filipino in the national and international tests showed that the overall students ' reading skills were not significantly correlated to mathematics performance.

Onkoba (2015) investigated the relationship between reading comprehension practices and academic performance among class three pupils in Westland Sub-County, Kenya. The study findings confirmed that reading comprehension practices have an influence on academic performance and therefore there is a significant correlation between reading comprehension practices and academic performance. The findings also

confirmed that there is a relationship between reading difficulties and academic performance. However, the study did not show how comprehension strategies were used to assist learners with reading difficulties. The present study, therefore, seeks to investigate how comprehension strategies are used as interventions focusing on learners with reading difficulties and how this eventually reflects in their academic performance.

Reading challenges can be corrected through; development of sensitive and valid screening measures; professional development and use of a professional common language; implementation of three-tier models; continuous assessment of progress and appreciation of school leadership and capacity factors (Giess et al., 2012). Early intervention is, however, possible. This involves assessing all children and intervene first in the classroom and then through supplemental instruction. Also, monitoring their understanding of text and making adjustments in the reading where necessary. (Scanlon, Anderson and Sweeney, 2016). Good readers try to determine the meaning of unfamiliar words and concepts in the text, and deal with inconsistencies or gaps as needed (Piper, Zuilkowski & Mugenda, 2014).

Early intervention is effective. Studies in overcoming reading difficulties in Organization for Economic Cooperation and Development (OECD) countries like the US and Western Europe (Kenya not included) ordinarily show that between 70% - 90% of pupils at risk will learn to read on an average scale (Denton, 2012; Scanlon et al., 2016). This necessitates the instructors to give ample opportunities for guided exercising of newly acquired skills; give a major increase in intensity of instruction, and; give systematic and express instruction on part skills that show deficiency (Giess et al., 2012). Interventions are instrumental once they give acceptable levels of support as learners learn to use new skills (Piper et al., 2014). However, even the

perfect intervention programs leave behind 2-6% of learners. Therefore, it is important to scale back the numbers so as to effectively implement remedial programs (McEwan, 2015).

If pupils do not have the specific background knowledge, the teacher should help them to build their knowledge by teaching reading strategies and skills, and knowledge about the text. Reading widely broadens the background information, thus providing the pupils with better knowledge base with which to relate to their subject textbooks and lessons (Piper et al., 2014). Chow and Chou, (2010) indicated that, reading volume is a predictor of comprehension and cognitive ability (building their vocabulary and general knowledge). Dungun, (2011) recommends that, students need a lot of academic texts which require them to use higher levels of reading skills and comprehension. Unfortunately, many students avoid this and go for light reading like newspaper and entertaining magazines (Denton & Al Otaiba, 2011). This leads to poor academic achievement as they move to higher levels of learning.

Athiemoolam and Kibui (2012) did an analysis of Kenyan learners' proficiency in English based on reading comprehension and vocabulary. It was evident from the study that Kenyan learners were experiencing challenges with the interpretation and application of reading comprehension and vocabulary skills that are essential to the promotion of effective reading with the focus on making meaning. Some reading difficulties experienced by the learners within the context of their study could be attributed to problems external to the reader which could include a lack of background knowledge, the way texts are written and organized, the style and complexity of the language, an impoverished reading culture and environment, and inadequate experience and exposure to the manifold contexts in which reading occurs (Athiemoolam & Kibui, 2012). Moreover, poor teaching can both initiate and

perpetuate reading difficulties for learners. The study proposed that teachers should use teaching methods that would improve their learners' predictive and interpretive skills relating to reading comprehension (Hall, 2013). Finally, learners should be aware that becoming a good reader takes time and involves sustained reading effort. With guidance and support from their teachers and a great deal of exposure to different genres, learners will, over time, have the opportunity to become proficient readers with enhanced interpretive, critical and analytical skills (Ganimian & Murnane, 2016).

Omwega, Amimo and Role (2014) examined how reading skill deficiency could be the main barrier in the participation of Kenyan pupils in the global space. The findings revealed that students lacked proficiency in reading - only attaining the level described as fair; suggesting that the pupils lagged behind in global information. Girls had better reading skills than boys. The study recommends that there should be a constant supply of a variety of reading materials at home and school; more emphasis on the aesthetic value of reading and establishment of school libraries. Piper and Zuilkowski (2015) assessed reading fluency in Kenya using oral or silent assessment interventions. The study compared standard two pupils' scores on oral and silent reading tasks of the lower primary school pupils in Kiswahili and English, and found no statistically significant differences in either language. The study, however, found oral reading rates to be more strongly related to reading comprehension scores. Oral assessment was reported to having another benefit for program evaluators – it allows for the collection of data on student errors, and therefore the calculation of words read correctly per minute, as opposed to simply words read per minute. The authors, therefore, recommended that, in Kenya and in similar contexts, student reading fluency be assessed via oral rather than silent assessment.

The findings of the studies reviewed in this subsection provide evidence on the importance of reading comprehension interventions in addressing reading difficulties among learners of different age groups. However, the studies did not link reading comprehension with learners' academic performance.

2.6 Cooperative thinking skills and academic performance of primary school pupils

Fostering thinking skills develops school children's cognitive abilities and leads to positive curricular outcomes (Johnson, Johnson, Roseth & Shin, 2014). However, despite the role of thinking skills in second language learning and teachers' interest in thinking skills at the level of primary school, the practice of teaching thinking skills at primary school is still lacking (Alwadai, 2014; Gashan, 2015). There is only modest contribution of the teachers' practices to teaching thinking skills (Sardare & Saad, 2013) and there is a dire need for further work on primary students' synthesis, analysis, and interpretation skills (Pilten, 2010). Some important thinking skills can be developed in a cooperative learning environment.

Cooperative learning refers to instructional methods in which students work in small groups to help each other learn (Slavin, 2014). It also refers to teaching methods in which students work together in small groups to help each other learn academic content. Cooperative learning is a pedagogical approach that promotes student-student interaction via working in small groups to maximize their learning and reach their shared goal (Polat, 2015). It involves students working together to achieve common goals or complete group tasks– goals and tasks that they would be unable to complete by themselves (Gillies, 2016). It is widely recognized as a pedagogical practice that promotes socialization and learning among students from pre-school through to

tertiary level and across different subject domains. In one form or another, cooperative learning has been used and studied in every major subject, with students from preschool to college, and in all types of schools. Cooperative learning is used at some level by hundreds of thousands of teachers (Wichadee, 2009; Slavin, 2014).

Interest in cooperative learning gathered momentum in the early 1980s with the publication of the first meta-analysis involving 122 studies on the effects of cooperative, competitive, and individualistic goal structures on students' achievement and productivity in a sample of North American schools (Johnson et al., 2014). The results showed that cooperation was more effective than interpersonal competition and individualistic efforts; cooperation with intergroup competition was also superior to interpersonal competition and individualistic efforts; there were no significant differences between interpersonal competitive and individualistic efforts. The results were found being consistent across all subject areas (language arts, reading, mathematics, science, social studies and physical education), for all age groups, and for all tasks involving conceptual understanding, problem solving, categorizing and reasoning.

In a similar vein, Slavin, Lake, Hanley and Thurston (2014) reported on a best-evidence synthesis of 60 studies across both elementary and secondary schools in the US that compared cooperative learning to control groups studying the same material. The results showed that the overall effects of cooperative learning on achievement were clearly positive in 72% of the comparisons whereas only 15% favored control groups with 13% recording no significant differences. These findings led Slavin to conclude that cooperative learning can be an effective strategy for increasing student academic achievement.

In a follow-up meta-analysis of 117 studies that were conducted on the learning together and learning alone method, Johnson et al. (2014) examined the effects of cooperative, competitive, and individualistic learning on a number of academic, personal and social dependent variables (that is, achievement, interpersonal attraction, social support, self-esteem, perspective taking, learning together, and controversy) and found strong effect sizes between cooperative learning in comparison to competitive and individualistic learning. These effect sizes ranged from 0.58 to 0.70 or effect sizes that Hattie (2009) believes are desirable because they can make " real world differences" (p. 17) in educational interventions. In short, the results of this meta-analysis and the Johnson et al. (2014) meta-analysis and Slavin' s (2014) best-evidence synthesis found that cooperative learning in comparison to competitive and individualistic learning has very strong effects on a range of dependent variables such as achievement, socialization, motivation, and personal self-development.

Cooper' s (1995) study as cited in Gillies (2016) on cooperative learning and critical thinking suggests that cooperative or heterogeneous group learning may foster the critical thinking skills that are lacking in many students. In many such groups, the feedback that students receive on verbal and written responses from other students and teachers improves thinking skills. Students may also gain from teaching other students since such teaching may require better cognitive strategies that foster critical thinking. Kyle et al. (2013) carried out a study on using graphic organizers, cooperative learning groups, and higher order thinking skills to improve reading comprehension. The study found that the implementation of cooperative learning groups, higher order thinking skills, and graphic organizers as interventions resulted to a substantial increase in reading comprehension.

Caposey and Heider (2003) as cited in Slavin et al., (2014) assessed cooperative learning as a strategy for improving reading comprehension among elementary and middle school students in growing middle class communities, located in Northern Illinois in the US. The analysis of probable cause data revealed that students showed a need for improvement in reading comprehension related to retention of vocabulary. Further, it was reported that students had difficulties in transfer of reading skills to content area subjects. This may have been due to a lack of vocabulary mastery. Reviews of instructional strategies demonstrated a need for improving teaching techniques. A review of solution strategies suggested by other studies, in addition to an analysis of the problem setting, demonstrated a need for the selection of an appropriate intervention: a cooperative learning technique designed to improve reading comprehension skills while mastering vocabulary. The intervention was implemented for a period of 10 weeks. During that time, teachers repeatedly observed a cooperative atmosphere in their classrooms. Post-intervention data indicated improvement in mastery of vocabulary skills and reading comprehension using the cooperative learning method of teaching. Educators, students, and parents were pleased with the success of the intervention.

In the same context, Almanza (2013) carried out a study on the Effects of the Directed Reading Thinking Activity (DRTA) and cooperative learning strategies on reading comprehension. Subjects for the 8-week study were 53 sixth-graders from 2 classes in Brooklyn, New York. The results indicated that the majority of children in the cooperative reading groups scored higher on their reading comprehension tests than when they used the DRTA. The findings suggest that cooperative learning can be used as an instructional strategy whereby students can improve their reading comprehension. Therefore, it was evident that cooperative learning encouraged

cooperative thinking which was important in promoting shared understanding and problem solving skills.

In Iran, Jalilifar (2010) investigated the effect of cooperative learning techniques on college students' reading comprehension among female pre-intermediate college students. The study primarily focused on the impact of Student Team Achievement Divisions (STAD) and Group Investigation (GI), which are two techniques of Cooperative Learning, on students' reading comprehension achievement of English as a Foreign Language (EFL). The results revealed that STAD is a more effective technique in improving EFL reading comprehension achievement whereas GI and Conventional Instruction (CI) did not enhance reading comprehension significantly. Team rewards, as one of the central concepts of STAD, may have a strong impact on learners' performance in reading comprehension.

Also in Iran, Tehrani and Razali (2018) examined developing thinking skills in teaching English as a second/foreign language at primary school. Through a rigorous review of previous research on fostering thinking skills which provides a series of strategies or techniques, namely Content Based Instruction, Task-Based Language Teaching Approach, English Literature, and Mental Modeling in Reading Comprehension, the authors argue that these strategies or techniques can be used for teaching or embedding thinking skills in the context of English as a Second/Foreign Language for young learners at primary school.

2.7 Theoretical Framework

Since the study focused on the reading difficulties and interventions, the following theories underpin research variables of in this research. The study will be guided by the Piaget' s Theory of Cognitive Development, the Double-Deficit Theory of

Bowers and Wolf ,the Cognitive Model of Reading Comprehension by Walter Kintsch and the Transformational Theory.

2.7.1 Piaget' s Theory of Cognitive Development

This study was guided by the Theory of Cognitive Development which was propagated by Piaget in 1983. Cognitive development refers to the aspect of development that deals with thinking, problem solving, intelligence and language. According to Piaget, cognitive development is a combined result of the maturation of the brain and nervous system and the experiences that help individuals adapt to the environment. Piaget contends that cognitive development in all children will follow predictably and qualitatively distinct levels or stages. These stages are from concrete operational thought to formal operational thought, are useful in this study in that adolescents' reading abilities and social/emotional adjustment in secondary schools depend on how successful they went through these early steps (Lerner, 2000). Piaget emphasizes that the order in which the periods occur is approximately fixed but a child' s rate of progress through them is not and the age at which each stage or sub-stage is negotiated varies from child to child.

The stage progression portion of Piaget' s cognitive development theory has important implications on reading development stages (Chall, 1983). First, reading process is developmental and no child skips a stage. Second, individual children may take different lengths of time and need different experiences to complete their development. The schemata (mental structures) aspect of Piaget' s 1983 theory is in line with reading definition of reading beyond the lines in this study. The foregoing argument relates to the way reading is correctly viewed as a highly subjective interaction of learner' s prior knowledge, perception and purposes with those of the

author. This interaction is guided by Piaget' s two complementary processes of assimilation and accommodation.

The word recognition concept derives from this theory in the sense that one has to recognize a word in order to distinguish it from the other while at the same time inferring meaning. This theory is important in this study as it provides a sound theoretical understanding of the word recognition strategies from a cognitive development point of view. However, Piaget' s theory does not take into account that the sounds connected to words - that is, phonological awareness - are a very important determinant of their recognition and, as such, is insufficient in guiding this study when used alone. Therefore, study also discusses the Double-Deficit Theory which suffices to explain the phonological awareness as an area that needs to be addressed in reading difficulties.

2.7.2 Double-Deficit Theory

The double deficit theory was developed and presented in 1993 by Bowers and Wolf. The double-deficit theory is not a theory based on a new deficit area but instead, a culmination of two deficits. It explains that students with phonological awareness deficits and Rapid Automatic Naming (RAN) deficits are poorer readers than those students with only one deficit (Wolf, 1999). Bowers and Wolf (1993) discuss four subtypes of reading deficits. The first subtype is students that are good non-word decoders and demonstrate good fluency in regular word reading. These would be the " typically developing" students. The next two subtypes are " single deficit" students. These students will either be poor non-word decoders while demonstrating good fluency in regular word reading (phonological awareness deficit) or good non-word decoders while demonstrating poor fluency in regular word reading (RAN

deficit). Finally, the authors maintain that the double-deficit students demonstrate poor non-word decoding skills as well as poor regular word reading thus creating a " double-deficit" . Bowers and Wolf maintain that students with the double deficit are poorer readers than those with only one area of deficit.

This theory underpins the power of phonological awareness and was therefore instrumental in providing understanding on how phonological interventions such as phonological processing, phonological awareness, rapid access to mental lexicon, and phonological working memory improves the leaner' s reading skills and ultimately leading to better academic performance. The double-deficit theory, however, relies on the sound that is associated with the words and does not explain how this improves the comprehension ability of the learner which is a very important aspect of reading. This insufficiency is, therefore, addressed in the cognitive model of reading comprehension.

2.7.3 Cognitive model of reading comprehension

The cognitive model of reading comprehension model was advanced by (Kintsch, 1998). The model incorporates the five different components involved in reading comprehension. There is an interrelationship among the comprehension components as represented in the construction – integration model (Kintsch, 1998).

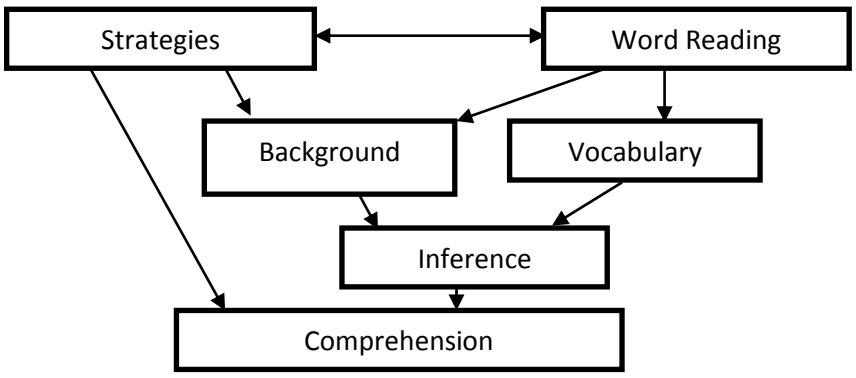

Figure 2.1: **Construction- integration, Source: Kintsch (1998)**

The Construction Integration (CI) by Kintsch (1998) is a connectionist theory which proposes two phases in text comprehension which are; construction phase and an integration phase. In the construction phase, when a reader reads a word (decoding), it straight way activates that word plus all its meaning (vocabulary) in the long term memory (Graesser, Singer & Tenebaum, 1994). The semantic associates of the word (from background knowledge) are activated, in the readers mind; a literal version of the text is constructed from the three components vocabulary, background knowledge and decoding. At the integration phase, there are two roles played by background knowledge. First, connections among nodes from long-term memory which depends on background knowledge (Whitney, Budd, Bramucci & Crane, 1995). Second background knowledge is used to make inferences, elaborations and in text interpretation using domain- specific knowledge about texts (Kintsch, 2005).

Background knowledge has a strong impact on comprehension all text structures require domain specific strategies and knowledge (Kintsch 1998). Kintsch argues that no special strategies are required to make spatial inferences. From Figure 2.1, each arrow is a representation of a theoretical statement which states that there is a direct effect (path) from the variable at the tail of the arrow to the variable at the head of the tail. A curved double– headed arrow is a representation of a theoretical statement that the two statements are correlated. Absent arrows between a pair of variable is a representation of a theoretical statement that there is no direct effect between them. Strategies have a direct effect on reading comprehension and an indirect effect on reading comprehension via background knowledge and inference (Kintsch, 2005). Kitnsch argues that vocabulary has no direct effect on comprehension but an indirect one via inference. Kintsch further notes that the construction integration model (CI) strongly emphasizes on the role of background knowledge in inference.

Since the aim of reading is comprehension, this model provides a theoretical basis for tracing the comprehension path from word recognition to vocabulary mastery in comprehension monitoring. Thus, it provide a sound basis for examining how teachers build on these to form reading strategies to help learners with reading disabilities improve their academic performance. The cognitive model of reading comprehension together with the Piaget' s Theory and the Double Deficit Theory while explaining reading difficulties from a theoretical point provide meaningful insight into the problem, however, they fall short of proposing interventions along these areas. In the present study, the application of interventions was observed through the transformation leadership theory in education management.

2.7.4 Transformational Leadership Theory

James MacGregor Burns coined the term transformational leadership in his book titled ' Leadership' which was published in 1978, and described it as a process where leaders and followers work together to advance motivation and morale. According to Burns (1978), transformational leadership is a style of leadership that transforms follower attitudes, beliefs, and behaviors, to a higher realm of motivation where the leader inspires followers to be motivated to rise above and beyond current levels of achievement and performance to even higher levels (Burns, 1978). In business organizations, transformational leadership is proven to have positive effects on employee job performance, motivation, commitment, and satisfaction. The success of transformational leadership on teacher commitment is well documented as noted by Dumay and Galand (2012).

Bernard Bass' s work of 1985 serves as the cornerstone research on transformational leadership in the classroom. This is because, it highlights transformational leadership

behaviors. Transformational leadership behaviors refer to particular behaviors or activities engaged in by leaders that improve overall organization performance and outcomes (Bass, 1985). According to Bass, transformational leaders exhibit the following transformational leadership behaviors: idealized influence, inspirational motivation, individualized consideration and intellectual stimulation (Halverson, Kelly & Shaw, 2014). Inspirational motivation entails leaders communicating high performance expectations in an encouraging and enthusiastic fashion (Halverson et al., 2014).

Individualized consideration involves leaders coaching, mentoring, and providing feedback in a manner consistent with each individual's needs. The intellectual stimulation calls upon leadership to challenge followers to embrace new ways of thinking and doing things, and to reassess values and beliefs (Ornorato, 2013). The leader solicits new ideas from followers and shows tolerance for mistakes. Idealized influence is demonstrated when leadership provide vision and a sense of direction while displaying total commitment to the vision and mission of an organization (Valentine & Prater, 2011). Evidence demonstrates that the aforementioned transformational leadership behaviors have significant and progressive influence over subordinates/followers within organizations (Humphrey, 2012).

Kenneth Leithwood provides the early pioneering empirical research on transformational leadership style in school settings (Leithwood, 1994). Leithwoodas cited by Pounder (2014), suggests that transformational leadership positively influences schools’ leadership's ability to facilitate change in school restructuring initiatives and is best suited for coping with the demands of schools in twenty-first century. Leithwood postulates that transformational leadership styles promise to

enhance school leadership' s ability to make the necessary school transformations that facilitate meeting stakeholder accountability and performance improvement demands. Leithwood as noted by Simsek (2013) recommends transformational leadership approaches to be practiced and featured as components of principal preparation programs.

In the present study, transformational leadership in education provides an important perspective for interventions management which in essence, is an internal restructuring initiative championed and overseen by school management in order to improve learners' academic performance. Transformational leadership fosters a conducive environment for both teachers and the school management which further allows better coordination of programs through relationships management, inspiration and motivation to excel in assigned tasks. Specifically, head teachers and BOM members are responsible for and concerned with holistic development in their schools. The ultimate aim is to nurture and boost academic performance of learners. Head teachers and BOM therefore, provide support for better coordination of interventions measures, avail resources and learning facilities which go a long way in alleviating reading difficulties among pupils in public primary schools.

Without leadership and management believing in the transformation, teachers alone cannot address the reading difficult menace which seems to be threatening the overall academic performance in public primary schools. A concerned leader, would therefore support continuous training and development of language teachers, and put up appropriate follow-up and monitoring programs to ensure proper application of reading difficult interventions measures toward addressing general academic performance in a given primary school. This theory was therefore important in

anchoring the effectiveness of reading difficult interventions to the leadership and management of public primary schools in Kenya.

2.8 Conceptual Framework

The conceptual framework in Figure 2.2 shows how dependent variables are related to the independent variables in this study.

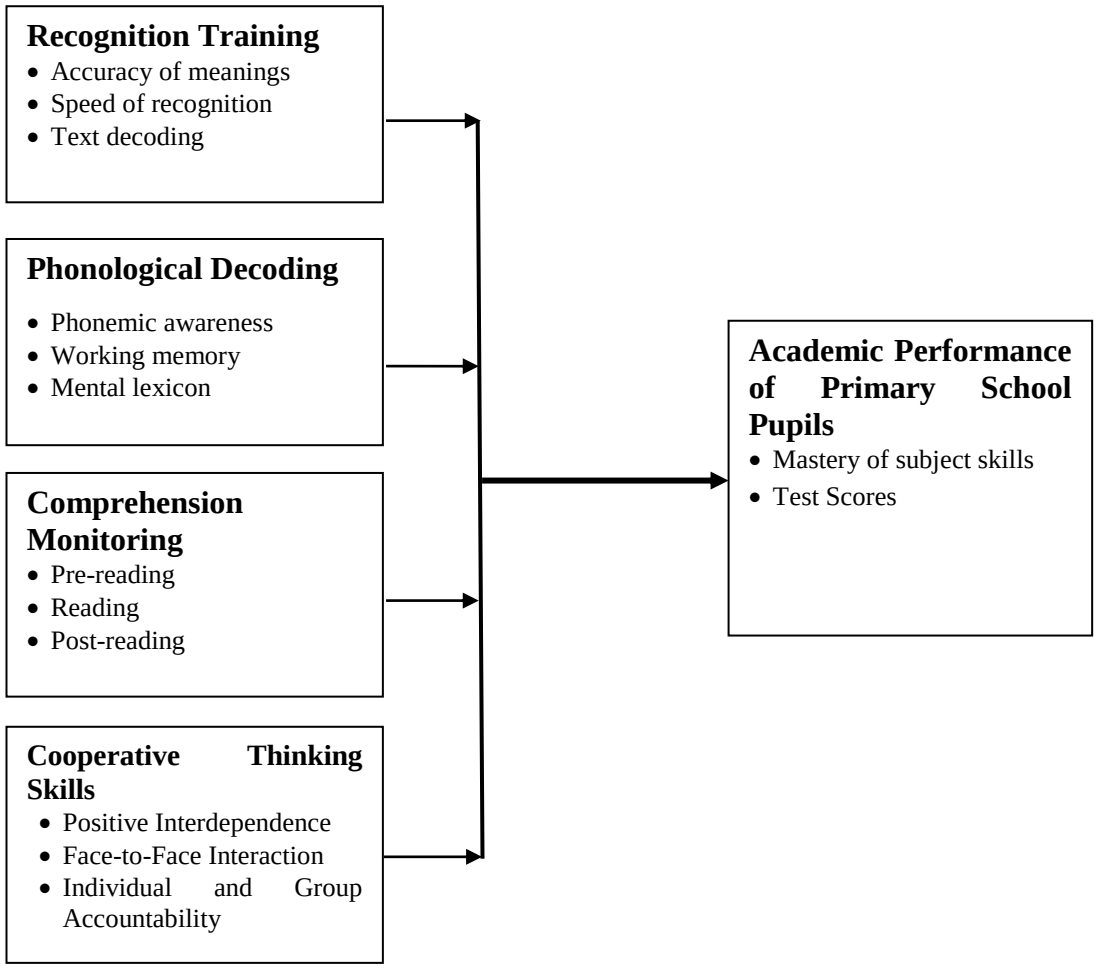

Figure 2.2: Conceptual Framework Source: Researcher (2018)

The conceptual framework shown in Figure 2.2 illustrates how the independent and dependent interact together in the framework. The independent variables are: word recognition training, phonological decoding, and comprehension monitoring and cooperative thinking skills. The independent variables are hypothesized to having

effects on selected reading difficulty interventions, which are likely to affect academic performance among pupils from public primary schools in the Nakuru West Sub-County, Nakuru County, Kenya.

In this study, word recognition training was measured through indicators that included: accuracy of meanings, speed of recognition and text decoding while phonological awareness was examined through indicators such as phonemic awareness, working memory and mental lexicon.

The framework also contemplate that comprehension monitoring at the pre-reading, reading and post-reading stages leads to a significant outcome in the academic performance of pupils. Comprehension monitoring was measured through pre-reading, reading and post-reading. The study also postulated cooperative thinking skill as an intervention measure which was measured through positive interdependence, face-to-face interaction and individual and group accountability. Academic performance in the present study was measured using; mastery of subject skills, test scores and assignments.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that was used for this study. It describes the research design, the area of the study, the study population, the sample size and sampling techniques, research instruments, data analysis and presentation and finally ethical issues.

3.2 Location of the Study

The study was carried out in Nakuru West Sub-County, Nakuru County – Kenya. Nakuru County is one of the Counties in Rift Valley region, Kenya. Nakuru is an agriculturally-rich county and is blessed with various tourist attractions such as craters and lakes such as Lake Nakuru. It' s made up of 11 constituencies which also double up as the administrative unit of the county. Nakuru Town West is one of the sub counties of Nakuru County (Nakuru County Government, 2017). The area is highly cosmopolitan and has 12 public primary schools with a population of 812 teachers, of which 342 are language teachers.

The area is also densely populated and classified as a low income area. The area has several private and public secondary schools and also public and private primary schools and ECD centres. However, higher learning institutions are scarce in this area. Compared to other sub-counties in Nakuru County, the academic performance standards have been observed to be declining (Nakuru County Government, 2017). This is despite MOE policies on interventions for reading difficulties. The socio-demographic patterns in the area are unique compared to other sub-counties in Nakuru County, hence, making it an information rich study area.

3.3 Research Design

This study used both descriptive survey design and quasi-experimental design. According to Orodho (2009), research design is a program designed to guide the researcher in the collection, analysis and interpretation of observed facts. Groves (2010) states that the descriptive survey design generalizes from a sample to a greater population so that inferences can be made about some characteristics, attitudes or behavior of the entire population. The design is useful in obtaining both qualitative and quantitative data. The design enabled the study to collect the respondent' s attitudes and opinions concerning the research problem over a wide area as a descriptive format. As such, it enabled the study to obtain different perspectives of the reading difficulty problem and interventions sought to address them from language teachers across the public primary schools in Nakuru West Sub County. Further, it enabled the researcher to describe the state of affairs in the classrooms regarding the reading difficulties interventions from a non-participant observer point of view. These descriptions were then subjected to various forms of statistical analysis for inference and generalizations.

The study also employed the quasi-experimental design since it sought to establish the exact effect of the interventions from direct observation of the pupils, to understand how deep the reading difficulties problem was and how effective the interventions were in addressing the problem. According to Dinardo (2008), the quasi-experiment is an empirical interventional study used to estimate the causal impact of an intervention on target population without random assignment. Moore (2008) also explains that the quasi-experimental study is a type of evaluation which aims to determine whether a programme or intervention has the intended effect on a study' s participant. Quasi-experimental research shares similarities with the traditional experimental design or

randomized controlled trial, but it specifically lacks the element of random assignment to treatment or control. Instead, quasi-experimental designs typically allow the researcher to control the assignment to the treatment condition, but using some criterion other than random assignment, such as, eligibility cutoffs mark (DeRue, 2012). As such, there was no need to have a control group, but rather, the reading performance of the learners was evaluated through a quasi-experimental pre-test and post-test evaluation. The quasi – experimental research design has been used successfully in previous reading intervention studies such as Rivera (2015) in the US, Ronkováa and Wildová (2016) in the Czech Republic and Cekiso (2012) in South Africa. In all these cases, the design proved to be effective in establishing a baseline with the pre-test, allowing for comparison between pre-test and post-test results and hence draw inferences and conclusions.

3.4 Target Population

Target population in academic research refers to an entire group of individuals, events or objects having common observable characteristics (Orodho, 2009). According to Flick (2018), a target population is the population to which a researcher wants to generalize his or her results. The study targeted pupils and teachers in 12 primary schools in the area as its unit of analysis. From these, the accessible population was class 4 pupils owing to the fact that it was a transition class from lower to upper primary school hence their ability to read properly is critical at this early level. The 12 primary schools in Nakuru West Sub-County have 14,158 pupils in classes one to class eight. Records from the 12 schools suggest that there are 1770 class 4 pupils. Since this study was about reading difficulties interventions, the study focused on pupils expected to have reading difficulties. A recent national survey by KISE (2018) on children with learning disabilities (of which reading difficulties forms part),

revealed that 8% of primary school pupils in the country were expected to have reading difficulties. Therefore, the present study postulated that 8% of the class 4 pupils were expected to have reading difficulties.

However, the identities of these pupils were not known and had to be scientifically determined in order to select the students with reading difficulties without biasness. The study, therefore, administered a pre-test to all class four pupils in order to assess the reading difficulty problem in the schools and to identify learners with reading difficulty. The instrument used was a 187 word reading comprehension test adapted from Karanja (2015) which enabled the researcher to filter out learners with reading difficulties problem in the schools. This was the same instrument used in the post-test for consistency and for better comparison on improvement against prescribed parameters. The identified pupils (units of observation) were noted by their language teachers and formed the study group which was also used for the post-test after the interventions had been done towards the end of the term after 9 weeks.

The study also targeted all the language teachers, that is, English and Kiswahili teachers from the 12 primary schools who were 342 in number. The study being a quasi-experimental study (and due to tedious examination process), specifically involved only class 4 English language teachers numbering68in the 12 primary schools.

3.4.1 Sampling Frame

A sampling frame for the target population is given in Table 3.1.

Table 3.1
Sampling frame for target population

Population category	Population
Language teachers	342
English teachers (Class Four)	68
Class four Pupils	1770

Source: Nakuru West Sub County Education Office, (2018)

3.5 Sampling Procedure

A sample is a smaller group obtained from the accessible population and each member has equal chance of being selected to be a sample. It is also a finite part of a statistical population about the whole (Patten & Newhart, 2017). This study had two categories of respondents whose sample sized is described in section 3.5.1 and 3.5.2.

3.5.1 Sample Size of Pupils

The study targeted 1770 pupils in 12 public primary schools in the area. From these, 8% of the pupils were expected to have reading difficulties (KISE, 2018) and these were of interest to the study. Therefore, in order to obtain a representative sample size for the pupils without bias while keeping the size manageable, the study used the formula proposed by Kathuri and Pals (1993) since the population had a known variance;

$$n = \frac{\chi^2 Npq}{\sigma^2 (N-1) + \chi^2 pq}$$

Where:

n = required sample size

N = the given population size

P = population proportion, assumed to be 0.08

q = 1 –p= 0.92

σ^2 = the degree of accuracy whose value is 0.05

χ^2 = table value of chi-square for one degree of freedom, which is 3.841

Substituting these values in the equation, estimated sample size (n) was:

$$n = \frac{3.841 * 1770 * .08 * .92}{0.05^2(1770 - 1) + 3.841 * .08 * .92} = 106.35 \approx 106$$

Therefore, a sample size of 106 of pupils' respondents was obtained from the above formula. These were the pupils expected to have reading difficulties in class four across the 12 schools in the area when sampled within a confidence level of 95%. This formula enabled the researchers to minimize the error and enhance stability of the estimates. From a sample size 106 pupils, the researcher proportionally (based on total number of class four pupils) computed the specific number of pupils for each public primary school in Nakuru west sub-county. Table 3.2 shows the computed sample size for each primary school.

Table 3.2

Sample size table for pupils with reading difficulties in Nakuru west sub-county

Name of primary school	Total number of class four pupils	Computed proportionate sample size	No. of class four streams
1. Kaptembwo Primary School	188	11	4
2. Heshima Primary School	179	11	4
3. Muslim Primary School	165	10	3
4. Nakuru West Primary School	201	12	4
5. Koinange Primary School	134	8	3
6. Umoja Primary School	122	7	2
7. Uhuru Primary School	127	8	2
8. Kibowen Primary School	131	8	2
9. Mwariki Primary School	155	9	3
10. Freehold Primary School	143	9	3
11. Lalwet Primary School	114	7	2
12. Parkview Primary School	111	7	2
Total	**1770**	**106**	**34**

3.5.2 Sample Size of the Teachers

This study involved an English language reading comprehension test followed by application of selected intervention. All English teachers for class four from all the selected primary school took part in the study. They were 68 in total. It was noted that some primary schools had more than one English teacher for each stream where some were handling composition while others were handling grammar.

3.5.3 Sampling of Pupils with Reading Difficulties

Singh and Masuku (2012) define sampling as a procedure of selecting members of a research sample from the accessible population which ensures that conclusions from the study can be generalized to the study population. The present study sampled pupils from class four in all the 12 schools given the time and the conditions in which the study was conducted (Suri, 2011). In this study, it was scientifically important to select the pupils as there were no official records of pupils with reading difficulties in

the schools and also to reduce sampling bias. Therefore, the study first administered a pre-test to all pupils in class four using the reading test adapted from (Karanja, 2015). The marked pre-test resultshelped to filter and identify the pupils with reading difficulties in the schools. The marks were kept secret. Pupils who did not achieve the pre-determined pass mark test scores (25%) were hence put together in an excel worksheet for ease of monitoring of their performance in the post-test and in the mid-term examination. The study realized that the number of pupils who scored less than 25% were fewer than the computed sample size. However, this being a quasi-experimental design, strict sampling technique did not apply (DeRue, 2012). The post-test results of the sampled pupils were used in the analysis later in order to determine the effect of the selected interventions.

3.5.4 Sampling of the Language Teachers

Since the study involved an English language reading comprehension test, all English teachers for class four were included in the study. The teachers were informed about the pre-test and post-test as well as observation criteria in order to avail themselves and class to participate in the study, and also allow the observation exercise to be carried out during their lessons. Only the 68 class four language teachers who allowed the pre-test and post-test to be carried out in their classes were required to fill the questionnaire.

3.6 Instrumentation

Research instruments are tools used to collect the necessary information for a study. The most commonly used research instruments include; questionnaires, observational forms and a reading test adapted from (Karanja, 2015). In this study, the researcher made use of the questionnaires, reading test and observation schedule to collect data.

3.6.1 Questionnaire

The questionnaire is most commonly used in survey studies and was preferred in this study because it is an efficient way of generating large amounts of data, of reaching a wide population and is also easy to design and administer (Oso & Onen, 2009; Walliman, 2017). The questionnaires as shown in Appendix II were duly filled in by class four English language teachers with view to soliciting their perspectives and opinions on application of reading difficult intervention measures vis-a-vis academic performances of identified pupils. The said teachers were required to fill the questionnaire after mid-term examinations and after the prescribed intervention had been applied.

The questionnaires had closed (structured) items scored on a five point Likert scale and were divided into sections describing the variables of the study; section A: requires demographic data of teachers, section B: Word recognition training on academic performance of pupils, section C: Phonological decoding intervention on academic performance of pupils, section D: Comprehension monitoring on academic performance of pupils, section E: Cooperative thinking skills on academic performance of pupils, and section F: Academic performance of pupils in Nakuru West Sub-County.

3.6.2 Observation Schedule

The observation schedule as shown in Appendix II was used by the researcher during class sessions to monitor teaching practices and collect data with regards to application of prescribed intervention measures. It was also used to capture the actual interplay of the variables of interest during class sessions between teachers and pupils in class 4 (Marshall & Rossman, 2014). The study adopted the structured observation

approach (Yin, 2017) which is essentially a tool that provides information about particular behaviors such as reading difficulties and interventions used in the present study. The researcher was a non-participant in the class sessions and only observed the way the lessons were conducted in order to establish how the intervention strategies manifested during the sessions. The observation schedule contained all the variables of the study and their indicators and was marked against the occurrence of these variables in real practice.

3.6.3 Reading Test

The study also used a reading test adapted from Karanja (2015) as listed in appendix IV to test the reading difficulties of the pupils in the schools through an initial pre-test to assess the levels of reading difficulties and select the cases for inclusion into the post test. This instrument was administered to class four learners at first for selection of those with demonstrable reading difficulties and also after 9 weeks to the same group of learners for the post-test to assess the efficacy of the prescribed interventions which were: word recognition training, phonological decoding intervention, comprehension monitoring and cooperative thinking skills. The same reading test adapted from Karanja (2015) was used in the post-test for consistency.

3.6.4 Pre-testing of Research Instruments

Oso and Onen (2009) recommend that at least 10% of the sample size can form part of the pilot group. Therefore, in this study piloting was done with a group of 15 respondents; five teachers and ten pupils drawn from two primary schools in the neighboring Nakuru East Sub-County – which had comparable characteristics - before the actual collection of data. The pre-testing group was purposively chosen with the assistance of head teachers of the two schools. The pre-testing was meant to

enable the researcher discover the weakness of the research instruments which may arise during the actual study and affect the findings. This included, checking the clarity of the questionnaire items and also comments elicited from the pilot group that could assist the researcher reconstruct the questionnaires for the purposes of improvement.

3.6.5 Validity of Research Instruments

Validity is the accuracy and meaningfulness of inferences which are based on the results (Oso & Onen, 2009). It is a measure of how well a 'test' measures what it is supposed to measure. It is concerned with the accurate representation of the variables under study (Singh & Masuku, 2012). Content validity was used in this study for the purposes of determining whether the instrument really measures what it is designed to measure (Panneerselvam, 2014). Content validity refers to the extent to which a measure represents all facets of a given subject. An element of subjectivity exists in relation to determining content validity, which requires a degree of agreement about what a particular construct represents.

Content validity requires the use of experts to evaluate whether test items assess defined content (Flick, 2018). Hence in this study, copies of the questionnaire were given to the researcher' s supervisors at the university to evaluate them for content validity. The instrument was also evaluated for construct validity which refers to whether the operational definition of a variable actually reflects the true theoretical meaning of a concept (Panneerselvam, 2014). The recommendations from their eveluation helped in restructuring of the questionnaire by incorporating the missing information, omitting irrelevant items and paraphrasing items that might appear

ambiguous to the respondents. These corrections helped in improving the validity of the questionnaires to be used for the actual study.

3.6.6 Reliability of Research Instruments

Reliability is the measure of the consistency of the results from the tests of the instruments. It is a measure of the degree to which a research instrument yields consistent results or data after repeated trials. The internal consistency approach was used to determine the reliability of the instruments. The Cronbach' s coefficient alpha was applied on the results obtained from the pilot test to determine how items correlate among them in the same instrument. Cronbach' s coefficient Alpha of more than 0.7 was considered acceptable for the purposes of the study. According to Marshall and Rossman (2014), as a rule of thumb, a proposed psychometric instrument should only be used if a value of 0.70 or higher is obtained on a substantial sample. A reliability coefficient $\dot{\alpha} \geq 0.70$ was, therefore, adopted for this measure. In this study, the pre-test of the questionnaire reported a reliability of 0.96 for the questionnaire which was very high and, therefore, acceptable for the study purposes.

3.7 Methods of data collection

Before embarking on the data collection exercise, the researcher obtained an authorization letter from the university' s post-graduate school. The research permit was then obtained from the National Commission for Science Technology and Innovation (NACOSTI) and the authorities from the study area. Before the research instruments are distributed the researcher made prior visits to the selected schools to seek appointments with the head teachers to seek further permission to carry out the studies in their schools and also enlist their support in identifying the respondents for the study. The research instruments were administered to the subjects thereafter by the researcher and her assistants. The researcher engaged and trained two research

assistants to help in data collection, administering of instruments and making observations during lessons. These 2 research assistants were English teachers handling classes six and seven.

3.7.1 Procedure for administering reading test

This was the first instrument to be administered in this study. The study used a comprehension reading test adapted from (Karanja, 2015). The reading component was timed to take a maximum of 2 minutes for the 187-word passage after which the learners were free to answer the test questions throughout the exercise and then hand in their scripts. This instrument was administered in two phases, the pre-test and post-test (Moore, 2008).

In the pre-test, the instrument was administered to all class four pupils in the selected classes in the 12 schools in Nakuru West to establish the baseline for pupils with reading difficulties. Arrangements were made with the English teacher on the availability of a double lesson class to enable administration of both pre and post reading tests.

To expedite the process, the researcher made adequate arrangements with individual public school to allow the research assistants to simultaneously carry out the tests in all class four streams in selected primary schools within the study area. That way, four schools were covered per day; the researcher and two research assistants were involved per day. The exact number of days used were five instead of three due to inconsistencies as some schools could not avail the classes, teachers and pupils when requested.

The identities of learners who were under observation were kept confidential by respective English teachers. For the purpose of control and comparison, care was

taken to ensure that both pre-test and post– test were administered to all pupils in class four. The pupils who had been noted to having reading difficulties and their corresponding pre-test results were kept secret, noted by both the researcher in an excel worksheet and a copy was also given to the concerned English teachers.

In the post-test, instrument was again administered to all pupils in class 4 but the study was only interested in the marks of the pupils who had been identified as having reading difficulties. Their results on pre-test and post-test were collated and analyzed for conclusions on effectiveness of the selected interventions. After marking the tests, the researcher was able to share the results not only with the teachers, but also with the head teachers and also the pupils for them to know the value of the study.

3.7.2 Procedure for carrying observation

Following the disclosure of the results on pre-test to the head teacher and the class four English teachers, the researcher organized a meeting with research assistants and the class four English teachers in one of the hotel within the Nakuru-west sub-county. The researcher met the cost of the meeting. This was meant to deliberate further on the outcome of the study and the proposed interventions to remedy the reading difficulties. While speed and meaning were noticeably poor in the tests, these were not the focus of the interventions as it was agreed that these were to address themselves through the interventions. The meeting, therefore, resolved to focus only on the four interventions, that is: word recognition training, phonological decoding intervention, and comprehension monitoring and inculcating cooperative thinking skills. These were all directly observed during the reading tests. The researcher and her assistants were also to be allowed into double class sessions for English to monitor and record observations on implementation of reading difficulties

interventions on learners. Teachers were also taken through the observations criteria which were to be used.

The researcher and her assistants were able to visit the schools twice during the period between the pre- test and post– test to monitor the progress on application of the agreed intervention. The first visit was done one week after the pre-test and the other visit was done one week after the mid-term examinations. This being a descriptive survey study, the researcher and her assistants refrained from participating in the learning sessions and only restricted themselves to observations and taking notes during the prescribed English lessons. It is expedient to note that after prescribing and discussing with the English teachers on the nature of the interventions to be applied, the researcher and her assistants did not attempt to administer or influence the interventions in any way during the lessons. The observations notes were hence collated for analysis stage.

3.7.3 Procedure for administering questionnaire

The questionnaires were administered to the class four English teachers and collected on the material day of administration. This was the last of the three instruments to be administered. This was done during the post-test since the interventions had presumably been affected and also the learners had done their mid-term examinations. Therefore, it was possible to infer the effects of the interventions on the academic performance of the pupils using the results of the mid-term examinations with reference to intervention exercise. All the 68 sampled class 4 language teachers were given the questionnaires to fill in independently during the post-test sessions.

3.8 Methods of data analysis

Data analysis included sorting the instruments, counterchecking the scoring and data entry for quantitative data.

3.8.1 Analysis of quantitative data

The researcher used the computer software Statistical Package for Social Scientists (SPSS) version 21 to conduct initial data analysis using simple descriptive statistical measures such as, mean, standard deviation and variance to give glimpse of the general trend. In addition, correlation analysis was used to determine the nature of the relationship between variables at a generally accepted conventional significant level of $P \leq 0.05$ (Sekaran & Bougie, 2016). Linear regression analysis was employed to test the hypotheses. Multiple regression analysis was applied to analyze the relationship between a single dependent variable and several independent variables. The beta (β) coefficients for each independent variable were generated from the model in order to test each of the hypotheses under study. The regression model was used to test is shown below:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y= Academic Performance of Pupils in public primary schools

β_0 =constant

$\beta_1 + \beta_4$ = weights crested from the variables (x_1,x_2,x_3) as shown below

X_1 = Word Recognition Training

X_2 = Phonological Decoding Intervention

X_3 =Comprehension Monitoring

X_4 = Cooperative Thinking Skills

ε is the estimated error of the model that has a mean of zero at constant variance.

3.8.1.1 Assumptions of Regression Model

There are four principal assumptions which justify the use of linear regression models for purposes of inference or prediction. This include Linearity and additively of the relationship between dependent and independent variables. This is where by the expected value of dependent variable is a straight-line function of each independent variable, holding the others fixed, the slope of that line does not depend on the values of the other variables and the effects of different independent variables on the expected value of the dependent variable are additive (Orodho, 2013). The linearity assumption means that the amount of change or rates of change between scores on two variables are constant for the entire range of scores for the variables. Violation of this assumption means that the variables have no linear relationship and therefore, cannot be predicted using a linear model. Linearity was tested by means of a P-P plot whereby the plotted points should match the diagonal line and also by means of a scatter plot whereby the amounts of points scattered above and below the 0-horizontal line should be equal.

The other assumption is the statistical independence of the errors - in particular, no correlation between consecutive errors in the case of time series data (Montgomery, Peck & Vining, 2012). This was tested using Tolerance statistics and Variable Inflation Factor (VIF). The VIF values for all the predictors should be below 5. According to Rogerson (2001), VIF values of below 5 indicate no evidence of Multicollinearity. Violation of this assumption means that the variables are simply expressions of each other, that is, is not independent and this may distort the findings.

Homoscedasticity assumption or constant variance of the errors versus time (in the case of time series data), versus the predictions and versus any independent variable is

the other assumption of the study. The decision rule is to reject the null hypothesis when calculated p-value is greater than α value of 0.05 and fail to reject the null hypothesis if the calculated p-value is less than α value of 0.05. According to Kothari (2011), existence of heteroscedasticity can invalidate statistical tests of significance that assume that the modeling errors are uncorrelated and uniform. Lastly we have normality of the error distribution (Field, 2009). The normality assumption means that the residuals in the model should be normally distributed. The decision rule is to reject the null hypothesis if p-value is greater than 0.05 and fail to reject the null hypothesis if the p-value is less than 0.05. Violation of the normality assumption can also affect the statistical integrity of the findings by introducing distortions and bias in the results.

3.8.2 Analysis of pupils' test

During the reading tests, all the scripts were assigned a simple serial number that was then used to identify the pupils who had participated. This was meant for confidentiality on the side of the researcher, though the teacher matched the numbers with the pupils for the sake of future identification in the post-test. After the baseline reading tests, the scripts were all collected, marked and grades awarded. The serial numbers of the pupils were later communicated to the respective English teachers during the post baseline meetings to discuss the results and strategtize on application of interventions. After the post – test, the scripts were also marked and the results correlated between the two test results (pre and post) using the One-Way ANOVA to establish whether the interventions made a significant difference in remedying the reading difficulties.

3.8.3 Analysis of Observation Schedule

The results from the observation schedules were analyzed descriptively along thematic areas and used to provide supporting narratives to the study. The results from the observation schedule were also analyzed using content analysis where the observations were complimented by field notes to provide supporting narratives for the quantitative data. This was done along the various constructs of reading difficulties interventions.

3.9 Ethical Considerations

Ethical issues such as confidentiality, privacy, and respondent anonymity (Chakraborty, 2012) were strictly observed and adhered to during the research period. Ethical research respects the rights of the respondents to participate in a study with informed consent. In this study, the researcher first sought all relevant permissions from the concerned authorities prior to carrying out the study (Oso & Onen, 2009). An ethical clearance letter was first procured from the University' s ethical clearance committee after which the researcher proceeded to obtain a research permit from the National Commission for Science Technology and Innovation (NACOSTI). The researcher then sought appointement with the respective school heads and teachers of the schools where the study was carried out.

The teacher respondents were required to sign a consent letter indicating their voluntary participation in the study. Clear and adequate explanations showing the purpose and the intention of the study were given to the prospective respondents after which they are expected to make their informed decision on whether or not they were interested in participating in the study. Stigmatization of pupils with reading difficulties identified in the study was avoided by ensuring that all class four pupils participated in the pre-test and in the post-test. Arrangements were made to ensure

that their lunch was available and that they were released as soon as they had submitted their scripts.

The participants in the study were assured of anonymity and confidentiality throughout the research process. This was done through reminding the participants not to write their names or contacts in the questionnaires or scripts. Data was handled with utmost care and was not inflated or otherwise mishandled so as to give a true reflection of the subject being investigated in the study. All material used and to be included later in the study were duly acknowledged cited and referenced using the APA format.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents results arising from the analysis of data collected using questionnaires. The data collected was analyzed using descriptive and inferential statistical methods where the findings are presented in tables and figures, and their implications discussed.

4.2 Reliability Statistics

Before administering the questionnaire to the teachers for data collection, the reliability analysis of the instrument was carried out to determine whether data was indeed reliable for its intended purposes. The Cronbach Alpha value was computed and the results are as presented in Table 4.1.

Table 4.1

Reliability Statistics

Cronbach's Alpha	N of Items
0.96	54

The results in Table 4.1 shows that the questionnaire was highly reliable for the study as indicated by the alpha value that is way above the recommended value of 0.7 (Marshall & Rossman, 2014). Due to the high Cronbach Alpha coefficient, there was no need to substantially revise the instrument; hence, it was administered after being scrutinized for any omission or punctuation errors.

4.3 Response Rate

The study administered questionnaires to all the 68 class four language teachers sampled and obtained the response rate as shown in Table 4.2.

Table 4.2

Questionnaire Response Rate for Teachers

No. of questionnaires Issued to teachers	No. of questionnaires Returned	Response Rate (%)
68	57	89

The high questionnaire response rate (84%) shown in Table 4.2 was acceptable according to (Maxfield & Babbie, 2014). The other questionnaires were not returned by the respondents, hence, they were not included in the study.

The study also administered thereading comprehension test in two phases, the pre-test and post-test where class fours' 644 pupils from one stream per school were targeted. The response is as shown in Table 4.3.

Table 4.3

Response Rate for pupils who participated in comprehension tests

Test	No. of pupils targeted for comprehension tests	No. of pupils who participated in comprehension tests	Response Rate (%)
Pre-test	106	69	65
Post-test	106	62	58

Response rate for pupils who participated in th reading comprehension pre-test(class four pupils with reading difficulties) was 69 (65%)while those who participated in the post – test (class four pupils with reading difficulties) was 62(58%) as shown in Table 4.3. In both cases the response was acceptable for the study purposes. One hundred and six (106) was the computed sample size but the study used cut off points/marks from the pre-test results and was less bothered with random sampling since this was a quasi-experiment (DeRue, 2012). According to Babbie (2015), a response rate of 50% is acceptable for studies of this kind while Onen and Oso (2009) rates instrument response rates above 70% as very good. However, some of the targeted pupils were

not able to participate in the study due to absenteeism when the study was being conducted in their schools.

4.4 Demographic Characteristics of the Teachers

Teachers were the main players in the application of interventions measures hence understanding of their background profiles were critical. Therefore, the study sought to determine the demographic characteristics of the respondents as they are considered as categorical variables which give some basic insight about the respondents. The characteristics considered in the study were; range of ages of the respondents, gender, highest level of educationand number of years they had worked in their present schools. The findings on these are summarized in Table 4.4.

Table 4.4

Demographic Characteristics of the Teachers

Variable	Response	Frequency	Percent (%)	Cumulative Percent
Gender	Male	21	37	37
	Female	36	63	100
Total		**57**	**100**	
Academic qualifications	Degree	7	12	12
	Diploma	20	35	47
	Certificate	30	53	100
Total		**57**	**100**	
How long have you been a	1-5 years	24	42	42
teacher in this school?	6 - 10 years	15	26	68
	11 - 15 years	9	16	84
	Above 15 years	9	16	100
Total		**57**	**100**	
What subjects do you teach?	English	27	47	47
	Kiswahili	12	21	68
	Both	18	32	100
Total		**57**	**100**	

The findings of the study as tabulated in Table 4.4 indicated that a high proportion 36(63%) of language teachers in the sampled schools were females compared to 21, (37%) males. Concerning the level of education, the results indicate that the majority, 30(53%) of class four language teachers had certificate level of education as their highest academic qualifications, with 20 representing (35%) being diploma holders while degree holders accounted for 7(12%). A majority 24, (42%) of the class four languages teachers had also worked as teachers in their current school for less than five years and mostly taught English language 27(47%). These findings imply that majority of the respondents had reasonable level of education and relevant work experience as language teachers in their present schools and could, therefore, be relied upon to give dependable information for the study. Abere and Muturi, (2015) explained that for a reliable study to be conducted, the respondents' background characteristics, such as, age, gender, educational qualifications and work experience needed to be established so as to ascertain that one sampled from a reliable population that is likely to give valid answers for the study.

4.5 Results on Descriptive Analysis

This section presents the results of the descriptive statistical analyses of the data and their interpretations. The descriptive statistics helped to develop the basic features of the study and form the basis of virtually every quantitative analysis of the data. The results were presented in terms of the study objectives.

4.5.1 Word recognition training on academic performance of pupils

The first objective of the study was to assess the effects of word recognition training on academic performance of primary school pupils in Nakuru West Sub-County. This variable was described in terms of accuracy of meanings, speed of recognition and text decoding. A five point Likert scale was used to rate responses of this variable and

it ranged from; 1 = strongly disagree to 5 = strongly agree and was analysed on the basis of the mean score and standard deviation. The findings are presented in Table 4.5.

Table 4.5

Word recognition training on academic performance of pupils

Statements (N = 57)	1	2	3	4	5	Mean	Std Dev.
I always try to ensure that my pupils learn new words and their meanings	6(10.5)	3(5.3)	3(5.3)	45(78.9)	0	3.53	1.002
I always require my pupils to explain the meanings of the words they have learnt	9(15.8)	6(10.5)	12(21.1)	27(47.4)	3(5.3)	3.16	1.192
I require my pupils to find out other meanings of the words they learn	12(21.1)	6(10.5)	15(26.3)	18(31.6)	6(10.5)	3.00	1.309
I teach my pupils to use dictionaries to get more accurate meanings of words	15(26.3)	12(21.1)	6(10.5)	18(31.6)	6(10.5)	2.79	1.411
I always monitor the speed with which the pupils recognize words	6(10.5)	3(5.3)	6(10.5)	27(47.4)	15(26.3)	3.74	1.218
Speed of word recognition helps to increase reading speed of texts	6(10.5)	3(5.3)	0	27(47.4)	21(36.8)	3.95	1.245
I test my pupils on the speed with which they recognize words	6(10.5)	0	6(10.5)	39(68.4)	6(10.5)	3.68	1.038
I teach my pupils on how to decode words visually according to their graphic forms	9(15.8)	3(5.3)	18(31.6)	24(42.1)	3(5.3)	3.16	1.146
I teach my pupils on how to activate links between the graphic forms of words and their sounds	6(10.5)	6(10.5)	18(31.6)	24(42.1)	3(5.3)	3.21	1.065
I observe how the pupils use their mental dictionaries to locate the words and compare them	12(21.1)	3(5.3)	18(31.6)	24(42.1)	0	2.95	1.156
Average						**3.317**	**1.1782**

The results as shown in Table 4.5 depicted that majority of the teacher respondents were inclined to agree with all the statements describing their application of word

recognition as an intervention to remedy reading difficulties among learners with an aggregate mean of 3.317. The standard deviation was 1.1782. This suggests that the teachers were well aware of the value of word recognition as an intervention for addressing reading difficulties among learners. Particularly, the top three assertions that the teachers agreed with were that speed of word recognition helps to increase reading speed of texts, (mean = 3.95); “I always monitor the speed with which the pupils recognize words” , (mean = 3.74), and; “I test my pupils on the speed with which they recognize words” ’ (mean = 3.68). However, from the comprehension reading test results conducted in this study, it was evident that the learners reading speeds were significantly lower than the allocated time implying that the learners reading speeds were not necessrily affected by this intervention. The slow speed in reading tests is however explained byHamada and Koda (2011) as arising from imposing time constraints which affects the link between word recognition.

Concerning the accuracy of meanings, most teachers reported that they always tried to ensure that their pupils learn new words and their meanings, (mean = 3.53). However, there was an indication that fewer teachers required their pupils to explain the meanings of the words they have learnt, (mean = 3.16) and to find out other meanings of the words they learn, (mean = 3.0). Further, it is evident that most teachers did not teach their pupils to use dictionaries to get more accurate meanings of words, (mean = 2.79). This finding on the failure of teachers to teach their pupils to use dictionaries to get more accurate meanings of words is explained by the fact that majority of the schools visited did not have adequate reference materials such as dictionaries to aid the learning processes. Indeed, Karanja (2015) established that ninety percent of the teachers of English experienced problems in teaching reading due to lack of library resources. This meant that library resources are key component in enhancing accuracy

of meaning of words among pupils. According to Oduagwu and Oduagwu (2013), the school library is one of the crucial factors which facilitate the implementation of educational objectives by promoting the efficiency and general effectiveness of teaching and learning. Learners can find materials to supplement what has been taught in class. Therefore, it is important to expose learners to such facilities regularly during the language sessions.

Regarding text decoding, the findings suggest that majority of the teachers taught their pupils how to activate links between the graphic forms of words and their sounds, (mean = 3.21). However, fewer teachers put emphasis on teaching their pupils to decode words visually according to their graphic forms, (mean = 3.16). Most teachers did not observe how the pupils use their mental dictionaries to locate the words and compare them, (mean = 2.95). The findings suggest that most teachers did not necessarily find it important to teach pupils to link the graphic forms of words with their sound. The findings agree with Crosson and Lesaux (2010) who noted that retrieval of semantic information can be optional and can be done through orthographic information or meaning can be activated by phonological codes decoding. However, they disagree with Shen and Jiang (2013) who postulated that activating phonological information is mandatory and essential in retrieving meaning from a mental lexicon regardless of orthographies. Grabe (2010), however, resolved the conflicting positions on activating phonological information noting that the direct lexical route normally enables readers to process familiar words and words of high frequency, whereas the optional route tends to operate when unfamiliar and less frequent words are encountered (or pseudo words).

4.5.2 Phonological decoding intervention and academic performance of pupils

The second objective of the study was to determine the effects of phonological decoding intervention on academic performance of primary school pupils in Nakuru West Sub-County. The status of this variable was described on the basis of phonemic awareness, working memory and mental lexicon. A five point Likert scale was used to rate responses of this variable and it ranged from; 1 = strongly disagree to 5 = strongly agree and was analysed on the basis of the mean score and standard deviation. These results are presented in Table 4.6.

Table 4.6

Phonological decoding intervention and academic performance of pupils

Statements (N = 57)	1	2	3	4	5	Mean	Std Dev.
I train my pupils on the recognition and pronunciation of various vowel sounds	6(10.5)	0	6(10.5)	30(52.6)	15(26.3)	3.84	1.146
I train my pupils on the recognition and pronunciation of various consonant sounds	6(10.5)	6(10.5)	0	27(47.4)	18(31.6)	3.79	1.292
I train my pupils to read actual words and pseudo words	9(15.8)	3(5.3)	6(10.5)	33(57.9)	6(10.5)	3.42	1.238
I ensure my pupils learn about rhyming words	6(10.5)	0	9(15.8)	30(52.6)	12(21.1)	3.74	1.126
I require my pupils to repeat words after they have been read	6(10.5)	0	6(10.5)	24(42.1)	21(36.8)	3.95	1.202
I do give my pupils regular spelling tests	9(15.8)	6(10.5)	3(5.3)	21(36.8)	18(31.6)	3.58	1.439
I do give my pupils regular pronunciation tests	9(15.8)	0	9(15.8)	24(42.1)	15(26.3)	3.63	1.318
I always task my pupils to differentiate between similar words	9(15.8)	3(5.3)	15(26.3)	30(52.6)	0	3.16	1.099
I often ask my pupils to write down or utter a list of similar sounding words	9(15.8)	0	9(15.8)	39(68.4)	0	3.37	1.096
Average						**3.609**	**1.217**

It is evident from the findings in Table 4.6 that majority, (mean = 3.609) of the teachers agreed with the statements regarding their application of phonological decoding interventions to address reading difficulties among learners. The top three statements with the highest means suggest that the teachers put more emphasis on developing working memory of the learners and creating phonemic awareness as indicated by the teachers responses to the statements such as : “I require my pupils to repeat words after they have been read” , (mean = 3.95); “I train my pupils on the recognition and pronunciation of various vowel sounds” , (mean = 3.84), and “I train my pupils on the recognition and pronunciation of various consonant sounds” , (mean = 3.79). These findings suggest that the majority of teachers were emphasizing phonemic awareness to enable the learners decode the sounds used in pronouncing the words.

In addition, observations made by the researcher during class lessons and also when carrying out the comprehension tests revealed that the learners had a problem with pronunciation with part of the challenge arising from their limited vocabulary. Even among learners without reading difficulties, accurate pronunciation of all the words in the 187 words reading comprehension test was a problem. According to Piper et al. (2016), children with reading difficulties are thought to have a fundamental deficit in phonologic awareness, that is, the ability to translate individual letters and letter combinations into sounds. Therefore, recognizing this problem, the teachers were trying to stress phonemic awareness among their pupils.

The findings also suggest that the teachers moderately emphasized working memory exercises particularly those involving writing as evidenced by the statements like; “I do give my pupils regular pronunciation tests” , (mean = 3.63) and “I do give my

pupils regular spelling tests" , (mean = 3.58). Moreover, it was evident that most preferred teaching learners to recognize the pattern of sounds as indicated by the findings on the statement; "I ensure my pupils learn about rhyming words" , (mean = 3.74). This implies that the teachers were actively teaching their pupils how to decode sounds of words. The findings agree with Silva and Crenitte (2015) who found that learners subjected to phonological decoding intervention program which were personal in many aspects showed statistically significant improvement at post-assessment in their performance. The findings also agree with Oyetunde et al., (2016) who found that pupils who had received phonological decoding interventions significantly outperformed the control group who had not received the instructions on all nine reading skills sub-tests.

The results further showed that teachers put less emphasis on training learners to use their mental lexicon in word recognition as indicated by the low means of statements requiring the learners to differentiate between words, such as; "I train my pupils to read actual words and pseudo word' s (mean = 3.42), " I often ask my pupils to write down or utter a list of similar sounding words" , (mean = 3.37) and "I always task my pupils to differentiate between similar words" , (mean = 3.16). These low mean scores suggest that they put less emphasize on developing the mental lexicon of the learners which is a very important component of phonological decoding. Consistent with Karanja (2015), the findings suggest that most of the teachers were experiencing problems in teaching certain aspects of phonological awareness. As such, the children with reading difficulties were not receiving full education assessment as recommended by (Glascoe, 2012).

4.5.3 Comprehension monitoring intervention and academic performance of pupils

The third objective of this study was to examine the effects of comprehension monitoring on academic performance of primary school pupils in Nakuru West Sub-County. The status of this variable was described in terms of pre-reading, reading and post-reading after an intervention initiative. A five point Likert scale was used to rate responses of this variable and it ranged from; 1 = strongly disagree to 5 = strongly agree and was analyzed on the basis of the mean score and standard deviation as shown in Table 4.7.

Table 4.7

Comprehension monitoring intervention and academic performance of pupils

Statements (N = 57)	1	2	3	4	5	Mean	Std Dev.
I adequately prepare my pupils before the reading exercises	9(15.8)	6(10.5)	12(21.1)	21(36.8)	9(15.8)	3.26	1.303
I ensure that all pupils are seated in a position where there is enough light so that they can read with minimum visual difficulty	9(15.8)	3(5.3)	3(5.3)	27(47.4)	15(26.3)	3.63	1.358
I ensure that the pupils are well positioned so that they can be audible during reading exercises	9(15.8)	3(5.3)	3(5.3)	27(47.4)	15(26.3)	3.63	1.358
I monitor the speed with which the pupils read passages	9(15.8)	6(10.5)	3(5.3)	30(52.6)	9(15.8)	3.42	1.322
I monitor pronunciation of words especially vocabularies	6(10.5)	9(15.8)	0	24(42.1)	18(31.6)	3.68	1.352
I monitor how readers substitute or omit words while reading	9(15.8)	3(5.3)	0	30(52.6)	15(26.3)	3.68	1.352
I usually encourage pupils with reading difficulties to sit near those who do not have the difficulties during my lessons	9(15.8)	0	0	24(42.1)	24(42.1)	3.95	1.368
I usually ask the learners whether they understand what was being read	9(15.8)	3(5.3)	0	33(57.9)	12(21.1)	3.63	1.318
I always encourage the pupils to list down new words and help them learn their meaning	9(15.8)	3(5.3)	9(15.8)	30(52.6)	15(26.3)	3.37	1.234
I always encourage pupils to list down words they had difficulty pronouncing and assist them	9(15.8)	0	12(21.1)	33(57.9)	3(5.3)	3.37	1.144
I give pupils comprehension tests regularly and monitor how they perform so I can know how best to intervene	9(15.8)	9(15.8)	6(10.5)	24(42.1)	9(15.8)	3.26	1.343
Average						**3.535**	**1.314**

The overall mean of the responses, (mean = 3.535) in Table 4.7 is above 3.5 indicating that most of the teacher respondents were in agreement with assertions made regarding their application of comprehension monitoring to remedy reading difficulties and their effects on academic performance of pupils in their schools. The top three comments, for instance, suggest that majority of the teachers usually encourage pupils with reading difficulties to sit near those who do not have the difficulties during their lessons, (mean = 3.95). Most teachers monitor pronunciation of words especially vocabularies, (mean = 3.68) and also monitor how readers substitute or omit words while reading, (mean = 3.68). This shows that the teachers were more concerned about the reading phase of comprehension than the other two phases of pre-reading and post reading. According to Kyle et al., (2013), Hall, (2013) and Richardson and Lyytinen (2014), while the in-reading stage was important, it was important that the other stages too be given sufficient attention so as to improve the comprehension cycle.

The findings further suggest that most teachers prepared their pupils at the pre-reading phase as suggested by their agreements with the two statements; “I ensure that all pupils are seated in a position where there is enough light so that they can read with minimum visual difficulty”, (mean = 3.63) and “I ensure that the pupils are well positioned so that they can be audible during reading exercises”, (mean = 3.63). Further, comparably fewer teachers agreed that they adequately prepare their pupils before the reading exercises, (mean = 3.26). However, in the researcher’ s observations, in most schools, majority of the classrooms were not well lit and were congested, making it difficult for the learners to move to areas where there was enough light. These findings imply that the teachers did not adequately prepare their learners well during the pre-reading stage especially with regard to the subject matter.

As such the pupils were seldom ready for the in-reading exercise. Ganimian and Murnane (2016) had explained that the pre-reading stage is a very important stage that gives the learner an overview that increases reading efficiency and improves the learner' s comprehension of a text.

However, the teachers put less emphasis on the post reading stage as suggested by their low rating of the statements regarding this phase of reading; "I always encourage the pupils to list down new words and help them learn their meaning", (mean = 3.37) and "I always encourage pupils to list down words they had difficulty pronouncing and I assist them", (mean = 3.37). It was also evident that fewer teachers gave their pupils comprehension tests regularly and monitored how they perform so that they could know how best to intervene, (mean = 3.26). The comparably low means on the post reading constructs suggests that it was not given much emphasis, although, this was an important stage of reading. The finding that fewer teachers gave their pupils comprehension tests regularly goes against the Giess et al. (2012) who recommended continuous assessment of progress among other interventions for remedying reading challenge. Also according to Scanlon et al. (2016), monitoring pupils understanding of the text, and making adjustments in their reading was described as important intervention strategy.

These findings imply that the pupils were not adequately prepared by their teachers during comprehension with the focus of teachers being concentrated on the reading phase. Also the post reading phase was less emphasized than the other two phases of reading. Observations made during the lessons confirmed that teachers did not adequately prepare the learners for the reading assignment at the pre reading stage. However, during the in-reading stage, they tended to put much emphasis on how the

pupils read. In the post reading stage, the teachers were only particular in finding out what the learners could summarize from the text as opposed to, say, recalling new words and their meanings. This was indicative of inadequate comprehension monitoring practices by teachers in the schools. Indeed, Hall (2013) observed that poor teaching can both initiate and perpetuate reading difficulties for learners. Hall' s study proposed that teachers should use teaching methods that would improve their learners' predictive and interpretive skills relating to reading comprehension. Giess et al. (2012) had also recommended that instructors need to give ample opportunities for guided exercising of newly acquired skills, give a major increase in intensity of instruction and give systematic and express instruction on part skills that show deficiency.

4.5.4 Cooperative thinking skills and academic performance of primary school pupils

The fourth objective of this study was to assess the effects of inculcating cooperative thinking skills on academic performance of primary school pupils in Nakuru West Sub-County. The status of this variable was described in terms of positive interdependence, face-to-face interaction and individual and group accountability. A five point Likert scale was used to rate responses of this variable and it ranged from; 1 = strongly disagree to 5 = strongly agree and was analysed on the basis of the mean score and standard deviation. The results are presented in Table 4.8.

Table 4.8

Cooperative thinking skills and academic performance of primary school pupils

Statements (N = 57)	1	2	3	4	5	Mean	Std Dev.
I try to create an environment where pupils appreciate the value of " swimming or sinking together" when learning	0	6(10.5)	21(36.8)	27(47.4)	3(5.3)	3.47	0.758
I organize pupils into small groups for the purposes of learning reading	3(5.3)	3(5.3)	0	27(47.4)	24(42.1)	4.21	0.959
I reward groups depending on their performance on reading	0	0	3(5.3)	33(57.9)	21(36.8)	4.32	0.572
I often instruct learners in groups to orally explain to each other how to solve problems	0	0	3(5.3)	33(57.9)	21(36.8)	4.32	0.572
Groups are used for discussing concepts learnt	3(5.3)	3(5.3)	3(5.3)	42(73.7)	6(10.5)	3.79	0.901
I often use group work to check for understanding of reading concepts	3(5.3)	6(10.5)	9(15.8)	24(42.1)	18(31.6)	3.79	1.161
I always give each pupil a test to take individually	3(5.3)	6(10.5)	6(10.5)	21(36.8)	18(31.6)	3.84	1.146
I randomly select a student from each group for a task and he/she is expected to represent the whole group	3(5.3)	3(5.3)	9(15.8)	24(42.1)	18(31.6)	3.89	1.08
I often require that pupils teach what they have learnt to others in my presence	3(5.3)	3(5.3)	9(15.8)	21(36.8)	21(36.8)	3.95	1.109
Average						**3.95**	**0.917**

With an aggregate mean of 3.95 and a standard deviation of 0.917 in Table 4.8, it is evident that that majority of the teacher respondents strongly agreed with the statements regarding their inculcating of cooperative thinking skills as an intervention to address reading difficulties among their pupils. The top three comments reinforce

this position suggesting that majority of the teachers; often instruct learners in groups to orally explain to each other how to solve problems, (mean = 4.32); reward groups depending on their performance on reading, (mean = 4.32), and organize pupils into small groups for the purposes of learning reading, (mean = 4.21). This was meant to create positive interdependence among the learners. The results support those of Almanza (2013) which revealed that cooperative learning encouraged cooperative thinking which led to shared understanding and problem solving skills. They also support Cooper' s (1995) study as cited in Gillies (2016) which found that cooperative learning was an enabler of critical thinking skills that are lacking in many students.

The results also indicate that the teachers inculcated individual and group accountability among their learners by often requiring that pupils teach what they have learnt to others in their presence, (mean = 3.95); randomly selecting a student from each group for a task and he/she is expected to represent the whole group (mean = 3.89), and always gave each pupil a test to take individually, (mean = 3.84). However, it was evident that fewer teachers were not able to articulate well the concept of " swimming or sinking together" when learning and as such put least effort in trying to create an environment where pupils appreciate its value as indicated by the lowest means of the statements, (mean = 3.47).

These results suggest that majority of the teachers readily applied cooperative thinking skills interventions to their learners in order to enable them learn from each other how to read. It was evident during the class sessions observations that the learners in groups readily supported each other and even provided non-verbal cues when a member of their group was called upon to read for the class. These results

agree with those of Jalilifar (2010) on the effect of cooperative learning techniques that revealed team rewards may have a strong impact on learners' performance. The results also support those of Johnson et al., (2014) who demonstrated that cooperative learning had strong effect on a number of academic, personal and social predictors compared to competitive and individualistic learning. It is therefore evident that positive interdependence and individual and group accountability were used extensively compared to face-to-face interaction when applying cooperative thinking skills interventions to address reading difficulties among learners in primary schools.

4.5.5 Academic performance of primary school pupils in Nakuru West Sub-County

Finally, the study sought to determine the status of academic performance of primary school pupils in Nakuru West Sub-County. This was the dependent variable and the status of this variable was described in terms of mastery of subject skills, test scores and assignments. The status of this variable was rated on a 5 point Likert scale ranging from; 1 = strongly agree to 5 = strongly disagree and was analysed on the basis of the mean score and standard deviation. These results are presented in Table 4.9.

Table 4.9

Academic performance of primary school pupils in Nakuru West Sub-County

Statements (N = 57)	1	2	3	4	5	Mean	Std Dev.
Pupils in my class are showing marked improvements in dealing with difficult subjects	3(5.3)	3(5.3)	3(5.3)	39(68.4)	9(15.8)	3.84	0.941
Pupils in my class are demonstrating good command of reading difficult subjects	3(5.3)	3(5.3)	0	36(63.2)	15(26.3)	4.00	0.982
Pupils in my class are able to demonstrate good comprehension skills in other subjects apart from languages	0	6(10.5)	15(26.3)	33(57.9)	3(5.3)	3.58	0.755
Reading appears to affect performance in all other academic subjects	3(5.3)	0	6(10.5)	21(36.8)	27(47.4)	4.21	1.013
Reading difficulties are the principle causes of failure in school	3(5.3)	0	3(5.3)	21(36.8)	30(52.6)	4.32	0.985
Reading interventions have led to improvements in test scores in all subjects	3(5.3)		6(10.5)	27(47.4)	21(36.8)	4.11	0.976
Pupils perform well in class reading assignments	6(10.5)	0	9(15.8)	30(52.6)	12(21.1)	3.74	1.126
Pupils perform well in homework	6(10.5)	0	9(15.8)	30(52.6)	12(21.1)	3.74	1.126
Pupils perform well in group assignments	6(10.5)	0	3(5.3)	39(68.4)	9(15.8)	3.79	1.065
Average						**3.93**	**0.997**

The results as shown in Table 4.9depicts that majority of the teachers strongly agreed with all the statements describing academic performance of the pupils in their schools as indicated by the high overall mean for the responses, (mean = 3.93). However, it was evident that most teachers were concerned with the reading difficulties their pupils were experiencing, and linking to academic performance as suggested by the top two statements; “reading difficulties are the principle causes of failure in school” , (mean = 4.32) and “reading appears to affect performance in all other academic subjects” , (mean = 4.21). Nevertheless, most of them felt that their interventions were having a substantial effect on academic performance as indicated by their rating

of the statement; “reading interventions have led to improvements in test scores in all subjects” , (mean = 4.11). The least rated statement (mean = 3.58) showed that most teachers were of the view that pupils in their class were able to demonstrate good comprehension skills in other subjects apart from languages.

These findings imply that the academic performance of the learners was to a considerable extent affected by the reading difficulties. The findings agree with Cimmiyotti (2013) in the US, Yamashita and Hayashi, (2014) in Japan, Onkoba (2014) and Karanja (2015) in Kenya whose studies found that reading difficulties affected the academic performance of pupils. Specifically, students who had fewer problems with word substitution, omission, mispronunciation and addition scored highly in the end of the term exams. However, they disagree with Oberholzer (2015) in South Africa who failed to find any significant correlation between reading difficulties and academic performance.

The teachers were also asked to rate reading difficulties in terms of their commonality among their learners. The findings are provided in Table 4.10.

Table 4.10

Reading performance of primary school pupils in Nakuru West Sub-County

Statements (N = 57)	1	2	3	4	5	Mean	Std Dev.
Comprehension errors	0	18(31.6)	0	21(36.8)	18(31.6)	3.68	1.227
Word recognition errors	3(5.3)	21(36.8)	0	24(42.1)	9(15.8)	3.26	1.261
Problems relating to reading habits	0	21(36.8)	0	27(47.4)	9(15.8)	3.42	1.149
Inappropriate word grouping	0	15(26.3)	9(15.8)	24(42.1)	9(15.8)	3.47	1.054
Ignored or misinterpreted punctuations	0	15(26.3)	3(5.3)	21(36.8)	18(31.6)	3.74	1.173
Average						**3.514**	**1.173**

Looking at the results in Table 4.10, it is evident that majority of the teachers agreed with the statements regarding reading performance of pupils in their schools. The top two statements with the highest means indicate majority of thepupils often ignored or misinterpreted punctuations, (mean = 3.74) and also exhibited comprehension errors when reading,(mean = 3.68). However, as suggested by the low rating of word recognition errors, (mean = 3.26), it was evident that word recognition was not a major problem affecting the learners. These findings indicate that reading performance of the pupils in the primary schools in the study area was still a problem that needed to be addressed. These findings concur with other previous researchers in the Kenyan context such as Karanja (2015), Onkoba (2014) and The Uwezo Assessment report of 2010 and 2011 that established there was a reading performance problem among learners in Kenya. This implies that teachers needed additional training on the letter-sound correspondence techniques of teaching that are anchored on the alphabetical codes as recommended by Jukes et al. (2017) who had pointed out that if it can be established that the reading problem arises from lack of phonological awareness and skills in alphabetical coding.

4.6 Inferential Statistics

To evaluate the relationships between the dependent and independent variables and subequently test the hypothesis, correlation and multiple regression analysis was done and the findings discussed as follows.

4.6.1 Correlation Analysis and Hypothesis Testing

In this subsection, a summary of the Pearson' s product moment correlation analyses is presented. It seeks to first determine the degree of interdependence of the

independent variables and also show the degree and strength of their association with the dependent variable separately. The results are summarized in Table 4.11.

Table 4.11
Summary of Correlations

		Word Recognition	Phono-logical Decoding	Compre-hension Monitoring	Cooperative Thinking	Academic Performance
Word Recognition	Pearson Correlation	1	.917**	.921**	0.157	.283*
	Sig. (2-tailed)		0.000	0.000	0.244	0.033
	N	57	57	57	57	57
Phonological Decoding	Pearson Correlation	.917**	1	.877**	0.078	0.181
	Sig. (2-tailed)	0.000		0.000	0.563	0.178
	N	57	57	57	57	57
Comprehension Monitoring	Pearson Correlation	.921**	.877**	1	.315*	.407**
	Sig. (2-tailed)	0.000	0.000		0.017	0.002
	N	57	57	57	57	57
Cooperative Thinking	Pearson Correlation	0.157	0.078	.315*	1	.575**
	Sig. (2-tailed)	0.244	0.563	0.017		0.000
	N	57	57	57	57	57
Academic Performance	Pearson Correlation	.283*	0.181	.407**	.575**	1
	Sig. (2-tailed)	0.033	0.178	0.002	0.000	
	N	57	57	57	57	57

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The first correlation was done to determine whether word recognition training significantly influenced academic performance of primary school pupils in Nakuru West Sub-County. This enabled testing of the first null hypothesis:

$H0_1$: Word recognition training does not significantly influence academic performance of primary school pupils in Nakuru West Sub-County

The results in Table 4.11 shows that the relationship between the variables was significant (r = 0.283, p = 0.033) which is less than alpha, 0.05. Therefore, the study reject the null hypothesis that word recognition training does not significantly influence academic performance of primary school pupils in Nakuru West Sub-County. This finding disagrees with Shen and Jiang (2013) that word recognition has not been consistently observed to affect reading comprehension.

This means that word recognition had a moderate relationship with academic performance, and that with more emphasis, words recognition training was likely to have more meaningful impact on reading abilities of the learners and subsequently, an improvement in their academic performance. The findings agree with McCormick and Becker (2010) whose study found evidence suggesting that direct word study leads to reading improvement for pupils.

The study also sought to determine effects of phonological decoding intervention on academic performance of primary school pupils in Nakuru West Sub-County. This enabled testing of the second null hypothesis:

$H0_2$: Phonological decoding intervention does not significantly influence academic performance of primary school pupils in Nakuru West Sub-County

The correlation results in Table 4.11 indicates that there was no significant relationship existing between the variables (r = 0.181, p = 0.178 which is more than alpha, 0.05).

Consequently, the study failed to reject the null hypothesis that phonological decoding intervention does not significantly influence academic performance of primary school pupils in Nakuru West Sub-County. This finding failed to agree with those of previous studies such as the National Reading Panel (2014) and Piper et al. (2016) which found that children receiving phonologic decoding instruction performed significantly well above their peers.

This implies that the phonological decoding as an intervention currently being applied in the schools does not have the significant effect for enabling the learners read correctly and hence, performs well in their exams. This finding failed to support those of Silva and Crenitte (2015) whose study on effect of phonological decoding intervention program on performance of children at risk for reading difficulties in Brazil revealed that the learners showed statistically significant improvement at post-assessment in the performance of the following skills: letter naming; phoneme-grapheme relationship; phonological awareness; phonological working memory for non-words; phonological working memory for digits in direct order; alphabet recognition in sequence; writing under dictation of words and pseudo words; reading of words and pseudo words.

The study was also interested to determine whether comprehension monitoring had a significant relationship with academic performance of primary school pupils in Nakuru West Sub-County. The third hypothesis was hence:

$H0_3$: Comprehension monitoring does not significantly influence academic performance of primary school pupils in Nakuru West Sub-County

The correlation analysis in Table 4.11 indicates that there was indeed a significant relationship ($r = 0.407$, $p = 0.002$) which is less than alpha, 0.05 between the

variables. This meant that the study rejected the null hypothesis. Therefore, it can be inferred that comprehension monitoring as currently practiced in the schools did translate to academic performance of primary school pupils in Nakuru West Sub-County. These findings agree with those of Piper and Zuilkowski (2015) whose study on reading assessment interventions revealed that reading rates were more strongly related to reading comprehension scores.

The result suggests that there was a moderate but positive relationship between the variables indicating that comprehension monitoring as was currently being done by the teachers in the surveyed primary schools was significantly influencing academic performance of primary school pupils in the area. These results agree with those of previous studies, for example, Cummins (1979) cited in Onkoba, (2015) who found that linguistic proficiency at a certain level was necessary for academic performance. Linvile (1970), Kopiyo (1982), Dawe, (1983) and Muhandiki (1984) also cited in Onkoba (2015) similarly found out that reading comprehension significantly affected pupils' performance across several subjects.

The last construct was interested in assessing whether inculcating cooperative thinking skills had a significant relationship with academic performance of primary school pupils in Nakuru West Sub-County. This enabled the testing of the last (fourth) hypothesis:

$H0_4$: Inculcating cooperative thinking skills does not significantly influence academic performance of primary school pupils in Nakuru West Sub-County.

The correlation analysis in Table 4.11 indicated that there was indeed a significant relationship between the variables ($r = 0.575$, $p = 0.000 < p = 0.05$). Therefore, the

study rejected the null hypothesis and, subsequently accept alternate hypothesis that inculcating cooperative thinking skills significantly influence academic performance of primary school pupils in Nakuru West Sub-County accepted. This finding supported those of Johnson et al. (2014) who found strong effects between cooperative learning in comparison to competitive and individualistic learning on a number of academic dependent variables.

This finding suggests that the relationship between the variables was positive and strong implying that the putting learners in groups and assigning them reading tasks improved their reading abilities and enabled them to perform better academically. It concurs with that of Slavin et al. (2014) who found that cooperative learning can be an effective strategy for increasing student academic achievement.

4.6.2 Multiple Regression Analysis

Multivariate regression analysis was used to determine the multiple regression model hypothesized in chapter three. It was also used to determine how the independent variables influenced the dependent variable collectively. The analysis was also meant to establish the extent to which each independent variable affected the dependent variable in such a collective setup and which were the more significant factors. However, it was important to first establish the validity of the regression model through carrying out model assumption tests. The results are presented in section 4.5.2.1 to 4.5.2.5.

4.6.2.1 Tests for Assumptions of Regression Model

Greene (2002) explains that regression can only be accurately estimated if the basic assumptions of multiple linear regressions are observed. In this regard testing of

linearity, multicollinearity, homogeneity of variance, and normality assumption tests were important. The results of these tests are discussed as follows.

4.6.2.2 Tests for the Linearity Assumption

Linearity was tested by means of a P-P plot whereby the plotted points should match the diagonal line and also by means of a Scatter plot whereby the amounts of points scattered above and below the 0-horizontal line should be equal (Montgomery, Peck &Vining, 2012).

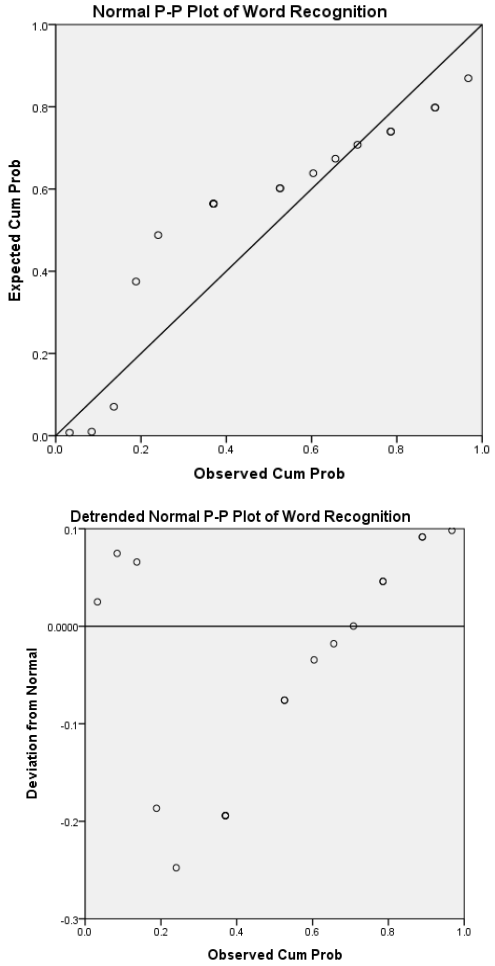

Figure 4.1: Linearity P-P plot and Scatter plot for Word Recognition

The closeness of fit of the plotted points with the diagonal line in Figure 4.1 and also the amounts of points scattered above and below the 0-horizontal line of the Scatter

plot being equal suggests that the linearity assumption in the measurement of word recognition in the regression model is valid.

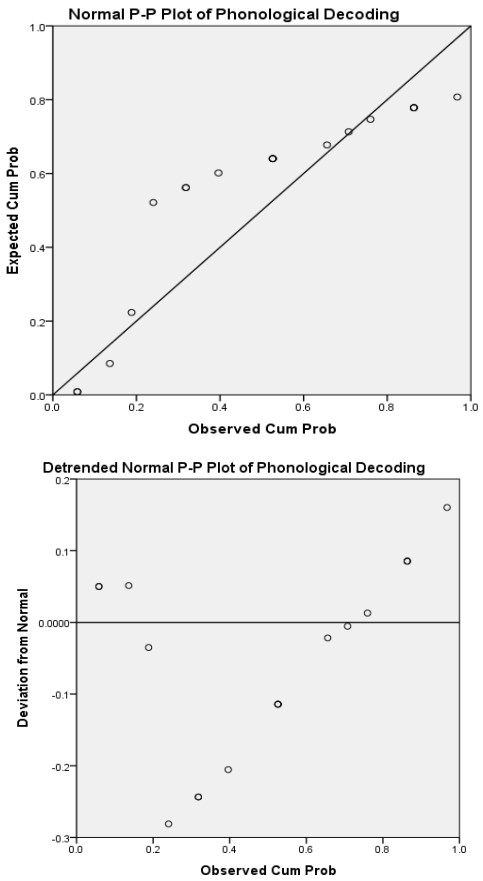

Figure 4.2: Linearity P-P plot and Scatter plot for Phonological Decoding

The closeness of fit of the plotted points with the diagonal line in Figure 4.2 and also the amounts of points scattered above and below the 0-horizontal line of the Scatter plot being equal suggests that the linearity assumption in the measurement of phonological decoding in the regression model is valid.

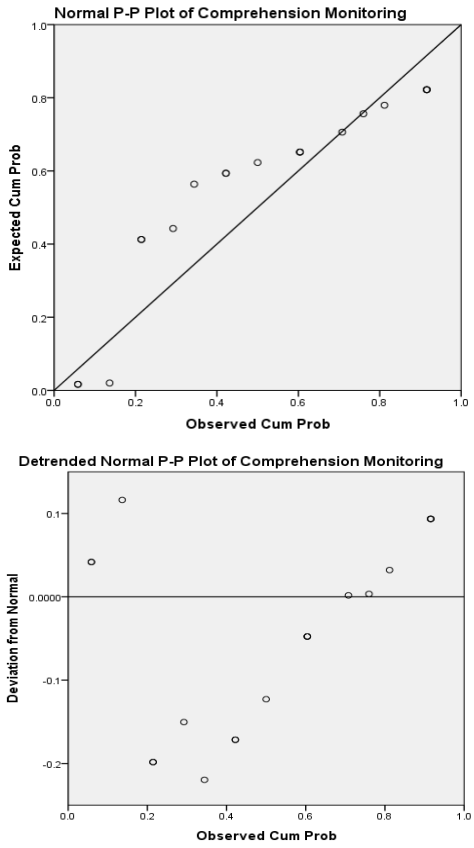

Figure 4.3: Linearity P-P plot and Scatter plot for Comprehension Monitoring

The closeness of fit of the plotted points with the diagonal line in Figure 4.3 and also the amounts of points scattered above and below the 0-horizontal line of the Scatter plot being equal suggests that the linearity assumption in the measurement of comprehension monitoring in the regression model is valid.

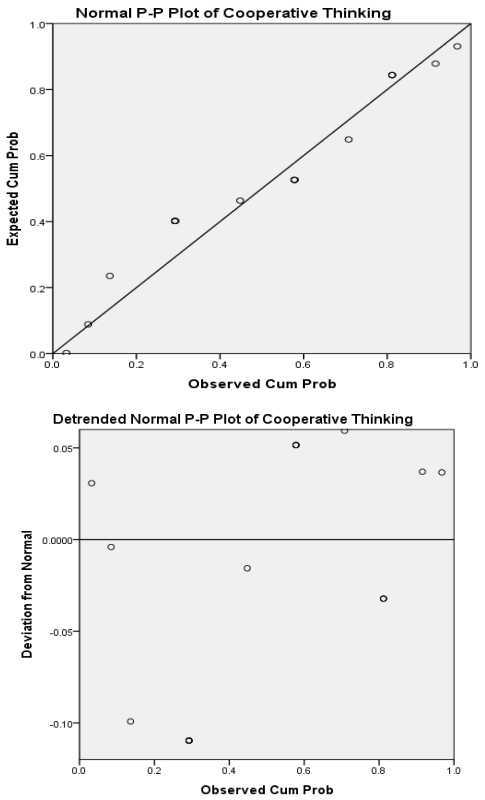

Figure 4.4: Linearity P-P plot and Scatter plot for Cooperative Thinking

The closeness of fit of the plotted points with the diagonal line in Figure 4.4 and also the amounts of points scattered above and below the 0-horizontal line of the Scatter plot being equal suggests that the linearity assumption in the measurement of cooperative thinking in the regression model is valid.

4.6.2.3 Test for the Multicollinearity Assumption

Multicollinearity assumption test is instrumental in determining whether multicollinearity would affect the results of regression analysis involving all the variables (Field, 2009). In this study the tolerance and variance inflation factors (VIF) determined were used to test for multicollinearity as shown in Table 4.12.

Table 4.12
Results for the Multicollinearity Assumption Tests

Variable	Sig.	Collinearity Statistics	
		Tolerance	VIF
Word Recognition	0.908	0.098	10.188
Phonological Decoding	0.428	0.139	7.17
Comprehension Monitoring	0.347	0.11	9.106
Cooperative Thinking	0.11	0.716	1.397

The results in Table 4.12 shows that the VIF for Word Recognition was 10.188 while the VIF for phonological decoding = 7.17, comprehension monitoring = 9.106 and cooperative thinking = 1.397 are all respectively less than 10 and with tolerance values greater than 0.1 save for one, that is word recognition. This effectively rules out the possibility of multicolliearity affecting the entire regression model (Field, 2009). Therefore, the results imply that there was the occurrence multicollinearity was effectively controlled among the variables and, hence, could have negligible or virtually no effect on the performance of the variables in the model.

4.6.2.4 Test for the Homoscedasticity Assumption

The homoscedasticity assumption means that the variance around the regression line is the same for all values of the predictor variable. The Levene' s test was used to test this assumption. It uses an *F*-test to test the null hypothesis that the variance is equal across groups. A *p* value less than .05 indicates a violation of the assumption (Modugno & Giannerini, 2015). The results are presented in Table 4.13.

Table 4.13

Test for the Homoscedasticity Assumption

	Levene Statistic	df1	df2	Sig.	Conclusion
Word Recognition	7.846	2	9	0.110	P >0.05, hence equal variance
Phonological Decoding	9.176	2	9	0.207	P >0.05, hence equal variance
Comprehension Monitoring	6.260	2	9	0.020	P <0.05, hence unequal variance
Cooperative Thinking	1.420	2	9	0.291	P >0.05, hence equal variance

Table 4.13 shows that the Levene statistic for Word Recognition is 7.846, p = 0.11>0.05, for phonological decoding is 9.176, p = 0.207> .05, for comprehension monitoring is 6.260, p = 0. 020< .05 and for cooperative thinking is 1.420, p = 0.291> .05. Given that the probability associated with the Levene statistics for all these variables are greater than the level of significance, p > .05 save for the one for comprehension monitoring, Warner (2008) suggests that the probability for these Levene statistics meets the threshold for the homogeneity assumption. Hence the homoscedasticity assumption was satisfied and the proposed regression models for this study were suitable for analysis.

4.6.2.5 Test for the Normality Assumption

The normality assumption means that the residuals in the model should be normally distributed. The decision rule is to reject the null hypothesis if p-value is greater than 0.05 and fail to reject the null hypothesis if the p-value is less than 0.05 (Field, 2009). The normality assumption results for the study are given in Table 4.14.

Table 4.14
Test for the Normality Assumption

Variable	Descriptive	Statistical Values	Std. Error	Shapiro-Wilk Statistic	df	Sig.	Comment
Word	Skewness	-0.06	1.014	0.789	10	0.084	Normally
Recognition	Kurtosis	-5.652	2.619				Distributed
Phonological	Skewness	-1.843	1.014	0.942	9	0.537	Normally
Decoding	Kurtosis	3.559	2.119				Distributed
Comprehension	Skewness	-1.415	1.225	0.902	10	0.391	Normally
Monitoring	Kurtosis	-0.225	0.342				Distributed
Cooperative	Skewness	-1.731	0.913	0.805	12	0.089	Normally
Thinking	Kurtosis	3.63	2				Distributed

Table 4.14 shows that the variables were normally distributed with skewness and kurtosis values ranging between -1.0 and +1.0 and their parameters within the limits ± 1.96 suggesting that the departure from normality was not too extreme. This was acceptable according Pallant (2013) and Field (2013) who explained that parametric values greater than ± 1.96 for small samples suggested that the distribution of the data was not normal. Thus, on the basis of the respective skewness and kurtosis values in Table 4.14, it can be deduced that all the variables of interest to the study were normally distributed and, therefore, further tests could be carried out on the data.

4.6.3 Results on Multiple Regression Analysis

Multiple regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. This analysis was used to examine how the independent variables influence the dependent variable in such a collective set-up. It was also used to determine the extent to which each independent variable affected the dependent variable and also rank them in order of their importance. Four measures were used; word recognition, phonological decoding, comprehension monitoring and cooperative thinking

assummarized in Table 4.15.

Table 4.15
Multiple Linear Regression Analysis Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.648a	0.42	0.376	5.79465	2.134

a Predictors: (Constant), Cooperative Thinking, Phonological Decoding, Comprehension Monitoring, Word Recognition

b Dependent Variable: Academic Performance

The regression analysis in Table 4.15 shows that the relationship between the dependent variable and all the independent variables pooled together had a model correlation coefficient = 0.648. The r-square (R^2= 0.42), further, indicates that the model could explain upto 42% variations in the academic performance of primary school pupils in Nakuru West Sub-County. It also suggests that the model could improve when more predictive variables were incoporated into the model. Sen and Srivastava (2011) stated that the appropriateness of the multiple regression models as a whole can be tested using F test. Therefore, the study also performed an ANOVA on the independent and dependent variables and the results are summarized in Table 4.16.

Table 4.16
Summary of ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1266.264	4	316.566	9.428	.000[b]
Residual	1746.051	52	33.578		
Total	3012.316	56			

a Dependent Variable: Academic Performance
b Predictors: (Constant), Cooperative Thinking, Phonological Decoding, Comprehension Monitoring, Word Recognition

The results in Table 4.16 indicate that there was a significant difference between means of variables predicting reading difficulties interventions and the mean of variable predicting academic performance of primary school pupils in Nakuru West Sub-County($F_{o'} = 9.428 > F_c = 2.56$; $\alpha < 0.05$; df = 4, 52; $p = 0.000 < p = 0.05$). This finding confirms that the model predicted in Table 4.16 and shows its indeed significant.In order to determine which of the reading difficulty intervention was more important when it came to predicting primary school pupils in Nakuru West Sub-County, the beta value was used. The results given in Table 4.15 provides a summary of the multiple linear regression analysis correlation coefficients.

Table 4.17

Multiple linear regression results

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	13.917	5.847		2.38	0.021
Word Recognition	0.055	0.242	0.076	0.227	0.821
Phonological Decoding	-0.338	0.215	-0.445	-1.574	0.122
Comprehension Monitoring	0.341	0.182	0.598	1.876	0.066
Cooperative Thinking	0.482	0.147	0.41	3.286	0.002

a Dependent Variable: Academic Performance

It can be deduced from the findings in Table 4.17 that the most influential reading difficulty intervention in the model as per the beta values was cooperative thinking skills ($\beta = 0.482$, $p = 0.002 < p = 0.05$). This finding also indicates that the dependent variable, that is, the academic performance of the pupils, would change by a corresponding number of standard deviations when the respective independent variables changed by one standard deviation. However, the other three independent variables (reading difficulty interentions) when combined do not matter most, but

cooperative thinking supersedes all of them. Further, the model constant is significant ($p < 0.05$) which suggests that there were other factors not included in the model which affected the pupils academic performance in the schools.

The study therefore establishes that in a combined set up, cooperative thinking was the most powerful intervention having visible effects on academic performance of the pupils with reading difficulties in the schools. This finding implies that much emphasis was being put on one intervention, that is, cooperative thinking by the teachers in public primary schools in Nakuru west sub-county. The other interventions though important received less attention and as such their effect could not reflect significantly when a joint effect is considered. The results disagree with Oberholzer (2015) in South Africa whose study failed to find any significant correlation between reading difficulties and academic performance. The resulting regression model, therefore, holds under;

$y = 13.917 + 0.055X_1 - 0.338X_2 + 0.341X_3 + 0.482X_4$ or,

Academic Performance of Pupils = 13.917 + 0.055 Word Recognition Training - 0.338 Phonological Decoding Intervention + 0.341 Comprehension Monitoring + 0.482 Cooperative Thinking Skills

In the combined model in Table 4.17 for multiple regressions, only one intervention, that is, cooperative thinking was found to have a significant effect on the dependent variable (academic performance of pupils). Therefore, it can be concluded that the effect of the interventions, save for phonological decoding, when examined alone had a significant and positive effect on the pupils academic performance. However, when examined together in a joint model, only cooperative thinking skills had a significant effect on the dependent variable. This means that all the interventions save for

phonological decoding were important to the academic performance of the pupils and, as such, could not be ignored when strategizing to improve academic performance.

4.7 Results from the Reading Test

The study also sought to establish whether there was a significant difference in reading improvement among leaners with reading difficultyin pre-test results and post-test results after subjecting them to interventions over a nineweek period. A comprehension experiement requiring the learners to read a 187 words passage was given to a total of 69 class four learners with reading difficultiesin the pre-testphase and to 62 class four learners with reading difficulties in the post-test phase from all the 12 schools,and each learner allocated two minutes to read the script. The results are summarized in Table 4.18.

Table 4.18

Results from the Pre-test and Post-Test reading tests

Test	No. of pupils who participated in comprehension tests	No. of pupils who had reading difficulties	Percentage (%)
Pre-test	106	69	65%
Post-test	106	62	58%

From the results, it was important to focus only the results of the 62 pupils identified with reading difficulties in the post-test and belonging to the same cohort in the pre-test. Their results in the post-test were matched with their pre-test results for sample size consistency in further analysis of the interventions. The comprehension test was assessed on the basis of the speed of completing reading the passage, number of mispronouced words, omitted words, substituted words, merged words and how well the pupils answered the comprehension test scores in both tests. After reading,pupils were given time to answer the comprehension questions over the lesson. The results are presented in Table 4.19.

Table 4.19

Reading Test Results

PRE TEST SCORES **N = 62**													
Variable	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	Average
Speed*	28%	33%	33%	38%	40%	43%	46%	49%	32%	22%	25%	41%	36%
Mispronounced words	49%	52%	46%	41%	40%	37%	34%	31%	38%	41%	22%	20%	38%
Omitted words	55%	51%	44%	35%	35%	27%	22%	16%	20%	35%	39%	6%	32%
Substituted words	31%	22%	25%	20%	19%	16%	13%	10%	18%	11%	13%	20%	18%
Merged words	11%	9%	11%	15%	8%	11%	11%	11%	9%	15%	19%	21%	13%
Average reading test scores	**35%**	**33%**	**32%**	**30%**	**28%**	**27%**	**25%**	**23%**	**23%**	**25%**	**24%**	**22%**	**27%**
Comprehension Test scores	35%	33%	36%	36%	41%	41%	42%	44%	25%	17%	28%	40%	35%
POST TEST SCORES **N = 62**													
Speed*	47%	50%	53%	59%	66%	49%	54%	53%	36%	22%	33%	57%	48%
Mispronounced words	33%	29%	30%	25%	20%	18%	15%	12%	29%	36%	19%	10%	23%
Omitted words	17%	17%	13%	11%	8%	11%	14%	11%	15%	30%	16%	18%	15%
Substituted words	12%	10%	11%	7%	7%	6%	4%	3%	2%	15%	11%	9%	8%
Merged words	10%	10%	9%	11%	6%	7%	8%	11%	8%	15%	19%	19%	11%
Average reading test scores	**24%**	**23%**	**23%**	**23%**	**21%**	**18%**	**18%**	**19%**	**18%**	**24%**	**20%**	**23%**	**20%**
Comprehension Test scores	47%	35%	50%	45%	55%	53%	56%	60%	33%	25%	32%	44%	44%

*Based on words completed in the entire passage in the allocated two minutes, S = School

The results of the reading test in Table 4.19 reveal that there were notable discrepancies in the reading performance of the pupils from both the pre-test and post-test indicating that there was a substantial improvement in the reading performance of the pupils with reading difficulties after the interventions in the schools. The average reading speeds had improved from 36% in the pre-test to 48% in the post-test while the average proportion of miss-pronounced words had reduced from 38% in the pre-test to 23% in the post-test for all the 12 schools. The average proportion of omitted words among this group of learners also dropped from 32% in the pre-test to 15% in the post-test. Also noticeable was the observation that the proportion of substituted words had dropped from 18% in the pre-test to 8% in the post-test. The average scores of the post reading comprehension test also registered a marked improvement from 35% in the pre-test to 44% in the post-test. However, there was only a slight drop in the average scores of merged words from 13% in the pre-test to 11% in the post-test.

The research findings suggest that there was a serious reading difficulty problem in the schools as evidenced by the results of the pre-test and post-test scores. In both cases, it was evident that majority of the learners fell below the threshold prescribed by Ojanen et al., (2015) who recommended that a pupil should be able to read accurately, within the region of ninety-five percent of the words correctly in text to grasp what they are reading. Omwega et al., (2014) also found that students' , who lacked proficiency in reading only, attain the level described as fair; suggesting that the pupils lagged behind in global information. The findings also support those of Mwanamukumbi (2013) while acknowledging this problem in Zambia also noted that as pupils continued reading, they committed errors like substituting, mispronouncing, adding and omitting some words. The results also agree with Onkoba (2014) and

Karanja (2015) that there was a problem with reading difficulties among primary school pupils in the country.

However, the promise of the interventions evident in the post test results across the 12 schools indicate that the situation could improve when more emphasis was put on the reading difficulties interventions. Consequently, the findings agree with Silva and Crenitte (2016) who found that interventions remedied reading difficulties being experienced by pupils in Brazil. The findings also support those of Han (2015) who found evidence suggesting that word recognition was instrumental in improving comprehension skills of children. Similarly, the results concur with McCormick and Becker (2010) who found that interventions such as direct word study leads to reading improvement for learning disabled pupils. Ming-San Chang (2013) also established that comprehension monitoring practices were significantly related to students' scores. Therefore, it is evident that reading difficulties interventions were instrumental in addressing the reading difficulties experienced by the learners.

The pre-test and post-test results were subjectd to a One-Way ANOVA test to establish whether there was indeed a significant difference in reading difficulties among the learners after the interventions were carried out. The results are presented in Table 4.20.

Table 4.20

One-Way ANOVA Results for the Reading Tests

Test Variable	F	Sig. (2-tailed)
Speed*	6.19	0.001
Mispronounced words	8.22	0.001
Omitted words	4.44	0.005
Substituted words	3.35	0.033
Merged words	2.76	0.110
Post reading Test scores	3.99	0.005

N= 62

It is evident from the results in Table 4.20 that the means of performance on the reading test was significantly different between the cohort of pupils at the pre-test and post-test stage except for the merging of words ($F = 2.76$; $p = 0.110 > p = 0.05$). This implies that the interventions being carried out made a significant difference in reading performance of the learners. The findings support those of Cekiso (2012) in South Africa who found that learners who received reading strategy instruction scored both statistically and practically significantly higher marks on the reading comprehension test than those in the control group. These results concur with those of Oyetunde et al., (2016) whose study on strategies for improving literacy instructional practices in primary schools in Nigeria revealed that the treatment group significantly outperformed the control group on all nine reading skills sub-tests.

4.8 Chapter Summary

With an overall questionnaire response rate of 84% returned by the teachers and 81% and 84% of the pupils targeted participating in both pre-test and post-test comprehension tests respectively, the study was able to analyze the data, discuss and interpret findings related to the effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools in the Nakuru West Sub-County, Nakuru County, Kenya. Both descriptive and inferential statistical techniques were used to analyze the data. Descriptive statistical techniques involved frequencies, percentages, means and standard deviations. Inferential statistics involved Pearson' s product moment correlations and multivariate linear regressions. Since the study also had an experimental component involving two distinct groups, a One-Way ANOVA was used to compare the differences in their means when it came to reading tests. The findings in this chapter revealed that the academic performance of the pupils in both groups was significantly correlated with the interventions, that is;

word recognition, comprehension skills and cooperative thinking skills. However, the study failed to establish a significant correlation between phonological decoding and academic performance.

The study through the multiple regression analysis was able to demonstrate that the joint action of the four interventions could explain up to 42% of the variations in the dependent variable, that is, academic performance. Further, the study through the reading test experiment results was able to establish that despite the interventions, the problem of reading difficulties still persisted and that the problem was significant between the two groups of learners in all but one constructs evaluated. It was also apparent from the observations during class sessions that some of the interventions were not being effectively carried out. This could perhaps explain why most of the interventions were not having a strong effect on academic performance of the learners. The findings have significant implications to all stakeholders that require immediate attention.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings and the conclusions drawn from them, and makes recommendations for stakeholders that can be implemented to help address the problem identified in the study. The present study sought to examine the effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools in Nakuru West Sub-County, Nakuru County, Kenya. Specifically, the study sought to examine the effects of only four interventions, that is, word recognition training, phonological decoding intervention, comprehension monitoring and inculcating cooperative thinking skills on academic performance among pupils from public primary schools in the area.

The study was guided by the Piaget' s Theory of Cognitive Development, the Double-Deficit Theory of Bowers and Wolf and the Cognitive Model of Reading Comprehension by Walter Kintsch. These theories were able to provide theoretical grounding for the variables of interest to the study regarding reading difficulties and interventions. It employed both descriptive survey and experimental research designs, and targeted 12 public primary schools in Nakuru West Sub-County, Nakuru County with a combined population of 342 language teachers and 14,158 pupils enrolled from class one to class eight. The study further targeted all the 1770 class four pupils in the 12 primary schools for the pre-test and the post– test. From these, it was estimated that 8% of the pupils had reading difficulties that were not necessarily neurological in nature. However, from the study findings and the assessment of the researcher, it appears the numbers of pupils with reading difficulties were much higher than these. A sample size of 174 respondents comprising of 68 class four language teachers and

106 class four pupils expected to have reading difficulties was used. Data was collected using a well-structured questionnaire, an observation schedule and through analyzing results from a reading test. The questionnaire was pretested for both content and constructs validity and also for reliability using the internal consistency method. All ethical considerations were observed throughout the study. Data was analyzed using descriptive statistics involving means, modes and standard deviations, and inferential statistical methods involving Pearson' s Product Moment correlation, multiple regression analysis and One – way ANOVA.

5.2 Summary of the Findings

A summary of the major findings arising from the analysis of these variables is presented in this section. The main finding was that only three interventions, that is, word recognition training, comprehension monitoring and inculcating cooperative thinking skills had positive relationships with academic performance among pupils from public primary schools in the area. However, in the joint model, only one, that is, cooperative thinking skills had the explanatory power on academic performance in the regression model.

5.2.1Word recognition training and academic performance of pupils

Concerning the first objective of the study, the results revealed that, majority of the teacher respondents were inclined to agree with all the statements describing their application of word recognition as an intervention to remedy reading difficulties among learners. Particularly,most teachers were well aware of the value of word recognition as an intervention for addressing reading difficulties among learners. The teachers placed more emphasis on speed of word recognition than, accuracy of word meaning and text decoding. In contrast most teachers did not teach their pupils to use dictionaries to get more accurate meanings of words and also were not keen on

observing how their pupils use their mental dictionaries to locate the words and compare them.

Results from the correlation analysis revealed that there was a significant relationship between word recognition training and academic performance of primary school pupils in Nakuru West Sub-County. Results from the correlation analysis revealed that word recognition had a moderate relationship with academic performance and its influence could improve when more emphasis was put on all aspects of the intervention during the learning process. However, results from the multiple regression analysis revealed that word recognition training as an intervention was not significant enough in the joint model to influence academic performance of primary school pupils in Nakuru West Sub-County.

5.2.2 Phonological decoding intervention and academic performance of pupils

In relation to the second objective of the study, the study evidently noted that from the findings that majority of the teachers agreed with the statements regarding their application of phonological decoding interventions to address reading difficulties among learners. Their reactions to the statements suggested that they put more emphasis on developing working memory of the learners and creating phonemic awareness compared to developing their mental lexicon. These findings suggest that the majority of teachers were emphasizing phonemic awareness to enable the learners decode the sounds used in pronouncing the words. Further, both observations and comprehension tests revealed that most the learners had a problem with pronunciation with part of the challenge arising from their limited vocabulary.

Even among learners without reading difficulties, accurately pronouncing all the words in the 187 words reading comprehension test was a problem. This implied that the phonological decoding was not being carried out effectively as an intervention in the schools with majority of the teachers dwelling only on the pronunciation of the words as opposed to helping learners develop their mental lexicon. However, findings from both correlation analysis and multiple regression analysis revealed that phonological decoding did not significantly affect academic performance of pupils probably as a result of the manner in which it was being carried out.This implies that as things currently stand, the phonological decoding problem could continue propagating itself among learners in the area unless urgent remedial intervention is made to enable the learners read correctly and, hence perform well in their exams.

5.2.3 Comprehension monitoring intervention and academic performance of pupils

In relation to the third objective of this study, the results revealed that most of the teacher respondents were in agreement with assertions made regarding their application of comprehension monitoring to remedy reading difficulties and their effects on academic performance of pupils in their schools. The findings specifically revealed that the teachers were mostly concerned about the reading phase of comprehension than the other two phases of pre-reading and post-reading. Further, the findings revealed that the teachers did not adequately prepare their learners well during the pre-reading stage especially with regard to the subject matter and put less emphasis on the post-reading stage as suggested by their low rating of the statements regarding this phase of reading. It was therefore evident that the pupils were not adequately prepared by their teachers during comprehension with the focus of

teachers being concentrated on the reading phase. Also the post reading phase was less emphasized than the other two phases of reading.

In addition, from the researcher' s observations in most schools, majority of the classrooms were not well lit and congested making it difficult for the learners to move to areas where there was enough light. Other findings from the correlation analysis revealed that while there was indeed a significant relationship between comprehension monitoring and academic performance of primary school pupils in Nakuru West Sub-County, the intervention still could not explain the variations in the dependent variable, that is, academic performance in the multiple regression model. This means that comprehension monitoring as currently practiced in the schools did not translate to improved academic performance of primary school pupils in Nakuru West Sub-County.

5.2.4 Cooperative thinking skills and academic performance of primary school pupils

Finally, results on the fourth objective revealed that majority of the teacher respondents strongly agreed with the statements regarding their inculcating of cooperative thinking skills as an intervention to address reading difficulties among their pupils. It was evident that majority of the teachers often instruct learners in groups to orally explain to each other how to solve problems and rewarded groups depending on their performance on reading in order to create positive interdependence among the learners. These results further suggested that majority of the teachers readily applied cooperative thinking skills interventions to their learners in order to enable them learn from each other how to read. It was evident during the class sessions observations that the learners in groups readily supported each other and

even provided non-verbal cues when a member of their group was called upon to read for the class.

Findings from both the correlation analysis and multiple regression analysis revealed that cooperative thinking skills significantly affected academic performance of primary school pupils in the area and could explain the variations in the academic performance of the pupils in the schools. The strong relationship evident between cooperative thinking skills and academic performance further implied that by putting learners in groups and assigning those reading tasks improved their reading abilities and enabled them to perform better academically. This apparently was the most widely and effectively used intervention to remedy reading difficulties by the teachers.

5.3 Conclusions

The following conclusions are drawn from the study in relation to the objectives of the study.

5.3.1 Word recognition training on academic performance of pupils

Based on the results of the study, it can be concluded that word recognition as an intervention being carried out in the schools did have a significant effect on academic performance of pupils ($r = 0.283$, $p = 0.033 < p = 0.05$). However, the moderate effect it had on academic performance was necessarily because of the methods being used to implement it.While the teachers were well aware of the value of word recognition as an intervention for addressing reading difficulties among learners, it emerged that they were placing more emphasis on speed of word recognition than, accuracy of word meaning and text decoding.

5.3.2 Phonological decoding intervention and academic performance of pupils

It can also be concluded that phonological decoding did not significantly affect on academic performance of pupils ($r = 0.181$, $p = 0.178 > p = 0.05$) owing to the manner in which it was being carried out.It was observed that most the learners had a problem with pronunciation with part of the challenge arising from their limited vocabulary. Even among learners without reading difficulties, accurately pronouncing all the words in the 187 words reading comprehension test was a problem. Thus, as things currently stand, the phonological decoding could continue propagating itself among learners in the study area unless urgent intervention is made enabling the learners read correctly and hence perform well in their exams.

5.3.3 Comprehension monitoring intervention and academic performance of pupils

The study also concludes that comprehension had a significant effect on academic performance of primary school pupils in the area ($r = 0.407$, $p = 0.002 < p = 0.05$). Despite the moderate effect comprehension monitoring had on academic performance, it was not being effectively carried out through out all the phases with the teachers mostly concerned about the reading phase of comprehension than the other two phases of pre-reading and post reading. As such most teachers did not adequately prepare their learners well during the pre-reading stage especially with regard to the subject matter and put less emphasis on the post reading stage. Also the post reading phase was less emphasized than the other two phases of reading. Hence, it was evident that the pupils were not adequately prepared by their teachers during comprehension with the focus of teachers being concentrated on the reading phase.

5.3.4 Cooperative thinking skills and academic performance of primary school pupils

Finally, cooperative thinking skills significantly affected academic performance of primary school pupils in the area ($r = 0.575$, $p = 0.000 < p = 0.05$). The strong relationship evident between cooperative thinking skills and academic performance further implied that by putting learners in groups and assigning those reading tasks improved their reading abilities and enabled them to perform better academically. This apparently was the most widely and effectively used intervention to remedy reading difficulties by the teachers. Consequently, it can be concluded that cooperative thinking skills which is essentially group work was the most effective intervention on reading difficulties carried out in the schools.

5.4 Recommendations

The study makes the following recommendations based on the findings.

5.4.1Word recognition training on academic performance of pupils

There is need for the teachers to emphasize word recognition as an intervention especially among learners with reading difficulties in the schools. This needs to be emphasized mostly at the lower levels of primary school where the sylables are much simpler and the learners can build up on their recognition of the words.

5.4.2 Phonological decoding intervention and academic performance of pupils

The study also recommends that with regard to phonological decoding, teachers need to encourage their pupils to regularly speak in languages used during teaching to enable them improve on their phonological decoding. The teachers should also introduce poems as teaching aids which have more rhyming words to enable the learners easily recognize and differentiate words with similar sounds.

5.4.3 Comprehension monitoring intervention and academic performance of pupils

From the findings, it was evident that comprehension was poor among the learners and also comprehension monitoring as an intervention was not being carried out effectively. The study therefore recommends that the teachers should introduce regular comprehension tests to monitor the students progress in reading compreghension especially at the upper level of primary school.

5.4.4 Cooperative thinking skills and academic performance of primary school pupils

Finally, there is need for the teachers to introduce critical thinking skills to learners when doing group work so as to enable them solve problems in reading. One way to achieve this is to use structured reading assignments that have questions that can only be solved through group work at regular intervals.

5.5 Recommendations for Future Studies

In the course of carrying out this study, it was observed that a number of pupils used their mother tongue language to pronounce some words or communicate with other participants and the effects of this on academic performance is not known hence future studies should aim at understanding the effect of learners' mother tongue language on the ability to read without difficulties.

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APPENDICES

Appendix 1: Permission Letter to Sampled Schools to Collect Data

Hellen A. Matunga
P.O. Box 17216
Date: _____

The Head Teacher _____

Dear Sir/Madam

Re: Permission to Collect Data for Academic Research Purposes

I am a master' s student of Kenya Methodist University. I am carrying out a research on ***the*** *Effects of Interventions of Selected Reading Difficulties on Academic Performance among Pupils from Public Primary Schools in Nakuru West Sub-County, Nakuru County - Kenya.* This study involves English and Kiswahili teachers. I am, therefore, writing to request you to allow the sampled respondents to participate in this study at an agreed date. I take this opportunity to assure you that the data solicited will be confidentially handled and only used for the purpose of this study. Attached is a research permit from National Commission for Science, Technology and Innovations (NACOSTI) and authorization letter from the County Director of Education.

Thank you.

Yours Faithfully,

Hellen A. Matunga

EDU-3-5672-1/2013

APPENDIX II: Questionnaire for Teachers

The purpose of this research to ***" assess the effects of selected reading difficulty interventions on academic performance among pupils from public primary schools in the Nakuru West Sub-County, Nakuru County, Kenya."***You are kindly requested to provide answers to these questions as honestly and precisely as possible. Responses to these questions will be treated with outmost confidentiality. Please tick [√] where appropriate or fill in the required information on the spaces provided. Do not write your name or contacts on the questionnaire.

SECTION A: Demographic Data

1. Gender

Male [ ] Female [ ]

2. Academic qualifications Degree [ ] Diploma [ ] Certificate [ ]

Other (Specify) ……

3. How long have you been a teacher in this school?

1-5 year [ ] 6-10 years [ ] 11-15 years [ ] above 15 years [ ]

4. What subjects do you teach?

English [ ] Kiswahili [ ] Both [ ]

SECTION B: Word recognition training on academic performance of pupils

6. Please rate how the following statements describe the effects of word recognition training on academic performance of primary school pupils in Nakuru West Sub-County. Please tick where appropriate. (√) SA=strongly agree, A= agree, N = Neutral, D= disagree, SD= strongly disagree.

Statements	**SA**	**A**	**N**	**D**	**SD**
I always try to ensure that my pupils learn new words and their meanings					
I always require my pupils to explain the meanings of the words they have learnt					
I require my pupils to find out other meanings of the words they learn					
I teach my pupils to use dictionaries to get more accurate meanings of words					
I always monitor the speed with which the pupils recognize words					
Speed of word recognition helps to increase reading speed of texts					
I test my pupils on the speed with which they recognize words					
I teach my pupils on how to decode words visually according to their graphic forms					
I teach my pupils on how to activate links between the graphic forms of words and their sounds					
I observe how the pupils use their mental dictionaries to locate the words and compare them					

SECTION C: Phonological decoding intervention on academic performance of pupils

8. Please rate how the following statements describe the effects of phonological decoding intervention on academic performance of primary school pupils in Nakuru West Sub-County. Please tick where appropriate (√). SA=strongly agree, A= agree, N = Neutral, D= disagree, SD= strongly disagree.

Statement	**SD**	**D**	**N**	**A**	**SA**
I train my pupils on the recognition and pronounciation of various vowel sounds					
I train my pupils on the recognition and pronounciation of various consonant sounds					
I train my pupils to read actual words and pseudowords					
I ensure my pupils learn about rhyming words					
I require my pupils to repeat words after they have been read					
I do give my pupils regular spelling tests					
I do give my pupils regular pronounciation tests					
I always task my pupils to differentiate between similar words					
I often ask my pupils to write down or utter a list of similar sounding words					

SECTION D: Comprehension monitoring on academic performance of pupils

9. Please rate how the following statements describe the effects of comprehension monitoring on academic performance of primary school pupils in Nakuru West Sub-County. Please tick where appropriate. (√) SA=strongly agree, A= agree, N = Neutral, D= disagree, SD= strongly disagree

Statement	**SD**	**D**	**N**	**A**	**SA**
I adequately prepare my pupils before the reading exercises					
I ensure that all pupils are seated in a position where there is enought light so that they can read with minimum visual difficulty					
I ensure that the pupils are well positioned so that they can be audible during reading exercises					
I monitor the speed with which the pupils read passages					
I monitor pronounciation of words especially vocabularies					
I monitor how readers substitute or omit words while reading					
I usually encourage pupils with reading difficulties to sit near those who do not have the difficulties during my lessons					
I usually ask the learners whether they understand what was being read					
I always encourage the pupils to list down new words and help them learn their meaning					
I always encourage pupils to list down words they had difficulty pronouncing and assist them					
A give pupils comprehension tests regularly and monitor how they perform so i can know how best to intervene					

SECTION E: Cooperative thinking skills on academic performance of pupils

8. Please rate how the following statements describe effects of inculcating cooperative thinking skills on academic performance of primary school pupils in Nakuru West Sub-County. Please tick where appropriate (√). SA=strongly agree, A= agree, N = Neutral, D= disagree, SD= strongly disagree.

Statement	**SD**	**D**	**N**	**A**	**SA**
I try to create an environment where pupils appreciate the value of " swimming or sinking together" when learning					
I organize pupils into small groups for the purposes of learning reading					
I reward groups depending on their performance on reading					
I often instruct learners in groups to orally explain to each other how to solve problems					
Groups are used for discussing concepts learnt					
I often use group work to check for understanding of reading concepts					
I always give each pupil a test to take individually					
I randomly select a student from each group for a task and he/she is expected to represent the whole group					
I often require that pupils teach what they have learnt to others in my presence					

SECTION F: Academic performance of pupils in Nakuru West Sub-County

8. Please rate how the following statements describe the status of academic performance of primary school pupils in Nakuru West Sub-County. Please tick where strongly disagree. appropriate (√). SA=strongly agree, A= agree, N = Neutral, D= disagree, SD strongly disagree.

Statement	**SD**	**D**	**N**	**A**	**SA**
Pupils in my class are showing marked improvements in dealing with difficult subjects					
Pupils in my class are demonstrating good command of reading difficult subjects					
Pupils in my class are able to demonstrate good comprehension skills in other subjects apart from languages					
Reading appears to affect performance in all other academic subjects					
Reading difficulties are the principle causes of failure in school					
Reading interventions have led to improvements in test scores in all subjects					
Pupils perform well in class reading assignments					
Pupils perform well in homework					
Pupils perform well in group assignments					

Among the following reading difficulties which one(s) is commonly found among your learners?

Difficulty	**NA**	**L**	**NS**	**LM**	**VM**
Comprehension errors					
Word recognition errors					
Problems relating to reading habits					
Inappropriate word grouping					
Ignored or misinterpreted punctuations					

Key: VM = Very Much; M = Much; NS = Not Sure; L = Little; NA = Not at all

THANK YOU FOR YOUR PARTICIPATION

APPENDIX III: Observation Schedule

School .....

Class.....

	Difficulty	VP	P	AV	G	VG
Word Recognition Training	Accuracy of meanings					
	Speed of recognition					
	Text decoding					
Phonological Decoding	Phonemic awareness					
	Working memory					
	Mental lexicon					
Comprehension Monitoring	Pre-reading					
	Reading					
	Post-reading					
Cooperative Thinking Skills	Positive Interdependence					
	Face-to-Face Interaction					
	Individual and Group Accountability					
Library and reference materials	Story books					
	Dictionaries/ Kamusi					
	Encyclopeadias					

VG= Very Good; G = Good; AV = Average; P = Poor; VP = Very Poor

APPENDIX IV: Reading Passage (Adapted from Karanja (2015))

For Researcher' s Use Only;

School _____

Class_____

Words omitted _____

Words Substituted _____

Words Mis-pronounced _____

Time taken in reading _____

Words Added Mis-pronounced _____

No. of correct answers out of 10 _____

Total No. of words missed _____

Total No. of words on the passage _____

There are many kinds of snakes in the world. However, not all of them are poisonous. The most common snakes can sometimes be found in our gardens. These harmless grass snakes vary in length from one foot to three feet. They rarely bite people and are, in fact, shy creatures. Grass snakes eat insects and small animals like frogs and chicks. They are good for the garden as they keep away pests like rats and grasshoppers. The more poisonous varieties of snakes are the python and viper. These snakes are seldom found in gardens. Instead, these snakes live in forests or in dense vegetation such as swampland. They do not actively seek out victims, but will defend themselves against potential enemies and intruders. If the snake senses someone coming, it would rather glide noiselessly away than confront the person. Contrary to popular belief, snakes do not sting with their tongue. They bite with two fangs which point backwards. The snake' s tongue, which continuously flicks in and out, is actually it' s fingers. Its tongue consists of nerve endings which help the snake feel the food before eating it.

Comprehension questions

1. All kinds of snakes in the world are poisonous. True False (1Mk)

2. Where do we commonly find the harmless grass snake?_____(1mk)

3. Grass snakes eat ---------- and ---------- (1mk)

4. Why are grass snake good for gardens_____(1mk)

5. How do poisonous varieties of snake defend themselves against potential enemies and intruders?_____ (1mk)

6. Snakes feel the food with their_____before eating it (1mk)

7. Explain the meaning of the following word and expressions as used in the passage (3 mks) (a) Poisonous (b) They rarely bite people (c) Are good for the gardens (d) Seldom (e) Potential enemies (f) Fingers 8. What is the popular belief about snakes_____(1mk)

APPENDIX V: List of Schools in Nakuru West Sub-county

1. Kaptembwo Primary School
2. Heshima Primary School
3. Muslim Primary School
4. Nakuru West Primary School
5. Koinange Primary School
6. Umoja Primary School
7. Uhuru Primary School
8. Kibowen Primary School
9. Mwariki Primary School
10. Freehold Primary School
11. Lalwet Primary School
12. Parkview Primary School

APPENDIX VI: Consent to Participate in the Study

Hellen A. Matunga
P.O. Box 17216
Date: _____

The Language Teacher _____ of _____Primary School, P.O. Box _____

Dear Teacher,

I am writing to ask for your help me in actualizing my academic research that investigates ***the effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools in the Nakuru West Sub-County, Nakuru County, Kenya***. This research project involves learning more about ***interventions of reading difficulties***. I hope that the findings of the study will inform all relevant stakeholders about the ***reading difficulties interventions***.

There are three parts to the study: (i) a questionnaire – to be filled by the teacher (ii) non-participant observation of lessons – by the researcher and (iii) a reading comprehension test to be administered by teachers to pupils identified for the study. The questionnaire has two parts. In the first; I ask you to respond to questions about your background. The second part asks some general questions about the variables of the study. In total it takes between 5 and 7 minutes to complete the questionnaire. You are under no obligation to complete the questionnaire, or to answer all questions presented in it. If you come to a question which you don' t wish to answer, simply skip it.

The second phase of the study involves the non-participant observation. Here, I will request to sit in your class and observe you as you teach the students and make my observations in the process according to the study. This phase is expected to take part during one lesson only.

The third phase of the study involves administering the reading comprehension test to pupils with confirmed reading difficulties in your class. As the concerned teacher, you will assist in identifying children with reading difficulties. Here, out of ethical concern, I would like to solicit your assistance in making arrangements for a lesson where I can administer the tests among the learners with your full consent. I would also request your assistance in identifying the pupils aforementioned for the purposes of the study. No names or backgrounds of the participants will be captured during the

exercise. In particular, I would like to be able to use the reading comprehension tests in the following ways:

(a) To investigate the relationship between the reading difficulty interventions and the reading proficiency of the pupils. (b) To use the information to complete my research thesis at the University. (c) To present the findings in before a panel of researchers for the purposes of the thesis completion. (d)To publish the findings in a peer reviewed academic journal. I would like permission to be able to use recording digital gadget in this endeavor. Neither your name nor that of your pupils and your school will be revealed in the documents and presentations.

I hope you will be willing to participate because your responses are important and a valued part of the study. Your participation will remain strictly confidential. Your name or that of your pupils will not be attached to any of the data you provide. You are welcome to discontinue participation in the study at any time, should you wish to do so.

The risks of participation in the study are very low and of a social or reputational nature. The data collection will be kept in a confidential location after collection and in future and, moreover, will not have anything to identify you or your pupils. You will be asked to sign forms (below) indicating agreement for you and that of identified pupils to participate in the different parts of the study. I humbly request that you allow the selected pupils to voluntarily participate in this study.

Thank you for volunteering to participate in this research. Should you have questions regarding your participation, please contact. You may also contact my research supervisor for the project at the university; Dr. Paul Gichohi, pmakuster@gmail.com. This study has been considered from an ethical perspective by the KeMU postgraduate schools' ethics in research committee. Should you have any questions or concerns about the ethical approval or conduct of this study, please contact, Hellen Agutu at ***agutumatunga@gmail.com***

Yours faithfully,

_____

Hellen Agutu

Statement of Consent

You will be given a copy of this information to keep for your records

Please read the questions below and indicate whether or not you would be willing to participate in the study as described.

1. Do you consent to participate in the study by completing the questionnaire described above?

   Yes ( ) No ( )

2. Do you consent to be observed in class while you teach and to have the session captured on a notebook?

   Yes ( ) No ( )

3. Do you consent to have pupils identified with reading difficulties in your classroom be subjected voluntarily to reading comprehension tests for the purposes of this study?

   Yes ( ) No ( )

Signature Date

_____ _____

APPENDIX VII: University Authorization Letter

Appendix V: University Authorization Letter

KENYA METHODIST UNIVERSITY

P. O. Box 267 Meru - 60200, Kenya
Tel: 254-064-30301/31229/30367/31171
Fax: 254-64-30162
Email: deanrd@kemu.ac.ke

13TH JUNE, 2019

Commission Secretary,
National Commission for Science, Technology and Innovations,
P.O. Box 30623-00100,
NAIROBI.

Dear sir/ Madam,

RE: MATUNGA HELLEN AGUTU (EDU-3-5672-1/2013)

This is to confirm that the above named is a bona fide student of Kenya Methodist University, School of Education and Social Sciences undertaking the Degree of Masters of Education in Leadership and Management. She is conducting research on, **Effects of Interventions of Selected Reading Difficulties on Academic Performance among Pupils from Public Primary Schools in Nakuru West Sub-County, Nakuru County- Kenya.**

We confirm that her research proposal has been defended and approved by the University.

In this regard, we are requesting your office to issue a permit to enable her collect data for her research.

Any assistance accorded to her will be appreciated.

Thankyou

13 JUN 2019

DR. JOHN MUCHIRI, PHD
DIRECTOR, POSTGRADUATE STUDIES

APPENDIX VIII: Research Authorization Letter from NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/19/36150/31377**

Date: **15th July, 2019.**

Hellen Agutu Matunga
Kenya Methodist University
P.O. Box 267- 60200
MERU.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools in Nakuru West Sub County, Nakuru County-Kenya."*** I am pleased to inform you that you have been authorized to undertake research in **Nakuru County for** the period ending **15th July, 2020.**

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

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

CHARITY MUSEMBI.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nakuru County.

The County Director of Education
Nakuru County.

APPENDIX IX: Research Permit from NACOSTI

THIS IS TO CERTIFY THAT:
MS. HELLEN AGUTU MATUNGA
of KENYA METHODIST UNIVERSITY, 17216-20100 NAKURU,has been permitted to conduct research in *Nakuru County*

Permit No : NACOSTI/P/19/36150/31377
Date Of Issue : 15th July,2019
Fee Recieved :Ksh 1000

on the topic: *EFFECTS OF INTERVENTIONS OF SELECTED READING DIFFICULTIES ON ACADEMIC PERFORMANCE AMONG PUPILS FROM PUBLIC PRIMARY SCHOOLS IN NAKURU WEST SUB-COUNTY, NAKURU COUNTY - KENYA*

for the period ending:
15th July,2020

.....
Applicant's Signature

.....
FOR: Director General
National Commission for Science, Technology & Innovation

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

National Commission for Science, Technology and innovation
P.O. Box 30623 - 00100, Nairobi, Kenya
TEL: 020 400 7000, 0713 788787, 0735 404245
Email: dg@nacosti.go.ke, registry@nacosti.go.ke
Website: www.nacosti.go.ke

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH LICENSE

Serial No.A 25849

CONDITIONS: see back page

APPENDIX X: Research Authorization Letter from the Ministry of Education

MINISTRY OF EDUCATION

STATE DEPARTMENT OF EARLY LEARNING OF BASIC EDUCATION

Telegrams: "**EDUCATION**",
Telephone: **051-2216917**
When replying please quote
Email:cdenakurucounty@gmail.com
Ref.CDE/NKU/GEN/4/1/21/VOL.II/68

COUNTY DIRECTOR OF EDUCATION
NAKURU COUNTY
P. O. BOX 259,
NAKURU.

18th July, 2019

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION –HELLEN AGUTI MATUNGA
PERMIT NO. NACOSTI/P/19/36150/31377

Reference is made to letter NACOSTI/P/19/36150/31377 dated 15th July, 2019.

Authority is hereby granted to the above named to carry out research on ***"Effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools in Nakuru West Sub-County, Nakuru County - Kenya"*** for a period ending ***15th July, 2020.***

Kindly accord her the necessary assistance.

For: COUNTY DIRECTOR OF EDUCATION
NAKURU COUNTY

KIMANI G.N
FOR: COUNTY DIRECTOR OF EDUCATION
NAKURU COUNTY

Copy to:

- Kenya Methodist University
  P.O Box 267 – 60200
  MERU

APPENDX XI: Research Authorization Letter from Ministry of Interior

THE PRESIDENCY
MINISTRY OF INTERIOR AND
CO-ORDINATION OF NATIONAL GOVERNMENT

Telegram: "DISTRICTER" Nakuru
Telephone: Nakuru 051-2212515
When replying please quote

COUNTY COMMISSIONER
NAKURU COUNTY
P.O. BOX 81
NAKURU.

Ref No. CC. SR.EDU 12/1/2/VOL.V/7

17th July, 2019

Deputy County Commissioner
NAKURU WEST SUB COUNTY

RE:- RESEARCH AUTHORIZATION – HELLEN AGUTU MATUNGA

The above named student from Kenya Methodist University has been authorized to carry out research on **"effects of interventions of selected reading difficulties on academic performance among pupils from public primary schools"** in Nakuru West Sub County, Nakuru County for a period ending 15th July, 2020

Please accord her all the necessary support to facilitate the success of her research.

MARY W. MWANGI
FOR COUNTY COMMISSIONER
NAKURU COUNTY

APPENDIX XII: Map of Nakuru West Sub County