THE INFLUENCE OF SPELLING ERRORS ON ENGLISH LANGUAGE PERFORMANCE AMONG LEARNERS WITH DYSGRAPHIA IN PUBLIC PRIMARY SCHOOLS IN LAMU COUNTY, KENYA

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DECLARATION

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

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DEDICATION

I dedicate this study to my beloved wife Ngina and our dear children Njenga, Kabuiya and Njeri so that you may appreciate the value of education in life. I thank you for being there for me all through the long hours of reading big and small books, both analogue and digital. Without you, this journey would not have been possible. God bless you abundantly.

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ABBREVIATIONS AND ACRONYMS

KCPE:	Kenya Certificate of Primary Education
KIE:	Kenya Institute of Education
KNEC:	Kenya National Examination Council
LD:	Learning Disabilities
LwLD:	Learners with Learning Disabilities
LwD:	Learners with Dysgraphia
MoE:	Ministry of Education
NINDS:	National Institute of Neurological Disorder and Stroke
OUP:	Oxford University Press
RoK:	Republic of Kenya

ABSTRACT

This study investigated how spelling errors made by Class Seven learners with dysgraphia impacted on their performance in English. The objectives of the study were to identify the spelling errors that learners with dysgraphia made when writing English words and find out the instructional needs of the participants. Further, the study investigated the remediation strategies that teachers used to address the spelling errors and established how the spelling errors affected the performance of the English language among the study participants. The research was guided by the Connectionist Stimulation of Spelling Process with a view to explaining how participants with learning disabilities spell written words. Data was collected in public primary schools in Lamu County, Kenya, through interviews, pupils' exercise books, past records, and a standardised spelling inventory. The study used mixed-method research design and relied on random sampling techniques in identifying the participants. A dysgraphia screening test was administered to the sampled learners to verify their eligibility to participate in the study. The study findings revealed that some learners paid attention to the phonological segments of the target word and associated particular letters with the segments, while others substituted letters in a target word or syllable leading to incorrect spelling. The study classified the various identified spelling errors into letter substitutions, deletions, insertions and transpositions, among others. The findings indicated that teachers did not identify the instructional needs of LwD which always made them use remediation strategies that did not address the pupils' learning strengths and needs. The researcher concluded that it was out of these shortcomings in the teaching of the LwD that led to misspelling of English words in written tasks which consequently brought about the poor performance in English. The researcher recommends creation of public awareness programmes on LD, and early assessment programmes for identifying Special Needs Education learners for adaptive and accommodative interventions.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter presents the background of the study, statement of the problem, purpose of the study and the research objectives. The chapter also looks at the research questions, significance of the study, delimitations and limitations of the study. The assumptions of the study, theoretical and conceptual framework and definitions of operational terms are also dealt with.

1.1 Background to the Study

Writing is the most sophisticated system of language because it requires the integration of previous exposure and experience in listening, speaking and reading (Lerner and Kline, 2006). Subbarayudu and Krishna (2013) posit that dysgraphia is a specific learning disability (SLD) that affects how children acquire written language and use it to express their thoughts. They argue that the stem 'graph' in the word 'dysgraphia' refers to producing letter-forms by hand. The prefix 'dys-' shows existence of impairment while the suffix '-ia' refers to having a condition. Borjes, Burns, Grona, Hale, Keller, Smith and McCorkle (2010) view dysgraphia as a SLD that affects writing. Hallahan, Lloyd, Kauffman, Weiss and Martinez (2005) posit that children with LD exhibit writing problems in spelling, handwriting and come up with poorly organised paragraphs.

In America, the National Institute of Neurological Disorder and Stroke (NINDS, 2008) argues that dysgraphia is a neurological disorder that is characterised by writing disorder. The institute posits that children with dysgraphia show a mixture of upper

and lower case, print and cursive letters, irregular letter sizes and shapes, general illegibility and struggle to use writing as a communications tool. NINDS (2008) further posits that learners with dysgraphia exhibit distorted or incorrect writing, and heavily rely on looking at the written work on a page when writing. Since the auditory and language processing of such learners is weak, they are likely to show inability or difficulty in performing tasks that require thinking and writing simultaneously. The U.S. Department of Education posits that LD affects approximately 5% of all the children enrolled in public schools in America (Kenyon, 2003).

Berninger and Wolf's study (as cited in Borjes et al., 2010) posits that students with dysgraphia may be uncertain about what they hear and therefore, experience problems in learning to spell and write words.

In Italy, Angelille, Marinelli and Zoccoloti (2011) examined whether lexical orthographic representations are stored in a single lexicon, shared for word recognition (reading) and retrieval (spelling), or whether there are two different input and output lexicons among surface dyslexic-dysgraphic and normal young Italian children. The study took normal and children with dyslexia and dysgraphia as participants and the findings revealed that a single orthographic lexicon is responsible for reading and spelling performance in both dyslexic-dysgraphic and normal young children.

In South Africa, Merwe, Smit and Vlok (2011) explore the assessment practices used by South African occupational therapists in remediation of handwriting difficulties in Foundation Phase learners. The study, with registered South African occupational therapists as its participants, aims at motivating them to evaluate and, or expand their current practices.

In Tanzania, Msanjila (2005) presents a case study to identify writing problems in the Kiswahili language exhibited by Form Three secondary school students. The study also aimed at establishing the reasons behind the problems. Writing skills are taught in Tanzanian secondary schools in the first two years, leading to the assumption that a third year student has learnt the skills comprehensively and competently (Msanjila, 2005). The study identified six writing problems: capitalisation, punctuation, inexplicitness, illogical sequence, spelling, and grammatical errors. The findings were attributed to lack of both qualified Kiswahili language teachers, and teaching and learning materials, among other reasons. The study also revealed that many students did not differentiate between the spoken and written, and formal and informal Kiswahili registers.

However, unlike Msanjila (2005) whose study centred on six writing problems in Kiswahili, the current one paid specific attention to spelling only in the English language to give it particular and greater scrutiny to identify various spelling errors. Further, while the former study used students with average ability in a secondary school in Tanzania as participants, the latter one had pupils with LD in public primary schools in Kenya.

In Kenya, the National Special Needs Education Policy Framework (RoK, 2009) observes that Kenya has only six types of special institutions catering for three categories of disabilities namely: children with visual and hearing impairment, mental handicap, and those who are deaf-blind. Thus, over three quarters of learners with disabilities, including dysgraphia, are left without a curriculum that addresses their needs. The English language is learnt in all public primary schools. The Kenya Primary Education Syllabus stipulates that all pupils in upper primary, under which

Class Seven falls, acquire writing skills that can enable them express their own ideas meaningfully for effective communication (RoK, 2002). The syllabus sets out that every Class Seven pupil should be able to spell from dictation, write speeches, minutes, dialogues, formal and informal letters, among other writing experiences. Further, it outlines thematic guidelines with each theme having a set of English vocabularies to be learnt for day-to-day usage, in both speaking and writing. In order to achieve these objectives, teachers are expected to teach spelling rules through the various exercises contained in pupils' course books with a view to instilling mastery of different language skills (Mathenge, Karinga, Maina, & Kondeng, 2004). Further, the teacher's guide book encourages instructors teaching English to Class Seven pupils to give the learners extra practice in spelling, particularly of words that present spelling difficulty, and promptly mark and return the corrected exercise books.

In an English course book for Class Seven pupils approved by the Ministry of Education, Mathenge, Karinga, Maina, and Kondeng (2014) identify some spelling rules involving, for instance, the prefix *un-* to form adjectives (e.g. fortunate/ *un*fortunate; important/*un*important; cover/ *un*cover) and suffixes *-ly* to form adverbs (e.g. neat/ neat*ly*; smart/ smart*ly*) and *-er* to form nouns (e.g. sell/ sell*er*; buy/ buy*er*) in order to help pupils learn how to spell English words. The course book also offers some insights for spelling some irregular verbs that change ‘i' to ‘a' to form past tense (e.g. sw*i*m/ sw*a*m; r*i*ng/ r*a*ng) and ‘a' to ‘u' to form past participle (e.g. r*a*ng/ r*u*ng; sw*a*m/ sw*u*m), among others. The Kenya Certificate of Primary Education (KCPE) expects each candidate to write an original English composition that exhibits accurate spelling (KNEC, 2011). It should be noted that the national KCPE English language examination consists of two sections: fifty objective questions and a writing task in the form of a composition (KNEC, 2008). The KNEC (2008) newsletter report

indicates that candidates performed better in the former section than in the later as shown in Table 1.1.

Table 1.1 Performance in KCPE English Examination in 2004 - 2007

Year	2004		2005		2006		2007	
Paper	Obj.	Comp.	Obj.	Comp.	Obj.	Comp.	Obj.	Comp.
% mean	45.74	35.77	43.10	36.30	45.88	35.47	47.02	41.10

Source: KNEC (2008).

The KNEC (2008) newsletter report indicates that candidates sitting for the 2007 KCPE English composition exam were tested on the ability to compose a personal story that was convincing and grammatically accurate.

However, the report shows a candidate who had misspelled almost all the words he or she had used in the composition. The examination body allocates 40 minutes for composition writing which earns a candidate between zero and forty marks depending on the candidate's ability to communicate effectively in written form (KNEC, 2011). A candidate in 2010 KCPE examination who could hardly copy the sentence set as a beginning of their personal stories earned two marks. The candidate had misspelled most of the words written in the entire composition, making it difficult to understand.

Further, the KNEC (2011) newsletter report shows that many candidates sitting for the English composition examination had problems writing correct spelling. In particular, the report shows a pupil whose effort to communicate in written English is compromised by the numerous spelling errors that dominate the composition with words like *fmug, foom, saHha, rainrg, haRy fegmas, masa, rfanan* and *tangeai,* among others. In the same vein, the KNEC (2013) newsletter report identifies

multiple spelling errors as one of the key challenges in writing skills that pupils sitting for KCPE in 2012 faced. The *Kenya Ultimate Spelling Contest* initiated by Kenya Literature Bureau and *Spell It Right* involving Class Five, Six and Seven pupils in public and private primary schools serves to show the concern the low performance in spelling has caused, and the need to reduce illiteracy among schoolchildren in Kenya **(**Wanzala, 2017).

From the foregoing, it is evident that spelling English words has continued to pose writing hindrances to pupils in public primary schools in Kenya. It was from this backdrop that this study found its basis.

1.2 Statement of the Problem

The Kenya Primary Education Syllabus sets the goals for English towards equipping pupils with writing skills for expressing and conveying information meaningfully, accurately and effectively (RoK, 2002). The syllabus identifies writing skills for Class Seven pupils that include writing from dictation, compiling school magazines, writing answers to comprehension questions and writing speeches, among other learning experiences. However, the KNEC (2011, 2013) newsletter reports indicate that numerous spelling errors have continued to inhibit many KCPE candidates' effective communication in written English. This is despite the efforts evident in RoK (2002) and course books approved for use by the Ministry of Education to instill effective writing skills in learners through spelling rules involving prefixes and suffixes, and irregular words such as verbs and nouns. In one instance, a candidate's effort to copy the input sentence presented in the composition question paper for KCPE 2010 examination to guide learners in writing an original composition produced words like

dag for *day*, *weiting* for *waiting*, *far* for *for*, and *fmuy* for *finally*, among others (KNEC, 2011).

Although the KNEC (2011) newsletter report reveals the spelling challenges that learners sitting for KCPE encounter in their effort to communicate in written form, the national examination body does not reveal whether or not these spelling problems are inclusive of those made by LwLD for consideration when setting or marking the special learners' written compositions.

In order to draw attention to the effects of spelling challenges on the academics of LwD, a study that centres on the influence of spelling errors on the performance in the English language for Class Seven pupils with dysgraphia in public primary schools in Kenya was necessary. This was because dysgraphia, about which there was little research in Kenya, could be to blame for the severe spelling errors manifested by some learners in KCPE newsletter reports. This was the gap this study purposed to fill.

1.2.1 Purpose of the Study

The purpose of the study was to investigate the spelling errors made by LwD when writing English language words and how they affected the performance of the subject among the Class Seven pupils in public primary schools in Lamu County.

1.2.2 Objectives of the Study

The objectives of the study were to:

a. Identify the spelling errors that learners with dysgraphia made when writing English words.

b. Find out the instructional needs of Learners with Dysgraphia to address the spelling errors in the English language.
c. Establish the remediation strategies that teachers use to help learners with dysgraphia improve in spelling English words.
d. Investigate how learners with dysgraphia perform in the English language.

1.2.3 Research Questions

The study was guided by the following questions:

a. What spelling errors do learners with dysgraphia present in their written English?
b. What instructional needs do learners with dysgraphia require to address the spelling errors they make in written English?
c. What remediation strategies do teachers use to help learners with dysgraphia improve in spelling English words?
d. How do learners with dysgraphia perform in the English language?

1.3 Significance of the Study

This study focused on the spelling errors learners with dysgraphia in Class Seven make when writing in English. It highlighted areas of the needs of the learners with dysgraphia that could help improve the teaching and learning of spelling skills.

The RoK (2009), in appreciating the then Kenya Institute of Education's (KIE) (now Kenya Institute of Curriculum Development (KICD) effort in developing curricula and syllabi for several areas of special education, points out that there are delays and lack of co-ordinated interventions in developing a curriculum responsive to specific needs in LD. In view of this, the study could provide the stakeholders with

information on the relevant writing skills in developing a responsive curriculum to accommodate the teaching and learning needs of learners with dysgraphia.

For special needs children, learning has for years been hampered by inadequate teacher capacity to manage learners with writing problems (RoK, 2009). The findings could raise awareness on the need for appropriate training of teachers in teacher training colleges to cater for the instructional needs in spelling of pupils with dysgraphia.

KNEC requires each Class Eight pupil sitting the Kenya Certificate of Primary Education (KCPE) exam to write a 40-minute English language composition that exhibits accurate spelling (KNEC, 2011). The study could sensitise KNEC on the fact that some candidates have dysgraphia and therefore may need oral rather than written tasks where the condition is severe.

Further, the KNEC (2011) newsletter report for KCPE 2010 identifies the following categories of learners with special needs: those who are blind or have low vision, the physically or mentally challenged, and those with hearing impairment. The current study could inform KNEC on whether or not to include learners with dysgraphia among those with special needs owing to their learning disability.

1.4 Limitations and Delimitations

a) **Limitations**

The Lamu District Development Programme (RoK, 2009) estimates that Lamu West covers an estimated 4503.7 square kilometres, an area dotted with remote village-centres within which many of the schools are located. Accessing some of the schools was a limiting factor. However, the researcher hired motor-cycle services to facilitate

his travel for essay access to the research centres. Further, the researcher informed in advance the sampled schools of any planned study visit.

The study was solely funded by the researcher's limited resources to meet the various expenses that included typing, printing, distributing and collecting of the research tools, among others. That notwithstanding, the researcher ensured that financial limitations did not compromise the standards and results of the study. The study was time-limited: it was set to begin and end within a specific period of time. The researcher organised a work-plan to guide his carrying out the study in order to meet the set deadline.

b) Delimitations

Lamu County is divided administratively into Lamu East and Lamu West. The study was carried out in Lamu West because it is relatively more populated and this provided a reliable sampled population for the study. The County is also cosmopolitan enough to allow a generalisation of the study findings. Besides, it was convenient and affordable to carry out a study in the County because the researcher worked there and therefore found it easier to establish rapport with the research population.

The study, however, paid attention to Class Seven pupils because they had been learning English as a subject for at least six years and were expected to have acquired sufficient writing skills. The study targeted pupils in Class Seven because they were expected to have out-grown the teething problems associated with writing such letters like *d* for *b* or *n* for *u*, a spelling problem likely to be witnessed in lower classes.

The researcher assumed that Class Seven pupils, with only a year to KCPE, could clearly exhibit spelling errors necessary for the study.

The study however paid particular attention to spelling errors over handwriting because over the years, Kenya National Examination Council (2011, 2013) newsletter reports have singled out spelling errors as one of the major problems exhibited by KCPE candidates in composition writing in national exams. Besides, the study was exhaustive and effective in tackling the study objectives.

1.5 Assumptions

This study assumed that:

a. All the schools which were purposively sampled for the study had Class Seven learners with dysgraphia.
b. Class Seven pupils with dysgraphia would clearly exhibit spelling errors meant for the study.
c. The duration and funds allocated for the study would be enough.
d. All the resource persons would be cooperative in the entire period of the study.
e. Despite the remoteness of most of the schools in the Sub-County, the researcher would access all the sampled data-collection centres.

1.6 Theoretical and Conceptual Framework

This section covered two areas: one, theoretical framework showing the guiding theory of the study, and second, the conceptual framework.

1.6.1 Theoretical Framework

The study was guided by the Connectionist Simulative of the Spelling Process advanced by Houghton and Zorzi's study (as cited in Rapp and Tainturier (2014)). Proponents of the Connectionist Simulation of the Spelling Process argue that letter sequences that correspond to a single phoneme are represented as single units

(Houghton and Zorzi's study as cited in Rapp and Tainturier (2014)). Rapp and Tainturier (2014) present two study participants with acquired dysgraphia that support the claim that letter sequences like PH in PHONE for /f/ or CK in ROCKET for /k/ are represented as single units as opposed to other grapheme sequences like CR or ST. The authors, referring to the letter sequences like PH and CK as complex graphemes or diagraphs, further posit that while complex graphemes are treated as units in written word recognition, double letters are not. However, they argue that the complex graphemes are likely to be at a disadvantage later in the spelling process since spelling involves sequential writing of an individual letter and their constituent letter components must be discriminatively identified for writing. The theory is related to the study because it explains how learners with disabilities approach written spelling.

1.7 Conceptual Framework

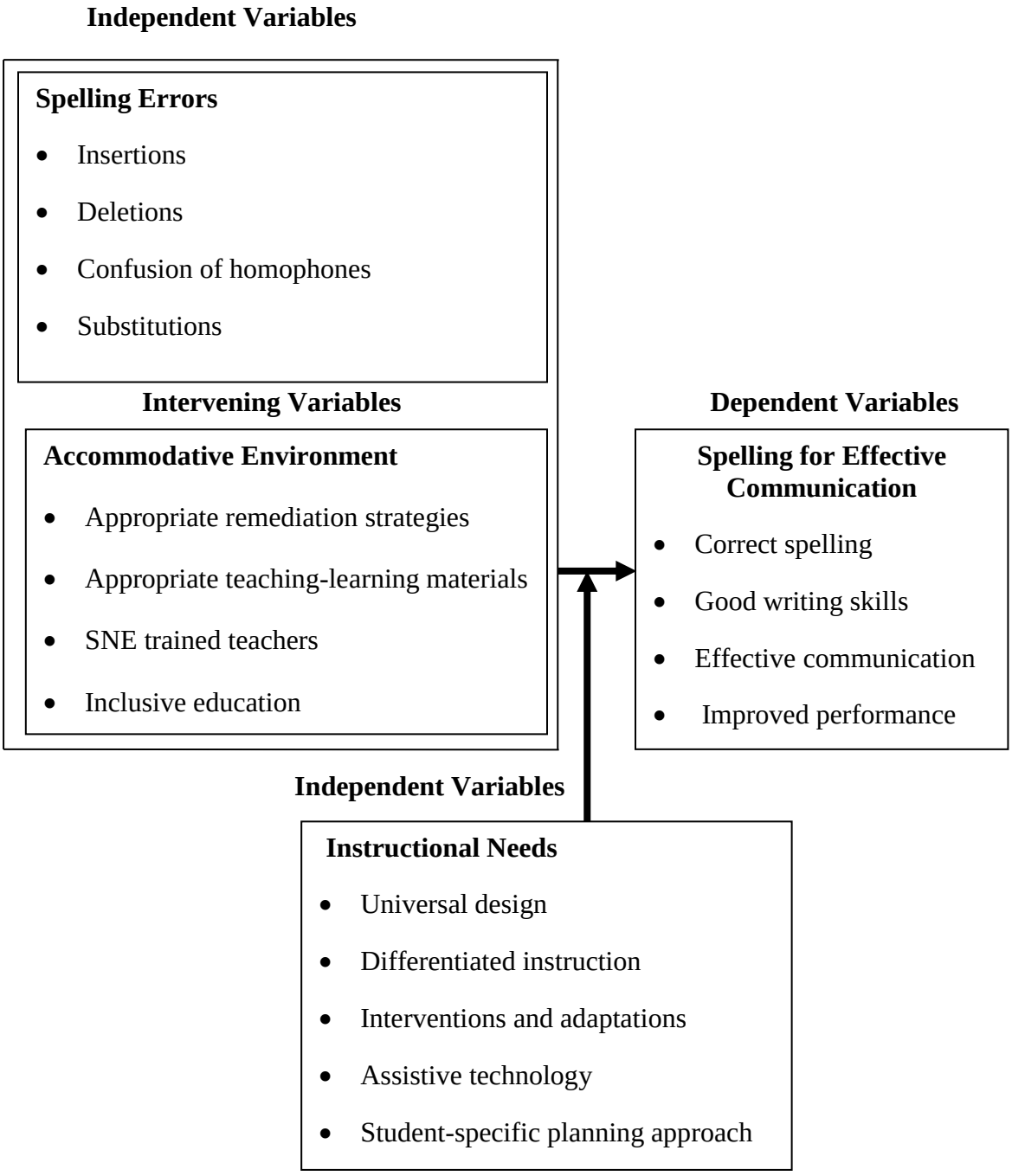

Figure 1.1 A conceptual framework showing study variables

Source: Researcher

Summary

The Conceptual Framework above implies that two independent variables: spelling errors and instructional needs of LwD require an environment that accommodates the needs (intervening variables) of the participants to enable them use the English language in written form for effective communication (dependent variables). The concept is that LwD face spelling challenges when writing English words. These challenges include confusing between homophones or inserting, deleting or substituting a letter or letters in a target word. The challenges are compounded further by the varied learners' individual learning needs and strengths. However, these setbacks can be managed adequately if teachers would be trained in SNE, have appropriate teaching-and-learning materials, and use appropriate remediation strategies to address the spelling needs in an inclusive education system. LwD in these settings are likely to show improved writing skills and performance in the English language than those who are not.

1.8 Operational Definition of Terms

Acquired dysgraphia: A specific learning disability that one gets after an incident or ailment that damages the victim's part of the brain that is responsible for development of writing skills to an extent that the victim cannot spell words through writing as he or she would do before.

Dysgraphia: A specific learning disability that is dominated by poor written spelling skills that inhibit the learner's ability to communicate effectively through writing.

English language: The compulsory British language version taught in public primary schools in Kenya.

Grapheme: The shape of a letter or letters to be written in order to represent a particular sound of a target word.

Performance: Rated score in written spelling in the English language.

Public primary schools: Schools owned and funded by the Kenyan government, and offer basic education from Class One to Eight.

Spelling errors: Writing the wrong letter or sequence of letters of a target word.

Spelling: Writing the correct letter or sequence of letters of a targeted word.

Writing: Putting down a letter or sequence of letters on a paper to communicate.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The review of related literature is set in four sections: section one will pay attention to the spelling errors that LwD manifest when writing English words and the second will look at the instructional needs that LwD require to overcome the spelling errors. Section three will highlight the intervention strategies that teachers use to address the spelling errors for the LwD while the fourth will focus on the performance of LwD in the English language.

2.2 Common Spelling Errors in the English Language for Learners with Dysgraphia

Lerner and Kline (2006) argue that spelling a word correctly requires a learner to have stored the word in memory and be able to retrieve it without the help of visual aids. The authors argue that some learners, however, have poor auditory memory that limits them from holding word sounds in their minds, making it difficult for them to learn to spell correctly. Learners with learning disabilities require motor memory to recall the motor movement of the word when it was previously written. There are also those who attempt to write the words by paying attention to their sound units and associating letters with them to come up with invented spelling that sounds like the target words but with wrong spelling (Lerner & Kline, 2006).

An individual with poor phonological segmentation skills will delete letters and syllables, omitting letters for less salient phonemes particularly those within internal location and unstressed syllables (e.g. past written as *pat* and realise as *relize*) (Wasowicz, 2007). The author posits that those with poor phoneme discrimination

and identification skills are likely to spell distinct vowel sounds with the same letter (e.g. bet and bit both spelled as bet), and add letters for phonemes that don't occur in a word (e.g. met spelled as *ment*). Those with poor sound sequencing skills commonly reverse the sequence of letters, with the liquids among those leading in letter reversals in a word or syllable sequence (e.g. fold written as *flod*).

An individual relies on the phonological awareness skills of phoneme segmentation, sequencing, discrimination, and identification in order to spell. The author posits that to do this, words are broken down into smaller syllabic and phonemic units then linked to their written forms. In order to achieve this, the author argues that the individual has to use phoneme-sound sequencing skills to map the letters to sounds in the correct order. In order to perceive the differences between speech sounds, and to recognise that a difference in sounds brings about a difference in meaning, the individual uses phoneme discrimination and identification skills (Wasowicz, 2007). This study sought to find out if the respondents showed spelling errors like these ones.

Mercer, Mercer and Pullen (2011) argue that in order to spell a word correctly, one requires the ability to read the word to be spelled, know the relationship between the sound patterns and structural analysis of the word, visualize the appearance of the word, retrieve the word from memory, and use motor capability to write the word.
They further argue that confused recall of spelling rules could result in insertions, omissions, substitutions, phonetic spelling of irregular words, letter orientation confusion and reversed letter sequence.

Protopapas, Fakou, Drakopoulon, Skaloumbakas and Mouzaki (2012), in a study to analyse spelling errors made by Greek school children with and without dyslexia,

identify spelling errors that are categorised in seven groups: phonological, grammatical, orthographic, stress, punctuation, unclassified and other errors.

The phonological ones are those spellings that affected the pronunciation of the target word, thereby altering its phonological identity. The authors argue that any phonologically unacceptable spelling was treated as a phonological error irrespective of phonological distance from the target, word-type, or within-word position. They argue that phonological errors are those that reflect difficulty in representations and processes that are not specific to words and independent of lexical knowledge. Grammatical errors included phonologically equivalent spelling of inflectional suffixes and may reflect insufficient mastery of inflectional morphology while the orthographic errors included spelling of word-stems, word-root, and any derivational morphemes preceding the obligatory inflectional suffixes which reflected imperfect registration of word-specific knowledge (Protopapas et al., 2012).

Stress errors included the stress diacritic, which marks the vowel of the stressed syllable in every Greek word with two or more syllables while punctuation errors included primary and secondary punctuation marks which could reflect difficulties in phrase-level grouping, intonation, mastery of writing conventions, or probably inattention due to poor concentration (Protopapas et. al, 2012). The authors put errors that included miscellaneous infrequent misspelling like mirrored letters as unclassified while other misspellings that failed to fit in the above groups were categorised as ‘others’ (Protopapas et al., 2012). While their study and the current one paid attention to spelling errors, theirs used the Cognitive Theory of Spelling while the current one used the Connectionist Simulative of the Spelling Process. Theirs used the Greek language while the current one used English. The two studies differed in

both their objectives with the former analysing the spelling errors from children with dyslexia while the later identified the same in children with dysgraphia.

Abu-Rabia and Taha's (2004) study identified spelling errors as phonetic, semi-phonetics, dysphonetic, visual letter-confusion, irregular spelling rules, word-omission, and functional word. The authors argue that phonetic errors are made when the writer is unable to translate specific phonemes of a certain word to graphemes particularly when the writer cannot rely on lexical writing. Semi-phonetics errors appear when the orthography of a word does not represent the target word phonologically because the writer lacks internal specific representation, even though the primary orthographical-phonological chunk of the word is retained (Abu-Rabia & Taha, 2004).

The dysphonetic errors occur when the words are spelled incorrectly in more than one phoneme, and when the spelled orthographic chunk does not represent most of the phonemes of the word the writer intends to spell (Abu-Rabia & Taha, 2004). The visual letter-confusion errors are caused by confusion between similar visual shapes of letters with different sounds while irregular spelling rules bring about misspelled words as a result of lack of mastery of the spelling rules in Arabic since the language presents varying forms of spelling a consonant in a word. Further, the authors identified the spelling errors in words that were omitted wholly as word omission errors, while functional words that preceded words were identified as functional words error. The spelling errors identified by their study differed from the current one because the Arabic language, which was the language whose spelling of words were under investigation, presented a different orthographic and grammatical system from

the English one, the language the current study identified the spelling errors of its words.

Elliot and Johnson (2008) present identification of spelling errors that included sound-based, rule-based, omission, commission and transposition, writing, and multiple errors. The sound-based errors included homophone confusion (e.g. there/their; hear/here), single consonant confused with another single consonant (e.g. look*e**t* for look*e**d*; re*s*eption for re*c*eption), replacement of letter *e* with *y (e.g.* empt*e* for empt*y*; lad*e* for lad*y*), and phoneme-grapheme mismatch (e.g. *deap* for *deep*; *agen* for *aging*).

The rule-based errors included doubling of a consonant (e.g. *accross* for *across*; *untill* for *until*) or singling (e.g. *aclimatised* for *acclimatised*; *ofering* for *offering*), suffix errors by adding *-ly* to the wrong word (e.g. funny*ly* for funny) or failing to change letter *y* to *i* in words ending in letter *y* before adding a suffix (e.g. repl*y*ed for repl*i*ed).

The omission, commission and transposition ones included single letter omissions (e.g. *empy* for *empty*; *easly* for *easily*), unnecessary letter insertion (e.g did*e*nt for didn't; ano*u*ther for another) and reversing two letters in a single word (e.g. br*ia*n for brain; gent*el*man for gent*le*man) respectively (Elliot & Johnson, 2008).

As for writing errors, they included spacing problems that led to writing of two words as one and vice (e.g. *to wards* for *towards*; *alot* for *a lot*) while other words in this category had their last letter missing (e.g. *befor* for *before*; *ever* for *every*).

Multiple errors consisted of several inserted or omitted letters (e.g. behid*e* for behi*n*d; man*e*gd for man*ag*ed) and extreme phonetic errors (*ant shaght* for *anxious*; *corried door* for *corridor*) (Elliot and Johnson, 2008). The authors identified the rest of the

spelling errors which included words whose parts was either missing or severely misspelled into ‘others' (e.g. *apoched* for *approached*; *appment* for appointment).

Fischer-Baum, McCloskey and Rapp (2010) used two children with acquired dysgraphia as participants to identify the cognitive scheme for representing letter position in the graphemic representations that underlie the ability to spell. The positional schemes were evaluated through analyses of letter perseveration errors produced by the participants. The results showed a strong support of a content-independent, both-edges scheme that represents letter position in terms of distance and direction from both the left and right-edges of a word. The study noted that most of the spelling errors were intruded letters. These were letters that did not appear in the correct spelling of the target word and took the form of substitutions or insertions. Categories of spelling errors were identified as letter substitutions (e.g. *absonce* for *absence)*; deletion (e.g. *futue* for *future*); insertions (e.g. *counld* for *could*); transposition (e.g. *roit* for *riot*), and appropriate spelling for homophones (e.g. *bean* for *been* and *two* for *too*).

Fischer-Baum, McCloskey and Rapp’s (2010) study differed with the current one; their study was a case study of two participants with acquired dysgraphia while the current one used a sample of a large population as participants. Further, while the former study identified the cognitive scheme for representing letter position in the graphemic representations, the present one identified the spelling errors that participants made with a view to determining whether teachers used the appropriate remediation strategies to curb the spelling challenges for improved performance in English as a subject. However, given that the two studies dealt with spelling errors

with LwLD and performance in English, the current study adapted the categories the authors used to identify the spelling errors.

Rasugu (2010) aimed at finding out the nature and prevalence of LD among standard three primary school pupils in order to identify and categorise them from the most common types to the rare ones in Starehe Division, Nairobi County. The study found out that although it could not conclusively establish that there were children with LD, the screening criteria used revealed 43.0% of the study participants were at high risk of developing LD. Further, the study identified poor visual-motor co-ordination, difficulty in copying, letters and words spacing, letters and words reversals, poor handwriting, sentence repetitions, letter omissions, capitalisation, over-printing among others, as common types of errors in English. The researcher recommends the study to be replicated in other regions in the country in order to gain a broader understanding of the study problem because the study was conducted in a few sampled schools in the Nairobi region owing to resource constraints. The researcher of the current study found Rasugu's (2010) study inadequate in addressing challenges affecting the English language among LwLD in public primary schools because only three schools were used in a whole county, making the findings unlikely to be generalised. Further, the scope of the study, which identified poor visual-motor co-ordination, difficulty in copying, letters and words spacing, letters and words reversals, poor handwriting, sentence repetitions, letter omissions, capitalisation and over-printing as among the several common types of errors in English among Class Three pupils in Starehe Division, Nairobi, was wide making it difficult for the researcher to specialise in one problem.

Sterbinsky (2007) argues that Words Their Way is a set of three inventories: Primary Spelling Inventory, Elementary Spelling Inventory, and Upper Level Spelling Inventory which are used to assess a student's ability to read and spell. They are instruments that teachers can be sure that the results they have received from them reflect the reality of the students' knowledge (Sterbinsky, 2007). Bear, Invernazzi, Templeton, and Johnson (2000) argue that Elementary Qualitative Spelling Inventory (EQSI) can be used for assessing the spelling knowledge of learners and assist teachers to plan for spelling lessons. EQSI has twenty-five words and split into word-features that constitute them to help teachers determine individual learner's instructional needs (Bear et al., 2000). The word-features are categorised depending on whether they are in early, middle or late emergent, letter-name alphabetic, within word pattern, syllabic and affixes, and derivational relations (Bear et al., 2000). The authors say the word-features are arranged depending on their level of difficulty beginning with the simplest to the most difficult: initial and final consonants, short vowels, digraphs, blends, long vowels, other vowel patterns, and inflected endings. Others are syllable junctures, unaccented final syllables, harder suffixes and word basses. Pearson Education (2008) posits that the Elementary Spelling Inventory can be used from the first grade and through all the elementary grades.

The literature reviewed in this section did not show any study that addressed the identification of spelling errors that learners with dysgraphia made when writing English words in Lamu County, Kenya. Protopapas et al. (2012), for example, analysed spelling errors from Greek school children with and without dyslexia but the current one focused on the same category of participants but with dysgraphia. Moreover, the two languages involved in the two studies were Greek for the former and English for the later which have different orthographic systems. Further, Abu-

Rabia and Taha's study (2004) investigated reading and spelling errors in Arabic language with Arabic readers with dyslexia as opposed to the current one which paid attention to spelling errors but in the English language with children with dysgraphia.

In their study, Elliot and Johnson (2008) paid attention to correct and incorrect use of punctuations, sophistication of vocabulary, non-standard English, sentence types and frequency of spelling errors, areas that differed from the current one which centred on the instructional needs, remediation strategies and performance in English of LwD. Like Elliot and Johnson's (2008) study which dealt with spelling errors, the current one did the same but not on frequency but to identify the same. In Fischer-Baum, McCloskey and Rapp's (2010) study, the authors described spelling errors in terms of letter perseveration errors and used a case study of two participants. However, the current one intended to identify the spelling errors with a view to determining the instructional needs of the participants and used a larger sample of participants with a view to making its findings more generalisable.

In her study, Rasugu (2010) argues that her study intended to find out the nature and prevalence rate of LD children in Class three. The study however acknowledges that the screening criteria used revealed that 43.0% of the participants were at high risk of developing LD, it could not conclusively establish that the participants were LD. The Dysgraphia Screening Test (Harp, 2015) that the current study used to determine the eligibility of the study participation gives indications of dysgraphia of a learner depending on the total score the learner gets from the tool. Rasugu's (2010) study centred on finding out the nature and prevalence rate of LD but the current one was specific on a particular LD. LD refers to several conditions that are likely to affect the acquisition, organisation, retention, understanding or use of verbal or nonverbal

information (Province of British Columbia, 2011). LD is therefore a wide and general field affecting many specific conditions. In order to be specific and built upon Rasugu's (2010) study, the current study targeted learners with dysgraphia. Dysgraphia is a specific learning disability which inhibits writing (Borjes, Burns, Grona, Hale, Keller, Smith and McCorkle, 2010).

None of the studies in the related literature reviewed dealt with the identification of spelling errors that learners with dysgraphia made when writing English words in Lamu County, Kenya. Nevertheless, the current study adapted the Elementary Qualitative Spelling Inventory (Bear al. 2000)) to establish the spelling errors of the study participants in the English language. This was the first objective that the current study filled.

2.3 Instructional Needs of Learners with Dysgraphia for addressing spelling errors in English language

Manitoba Education and Advanced Learning (MEAL) (2015) in an educational resource addressing the needs of LwLD, acknowledges the critical role classroom teachers play in identifying the instructional needs of learners. The resource argues that the classroom-based assessments that teachers administer have valuable data that could be used to determine the learning needs of LwLD. It classifies assessments into three categories: the formative assessment which is continuous and is used to identify what the learner already knows and understands for teachers to make decisions on how to help them progress; the summative assessment used to confirm whether a learner has achieved the curricular objectives; and assessment as learning because learners use it as an avenue of cognitive reconstruction emanating from their interaction with new ideas. The resource posits that teachers should not take an

assessment as an end in itself but as a feedback to identify and address the learning gaps of the learners. It advises teachers to assist learners who have difficulty in achieving targeted learning outcomes by trying new instructional approaches and offering them other chances to succeed.

However, teachers alone cannot collect all the necessary data for identifying, understanding and planning for LwLD and requires teamwork from parents, teachers, and the learner (MEAL, 2015). The team contributes information about the learner depending on what they think could provide insight into his or her unique instructional needs then determines how it will fill in the gaps through identifying strategies, interventions, and adaptations that suit the learner's needs (MEAL, 2015).

Another approach to determine learners' needs is the use of universal design which involves creating teaching and learning environments and materials usable by the widest range of learners with the widest range of abilities, and learning within the largest variety of situations (Manitoba Education, Citizenship and Youth, as cited in MEAL, 2015)). A universal design approach begins with the development of a class profile based on what is known about the students' learning styles, multiple intelligences, interests, strengths, and needs. This information helps teachers to reduce learning limitations and provide flexibility into curricular objectives in such a way that learning experiences are beneficial to all students in the classroom. When universal design is used as a foundation plan for instruction, teachers are able to meet the learning needs of all students in the classroom (MEAL, 2015). Manitoba Education, Citizenship and Youth (as cited in MEAL, 2015) argues that universal design is fundamentally inclusive because of its principles of non-discrimination and

equal opportunity in promoting accessibility to curricular content for diverse students to learn.

Education, Citizenship and Youth (as cited in MEAL, 2015) further advocates the use of differentiated instruction, a teaching and assessment approach which adjusts the presentation of the curriculum to accommodate the needs and abilities of diverse learners. Differentiated instruction focuses on individual student's learning preferences, learning styles, and multiple intelligences and is compatible with universal design (MEAL, 2015).

MEAL (2015) also proposes the use of adaptations to determine learners' instructional needs. Adaptations entail changing the teaching processes, materials, assignments or targeted outcomes to help individual learners to achieve the set learning outcomes (MEAL, 2015). Adaptations are fair, compatible with universal design and differentiated instruction and do not therefore present unfair advantage over learners who do not use them (MEAL, 2015). They are reasonable accommodations for LwLD to assist them achieve their curricular outcomes. MEAL (2015) posits that adaptations are useful to learners most when teachers apply them not to replace the need for developing basic skills but as a compensation for students' learning limitations. Teachers should select adaptations depending on the unique needs of the learner which have been identified in the student profile (MEAL, 2015). The educational resource advises teachers to ensure that learners use the adaptations regularly to determine if they gain from them and give learners time to adjust and learn how to use them.

Another approach that addresses the needs of LwLD is the use of assistive technology (AT) that is selected depending on the learner's strengths and needs (MEAL, 2015). AT includes any hardware or software equipment that could be utilized to improve or sustain a learner's performance or capability (MEAL, 2015). MEAL (2015) groups AT into categories of low, mid and high solutions. The low-technology solutions include raised line paper, alternative writing surfaces and alternative writing instruments like magnetic letters and alphabet stamps. Mid-technology solutions include digital recorders, calculators, talking spell-checkers, audio books, word processors and simple voice playback devices while the high-technology ones include talking word processors and prediction software, screen reading software, communication devices and specialized computer access like touch screens, alternative keyboards and braille display (MEAL, 2015).

MEAL (2015) however admits that even with the usage of all these approaches, some LwLD are likely to continue showing learning difficulties. The educational resource urges teachers to adapt the student-specific planning approach which involves expanding the assessment team to include a resource teacher who brings in more support and assessment**.** The student-specific assessment reviews the learner's support file and any additional data from the classroom teacher. It also observes to identify and record any extra information about the student's learning strengths and needs in the classroom environment in order to make decisions about any further assessment. In case a learner does not require any further assessment, the resource teacher may assist in selecting and implementing further interventions and adaptations which may be added to the Individual Education Plan (IEP) (MEAL, 2015).

Indiana Department of Education (IDE) (2017) posits that identification and early, appropriate, research-based interventions of LD are crucial in ensuring that learners are successful in classroom and thereafter. Indiana Center for Accessible Materials (ICAM) gives print instructional materials of specialized formats like digital text, accessible PDFs and ePubs, and audio files for students with documented print disabilities (IDE, 2017). IDE (2017) asserts that the ICAM, in conjunction with the Indiana Education Resource Center (IERC), provide braille, large print and tangible aids and equipment for learners who are blind or with low vision. IDE (2015) encourages the use of assistive technology like word prediction and text-to-speech software for LwD. It advises teachers to allow LwD to have more time to achieve the set learning outcomes. It also advocates LwD to record lectures or notes and be given examples of completed written projects. Teachers should allow and encourage LwD to use keyboards for writing or spelling, and should not grade their written work on neatness (IDE, 2015). It also suggests that primary school learners should be given writing books with raised-line papers with bold margins to enhance learners' spatial skills and use or have access to pencil grips.

Adelson, Geva and Fraser (2014), in a guide to help teachers determine whether English Language Learners (ELL) have problems in reading and writing because they have learning difficulties or just because they are ELL, insist that assessment should form the foundation of instruction for LwLD. The authors argue that assessment identifies the weaker areas and should therefore inform the teacher whether or not the ELL have challenges that are common with regular ELL or require instruction beyond English as a Second Language programming to initiate individualized programme. The teacher should continue assessing the learner to monitor progress

and make adjustments where required (Adelson, Geva & Fraser, 2014). The guide directs the teacher to ensure the assessment brings out whether the learner's struggle with reading emanates from word difficulties or comprehension of factual or inferential aspects (Adelson, Geva & Fraser, 2014). Lesaux and Kieffer (as cited in Adelson, Geva & Fraser, 2014)) however point out that there are very few studies on interventions for ELL but the learners have continued to gain from instructions arrived at from studies on struggling monolingual readers.

The Province of British Columbia (2011), in a guide for teachers supporting learners with LD, argues that teachers may adapt instructional and assessment strategies in order to accommodate learner's needs. This is done, the guide posits, with a view to helping the learner achieve the set curriculum objectives and demonstrate mastery of concepts learnt. The adaptations may include the instructional approach, learning materials and the social or physical environments under which the learner is to receive instructions. Further, the span of time the learner is expected to be in contact with the instructor, resources and topics, response and evaluation procedures may also be adjusted to meet the ability level of the learner (PBC, 2011).

Bear et al. (2000) posit that the EQSI has a Feature Guide for Elementary Qualitative Spelling Inventory table which has word-features at the top row against which the teacher uses to score the learners' written spelling. To ensure consistency in scoring, Bear et al (2000) directs teachers to add a point in the respective column of the correctly spelled word-feature of the target word. Bear et al. (2000) posits that in order to get the word-feature analysis for a learner to determine his or her spelling instructional needs, the total number of points in each feature-column are added. If a learner scores about five out of six word-features in a given column, that would mean

the learner is good in that particular spelling feature unlike when the score would be two or three which would imply the learner is weak and requires some instructions (Bear et al., 2000). In case the learner does not get a single score in a particular spelling feature, that should mean the word-feature is beyond the learner's instructional scope, and the word-features appearing before it should be addressed first (Bear et al., 2000).

Much as the MEAL (2015) suggests several approaches of identifying the instructional need of learners among them assessment, universal design, and differentiated instruction, the resource did not inform the study of how teachers would identify the instructional needs necessary to address the spelling errors of LwD. While this study appreciates IDE's (2017) view of identification and early interventions as important to address learning issues affecting LD, the department does not tell how learners' instructional needs can be identified in order to effectively address their learning needs particularly in spelling errors. Even though Bear et al. (2000) present Feature Guide for Elementary Qualitative Spelling Inventory which the authors say could be utilised to determine the instructional needs of learners with spelling challenges, the researcher noted that none of the literature reviewed addressed the spelling instructional needs of the LwD in Lamu County. The current study adapted the Bear et al.'s (2000) Feature Guide for Elementary Qualitative Spelling Inventory in order to identify the instructional needs of the current study's participants.

2.4 Remediation strategies that teachers use for learners with dysgraphia to improve in spelling English words

A spelling error in a target word inhibits effective written communication. This requires that learners are instructed consistently and carefully in spelling to ensure they convey the intended information when writing.

PBC (2011) posits that poor spellers have problems noticing and recalling features of language presented by letters. Such features include the ability to analyse and recall specific sounds in words associated with letters like f, sh, or p; syllables such as cas-, mem-, or neg-; and morphemes like re-, -ment, or –est (PBC, 2011). In order to address this problem, the guide directs instructors to teach reading and spelling together, discuss with the learner the word structure, its origin, meaning and morphemes. Further, teachers are encouraged to provide practical lessons involving modeling clay for learners to spell words.

Teachers can also print a spelling word on a strip of paper and then cut the letters out for students to re-arrange them to spell the target word (PBC, 2011). Moreover, the guide suggests use of boxes representing the shape of letters of the word to be spelled (e.g. the word m-o-t-h-e-r to be represented by) so that each letter of the target word would be matched to its respective blank shape box to aid its spelling.

The learner should access the correctly spelled words easily by keeping a list of most frequently misspelled ones, or be assisted to make a personal reference of the same (PBC, 2011). The guide argues that the frequency at which such learnt words are spelled or used should increase, and in order to prompt and give the correct spelling,

teachers should brainstorm with a learner before a spelling or writing exercise of a target word.

Teachers should also provide a word-prediction software available for learners with spelling difficulty or use other adaptations that may include reducing the number of target words to be spelled or mastered within a level that match their learning ability for gradual progress (PBC , 2011).

Hillis and Trupe's study (as cited in Basso, 2008) says that sound-to-letter conversion teaching was used with a study participant who showed severe aphasia and a pattern of writing impairment consistent with deep dysgraphia. In order to improve the writing of single letters, a treatment hierarchy for teaching phoneme-to-grapheme conversion was used, and proved to be a self-cue in spelling and blocking the semantic error.

De Partz, Seron, and van der Linden's study (as cited in Basso, 2008) presents a study participant who had contracted encephalitis and was classified as having surface dysgraphia because of his lexical route impairment and preserved non-lexical one. His first therapy phase was aimed at recovering the conversion rules and an image for each misspelled word was generated and embedded in the written word. The author explains that the word ‘flamme' (flame), for example, had the two letters ‘m' representing a flame. The participant was required to copy the word and the image in response to the dictated word. The writing of the exercised and the unexercised words improved significantly.

Luzzatti, Colombo, Frustaci, and Vitolo's study (as cited in Basso, 2008) presents two study participants with agrammatic speech, phonological dyslexia and severely

impaired writing. The two had severe non-word spelling disorder. Their treatment was aimed at improving phonological-to-grapheme conversion rules. Treatment in the form of segmenting words into syllables and further to phones was done. They were then required to write to dictations single phonemes and short words with one-to-one phoneme-to-grapheme conversion, with more complex phoneme-to-grapheme rules being introduced progressively. An improvement of both participants was recorded, with one of them posting a "near normal spelling performance" (Luzzatti, Colombo, Frustaci, and Vitolo's study, as cited in Basso, 2008, p. 420).

Behrmann's study (as cited in Brunsdon, Coltheart, and Nickels, 2005) reports a homophone spelling treatment for a participant with surface dysgraphia without dyslexia. The treatment was meant to link homophones to their meaning and improve spelling. Training sessions included examining the spelling of each homophone pair given and identifying the difference between them. Each word was paired with a picture representing its meaning. The participant was also required to spell the homophone when presented with a pictorial cue and through dictation. Homework tasks included pre-determined homophone choices matched with pictures, written homophone naming in response to picture cue, and sentence completion tasks involving homophone choices. The study observes that there was an improvement of homophones spelling but not in assigning them to their particular semantic context. Weekes and Coltheart's study (as cited in Brunsdon, Coltheart, and Nickels, 2005) presents a case of a participant with surface dysgraphia following a traumatic brain injury.

During treatment for homophones spelling, words were presented in their homophonous pairs with a pictorial mnemonic requiring the participant to compare

the difference in spelling and associate the mnemonic cue with the appropriate word-spelling. The results indicated overall improvement in homophones spelling but no generalisation to spelling of the untreated ones.

Narang and Gupta (2014) present three remedial techniques for improving spelling ability of learners with LD for effective communication: Tactile, Auditory, Kinesthetic/visual (TAK/v), Visual Orthographic Approach, and Listen, Speak, Read and Write (LSRW).Students with reading and spelling problems have strength in phonic analysis and are therefore remediated better with TAK/v approach (Narang & Gupta, 2014). In a study to assess the effectiveness of the approach, the authors pasted cut-outs of words on sandpaper and the learner's finger traced each word with the eyes closed, saying each part loudly to emphasize the phonemes in it. The learner, unaided and with eyes closed, retraced each part of the word saying it again. The learner then wrote the word with the eyes opened. The process was re-done if the word was spelled incorrectly. Big words were split into their constituent syllables and read out to the learner who then did the tracing and retracing process in order to spell the target word correctly. The emphasised learning skills were tactual, auditory and kinesthetic but visual was deflected at the learning level. The analysis of their study showed significant improvements in spelling implying the TAK/v strategy was useful for intervention of spelling errors of children with LD.

The Visual Orthographic Approach was aimed at learners who had strength in visual analysis. Phonic-based instructions were avoided and emphasis placed on orthographic (visual) learning strategy (Narang & Gupta, 2014). Three sets of each alphabet were prepared on a sand paper and flashcards of the target words made. The learner was then let to visually register the pattern of letters of the target word

displayed on a particular flashcard for about 25 seconds. The learner was then expected to identify the letters that made up the target word from a heap of letters and spell the word. As a form of self-evaluation, the learner then compared his or her arranged letters with the word on the flashcard shown once again. A re-attempt was allowed if an error was noticed. The strategy used morphology-based spelling words and emphasised on visual and motor learning skills. Narang and Gupta (2014) posit that the results showed the visual inputs availed to learners posted a significant improvement in performance between the pre-test and post-test scores. This meant the study participants benefited from the visual orthographic technique (Narang and Gupta, 2014).

Further, the authors present LSRW strategy for learners with both morphological and phonological spelling needs. The strategy required the learner to listen carefully to the word read out by the instructor. The learner was required to repeat the word orally, and then be shown the written word on a flashcard for him or her to read it silently. The learner then wrote the spelling of the target word, pronouncing loudly each letter that made up the word. The process was repeated if the learner posted an incorrect spelling. The strategy used auditory, visual, vocal and motor learning skills to teach spelling of both morphological and phonological based words. The results indicated a significant improvement in pre-test and post-test scores which implied learners with morphological and phonological spelling needs gained from the LSRW treatment.

The NSWDET (2007) also argues that through spelling games in the form of puzzles, a learner may partner with a friend to have fun filling in blank boxes in a grid with letters to spell words. The game starts with the two learners having a common list of words to be spelled. They both work independently to write all the words from the

common list either horizontally, vertically or diagonally in the puzzle grid. In order to pay attention to the importance of correct spelling, the words should not be written from right to left. The list is written at the bottom of the grid for verification. Once the target words are written in the grid, every remaining blank box is filled with any letter. The puzzles are exchanged and the competition to identify the words in the grid begins and then returned for correction.

The researcher did not find in the reviewed literature reviewed in this section any study that investigated the remediation strategies that teachers used to address the spelling challenges of the current study. The Province of British Columbia (2011), for example, advises teachers to adapt instructional and assessment strategies to accommodate LwLD's needs. While the researcher found this piece of advice invaluable to the targeted recipients, it was for general use and did not focus on what teachers handling spelling errors with learners with specific LD like dysgraphia, which the current study centred on, would remediate them with. Even though Hillis and Trupe's study (as cited in Basso, 2008) and the current one used participants with dysgraphia, the researcher in the current study wanted to find out if teachers used sound-to-letter conversion strategy as a remedy for writing single-letter as did the authors in the former study. The researcher also noted that the authors had used only one participant as opposed to the current study which used a larger sample of population to make the findings generalisable.

In their study, De Partz, Seron, and van der Linden (as cited in Basso, 2008) present a study participant with surface dysgraphia. The first phase of the participant's therapy was aimed at recovering the conversion rules because his lexical route had been impaired. While the current study appreciated that De Partz, Seron, and van der

Linden's study (as cited in Basso, 2008) used a participant with LD, the findings of their study cannot be generalised because of the limited number of participants. Further, their study focused on assisting the participant in recovering the conversion rules through generating and embedding an image for each of the misspelled words in the written word. The researcher of the current study noted that their study presented only one remedy for only one spelling problem as opposed to the objective of the current one which aimed at establishing the strategies used by teachers to curb the various spelling errors the Class Seven LwD made when writing English words in Lamu County.

2.5 Performance in the English Language of Learners with Dysgraphia

Adelson, Geva and Fraser (2014), in a guide for supporting educators in Ontario working with English language learners and special education students, argue that English language learners who have a learning disability are likely to show uneven or no progress. They posit that learning difficulties persist irrespective of persistent and targeted instruction. The authors say that learners with learning disabilities show persistent problems in word reading and spelling and their understanding of written text does not increase as the general language knowledge does.

The authors view writing as a very challenging skill but one that is not a reflection of oral language incompetence. They claim that learners show persistent grammatical and morphological difficulties and limited vocabulary in written work. They are unable to use skills used in speaking and reading in writing. The guide also argues that such learners struggle to put ideas in writing and their written work does not increase in length over time.

The learners have tendencies of spelling the same word differently, thus showing minimal improvement on skills taught and poor adherence to writing rules like the use of periods and capitals (Adelson, Geva and Fraser, 2014). The current study intended to find out if the respondents exhibited similar behaviour.

Burr, Haas and Ferriere (2015) argue that learners of who are attending educational programmes that do not match their academic abilities can be hampered in their educational achievement. The authors posit that even though no diagnostic method works in all contexts, research has shown the need for effective processes for determining why English language learners are likely to underperform in their classes and whether special education services are necessary. The current study wanted to establish whether dysgraphia affects performance in the English language.

Sánchez, Parker, Akbayin and McTigue(2010), in a study to examine practices for identifying learning disabilities among students of English, in three New York State districts, argue that teachers use their professional judgement on whether the learning difficulties of the students go beyond language development problems. Hersten and Barker's study (as cited in Sánchez et al. (2010)) contend that meeting the instructional needs of English language learners is a critical step in determining whether a student's academic struggle is due to a disability or inadequate instructions. Teachers compare the performance of the struggling student with that of other students with similar background to evaluate whether the student is progressing (Sánchez et al., 2010). The current study went out to establish how the sampled teachers identified learners with dysgraphia.

Narang and Gupta(2014), in remedying spelling errors of students with learning disabilities based on the kind of misspelling they made; claim that the remediation

strategies they used depicted a major increase in performance in pre-test and post stage results. The study noted that this observation contradicted what Adelson, Geva and Fraser (2014) posited, and embarked to establish the behaviour of the respondents. This study undertook to find out if the performance in the English language of LwLD in Lamu County was affected by the way they spelled English words.

The researcher noted that none of the literature reviewed in this section reflected the performance of LwD in English in written tasks, and in particular, Lamu County, Kenya. This current study purposed to establish how the spelling of English language words affected the performance of LwD in the said area.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter focuses on the research design, research methodology, the variables, the location, and the target population of the study. The chapter also deals with sampling techniques, the sample size, the construction of research instruments, and the pilot study. Lastly, the chapter pays attention to data collection techniques, data analysis, and logistical and ethical considerations.

3.1 Research Design

The study used mixed-method design to address its objective. Tashakkori and Teddlie's study (as cited in Drew, Hardman & Hosp (2008)) argue that the use of mixed-method design helps the study to capitalize on the strength and minimize the limitations of each approach. The approach was necessitated by the type of data the study needed to meet its objectives. The first, second and fourth objectives required qualitative data while the third, quantitative.

3.2 Research Methodology

The study used the both qualitative and quantitative research methods. The qualitative method was used to collect non-numerical data in order to describe, narrate and explain the study objectives in the participants' natural setting - the classroom. The study explained the patterns, trends and relationship of the spelling errors that pupils with dysgraphia make. The method was deemed appropriate because the data that were collected through interviews and spelling inventory were non-numerical and required describing and explaining the results for data analysis. The quantitative method was used to collect numerical data from past records that indicated

performance of the learners in written tasks. The analysed data was represented in tables showing frequencies and percentages.

3.2.1 Variables

a. **Independent Variables**

The independent variables were the participants' spelling errors in English words, and their instructional needs to overcome the spelling errors.

b. **Intervening Variables**

The intervening variables were the accommodative environment needed for the spelling errors to be addressed for performance improvement in LWD. They included appropriate remediation strategies and teaching-learning materials, SNE trained teachers and inclusive education.

c. **Dependent Variable**

The dependent variables were the participants' spelling performance in the written English language words.

3.3 Location of the Study

Lamu County lies between latitudes 1^{0} 40´ and 2^{0} 30´ south and longitude 40^{0} 15´ and 40^{0} 38´ east (RoK, 2009, June). Administratively, it is split into two: Lamu West and Lamu East. The study was carried out in Lamu West. The researcher did not find any study in related literature review concerning the influence of spelling errors on English language performance among learners with dysgraphia in public primary schools that had been done in the area. The area had 66 public primary schools that presented a heterogeneous population of teachers and pupils for the study. Each of the 66 schools had an average of 40 pupils in Class Seven. The study participants were

therefore approximately 2640, a sufficient and reliable population for data collection and generalisation of the study results.

3.4 Target Population

The study targeted Class Seven pupils with dysgraphia in public primary schools in Lamu West. The area had at least 66 public primary schools (Amu, 08; Hindi, 08; Mpeketoni 35 and Witu, 15). Every public primary school was targeted to have at least one Class Seven with about 40 pupils, making the target population of pupils approximately 2640. Class Seven pupils were identified as participants because having been learning spelling of the English words for at least six years in primary school, they had overcome the basic spelling challenges associated with new spellers of the language in question at Class One, Two and Three - the lower primary level. At Class Seven level, pupils are expected to have acquired sufficient writing skills in the English language and consequently be able to write creative compositions that communicate their ideas effectively (RoK, 2002). Average learners in this class were therefore not expected to show acute spelling errors of simple, basic and familiar English words that the study used to collect data.

The study also targeted 66 Class Seven English language teachers in the 66 public primary schools. They were targeted because they taught writing as a skill in the English language which entailed spelling English words. This population was therefore better placed to provide the study with the strategies they used to teach spelling to LwD**.**

3.5 Sampling Techniques and Sample Size

3.5.1 Sampling Techniques

The study relied on the following sampling techniques in identifying general and specific participants:

a. **Systematic Random Sampling**

A list of all the 66 public primary schools was sequentially made to sample 30 schools. The 66 schools were divided by 30, the sample size of the schools the study used, in order to get the sampling interval (*n*). Any number from 1 to the *n*th was selected randomly to determine the first school to be sampled, followed by the subsequent *n*th school. It was from these sampled schools that learners with LD were sampled.

b. **Purposive Sampling**

The study purposely sampled 30 teachers who were teaching English in Class Seven and with an experienced of at least five cumulative years of teaching the subject in the said class. The researcher wanted to have such experienced English language teachers as the study participants so that the study could benefit from their wide experience of remediation strategies they used to teach spelling to the learners with LD.

The same sampling method was used to identify 300 learners with extreme spelling challenges from 30 systematically sampled schools. The study relied on the assistance of Class Seven English language teachers who used their experience to identify 10 learners with extreme spelling challenges from Class Seven in every sampled school. If any of the 30 sampled schools had more than one Class Seven streams, the streams were combined to form one class from where 4 pupils identified.

3.5.2 Sample Size

Bullen (2014) and Mugenda and Mugenda (2003), a study may use a sample population of 10% of the target population. Bullen (2014) argues that as long as the ten percent does not exceed 1000, a sample of 10% of the target population would give a fairly accurate result. The current study sampled 30 schools from a target population of 66. Each sampled school supplied the study with one experienced teacher who taught English language in Class Seven, making them to be 30 from a target population of 66 English language teachers. Thomson (2011) argues that the sample size of a population can be determined by the quality of data the researcher collects, a procedure the author calls 'theoretical sampling'. The procedure allows the researcher to pick experienced study participants or those going through the same issue that the study objective is addressing for reliable data (Thomson, 2011). The sampled teachers were to inform the study of the strategies they used to reduce the spelling errors that learners with dysgraphia made when writing English words.

Each of the sampled teachers identified 10 pupils with extreme spelling challenges from their classes, giving the study a sampled population of 300 pupils from a target population of 2640. The researcher, with the help of the sampled teachers, administered the Dysgraphia Screening Test (HLI, 2015) to all the 300 sampled pupils in their sampled schools to determine their eligibility for the study. The screening test identified 24 participants for the study. The researcher, with the assistance of the sampled teachers in their respective sampled schools, used the dysgraphia check-list in the Dysgraphia Screening Test scoring guide to verify the results of the screening test all of which turned to the affirmative. Kenyon (2003) posits that the prevalence rate of children with LwLD in the US is 5%. The current study identified a population

of 8% of LwD of the sample population of 300 Class Seven learners. Table 3.5.2 presents the figures.

Table 3.1: Sample Size Figures

	Target Population	Sampled Population	Percentage
Schools	66	30	45.45%
Teachers	66	30	45.45%
Pupils	2640	300	11.36%
Pupils with Dysgraphia	300	24	8%
Total	**3072**	**384**	**110.26%**

3.6 Research Instruments

a. Dysgraphia Screening Test

The study adopted (Harp, 2015) Dysgraphia Screening Test from Harp Learning Institute (HLI) to determine participants' eligibility in the study. The institute provides tutoring for students with dyslexia, dysgraphia, dyscalculia and other learning disabilities (Harp, 2015). The screening test gives indications of dysgraphia of a learner depending on the total score the learner gets from the tool (Harp, 2015). The author posits that the tool has several tasks which include how the learner grips the pencil or pen to write, drawing, copying and matching shapes, tracing lines and figures, and writing, among others. Each task is awarded points depending on how the learner responds to it. The author argues that the test can be utilized to determine dysgraphia concerns at any grade level. Kindergarten learners to Grade 2 should score between 12 to 14 points, Grade 3 to 5, 15 to 17 and Grade 6 and above, 20 to 21.

A learner who scores less than the marks indicated in their respective category should be considered as a child with dysgraphia. Some of the questions are timed and therefore administrators are advised to have a stopwatch and let the student take a break if they are fatigued (Harp, 2015). In order to ensure consistency in scoring the

screening test, the author gives a guide on how to awarded points to responses. Correct responses are awarded specified points and the incorrect ones, a zero. Tasks that do not apply to the grade level of the respondent are left blank (Harp, 2015).

The author also presents to the administrator of the screening test a list of indicators of dysgraphia to further assist them in the identification process of LwD. The study used the list to check if the sampled Class Seven participants showed these shortcomings. The dysgraphia screening test, its scoring guide and the dysgraphia check-list are presented in Appendix I (a), (b) and (c), respectively.

b. **Interview Schedule**

The study interviewed Class Seven English language teachers to find out the strategies they used to address the spelling errors pupils with dysgraphia make when writing English words. The interview had structured and semi-structured questions that enabled the study explore specific concerns of remediation strategies used to alleviate the spelling errors. The study had an interview schedule to guide and standardise interviews to the 30 sampled English language teachers. It is presented in Appendix I (d).

c. **Spelling Tool**

The study adopted the Elementary Spelling Inventory (ESI) to establish the spelling errors of the study participants (Pearson Education, 2008). ESI is an approach which is used to assess students' ability to spell (Bear, Invernizzi, Templeton and Johnson, 2000). The authors argue that the ESI also helps the instructor to identify the learner's stage of development in spelling. Sterbinsky (2007) posits that ESI can be used for learners across all the elementary. This study used the ESI because it is meant to assess learners within the educational level and the spelling range as the Class Seven

learners who were the current study participants. The ESI is presented in Appendix I (e).

The study prepared an answer sheet for every respondent on which the spelling responses for the ESI were written. They were numbered from one to twenty-five to correspond with the target words in ESI. The answer-sheet is presented in Appendix I (f).

d. **Past Records**

The study used the study participants' past records to establish how they performed in the English language. The records were participants' composition books and teachers' progress records.

i. **Participants' exercise books**

The study used the learners' English exercise books for composition writing to gain insight of how they performed in written tasks that involved spelling English words. The compositions would inform the study how the participants' spelling in written tasks affected their overall performance in the subject. Learners in Class Seven are expected to write imaginative compositions that exhibit their ability to communicate effectively (RoK, 2002). The method was appropriate because it provided the study with the participants' performance in an area that involved spelling of English words. Data collected from the composition books would be compared with that from the teachers' progress records to establish their corroboration.

ii. **Teachers' progress records**

The study used the English language teachers' progress records to find out the performance of the participants in the English language. The progress records were used because they reflected the respondents' statistical scores in class performance in

tasks that involved spelling. The strategy was appropriate because it corroborated with the data collected from the participants' composition books.

3.7 Pilot Study

The study visited Uziwa Primary School, a public primary institution in Lamu County, Kenya, to assess the reliability and validity of the interview schedule and past records. The pilot study was also expected to help identify and adjust any unclear issues or statements in the study instruments. Two weeks after the first visit, the researcher re-interviewed the Class Seven English language teachers and re-checked the learners' past records on performance to establish their reliability and validity tests. The sample population for the pilot study was as small as 1% of the total sample size of the study because the number would meet the objectives of the pilot study. The school was not included in the study sampling.

3.7.1 Validity

a) Dysgraphia Screening Test

HLI (2017) argues that the validity and reliability of its dysgraphia screening test is anchored on its success to provide assessment and tutorial services to thousands of children with special needs like dyslexia, dysgraphia, dyscalculia**,** autism and central auditory processing disorders, among others. The institute argues that without proper intervention, students with special needs are left with failing grades, low self-esteem, and a numbers of other learning challenges that accompany special needs education. HLI also focuses on addressing the various needs and strengths of different categories of LwLD which include visual-motor coordination, spatial skills, visual discrimination, and perceptual skills, among others, for several years now.

b. **Elementary Spelling Inventory**

Sterbinsky (2007), in a study at the Center for Research in Educational Policy to conduct validity tests of three spelling inventories: Primary Spelling Inventory, Elementary Spelling Inventory and Upper Level Spelling Inventory, reports that validity evidence showed that scores of a participant in that study on any of the three instruments were able to significantly predict achievement on California Standardized Tests four months later. Further, a participant's scores in that study on any of the three inventories administered about the same time as the standardized tests indicated a clear evidence of being significantly related to the standardized test scores (Sterbinsky, 2007). These validity test results confirmed the appropriateness of use of Elementary Spelling Inventory for the study to establish the instructional needs and the spelling challenges of the study participants.

c. **Interview Schedule**

The researcher ensured the interview questions remained objective to enable the interviewee respond truthfully. Efforts were made to ensure the interviewee's responses were not influenced by the researcher's preconceived opinions. Cohen, Manion, and Morison (as cited in Alshenqeeti, 2014) posit that in order to ensure high data validity from interviews, the researcher should try to minimize possibilities of bias through negative attitudes and avoid seeking responses that support their misperceptions. The interviewees were encouraged to seek clarifications of questions they did not understand before responding to them to ensure only the true and correct data were collected.

Kuzmanić (2009) posits that during interviews, the interviewer is likely to leave out important information during the transcription of verbal data. The study ensured enough attention was accorded to the interviewees, and the interviewer recorded as much as possible the actual information presented by the interviewees to ensure the validity of the data collected.

d) Past Records

The researcher established that the data the study collected from the participants' composition books and teachers' progress records reflected the truth about their performance in written tasks in the English language. Apart from a few compositions which had exaggerated marks in the participants' exercise books, most of the rest bore similar marks as those in the teachers' progressed records. The researcher also established that all data collected from the two sources had been recorded long before the study began, and were therefore free from any influence of the study. Besides, the two sources of the data shared a common average mark: 7. The researcher interpreted this to mean the data were valid for use in the study.

3.7.2 Reliability

a) Elementary Spelling Inventory

Sterbinsky (2007) posits that the analysis of the reliability by item discrimination, item difficulty, and internal consistency of Elementary Spelling Inventory provided evidence that it was able to differentiate between relatively higher and lower performing students. Data from test-retest indicated clear evidence of reliability for samples that included students who participated in the study (Sterbinsky, 2007). The researcher relied on these reliability results on Elementary Spelling Inventory to use the tool for identifying the instructional needs and spelling challenges of the study participants.

c. **Interview Schedule**

The study tool was subjected to a pilot study at Uziwa Primary School, Mpeketoni. The researcher sought the teacher's consent to be interviewed for the study and the same was received. The study purpose was explained to the teacher to boost reliability of the information he would give, and do so voluntarily. The researcher adjusted the schedule depending on how the response to the questions was from the interviewee.

The researcher went back to the same school and teacher after two weeks and carried out the interview again to see if the tool would give out the same response as it did during the first visit. The researcher established that the tool collected the same information as it had done and this ensured the tool was reliable for the study.

Further, the study sampled experienced teachers to participate in the study to enhance data reliability. Thomson (2011) argues that a researcher should ensure he/she identifies participants who are experienced or experiencing the problem that the study is focusing on. These first-hand experiences in a category the study is focusing on ensure the participants are sure and able to provide the best reliable data (Thomson, 2011).

d) Past Records

The study established that the data in the participants' composition books and teachers' progress records were reliable because they had been there long before the beginning of the study. They were therefore not recorded to meet the expectations of the study's objective and the study could for this reason count on them as reliable sources to determine the performance of the participants in English.

3.8 Data Collection Techniques

The study used the following techniques:

a. **Interviews**

The study notified respondents in advance of the impending interview. The researcher explained the purpose of the interview to the respondents for honest responses. The researcher checked the responses of the structured questions and took notes for the semi-structured questions to ensure no information was omitted or lost. Efforts were made to ensure note-taking did not interfere with the interaction between the interviewer and interviewee. The interview schedule is presented in Appendix 1(d).

b. **Spelling Inventory**

The researcher took the sampled Class Seven English language teachers through the purpose of the study and the objective of the study instrument. The teachers were inducted on how to administer and collect the spelling inventory. Participants were encouraged to attempt spelling all the words since no penalties would be meted against any misspelling. Further, they were informed that the tool was not an exam but a spelling exercise meant to identify their spelling errors for the study. In order to ensure clarity for every target word, teachers read out the target word loud enough for the respondents to hear. This was then followed by reading out a sentence within which the target word appeared in order to give the respondents the contextual meaning of the target word. Finally, the word was read out again before the participants were let to write the spelling of the word. Every participant needed a pencil or pen and an answer-sheet numbered 1 to 25. For consistency in scoring standards, the spelling responses of the respondents were scored in accordance with the guidance stipulated in Bear, et al. (2000). The findings are presented in Table 4.1.

c. **Past Records**

i. **Learners' Exercise Books**

The study examined the learners' English exercise books for marks awarded in their written tasks. The data collected were crucial in informing the study how the participants performed in tasks that involved spelling English words. Data collected from these books were triangulated with that from teachers' progress records to see if there was any consistency and correlation. The researcher was helped by Class Seven English language teachers to collect the composition books but the researcher collected the data himself for accuracy. The observations made from these sources were recorded in field-notes. The findings are presented in Appendix I (j) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15.

ii. **Teachers' Progress Records**

The study collected data from teachers' progress records to establish the performance of the participants in writing tasks that involved spelling English language words. Data collected were triangulated with that from the participants' composition books. The observations made from the sources were recorded as field-notes.

3.9 Data Analysis

a) Interview Schedule

The researcher read through all the field-notes from the conducted interviews to identify recurring themes and common threads. Recurring themes and common threads were then categorised and marked with codes to identify patterns and meaning, then broken down into smaller units that were relevant to the objectives of the study. The sorted themes were analysed and explained in relation to the fourth research objective.

e. Past Records

i. Composition Books

The study collected numerical data in form of marks awarded to participants' written tasks that involved spelling English words from their composition books. Three marked and awarded marks compositions were randomly picked from every participant's exercise book. A mean-score for the three compositions from every participant was calculated to represent the average performance entry for each one of them. The data were then recorded in tables and analysed in form of percentages and frequencies for interpretation. The findings are presented in 4.6.1.

ii. Teachers' Progress Records

The study used progress records from English language teachers to find out how the participants performed in the subject. The records contained marks from English language exams they had done in Lamu County Joint Examination. The marks were presented in three columns: one for the objective questions, another one for compositions and the third for the percentage performance. The objective questions were set out of fifty marks while the compositions were out of forty. The percentage performance a participant was the product of the sum total of the two columns multiplied by a hundred. The findings are presented in table 4.6.2.

3.9.1 Logistical and Ethical Considerations

a) Logistical Considerations

The researcher developed a work-plan for the study stipulating the activities to be done, the expected time-span for each activity and its outcome. The work-plan also included the party responsible for each activity in order to manage the limited time set for the study. The study sought and received research permits from the National Commission for Science, Technology and Innovation, Ministry of Interior and Co-

ordination of National Government, and Ministry of Education to carry out the research. The permits are presented in Appendix IV (a), (b), (c) and (d), respectively.

b) Ethical Considerations

The study made sure the interviewees were aware of the scope of the objective the study was focusing on and assured that the questions would not intrude into their personal life. Informed consent was sought and received long before the actual day of interview. The participants were informed that the interviews were entirely voluntary and that they could withdraw at any given time. Further, they were thanked for the time they spent for the study.

The researcher kept private and confidential any personal information that could cause any embarrassment of any nature to any source as a result of participating or volunteering information for the study. The researcher used codes rather than names to protect the identity of all the participants. The codes were used for the purpose of any follow up or clarification from the respondents that may arise during the study.

The study used Class Seven children as participants. Voluntary consent to participate in the study was sought and received from the participants and their parents. The study utilised school administrations to access parents whose children were identified to participate. The researcher informed the parents the purpose and objectives of the study and any other piece of information that could facilitate them to give consent to their children's participation in the study. The study prepared a consent form that was read out and translated into Kiswahili in the presence of respective Class Seven English language teacher to every parent with a participating child to enhance transparency and credibility between the parties involved in the study. All the parents

involved could hear and understand the Kiswahili language. The consent form is presented in Appendix I (h).

The research findings were made public to the relevant stakeholders. This was done in order to contribute the findings into the academic world for appropriate action.

The study required Class Seven participants to attempt a writing task to establish their spelling errors in English words. The participants were made aware of this purpose. Further, they were informed that the task was not an examination but rather a form of assessment to bring out their areas of spelling needs when spelling English words.

CHAPTER FOUR

FINDINGS, INTERPRETATIONS AND DISCUSSIONS

4.1 Introduction

This study was purposed to establish how spelling errors affected the performance in the English language of the learners with dysgraphia in Lamu County, Kenya. This chapter presents the return rate of the research tools and the demographic data of the respondents. It also presents the findings, interpretation and discussion of the research objectives. The objectives were to:

a. Identify the spelling errors that learners with dysgraphia make when writing English words.

b. Find out the instructional needs of learners with dysgraphia to address spelling errors in written English language.

c. Establish the remediation strategies that teachers used to help learners with dysgraphia improve in spelling English words.

d. Investigate how learners with dysgraphia perform in the English language.

4.2 General and Demographic information

This section presents the challenges the researcher faced during the study, the return rate and the demographic characteristics of the study respondents.

4.2.1. General information

The study sampled 30 schools from where 30 English language teachers were sampled. The research interviewed all the 30 teachers to find out the intervention strategies they used to address the participants' spelling errors in the English language. A total of 120 learners were sampled and went through a dysgraphia screening test to establish eligibility for the study. Data on the participants' spelling

errors were identified from Elementary Spelling Inventory. Supplementary information regarding the learners' performance in English was obtained through observation in their writing exercise books and teachers' progress records. The findings are presented in tables.

4.2.2 Demographic information on study respondents

The demographic data of the respondents included the level of training in Special Needs Education and the working experience for teachers, and the age distribution of the learners. The study sought this varied information because it would help to conceptualise factors that influenced the participants' responses. The following are the demographic data obtained from the two groups of participants.

1. **Teachers**

a. Training in Special Needs Education

The study sought to know if the teachers who participated in the study and were instructing learners with dysgraphia had received any formal training in SNE. The findings are presented in Table4.2.2.

Table 4.1 Training in Special Needs Education

Respondents	Level in SNE Training	Frequency	Percentage
Teachers	None Certificate Diploma Any other	17 6 7 0	56.7% 20.0% 23.3% 00.0%
Total		30	100.0%

Table 4.1 indicates that slightly above half of the teacher-respondents had not received formal training in SNE. Equally noted was that slightly below half of the teachers interviewed had some formal training in SNE. The highest and lowest level

of training in SNE that teacher that participated in the study had achieved was diploma and certificate respectively.

b. Working Experience of the Teachers

The study sought to establish the working experience of the respondents in teaching the English language in public primary schools. The findings are presented in Table 4.2.

Table4.2: Working Experience of the English Language Teachers

Respondents	Work experience	Frequency	Percentage
Teachers	1-5	4	13.3%
	6-10	9	30.0%
	11-15	10	33.3%
	16-above	7	23.3%
Total		30	99.9%

Table 4.2.3 shows that majority of the respondents had taught English in public primary schools for over ten years. Most schools had experienced teachers to teach English in Class Seven so that the class could benefit from the teacher's advanced skills in preparation for the KCPE the following year. The least experienced teacher had worked for about five years. This implied that all teachers interviewed had vast experience the study could relied upon to inform it of the strategies they used to learners with dysgraphia to address their spelling challenges. Further, their experience could also help the study to establish the performance of the participants in the language.

2. **Learners**

a. Age Distribution of the Respondents

The study sought to identify the age distribution of the learner-respondents. Table 4.2.4 presents the information.

Table 4.3: Age Distribution of the Learner-Respondents

Age Range of Learners in Years	Frequency of Respondents		Percentage of Respondents	
	LwLD	Average Learners	LwLD	Average Learners
10 – 14	6	All	25%	100%
15 – 19	15	0	62.5%	0%
20 – Above	3	0	12.5%	0%
Total	24	All	100%	100%

Table 4.3 reveals that very few learner-participants were within the expected age-range of the majority of the Class Seven pupils. Majority of children in Kenya join class one in primary schools aged about 6 years, and an average pupil in Class Seven would therefore be expected to be twelve years old. Majority of the study participants lay in the age-range of between 15-19 years, while the least group had learners beyond twenty years.

The study established that majority of these participants were made to repeat classes owning to their slow learning pace in academics. This meant very of them were luck to joined Class Eight because they were seen as slow-learners who would compromise the mean-score of their respective schools in KCPE.

4.3 Identification of spelling errors which learners with dysgraphia made when writing English words.

The first objective of the study was to identify the spelling errors made by the learners with dysgraphia in spelling English words. The study asked the pupils to write the spelling of the words the researcher read from a spelling inventory in Pearson Education (2008). The researcher then read out the sentence within which target word

appeared to give the respondent the contextual meaning of the target word. The target word was then re-read out before the participants were asked to write it in the answer-sheet. The twenty-five target words on the spelling tool corresponded to the numbers 1 to 25 on the answer sheet on which the words were spelled. Table 4.3.1 presents the findings.

Table 4.4 Spelling Errors of Learners with Dysgraphia from Elementary Spelling Inventory

Pupil's Code	1 bed	2 ship	3 kick	4 lump	5 float	6 train
01	bed	sheep	Kike	lynp	flow	trouintg
02	bed	sheep	King	lop	flat	tree
03	bed	ship	kicik	lamp	fating	Rallowy
04	Bed	ship	Kiyg	lamp	float	trein
05	bede	ship	Kiki	lamu	fulota	reini
06	Bedi	ship	Kiky	lamupu	fuliotie	tevinigs
07	bed	sheop	Ceek	larmp	flourt	trein
08	Bed	ship	Kick	lamp	float	train
010	Bed	sheip	Kick	lamp	floot	strain
011	BeD	ship	kiked	lamp	flot	trein
012	bed	shep	kieck	lamp	flat	train
013	bed	sheep	ceke	LoNp	FLoTe	treen
014	Bed	sheA	kige	lapu	totot	teres
015	Bed	ship	kick	lamp	slot	tren
016	BED	ship	kck	Lamp	flout	Train
017	bed	ship	kick	lamp	frot	train
018	bead	sheepl	Tok foul bail	slauu	feal	tampeletion
019	BeDi	sipis	kiBiBi	rAtui	fLtiti	tenNiti
020	Bebe	sepu	kiki	ramp	fotie	tinie
021	bedi	sipu	kiki	lamup	fuloti	tirein
022	Bed	sheep	kinki	ramp	flont	traini
023		tBrie	AeitpAi	kaeitke	wreitA	tAiuAi
024	bed	shaep	kigi	rabu	fulota	tire
025	bed	ship	kiki	lamapu	fiHoti	tirani

Pupil's Code	7 Place	8 drive	9 bright	10 shopping	11 padlock	12 serving
01	Bells	beivfyl	betts	soblk	stolk	S9slvs
02	Plas	dove	bret	shoping	shopit	steing
03	Plas	divevir	plort	spory	sore	salive
04	Place	draiv	btight	shopey	spou	saving
05	Pelec	dorafu	brati	chopi	sipoli	safi
06	Delese	trivevie	bevitingi	shopping	sepoele	saveing
07	place	drive	brite	shorping	pardlock	sarving
08	Place	Draver	braight	shopping	padlock	serving
010	places	drive	brit	shoping	padLock	serving
011	Plec	draiv	brait	shopping	pandlock	saving
012	Sples	dreve	barit	shopping	padlock	seveing
013	press	draev	braet	shopen	paLok	Save2
014	Pest	dalfi	Bat	shoping	palot	safini
015	Ples	Draive	Brait	shoping	paD lock	saveing
016	place	drive	Bright	shopping	Padlock	saving
017	Place	Drive	brite	shoping	Padrock	saving
018	Plece	diveres	ditlolder	skota	Poadboad	palered
019	PASH	GAlfi	BaPti	shtihtP	PaDatP	shtihrp
020	Pase	Baivt	bret	sopin	Pablku	savine
021	Pulais	duraivu	uliti	sopin	Pabiroci	savin
022	Pras	Draiv	Brait	shonpin	Padlock	shavin
023	ƨ ieteei	totipri	tAcAAce	tAoActoi	eAoAeiƨ e	tpAcAB
024	Piles	dirafu	bulati	chobe	Badoru	savi
025	Pulasi	Dirafu	bedti	shopini	Padroki	saveni

Pupil's Code	13 chewed	14 trough	15 marched	16 shower	17 trophy
01	Cheuds	Kavgst	manght	S9w	Boutrg
02	Choled	Kesat	mot	Show	Bottle
03	Tead	Coring	match	sapy	Bottle
04	Cheud	Carrize	match	shew	Bottle
05	Chileda	Carisi	machiti	chawa	Totoli
06	Chiondi	Carise	machedi	shawa	Putule
07	Cheeurd	Frearf	machted	sharwar	Trorfeed
08	Cheud	r	Mached	shawer	Troff
010	Ciud		march	shower	Trofic
011	Shyd	Trafu	machd	shawa	Trofing
012	Chewood	Tarf	mached	shawa	Torfi
013	Chudr	Traf	mochtd	showa	Trofed
014	Chere	Tafu	maich	chane	Pesta
015	Cheud	Traf	mached	shawa	Trofe
016	chewwood	Trfgh	marchd	shorwere	Trothy
017	Chead	Trofe	machd	shawer	Trofe
018	Chidrens firiafoad	Gatian	Palered	seahkplethor	petlArrt nea

019	chiPti	tAfati	Machi	shaiawa	Tafiti
020	Cubei	Turati	macite	sawa	Twke
021	Chudi	Tirafu	machifr	sawa	Tirofi
022	Chiald	Trafu	machit	shawa	Trofi
023	tAcAtAAt	tAcAtAAt	tAAAƨ ko	ErDƨ AoAio	keAcAcAc
024	Chiudo	Tikafu	machiti	chewa	Tilofi
025	cheDi	Tafu	macti	saba	Torofi

Pupil's Code	**18 Favour**	**19 ripen**	**20 collar**	**21 pleasure**
01	Feivfv	reipen	Cola	pellsa
02	Fiefed	soppen	Comle	plache
03	Faveing	veper	Cole	plavia
04	Fever	reipend	Collar	plasuer
05	Fafe	rai pen	Cola	palacho
06	Fefa	reapingtht	Cola	pealisha
07	Feaver	ripen	Courlar	pleaser
08	Fever	Rainpan	cola	playsher
010	Fever	rippen	colar	pleasure
011	Feva	raipen	cola	plesha
012	Fevar	riprprn	Ckole	playshen
013	Feva	reepen	cola	plesha
014	Tevag	rav	kola	pucla
015	Feva	raipen	chola	plesha
016	Fevar	ripeN	colar	plusre
017	Faver	ripen	colu	plasher
018	paricamaBVaraVaVa	Wirepean	charkeamathing	earakatheand
019	Fafat	raAipi	corAwi	BAlsha
020	Favae	laepen	kara	presa
021	Fera	laipeni	cola	palasa
022	Fava	rraipen	kora	prasha
023	pAAcAAni	6AiAƨ AcA	Tpueei6A	Atpƨ teAoeA
024	Fefa	yape	kora	pilecha
025	Fava	rpeni	kola	placha

Pupil's Code	**22 fortunate**	**23 confident**	**24 civilize**	**25 Opposition**
01	Sohena	hovvevy	sivisye	Bodecomeistin
02	Fleche	comfed	sifel	Opesiched
03	Fofaring	cofder	seeving	Conpzin
04	fochonet	conefedet	seveliviz	Poopsition
05	fochunetie	cofideti	sifilai	Opoziche

06	fonginite	covidete	sevivilase	Oposishe
07	fortunited	cornfeedent	Seevelar	Oporsition
08	fourchunet	counvident	seevelecer	Opposion
010	fourchunient	cofindent	sivilis	Opposition
011	Fochnet	confedent	sevleis	Oppocshen
012	forchunet	cofident	seavelas	Qpppozishen
013	fochunet	confednt	cevelanz	Popozeshen
014	Fonest	kofoatr	sheren	Opese
015	fochunet	chonfident	sivelaize	Oposishen
016	fochuNets	coNfidendt	civilines	oppovithoN
017	fochunech	confident	Sivelaives	Opozition
018	carakatheand	claiathinuean	Seelning	Opathigthing
019	Fasnt	cfitihi	siLAiti	oPtishie
020	Ftoince	cobfre	Sirler	Or
021	forechonet	confidet	civilaivz	Opozjseni
022	Fochinat	konfindenit	Siriran	Opozishen
023	6pioAoAci	tPeƨ titheAcAi	AGoiAeni	6A6AuHoAie
024	fochoati	koveti	sivatas	Kopovicheo
025	Focnat	corofDet	civilanas	Opposition

Table 4.3.1shows the spelling errors that the participants made when writing English words. The participant coded 023 did not spell the first word ‘bed’ and therefore Table 4.3.1does not have the spelling for the word.

In order to identify the spelling errors, this study adapted the categories used by Fischer-Baum, McCloskey and Rapp (2010). The errors were letter substitutions, deletions, insertions, transposition and inappropriate spelling for homophones. The study noted that some participants substituted vowels in words where the vowel sound in the word did not match with the letter associated with that sound. The following examples serve to illustrate:

a. *sh**ee**p* for sh**i**p (six respondents)

b. *l**a**mp* for l**u**mp (eighteen respondents)

c. *tr**e**in* for tr**a**in (ten respondents)

d. *f**e**ver* for f**a**vour (fifteen respondents)

These findings support Wasowicz's (2007) study observations that an individual with learning disabilities relies on phonological awareness skill of phoneme segmentation, sequencing, discrimination, and identification in order to spell. The following spelling errors show how respondents substituted unfamiliar phonemes with phonological segments to spell unfamiliar words:

a. *br**it*** for br**ight** (seven respondents)

b. *s**a**ving* for s**er**ving (sixteen respondents)

c. *sh**a**wer* for sh**o**wer (fourteen respondents)

d. ***s**ifel* for **c**ivilize (nineteen respondents)

Another category of spelling error was that the respondents deleted letters or syllables of less salient phonemes. This phenomenon is in line with Wasowicw's (2007) findings that indicated that learners with poor phonological segmentation skills delete letters and syllables, omitting letters of less salient phonemes as shown below:

a. *draiv* for driv**e** (fourteen respondents)

b. *che**u**ds* for che**we**d (twenty-four respondents deleted)

c. *tr**af*** for tr**ough** (twenty-four respondents*)*

d. *feiv**fv*** for fav**our** (twenty-four respondents)

The study further established that the respondents made spelling errors that were characterised by single letters that had replaced letter-sequences representing single phonemes. Here, the findings corresponded to the Connectionist Simulative of the Spelling Process advocated by Houghton and Zorzi's study (as cited in Rapp and Tainturier (2014)). The argument is that LwLD spell words with letter sequences which represent single phonemes, like PH for sound /*f*/ or CK for sound /*k*/, as single letter units as illustrated below:

a. *tra**f*** for trou**gh** (thirteen respondents)

b. *ki**k*** for ki**ck** (ten respondents)

c. *tor**f**i* for tro**ph**y (four respondents)

d. *padro**k**i* **for** padlo**ck** (five respondents)

The Connectionist Simulative of the Spelling Process in Houghton and Zorzi's study (as cited in Rapp and Tainturier (2014)) further posits that letter sequences like CR for sounds /*kr*/or ST for sounds /*st*/ are not treated as single phonemes but double distinctive sound units as the examples below illustrate, unlike in the examples above where letter sequences representing single phonemes are spelled as single letter unit.

a. *la**mp*** for lu**mp** (twelve respondents)

b. ***fl**ot* for **fl**oat (twelve respondents)

c. ***tr**ein* for **tr**ain (twelve respondents)

d. ***br**ait* for **br**ight (twelve respondents)

The Connectionist Simulative of the Spelling Process (Houghton and Zorzi's study (as cited in Rapp and Tainturier (2014)) observe that while LwLD treated two letter sequences with distinctive sounds as single sound units (e.g. letters 'ph' for sound /*f*/ in *tra**f**e* (tro**ph**y) or 'ck' for sound /*k*/ in *ki**k**i* (kic**k**)) in spelled words, they did not do so to double letters as evidenced below:

a. *sho**pp**ing* for sho**pp**ing (five respondents)

b. *o**pp**ocshen* for *o**pp**osition* (six respondents)

However, the study noted that the above observation was not consistent in some spelling as the examples below show:

a. *O**p**esiched* for o**pp**osition (fifteen respondents)

b. *sho**p**ing* for sho**pp**ing (fourteen respondents)

Further, this study also noted spelling errors which included insertions of letters in words. This tendency found support in Wasowicw's (2007) study that suggests that learners with dysgraphia add letters for phonemes that don't occur in a word when spelling unfamiliar words as is evident in examples below:

a. r***a***ipen for r***i***pen (six respondents)

b. *dr**a**iv* for dr***i***ve (seven respondent)

c. *bed**i*** for bed (three respondent)

d. *kik**i*** for kick (eight respondent)

Other spelling errors included words whose letter sequence did not have any relationship with the spelling of the target words. The classification of spelling errors that this study adapted did not have a category that addressed this group of errors. The researcher therefore adapted Elliot and Johnson's (2008) category of 'others' which included words whose part was either missing or severely misspelled as the following illustrations indicate:

a. *tBrie* for ship (one respondent)

b. *AeitpAi* for kick (one respondent)

c. *kaeitke* for lump (one respondent)

d. *wreitA* for float (one respondent)

The findings of the spelling inventory used in the study are presented on Appendix I (j).

4.4 Instructional Needs of Learners with Dysgraphia to address spelling errors in English language

The second objective of the study was to find out the instructional needs of LwD to address the spelling errors in the English language. In order to achieve this objective, the researcher adapted Feature Guide for Elementary Qualitative Spelling Inventory (Bear et al., 2000) in order to establish the instructional needs of the study participants. The findings presented in Table 4.4

Table 4.5 Instructional needs of the study participants

SPELLING STAGES												
Emergent			***Letter Name-Alphabetic***			**Within Word Pattern**			***Syllabic and Affixes***			**Derivational Relations**
Early	*Middle*	*Late*	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Late*	
Word-Features	consonants	Short Vowels	Digraphs	Blends	Long Vowels	Other Vowels Patterns	Inflected Endings	Syllable Junctures	Unaccented Final Syllables	Harder suffixes	Basses or Roots	Words Spelled Correctly
Possible Points	**15**	**9**	**9**	**9**	**10**	**4**	**4**	**3**	**4**	**5**	**5**	**25**
Respondent's Code												
01	11	3	2	2	0	0	0	1	1	0	0	1
02	12	5	4	4	0	1	1	1	1	0	0	1
03	10	7	1	2	3	0	0	1	1	0	0	2
04	14	5	5	6	5	4	1	3	2	1	1	7
05	12	5	3	1	0	0	1	1	1	0	0	2
06	11	6	4	0	0	0	1	0	0	0	1	2
07	14	2	6	9	5	1	2	1	1	2	2	4
08	15	8	7	8	6	1	3	2	1	1	1	9
010	15	8	7	9	6	3	1	1	3	3	2	5
011	15	7	5	9	1	0	2	2	1	1	0	3
012	14	6	7	6	2	2	2	2	1	1	0	4
013	14	6	5	8	0	1	0	2	1	0	0	1
014	11	6	4	1	0	0	0	1	0	0	1	1
015	14	8	7	8	3	0	1	2	1	2	1	5
016	15	7	8	9	8	2	2	2	3	1	2	9
017	15	8	7	7	5	0	1	2	2	1	2	8
018	5	4	3	1	4	0	0	1	0	0	0	0
019	12	6	4	1	2	0	0	1	0	0	0	0
020	11	6	0	2	3	0	0	2	0	0	0	0
021	12	7	2	0	1	0	0	1	1	0	1	0
022	13	8	5	8	4	0	0	2	1	0	0	1
023	0	0	0	0	0	0	0	0	0	0	0	0
024	9	7	3	0	0	0	0	1	0	0	0	1
025	13	9	3	0	0	0	0	2	1	1	2	3

Table 4.4 reveals that majority of the respondents did not require much instructions to spell the following word-features in the English language words: initial and final

consonants (e.g. *b* in bed, *p* in ship, *l* in lump), short vowels (e.g. *e* in bed, *i* in ship, *u* in lump) and diagraphs (e.g. *sh* in ship, *ck* in kick, *ch* in chewed). Most of the participants showed fair spelling competence in the three word-features because out of the possible word-feature points of fifteen, nine and nine in consonants, short vowels and diagraphs respectively, they got well over half of the possible points in the Feature Guide for Elementary Qualitative Spelling Inventory that the study adapted from Bear et al. (2000).

The authors argue that depending on the points that a learner gets in a particular word-feature, the results could be used to determine his/her instructional needs in that area. Consequently, majority of the participants did not require much instruction in these three word-features. The data in the Feature Guide for Elementary Qualitative Spelling Inventory further show that almost half of the participants did not require much instruction in spelling blends (e.*g. mp* in lamp, *fl* in float, *tr* in trough). However, almost all participants needed much instruction to spell word-features like long vowels (e.g. *oa* in float, *ai* in train, *igh* in bright), other vowel patterns (e.g. *er* in serving, *ew* in chewed, *ar* in marched), inflected endings (e.g. *pping* in shopping, *ving* in serving, *ed* in chewed) and syllable junctures (e.g. *v* in favour, *p* in ripen, *ll* in collar). Other word-features that the Feature Guide for Elementary Qualitative Spelling Inventory revealed the participants needed instruction on were unaccented final syllables (e.g. *er* in shower, *our* in favour, *en* in ripen), harder suffixes (e.g. *ure* in pleasure, *ate* in fortunate, *ent* in confident) and word-basses (e.g. *pleas* in pleasure, *fortune* in fortunate, *confid* in confident).

Bear et al. (2000) argue that in case a learner gets very few points or fails to get any in a given word-feature in any of the five spelling stages (e.g. emergent, letter name

alphabetic, within-word pattern, syllabic and affixes, and derivational relations), then the word-features in the respective spelling stages are beyond his/her instructional needs. The authors advise that such a learner should be instructed on the word-features that come before the ones he/she failed in first.

Further, the authors posit that if a learner indicates spelling challenges in almost all the word-features in a particular spelling inventory among the three: Primary Spelling Inventory, Elementary Spelling Inventory and Upper-Level Spelling Inventory, like did participants coded 018 and 023, the spelling tool administrator should administer the next lower spelling tool among the three to identify the instructional needs of the learner. Participant coded 01, for example, did not need much instruction on spelling initial and final consonants given that he/she had eleven out of the possible fifteen points but on short vowels, diagraphs, blends, syllabic junctures and unaccented final syllables. This was because he/she had only three out of nine, two out of nine, two out of nine, one out of three and one out of four points respectively, in the word-features. According to Bear et al. (2000), the rest of the word-features, which the participant got no points, were beyond his/her instructional level.

The study also asked the sampled teachers during interviews to explain how they determined the instructional needs of the LwD in order to plan for the spelling lessons in accordance with the needs and abilities of the learners to help them overcome the spelling challenges. Most of the experienced teachers informed the study that the Kenya Primary Education Syllabus (RoK, 2002) stipulates the scope of what is to be taught in the English language in all public primary schools in Kenya, and for this, they did not have provisions for assessments for special needs learners in their schools. They argued that even though they could identify learners with challenges in

spelling, they did not know what to do to help them overcome their challenges. They admitted that most teachers disliked such learners in their classes on account that they almost always brought down their subject mean-score which was expected to keep raising in Teacher's Performance and Appraisal Development (TPAD), a programme introduced by the Kenya government to monitor and evaluate teachers' performance in public schools.

Teachers trained in SNE said though it was important to establish the instructional needs of LwD in spelling, they were loaded with many lessons in a day that no time was spared for the special learners. They argued that English as a language subject required that teachers check the learners' exercise books on daily basis for the various assignments they give out in every spelling and writing topic, leaving out little time for individual attention for LwLD. The study revealed that a good number of teachers would require specialised training and facilities to enable them instruct LwLD meaningfully.

4.5 Establish the remediation strategies that teachers used to help learners with dysgraphia improve in spelling English words

The third task of this study was to establish the remediation strategies that teachers used to help learners with dysgraphia overcome their spelling errors when writing English words. In order to achieve this objective, the study interviewed thirty teachers who taught the study participants in order to identify the remediation strategies they used to curb this challenge. The study noted that the spelling errors included substitutions, deletions and insertions of consonants, short and long vowels, digraphs, blends, other vowel patterns, inflected endings, syllable junctures, unaccented final syllables and harder suffixes. Participants also confused target words with their

homophones while others wrote sequence of letters that did not have any relationship with the target words.

Even though majority of the teachers interviewed for this objective had not received formal training in SNE, the study primarily targeted English language teachers who taught Class Seven pupils. The purpose was to establishing the remediation strategies they used to address the spelling errors the participants made in written English words. The study noted however that about half of the teachers interviewed had been trained in SNE, and even though there were others in the sampled schools that had been trained in the area, they could not participate in the study because they either did not teach English to Class Seven pupils, an eligibility requirement for teachers' participation in the study, or were not sampled. The study was therefore certain it would gather the data it needed for the objective with the teacher-participants it interviewed.

Most of the teachers trained in SNE informed the study that even though they knew the study participants needed specialised instruction in the curriculum, they were overwhelmed by the large number of pupils in their classes. They therefore could not give individual attention to the learner-participants to address the spelling errors they made in written English. Consequently, they were compelled to use the remediation strategies applicable to the regular pupils who are the majority learners in their English language lessons. In order to make for this short-coming, most of the sampled schools utilised the vast experience of the English language teachers participating in the study to teach Class Seven pupils. Most of them had taught for over ten years and the study was certain it would collect the data it required from them.

Among the remediation strategies that teachers cited was dictation. Teachers who cited this approach said it helped them to address spelling challenges in homophones (e.g. here/ hear, lead/ lid, heard, hard). They said learners were supposed to construct short sentences using the homophones to bring out their meaning. Learners were then asked to spell the target words. The study observed that teachers did not revise the misspelled homophones with the learners despite their frequent dismal performance. The study found out that the use of dictation as a spelling strategy did not show performance improvement in spelling to learners with dysgraphia.

Lerner and Kline (2006) indicate that LwLD have poor auditory memory which limits them from keeping the target word-sound in their minds, leading them to inability to spell correctly. The authors point out that some spell the target words by focusing on the sound units of the words and associating letters with them only to end up with spelling that sounds like the target words but with inappropriate letter-sequencing.

In order to address this limitation, Behrmann's study (as cited in Brunsdon, Coltheart, and Nickels (2005)) suggests a homophone spelling treatment to help learners associate homophones with their meaning in order to improve spelling. The author says that teachers should assist learners to identify the spelling difference in the two homophones. Each word should be paired with a picture representing its meaning. The learner should be trained to spell the homophone when presented with the pictorial cue through dictation. The learner should then be given assignments that include pre-determined homophone with pictures to match with, written homophone in response to picture cue, and sentence completion tasks involving homophone choices.

Teachers also said they taught phonemic sounds in rhyming words (e.g. rough/ tough, look/ hook, effective/ creative) and in words with long and short vowels (e.g. still/ steal, bin/ bean, fill/ feel) as a remedy to spelling errors in these category of words. They however revealed that most of the respondents could not tell the difference between a short and long vowel sound. This is hardly surprising given that PBC (2011) guide posits that poor spellers have problems noticing and recalling features of language presented by letters.

Further, Wasowicz (2007) confirms that learners with poor phoneme discrimination and identification skills are likely to spell distinct vowel sounds with the same letter and add letters for phonemes that don't occur in a word. In order to address this challenge, teachers are advised to provide word-prediction software to learners with spelling challenges or reduce the number of target words that learners are to spell or master within a specified period of time (PBC, 2011).

Frequent writing of compositions was also identified as another strategy that teachers used to teach spelling. They argued that it exposed the participants to frequent spelling of words they had learnt in class sessions. This study however observed that the learners with dysgraphia did not show improved performance in compositions. Only a few of the misspelled words had been underlined to indicate incorrect spelling but teachers did not provide the corrections. The rest of the misspelled words were not attended to, meaning that the learner could not tell whether the spelling of words he or she had used were correct or not. This indicated therefore that writing compositions did not help LwLD to post improved performance in writing tasks.

Adelson, Geva and Fraser (2014) posit that LwLD are unable to utilise their speaking and reading skills in writing. The authors assert that the learners also display

persistent grammatical and morphological problems and limited use of vocabulary in written work. In order to address this problem, PBC (2011) directs instructors to teach reading and spelling together, discuss with the learner the word structure, its origin, meaning and the morphemes that make up the word.

Further, teachers are encouraged to provide practical lessons involving modeling clay to enhance tactile and visual memory of the learners. Luzzatti, Colombo, Frustaci, and Vitolo's study (as cited in Basso, 2008) suggest that teachers should segment words into syllables and phonemes so that the learner improves his or her phonological-to-grapheme knowledge for better spelling skills. The authors suggest that teachers should initiate spelling exercises involving single phonemes and short words with one-to-one phoneme-to-grapheme conversion through dictations, and then progressively introduce complex phoneme-to-grapheme rules.

Teachers also used frequent reading of short sentences or stories that had the words that learners had learnt to enable them internalise the spelling of the words. They argued that reading allowed learners to see the sequence of letters in the words in the reading materials. This study however found out that some schools had class-readers but were kept either in the headmaster’s office or store where learners could not access them easily for reading. The English language teacher occasionally borrowed the story-books from the store or the headteacher’s office and returned them for safe-keeping. Further, teachers revealed that most of the learners avoided borrowing the story books for fear of losing them and then having to replace them with new ones.

The study therefore established that reading was not an effective strategy to help LwLD to improve spelling of English words. Spelling a word correctly requires one to be able to read it, identify the relationship between the phonemes and graphemes that

make it up, maintain its visual memory, retrieve it from memory, and trace its motor movement to spell it (Mercer, Mercer & Pullen, 2011).

In order to assist LwLD, Narang and Gupta (2014) advises teachers to use the TAK/v strategy. In the TAK/v approach, cut-outs of words are pasted on sandpaper then the learner's finger traces each phoneme of the target word with the eyes closed, saying each part loudly to identify the phonemes in it. The learner then repeats the process, unaided, before being let to write the word with the eyes open. The process is re-done if the word is misspelled. The authors suggest that big words should be split into their constituent syllables and read out to the learner who should then trace and retrace the pasted word in order to spell it.

Another identified approach was Listen-Say-Read-Write (LSRW) which teachers said was appropriate in teaching spelling. Teachers said they wrote the word to be spelled on a flashcard and then the learners would be asked to look at it, then say it loudly, cover it so that he or she can write it without seeing it, and finally checks the spelling to find out if he or she had spelled it correctly. The study however noted that even though teachers identified the approach for its effectiveness, most of them did not use it to Class Seven learners saying that it was time consuming, and that it was meant for introductory learners in Class One, Two and Three. This meant that some teachers did not accommodate the needs of the LwLD to help them overcome the spelling challenges. Teachers complained of the attention the few learners with extreme problems in spelling required despite their inconsistent performance against the large number of other learners who needed less and posted better performance. The Listen, Say, Read, Write (LSRW) strategy found support in Narang and Gupta (2014). The authors say the strategy uses auditory, visual, vocal and motor learning skills to

address spelling challenges of LwLD. The strategy requires the learner to listen to the pronunciation of the target word and repeats it orally. The learner is then shown the written word on a flashcard to read it silently, then writes the spelling, and finally reads each letter that makes up the word. The learner is asked to repeat the process if he or she writes incorrect spelling. NSWDET (2007) presents this strategy in the format of LSCWC (look, say, cover, write, check) and views it as an effective spelling strategy in developing visual memory of words to be spelled.

Listen, Say, Read, Write (LSRW) strategy found support in Narang and Gupta (2014). The authors say the strategy uses auditory, visual, vocal and motor learning skills to address spelling challenges of LwLD. The strategy requires the learner to listen to the pronunciation of the target word and repeats it orally. The learner is then shown the written word on a flashcard to read it silently, then writes the spelling, and finally reads each letter that makes up the word. The learner is asked to repeat the process if he or she writes incorrect spelling. NSWDET (2007) presents this strategy in the format of Look-Say-Cover-Write-Check (LSCWC) and views it as an effective spelling strategy in developing visual memory of words to be spelled.

The rule-based approach was identified by teachers for its effectiveness in teaching learners how to use suffixes to form noun plurals and inflectional and derivational words. This strategy found support in Anastasiou and Griva's (2012) study who contend that MPSA, which entails teaching the rules that govern the patterns of inflectional and derivational morphemes in a word, helped learners break words into smaller blocks of morphemes for easy spelling.

Teachers also identified crossword puzzles as a spelling remediation strategy. This study found out that the crossword puzzles that teachers used from Mathenge et al.

(2014) required Class Seven pupils to read the leading descriptions of the target words then fill them in the blank boxes of the grid either horizontally or vertically. Even though the use of puzzles as spelling games for teaching spelling found support in NSWDET (2007), this study noted that those in the approved course books posed challenges to LwLD who could not read, and could not therefore understand the leading descriptions of the target words the crossword puzzles needed. An example of a puzzle that teachers used is presented in Appendix III.

Adelson, Geva and Fraser (2014) observe that English language learners with learning disabilities are likely to show persistent problems in word reading and spelling. LwLD who cannot read are therefore disadvantaged in this approach, and are therefore not likely to gain from its usage. Nevertheless, NSWDET (2007) agrees that teachers could use puzzles to help learners in spelling. Learners partner to enjoy filling in blank boxes with letters to spell words through competitions. The two learners or groups must have a common list of words to be identified from the grid. They should draw the puzzle grids independently then write the words in the boxes either horizontally, vertically or diagonally but words should not be spelled from right to left. Once the words are filled, the remaining blank boxes are filled with any letter in the alphabet. The common list of words is then written at the bottom of the puzzle so that the player can verify the spelling of the words. Finally the puzzles are exchanged for the game to begin. The player is expected to identify all the words by circling them in the grid. The first to complete becomes the winner. The puzzles are then returned for correction, if any. An illustration of the puzzle the NSWDET (2007) advocates is presented in Table 4.5.1.

Table 4.6. A Crossword Puzzle

N	L	F	G	A	M	E	B	D	S	E	E	D	S	F
O	P	R	G	I	C	J	C	V	N	A	F	A	S	A
R	O	F	A	M	I	L	Y	J	Y	D	E	Q	T	R
T	K	E	R	M	V	B	F	G	B	N	A	L	G	M
H	N	U	X	U	J	V	N	G	D	F	C	M	H	I
U	I	B	U	F	O	O	T	B	A	L	L	G	I	N
R	M	Z	P	I	G	D	N	E	X	Z	C	U	M	G
F	M	T	Y	S	L	Q	A	L	G	G	P	Y	M	N
Q	E	W	E	E	Y	J	O	L	P	L	O	Z	U	J
T	N	S	C	H	O	O	L	D	F	H	L	X	N	Y
P	I	L	T	Y	H	N	M	J	R	F	I	C	I	T
M	S	S	U	I	J	M	K	L	P	O	C	V	S	R
E	E	T	B	E	V	I	S	I	T	J	E	S	E	E
Q	T	E	X	S	W	A	C	V	F	S	E	A	T	E
D	E	P	O	S	I	T	L	Q	V	L	K	Z	A	W

Source: Researcher

DEPOSIT, NORTH, FOOTBALL, POLICE, FESTIVAL, SCHOOL, DAM, BELL, FARMING, FAMILY, VISIT, ATE, TREE, SEA, IMMUNISE, GAME, STEP

4.6 Performance in the English Language of Learners with Dysgraphia.

The fourth objective of this study was to find out how LwD performed in written tasks in the English language. In order to achieve this objective, the study requested the sampled teachers to avail the learners' composition books and the teachers' progress records to establish the marks the participants got in the written tasks. The composition books informed the study of the marks that teachers awarded to written compositions by the study participants during routine class sessions. These marks were scored and recorded in the participants' composition books. The routine class

compositions were used because the compositions had been written and scored in their natural environment and the data they contained were uninfluenced by any forces of the study. Teachers' progress records were used to establish the marks that the participants got in written tasks during examinations. The data collected informed the study how the participants performed in spelling tasks in the English language.

a. **Class Compositions**

The findings of the study established that all the sampled schools wrote class compositions on routine basis depending on individual school policy. The study found out that some of the compositions were scored while others had just ticks indicating that the concerned teachers had checked them but no marks had been awarded. It was also noted that some participants had resorted to copying written stories and presenting them to teachers as their own. The study also noted that some compositions had marks as high as thirty three, twenty five and twenty out of forty, translating to 82.5%, 62.5% and 50%, respectively. On those that did not have marks, the respective teachers said they felt the compositions were far below average and would always attract very low marks. They argued that awarding very low marks to struggling spellers would discourage them from making further attempts to learn how to spell and write for effective communication. On why some had marks as high as thirty-three and twenty-five out of forty and seventeen out of twenty, the concerned teachers said such marks were meant to motivate the learners to continue struggling to write better. The findings are presented in Table 4.5.1.

Table 4.7: Performance in Classwork Compositions of the Respondents

Learners	Composition Marks for the Year 2017/18 (Out of 20 marks)					
	First Term		Second Term		Third Term	
01	no marks	06	03	no marks	03	no marks
05	no marks	01	no marks	no marks	03	03
07	15	04	10	03	no marks	no marks
08	no marks	05	20	02	04	no marks
010	01	no marks	06	02	04	no marks
012	no marks	03	03	07	no marks	04
013	no marks	05	04	no marks	02	01
015	17	03	01	02	03	01
017	12	19	no marks	10	no marks	no marks
018	no marks	04	05	no marks	02	02
019	02	02	13	09	25	17
020	01	13	no marks	18	01	no marks
021	33	17	06	02	no marks	02
022	no marks	21	12	no marks	05	no marks
023	no marks	04	no marks	02	no marks	no marks

Table 4.6 shows varied composition marks that the study collected from the participants' composition books. The study picked two compositions for every term. A few teachers, despite the wide experience in teaching, admitted that they were overwhelmed by the participants' unique inability to spell simple English language words. They also admitted that they did not know how they would assist them to learn to spell because most of the strategies they had tried on them did not bring much changes. The teachers identified the limited time they had within a lesson of thirty minutes and lack of training in SNE as the major issues that hindered them from assisting the participants to learn how to spell English words. Most of those trained in SNE cited the big number of learners in their classes as the major limiting factor in making Individualised Education Programmes (IEP) for the participants to address their spelling challenges. The study noted that the SNE trained teachers did not have

facilities or programmes for identification and assessment of special learners for appropriate adjustments in curriculum and accommodations in instructions. These findings revealed that the LwD in public primary schools in the County were less likely to benefit much from the instructions they received from their English language teachers particularly in spelling.

The study realised that the study participants misspelled most of the words they used in writing their compositions and teachers confirmed that this affected the ability of the compositions to effectively communicate their story, and hence the low marks. The study also noted that teachers did not rectify the misspelled words in the written compositions nor had time with the learners to teach them the same. A few of the misspelled word were either circled or underlined, and in some rare cases, the learner advised to do corrections. The study also noticed that most of the compositions were neither marked nor scored indicating that teachers did not give spelling the attention it deserved to help the LwD overcome their writing challenges. The findings also revealed that while the regular learners got an average of twenty-five out of forty marks in all the three terms, the study participants had 8.9, 6.6 and 5.0 in first, second and third terms respectively. Teachers informed the study that this was because the regular pupils could spell a few words and construct some meaningful sentences in their compositions while the LwD continued to show challenges in learning to spell simple English words.

The researcher found out that a good number of respondents did not have composition books. Some of the teachers argued that they had tried to tell the participant' parents to buy composition books for their children but the parents had not heeded to their word. Others said they had resolved not to bother the participants to acquire

composition books because they seemed to dislike writing tasks. Teachers said this phenomenon was made worse when some of their classmates made fun of their writing products. The study viewed the lack of composition books by some of the study participants as a reflection of lack of commitment from teachers in their endeavours as educators in ensuring that all learners in their classes benefitted from their writing and spelling lessons irrespective of their learning limitations. It was therefore clear from the findings that writing tasks involving LwD in spelling English language words inhibited their performance in the subject. The class compositions of the respondents appear in Appendix I (i) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15.

b. **Teachers' Progress Records**

The study established that Lamu County Government had organised common Lamu County Joint Examinations in all the public primary schools in the County, in 2017. The study therefore used the data in the sampled teachers' progress records. It focused on the marks recorded for term 1, 2 and 3 in the English language in the joint examinations for that year. The English examination had two tests that were combined to find the percentage performance for every learner. The first test was an objective question paper (Obj.) with 50 questions for 50 marks and the second was a composition (Comp.) marked out of 40 marks. The study established that the English exams were administered under the same timetable and scored using common marking schemes across the entire Lamu County. The study also established that the County had identified experienced English language teachers, some of whom had been trained by KNEC to score compositions at the national level, to score the Class Seven learners' compositions. The identified teachers converged in designated central

schools to formulate modalities for scoring the compositions to ensure uniformity in the exercise. Table 4.8 presents the findings.

Table 4.8: Performance in the English language of the Respondents

Learners' Codes	**Lamu County Joint Exam for Class Seven, 2017**								
	TERM I			**TERM II**			**TERM III**		
	Obj. /50	**Comp. /40**	**%**	**Obj. /50**	**Comp. /40**	**%**	**Obj. /50**	**Comp. /40**	**%**
01	18	**03**	24	26	**05**	35	19	**03**	25
02	20	**02**	25	19	**03**	25	26	**04**	34
03	19	**04**	26	18	**06**	27	23	**04**	30
04	22	**06**	31	26	**04**	34	24	**01**	28
05	18	**02**	23	23	**06**	31	26	**03**	32
06	27	**04**	32	26	**04**	34	20	**02**	25
07	26	**03**	32	21	**03**	27	23	**03**	29
08	21	**02**	26	18	**03**	24	26	**06**	36
010	13	**04**	19	23	**04**	30	21	**04**	28
011	24	**06**	34	26	**03**	32	26	**03**	32
012	16	**05**	23	21	**04**	28	20	**06**	29
013	20	**04**	27	21	**05**	29	21	**02**	26
014	26	**06**	36	24	**03**	30	26	**03**	32
015	21	**02**	26	23	**04**	30	24	**05**	32
016	19	**03**	25	21	**01**	25	19	**02**	24
017	18	**04**	25	23	**06**	32	24	**02**	29
018	26	**02**	31	24	**02**	29	20	**05**	28
019	28	**05**	37	22	**01**	26	25	**06**	35
020	26	**06**	36	20	**04**	27	23	**01**	27
021	26	**03**	32	26	**03**	32	21	**05**	29
022	18	**03**	24	31	**02**	37	18	**04**	25
023	10	**01**	13	14	**01**	17	19	**02**	24
024	21	**03**	27	20	**04**	27	26	**06**	36
025	20	**04**	27	25	**03**	31	23	**05**	31

Table 4.7 presents the marks the respondents got in Lamu County Joint Examinations for the three terms in 2017 in the English language. The findings indicated that the

participants had better marks in objective questions than compositions. In the former section, learners were required to choose the correct answer from four choices provided in every question. Learners were required to write in a separate answer-sheet either letter A, B, C or D that represented the correct answer from the four choices given in the question paper. This requirement meant that in every question, the learner only needed to write just one of the four letters to present his or her answer for the objective question.

However, writing a composition required the learner to demonstrate knowledge of correct spelling of English words in making sentences that conveyed the writer's meaningful account of a particular story. Consequently, the participants of this study were likely to find objective questions easy to answer because of the simplicity of picking a letter and writing it in the corresponding number of the question than struggling with spelling English language words to create a coherent story. Teachers explained that this was the reason behind the difference in marks in the two tasks. The teachers' progress records indicated that the average learners in Class Seven posted average of 26, 28 and 25 marks in first, second and third terms respectively in the English composition exams, the study participants had 9, 7 and 4. The study revealed that LwD had low marks in writing tasks primarily because the misspelled English language words they used in their compositions failed to convey their intended message, yet teachers did little to address the menace.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study purposed to investigate the influence of written spelling errors on performance of the English language of LwD in Class Seven in public primary schools in Lamu County, Kenya. This chapter presents the summary of the study findings, the conclusions arrived at, and the recommendations.

5.2 Summary of the Study

The study objectives were to:

a. Identify the spelling errors that learners with dysgraphia made when writing English words.
b. Find out the instructional needs of learners with dysgraphia to address spelling errors in written English language.
c. Establish the remediation strategies that teachers used to help learners with dysgraphia improve in spelling English words.
d. Find out how learners with dysgraphia performed in the English language.

5.2.1 Spelling Errors that Learners with Dysgraphia Made When Writing English Words

The researcher noted that LwD made spelling errors when writing English words which included substitutions, deletions, insertions and homophones confusion. The spelling errors were recorded in consonants and vowels that did not match with the sound associated with that letter sound. The study also found out that respondents substituted phonemes they could not spell with phonological sequence of letters

representing the sounds of the substituted phonemes to spell words they did not know.

Further, letters or syllables of less salient phonemes were deleted, while in other cases letter-sequences that represented a single phoneme were replaced with single letters. The study also noted that learners inserted letters in words to create phonemes that didn't exist, and in some words that had double letters, one of them was left out. In some cases, learners also misspelled words using letter sequences that had no relationship with the target words. The words that had a part missing or those that were severely misspelled were put under the category of 'others'. These errors occurred in word-features that included consonants, vowels, digraphs, blends and inflected endings. Other features that were affected were syllable junctures, unaccented final syllables, harder suffixes and word-basses.

The study adapted the Elementary Qualitative Spelling Inventory (Bear al. 2000) to establish the spelling errors of the study participants and Fischer-Baum, McCloskey and Rapp's (2010) and Elliot and Johnson's (2008) studies to classify them.

5.2.2 Instructional Needs of Learners with Dysgraphia for addressing spelling errors in English language

The study found out the instructional needs of learners with dysgraphia that would assist teachers plan for their spelling lessons based on the needs and abilities of the learners. The study findings established that most teachers did not assess their learners to find out what they knew and what they didn't in order to plan for their instructions. The study noted that teachers taught spelling lessons that were presented in government-approved text-books irrespective of whether or not it was beyond the

instruction level of the learner or not. The study also established that teachers schemed for their spelling lessons in advance based on what was stipulated in the Kenya Primary Education Syllabus (RoK, 2002) and not on feedback from formative assessments on target learners. It was therefore clear to the study that most of the spelling lessons did not have adjustments or accommodations to reduce learning limitations to benefit the special learners.

5.2.3 Remediation strategies that teachers used to help LwD improve spelling.

The study established that teachers used various spelling strategies to address the spelling errors that learners in Class Seven made in written English language. The study revealed that most of the strategies were not appropriate and accommodative to the need and strengths of the participants. Most of them address the needs of the regular learners, leaving the LwD with very little gainful remediation. The study noted that LwD stood to benefit minimally because the strategies most teachers used in teaching spelling did not accommodate the needs and abilities of the study participants.

For instance, some teachers used dictation to instruct learners on spelling homophones. However, Behrmann's study (as cited in Brunsdon, Coltheart, and Nickels, 2005) suggestions the pairing of homophones with pictures that represent their meaning to help LwLD spell homophone. The study also considered word-prediction software to be helpful to LwLD because it displayed the visual memory of the word they intend to spell (PBC, 2011).

Writing of compositions as a spelling strategy was identified as ineffective. The study observed that Luzzatti, Colombo, Frustaci, and Vitolo's approach (as cited in Basso, 2008) advocate the split of the target words into syllabic or phonological sections to

improve LwLD's phonological-to-grapheme skills. The study also agrees with PBC's (2011) suggestion that teachers should teach reading and spelling together so that the LwLD know the relationship between sounds and letters in the target words. Further, the study contends that teachers should also provide practical lessons involving modeling clay to enhance tactile and visual memory of the learners in learning to spell difficult words (PBC, 2011).

The study identified Narang and Gupta's (2014) spelling approach of using the TAK/v strategy as appropriate to enable learners know the letter sequences of the target words rather than using frequent reading of short sentences or stories. LSRW approach was also identified to be effective as suggested in Narang and Gupta's study (2014)for strengthening the auditory, visual, vocal and motor learning skills of target learners to instill spelling skills. Teaching learners how to use the rule-based strategy to spell words was found to be an effective approach which also found support in Anastasiou and Griva (2012).

This study found out that the crossword puzzles that teachers used in Mathenge et al. (2014) did not address the spelling needs of LwLD. Nevertheless, the use of word-puzzles as a spelling strategy found support in NSWDET's study (2007). The approach involves two learners having fun competing to spell pre-determined words from a word-puzzle grid. The first learner to identify all the spelled words in the puzzle becomes the winner.

5.2.4 Performance in the English language

This study noted that LwD performed poorly in the English language in tasks that involved spelling. The composition marks in the learners' exercise books indicated that most of them were arbitrary awarded because the spelling errors inhibited clear

communication of the writer's ideas. Further, most teachers did not give spelling skill the attention it deserved because most of the misspelled words in the participants' composition books were not identified for correction even after it emerged that spelling inhibited communication in compositions. Consequently, learners therefore neither knew the words they had misspelled nor how to spell them.

The marks in teachers' progress records gave the study a clear picture of the role the spelling skills played in the performance in English language of the LwD. The data indicated that the LwD had better marks in objective questions than in composition. It was evident that if learners would improve in their spelling skills, they would get better marks in their compositions and consequently improve tremendously in the subject performance.

5.3 Conclusions

This study concluded that LwD in public primary schools in Lamu County, Kenya, made varied spelling errors in written English. These errors fell into categories of deletions, substitutions, insertions, confusions between homophones, among others. The errors affected word-features like consonants, vowels, diagraphs, blends and inflected endings, among others in targeted words. The study also concluded that teachers did not carry out formative assessment to determine the instructional needs of LwD. The participants therefore received spelling instructions that did not accommodate their learning needs and abilities. The study also concluded that most of the remediation strategies that teachers used did not address the spelling limitations of the LwD. Consequently, the participants' inability to spell English word negatively influenced the marks they got in compositions, and hence their poor performance in the subject.

5.4 Recommendations

The study proposes two sets of recommendations:

5.4.1 Policy Recommendations

In response to the findings, the study recommends the following:

Existing policies that need enhancement:

i. The study noted that the government had initiated several policies to address the learning needs of LwD. However, a few areas need to be improved:

ii. The functions of Kenya Institute of Curriculum Development include promoting equity and access to quality curricula and curriculum support materials for special needs education. In line with this, the study recommends that KICD develops curricula and curriculum support materials for practicing teachers and Teacher Training Colleges to equip the trainees with knowledge and skills in SNE for equitable literacy skills for all children.

iii. The Ministry of Education ensures that inclusive education in public primary schools accommodate the learning needs and nurture the strengths of LwD for quality and effective teaching and learning experiences.

iv. The Ministry of Education, TSC, KICD, KISE and other stakeholders in the education sector hold in-service courses and seminars for practicing teachers to equip them with and update them on the current and emerging issues related to the teaching and learning of LwD.

Non- Existent policies that need formulation:

This study appreciated the inclusion of LwD in public primary schools. However, the study noted that most teachers used teaching strategies that did not address the needs of LwD. In line with this, the study recommends that:

i. The TSC formulates policies that ensure all practising teachers in public primary schools are trained in SNE to equip them with skills and knowledge of instructing LwD for the benefit of all children.

ii. The KICD initiates predictive computer-based spelling programmes to assist LwD to learn to spell for effective communication in writing.

iii. The Ministry of Education develops early identification, assessment and intervention programmes for LwD for appropriate educational programmes.

iv. KNEC considers administering oral evaluations for LwD whose spelling needs inhibit them from effective communication through writing.

v. The Ministry of Education and other stakeholders in education sector formulate policies to create awareness to the public on issues related to Learning Disabilities.

5.4.2 Recommendations for further research

The teaching of LwD effectively requires teachers who are trained in SNE for quality and meaningful teaching and learning experiences. In line with this, the study recommends further research on:

i. Establishing how teachers in public primary schools use assessment to adjust and accommodate the teaching and learning of LwLD.

ii. Finding out the effectiveness of inclusive education in teaching LwLD in public primary schools.

iii. Establishing teachers' awareness of Learning Disabilities in relation to other categories of disabilities among pupils in public primary schools.

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APPENDICES

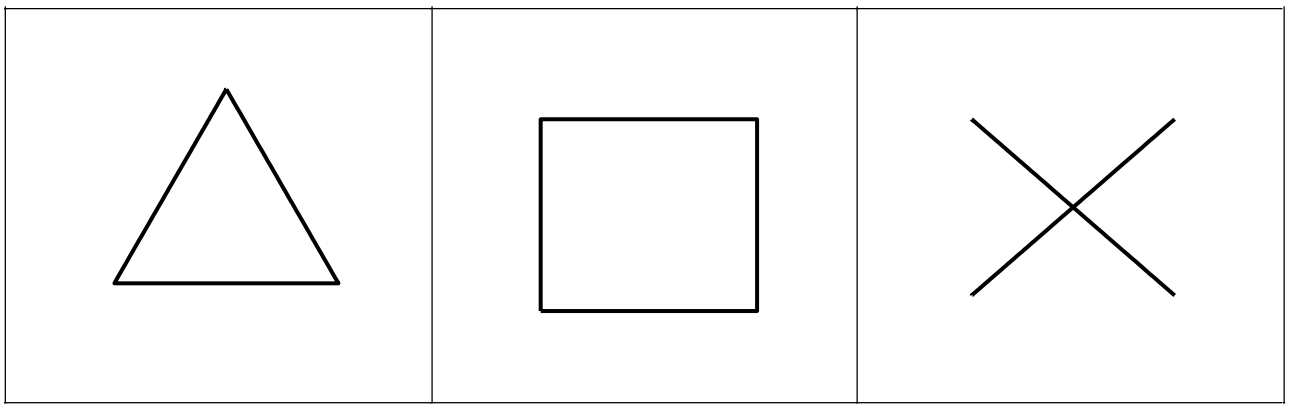
APPENDIX I: RESEARCH INSTRUMENTS

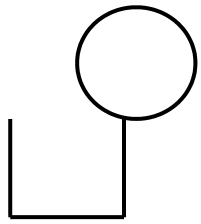
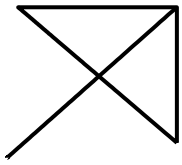
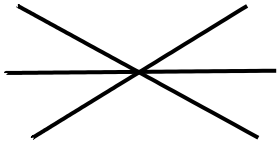
a) Dysgraphia Screening Test

1. Grip your pencil. (Make note of how the student grips the pencil)

2. Draw a circle in the space provided. The student may NOT erase.

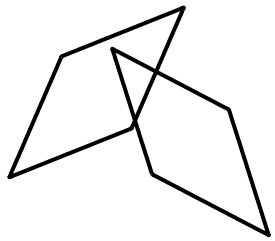
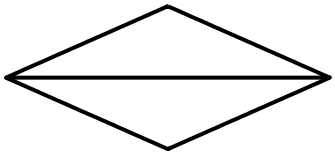
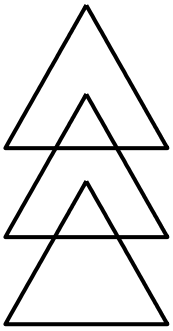
3. Copy each shape in the space provided. The student may NOT erase.

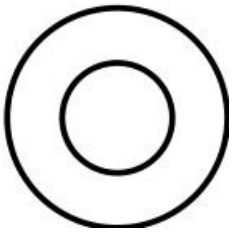


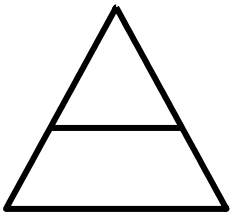
		

STOP: If student is in Kindergarten to grade 2.

STOP: If student is in grade 3 to 5.



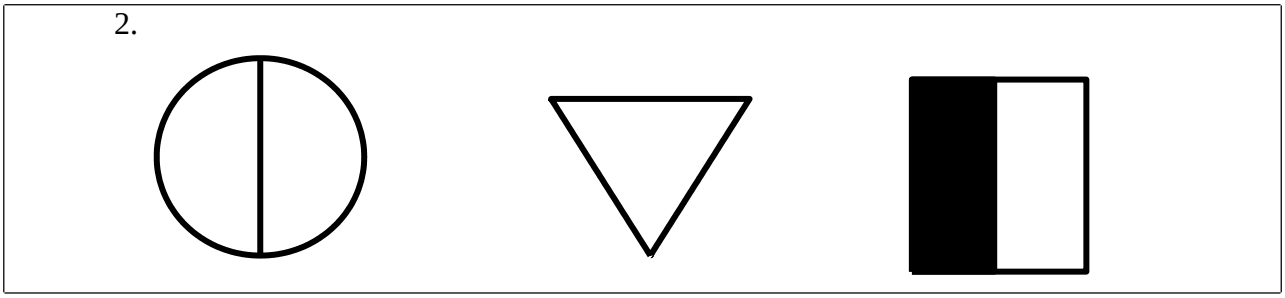


4. You will be timing the student on this question. Show Card 1 to the student for 5 seconds, then take it away. Have the student wait to copy the shapes on the blank forms provided until you have taken the card away, then instruct the student to copy the shapes from memory. (You may want to cut out the cards.)The student does not have to copy the card number.

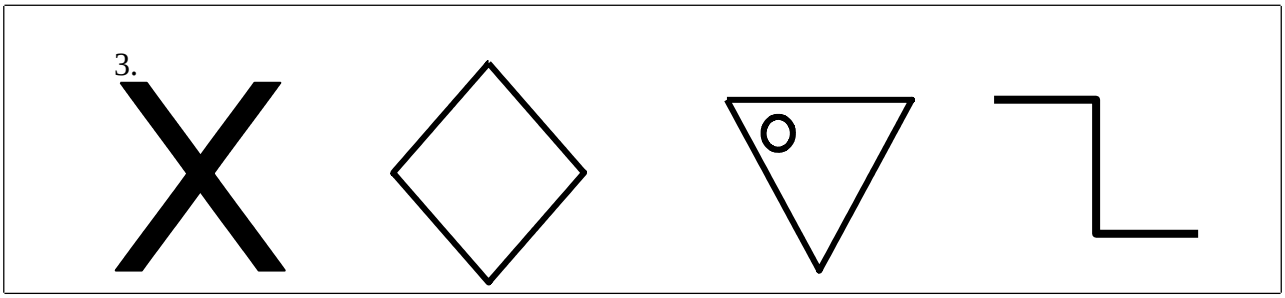
For Card 2, allow 10 seconds. Card 3 is to be held up for 15 seconds. STOP when the student makes a mistake.

1.

2.



3.



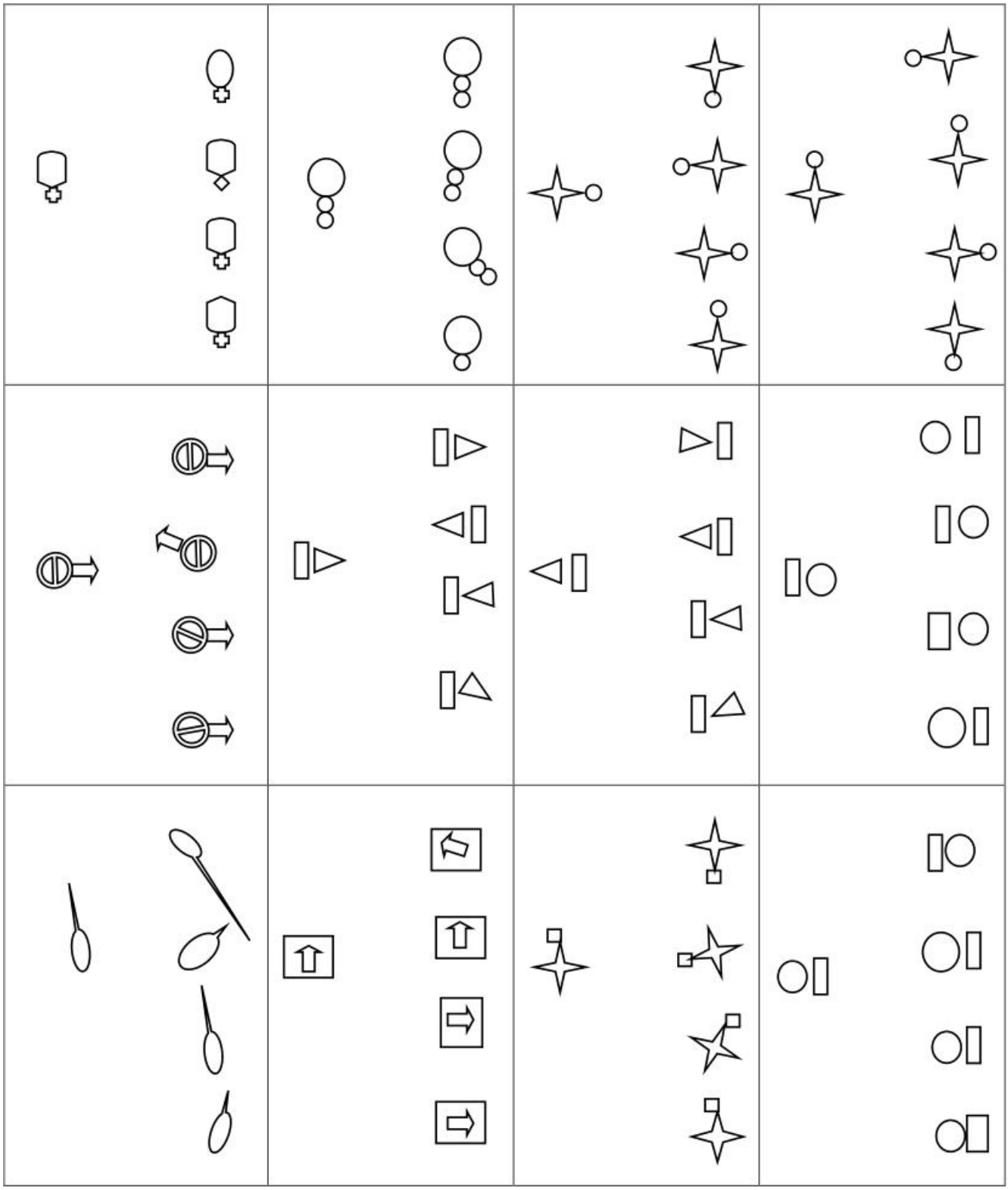
Blank Cards for Student:

1

2

3

5. Have the student circle the matching shape from the figure on the left.



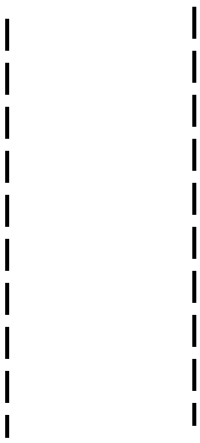
5. Have the student copy the sentence provided in the space below it, and **time how long it takes**. The student may use cursive or manuscript. This question is not to be used for Kindergarten students or those who do not yet know how to write letters.

Five boys and girls went out into the dark night to look for frogs, but they were quite surprised when all they found were three turtles.

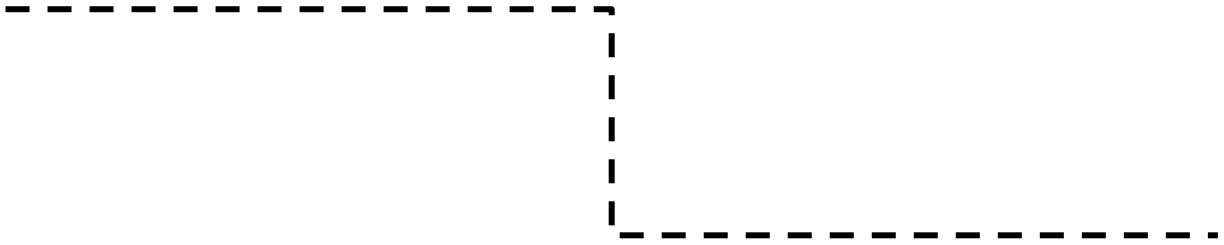
_____
_____
_____
_____

6. Draw a straight line in between the two lines provided.

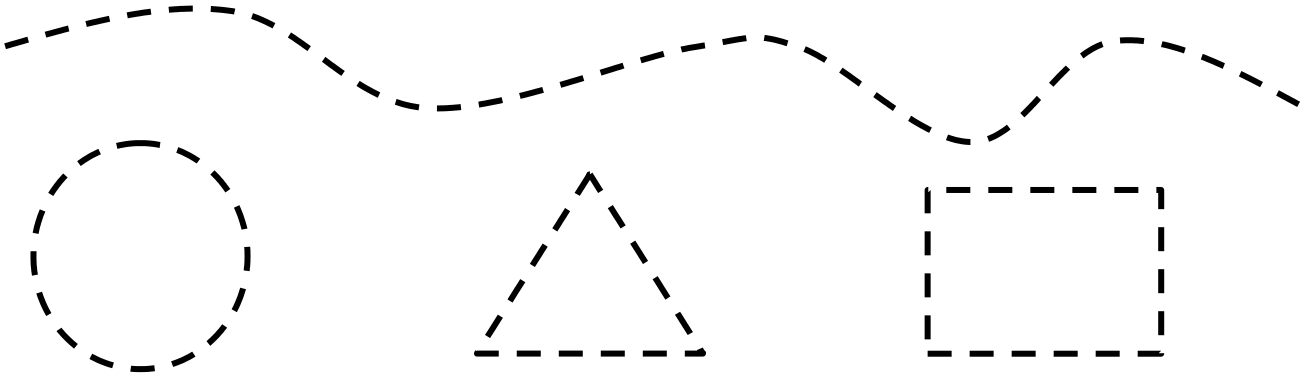
7. Draw a straight line in between the two lines provided.



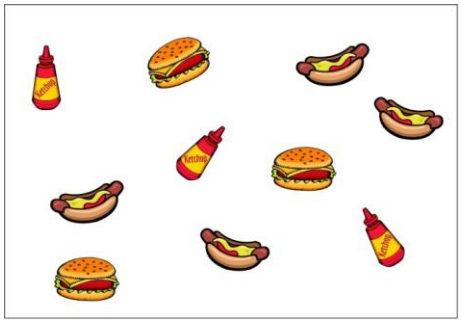
8. Trace each line or figure, trying to stay on the line as much as possible.



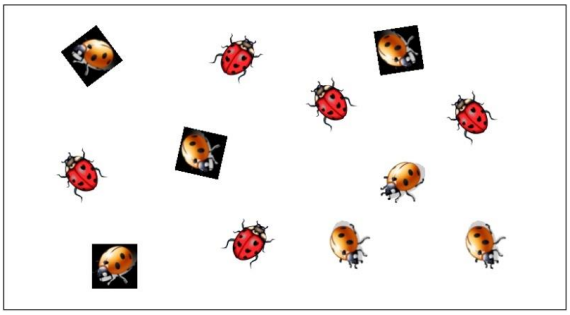
9. Give the student a marker or pencil and the age appropriate trapping sheet. Instruct the student to use the marker to circle the objects on the page. The student is to circle an object as quickly as possible without lifting the marker or pencil and then move on to the next object and circle it. The student is not to touch any of the objects with his/her marker. The student can start anywhere on the page and is not to stop or lift the marker until finished circling every object. There will be a line from one object to the next. The student cannot cut across an object on his/her way to another object.



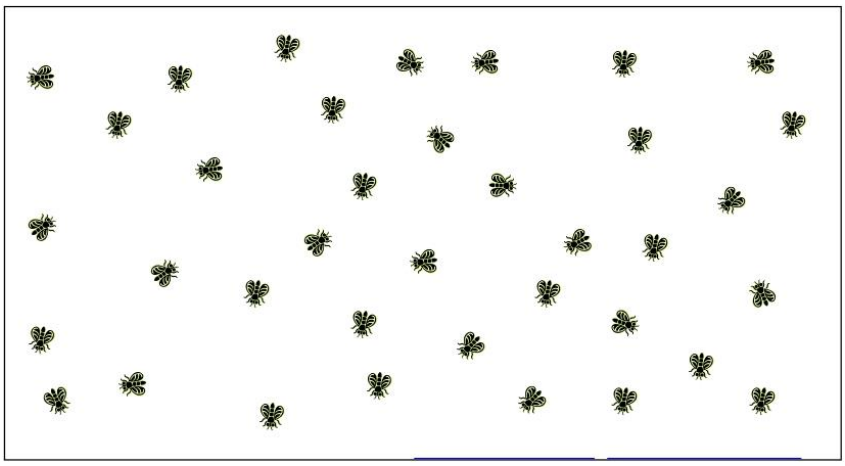
For Kindergarten to 2nd Grade Students



For 3rd to 5th Grade Students



For 6th Grade and Above Students



Adapted from: Harp, (2015).

b) Dysgraphia Screening Test Scoring Guide

The following is the scoring guide for each question in the dysgraphia screening test. Mark the points to the side according to the specifications. Leave it blank or mark with a 0 if incorrect or not the applicable grade level of your child.

For Kindergarten through 2nd grade, the student should have a score of 12 to 14. Anything less is an indication of dysgraphia.

For 3rd through 5th grade, the student should have a score of 15 to 17. Anything less is an indication of dysgraphia.

For 6th grade and above, the student should have a score of 20 to 21. Anything

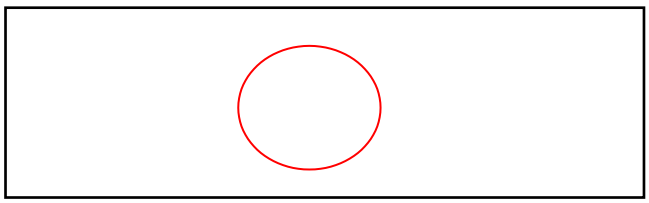
less is an indication of dysgraphia.

1. Grip your pencil.

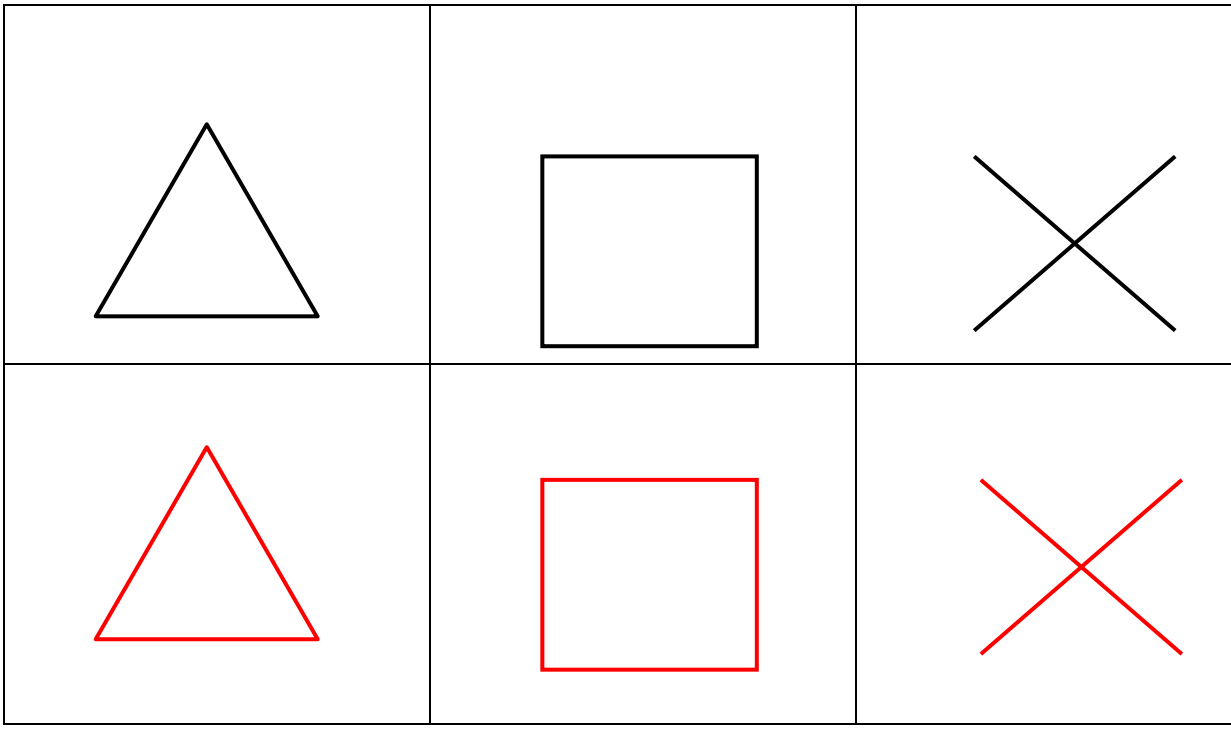
If the student has any other grip than the one shown at the right, this is marked as an incorrect answer. This is a symptom of motor dysgraphia. Give the student 1 point if the grip is correct. _____

2. Draw a circle in the space provided. The student may NOT erase.

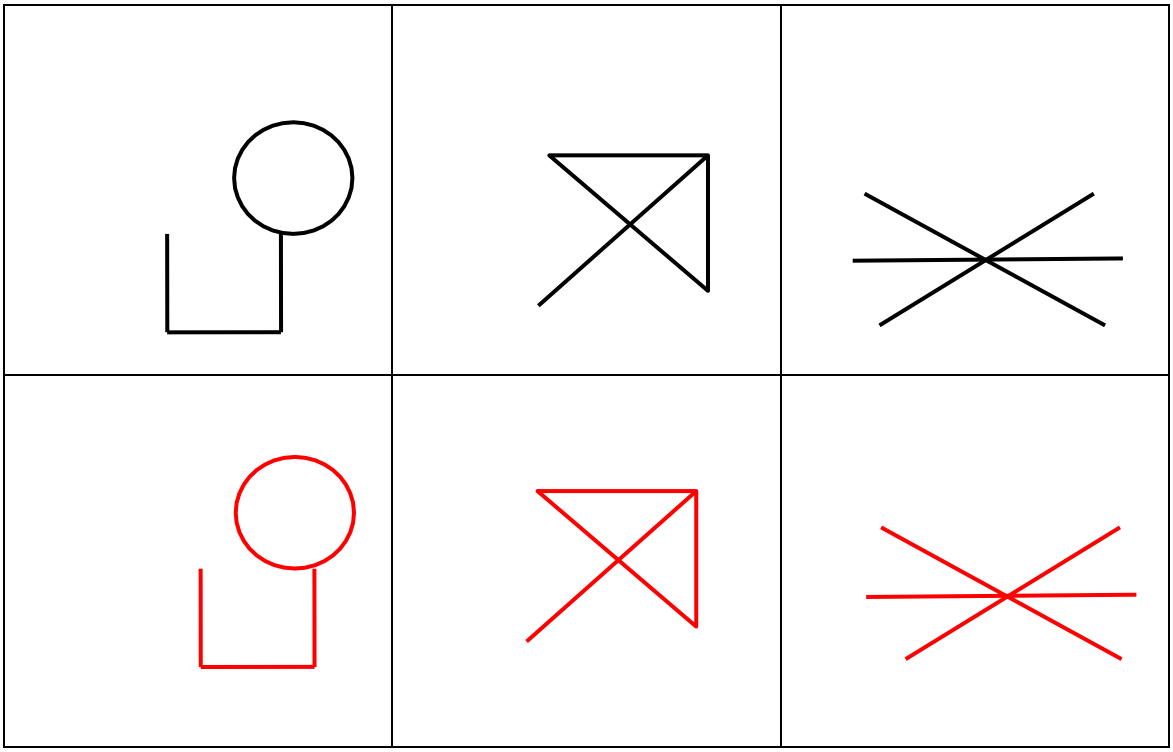
Make sure the student starts the circle at the top and moves from left to right. If the student circles in any other manner, mark the question as incorrect. Make sure that the shape resembles a circle. If the student circles from bottom to top or in the wrong direction, it is a symptom of spatial dysgraphia or dyslexia (or both). Give the student 1 point if the circle is formed correctly and in the right direction starting from the top. _____



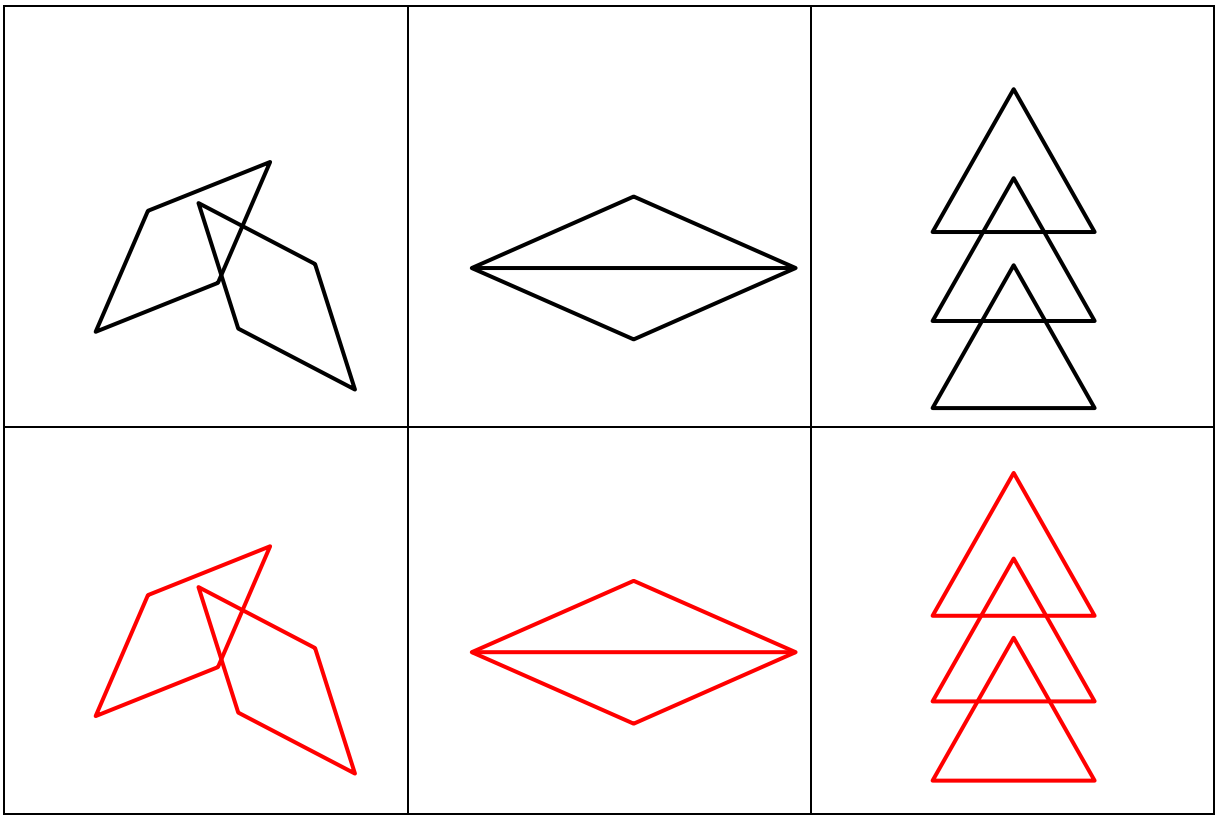
3. Copy each shape in the space provided. The student may NOT erase.



STOP: If student is in Kindergarten to grade 2.



STOP: If student is in grade 3 to 5.



For students in Kindergarten through second grade, all three shapes must be copied correctly. If the line is shaky or crooked, this is a sign of motor dysgraphia and mark it as incorrect. If the shape does not closely resemble the one given, mark it as incorrect. Give the student 1 point for each shape that is copied correctly. The highest possible score for this task for students in this level is 3 points. _____

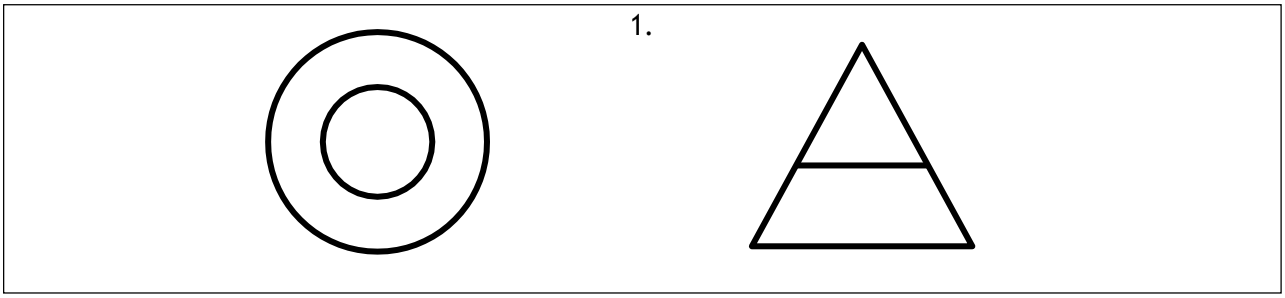
Do the same thing for students in third through fifth grade. Give a point for every shape that is copied correctly, starting with the first set of shapes. The total number of points for the correct response is 6. _____

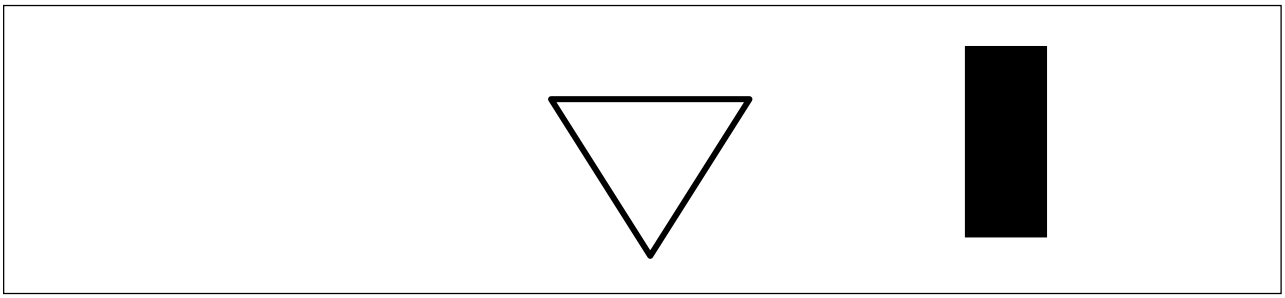
For students 6th grade and older, they must copy all nine shapes. Give them a point for every correctly copied shape. The total number of correct points would be 9. _____

4. You will be timing the student on this question. Show Card 1 to the student for 5 seconds, then take it away. Have the student wait to copy the shapes on the blank forms provided until you have taken the card away, then instruct the student to copy the shapes from memory (you may want to cut out the cards). The student does not have to copy the card number.

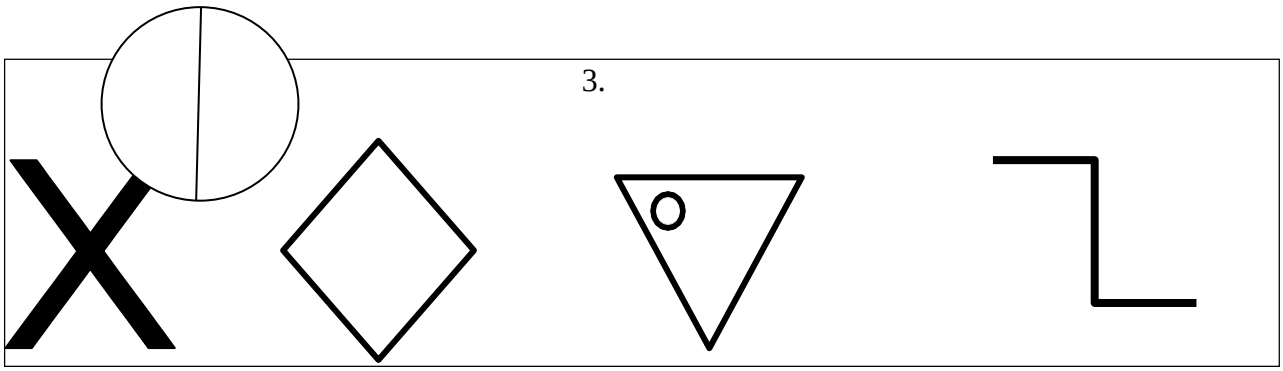
For Card 2, allow 10 seconds, Cards 3, 15 seconds. STOP when the student makes a mistake.

1.





3.



Mark the shape correct if it is close to the actual figure presented. If the general shape is recognizable it is a correct answer. All parts of the shape must be present for the student to have a correct response. If the student does not fall into the guidelines given below, this is a symptom of processing dysgraphia.

If the shape is upside down, tilted, or in general not the same as the one presented, then mark it as incorrect. If parts of the shape are missing, mark it as incorrect.

Count up all of the student's correct answers. Total number correct:_____

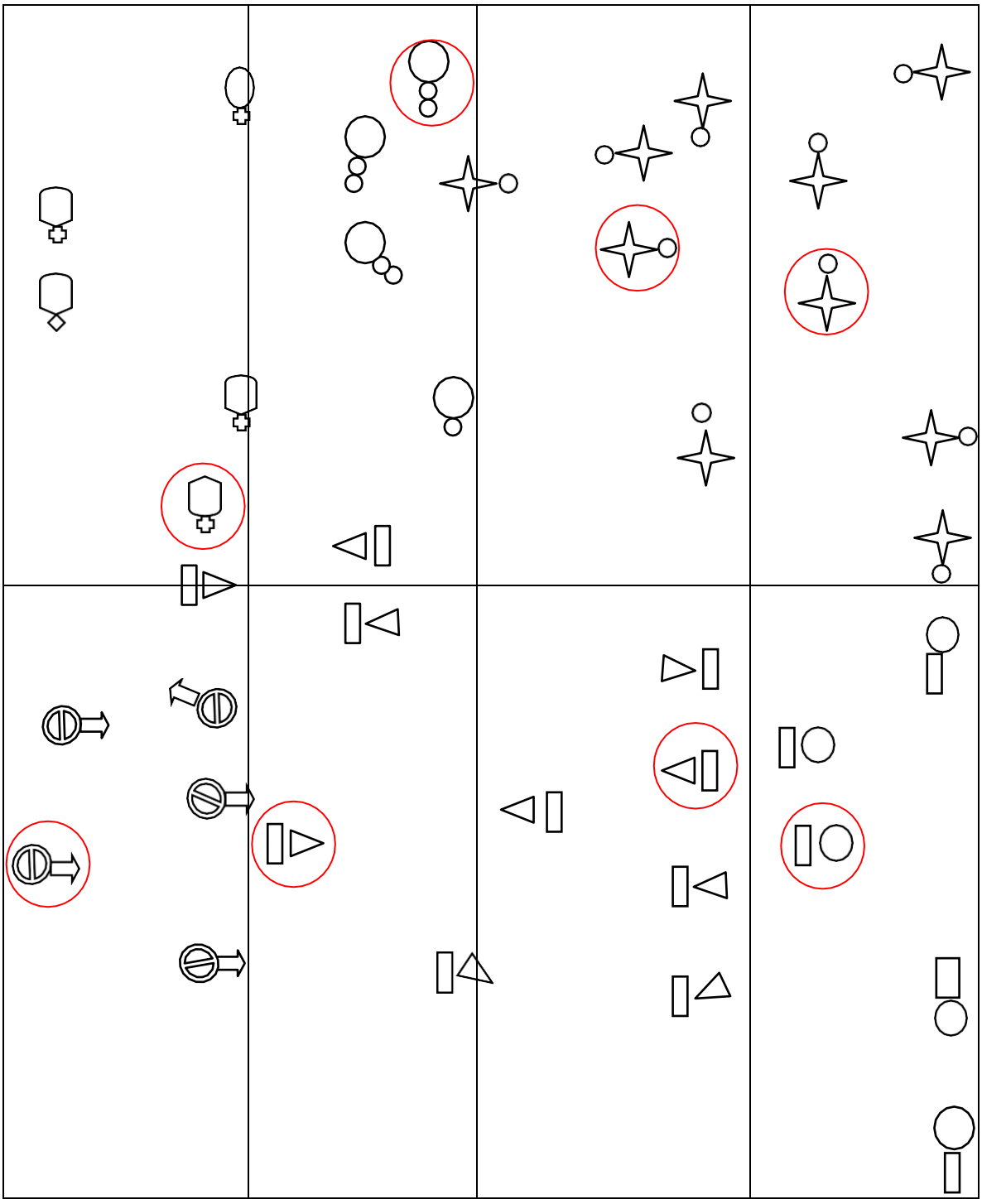
K - 1 shape

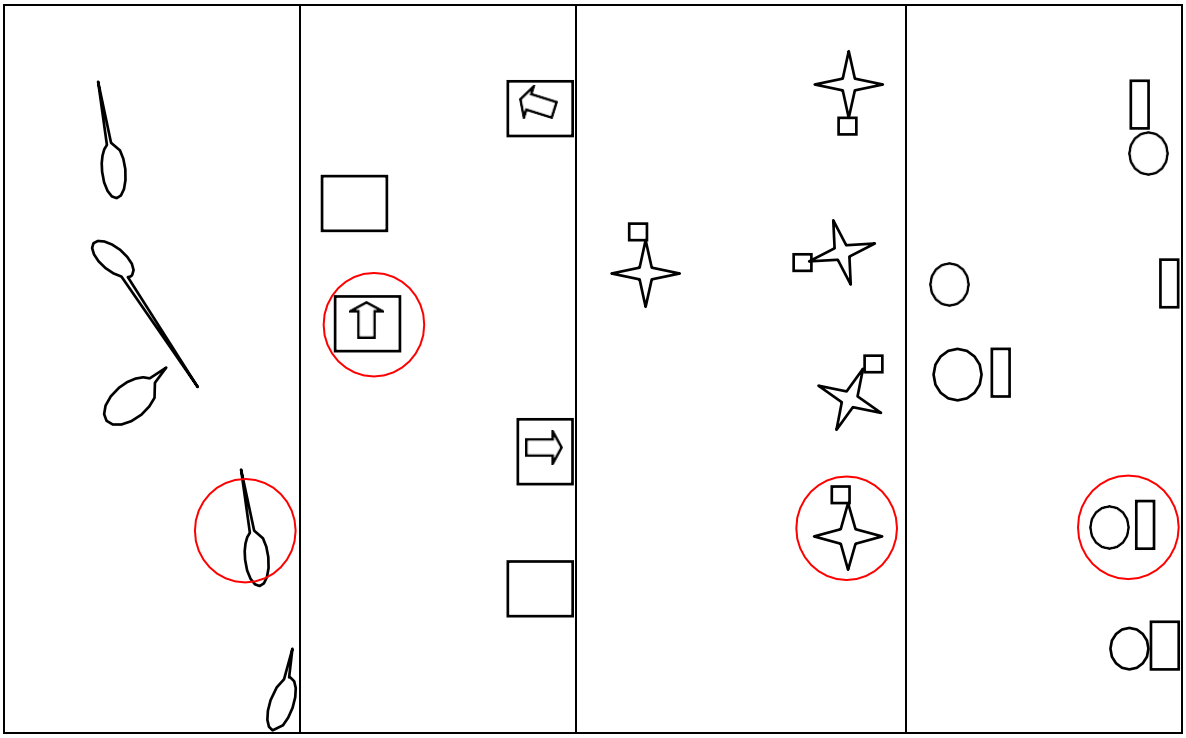
Grades 1 and 2 should have two correct shapes and 1 point.
Grades 3 and 4 should have three correct shapes and 1 point.

Grades 5 and higher should have four correct shapes and 1 point.

Only give the student the student a point if he/she copies the amount of shapes for his/her grade level correctly: _____

5. Have the student circle the matching shape from the figure on the left.





Total number of correct answers: _____

If the student struggles in this area, it is a symptom of spatial dysgraphia. For grades Kindergarten through 2nd grade, give a point for 8 correct answers.

For grades 3rd through 5th, give a point for 10 correct answers. For 6th grade and up, give a point for all of the answers correct.

5. Have the student copy the sentence provided in the space below it, and time how long it takes. The student may use cursive or manuscript. This question is not to be used for Kindergarten students or those who do not yet know how to write letters.

Five boysandgirls went out into thedarknightto look for frogs, but they were quite surprisedwhen all they found were three turtles.

1) Spacing
   a) Adequate - the words should not run together, no letters or words are omitted, and no letters or words are out of order. Give 1 point for adequate spacing. ____

   b) Inadequate – the words run together or are jumbled, letters are omitted or broken at the end of the line, they are substituted letters and not in order, words are not in order.

2) Letter Formation

a) Adequate – letters are formed correctly, lower case and capital letters are in proportion with each other, there are no reversals or upside down letters. There is no mixing of manuscript and cursive writing. Letters that go below the line actually do, such as j, g, instead of resting the bottom portion on the line. Give 1 point for adequate letter formation. ____

b) Inadequate - letters are incorrectly formed, capital and lower case letters are approximately the same size, reversals and/or upside down letters are present. Bottoms of letters that go below the line don't, such as j, g. There is mixing of manuscript and cursive writing.

3) Speed

a) Adequate – speed is consistent throughout the test and falls within or near grade level expectancies as given below.

b) Inadequate – very slow with great variability in speed of copying. Speed does not fall on or near grade level expectancies as given below.

Kindergarten: 3 ½ minutes, give 1 point
Grades 1-2: 2 ½ minutes, give 1 point

Grades 3-4: 2 minutes, give 1 point

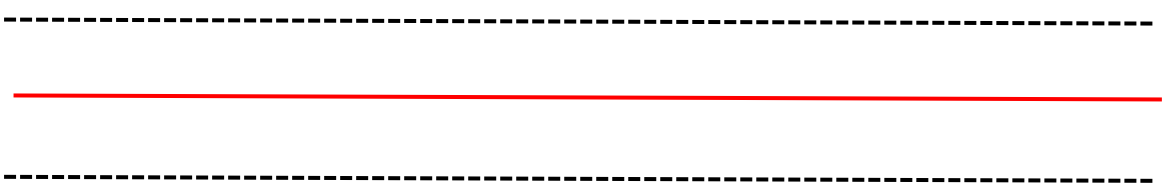
Grades 5-6: 1 ½ minute, give 1 point

Grades 7-8: 1 minute, give 1 point

Grades 9 and above: 50 seconds, give 1 point: _____

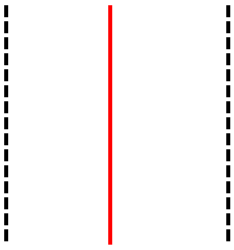
If your child struggles with questions 6 through 9, this is an indication of motor dysgraphia.

5. Draw a straight line in between the two lines provided.



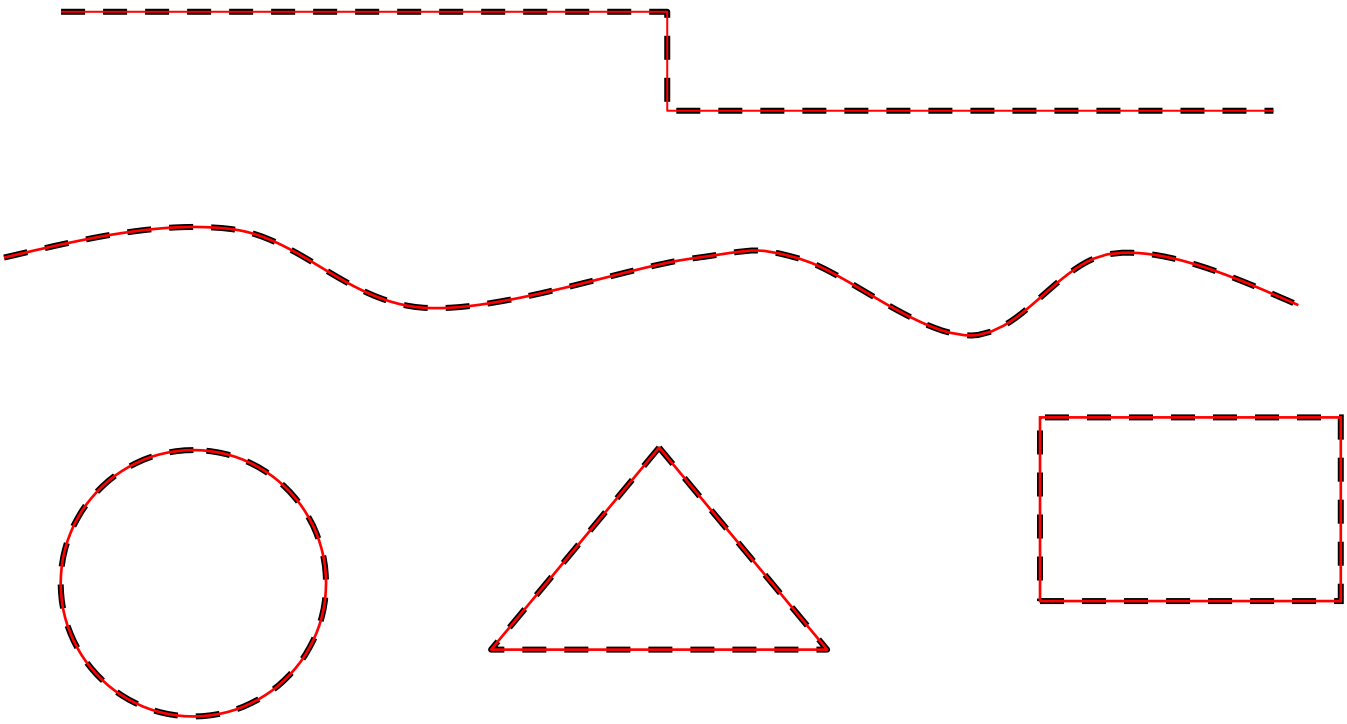
Give 1 point for all grades if the line is approximately in the middle and is straight and not shaky. If the student turns the page, has shaky lines, or presses extremely hard on the pencil, then do not give the student a point. _____

6. Draw a straight line in between the two lines provided.



Give 1 point for all grades if the line is approximately in the middle and is straight and not shaky. If the student turns the page, has shaky lines, or presses extremely hard on the pencil, then do not give the student a point. _____

7. Trace each line or figure, trying to stay on the line as much as possible.



Each line or figure should be traced over the actual line. Mark as incorrect if:

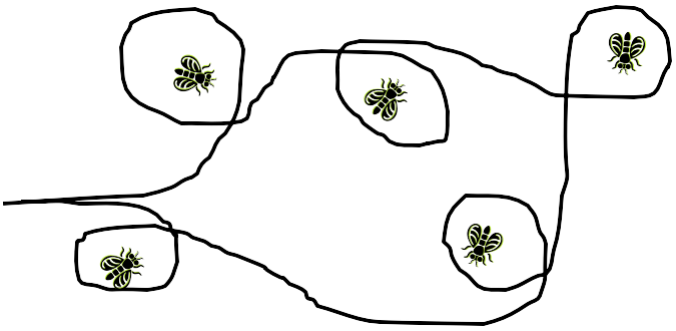
- tracing has crooked or shaky writing
- tracing is not directly on the shape
- lines are not in the approximate middle of the two vertical or horizontal lines
- student turns the paper to trace
- student is leaning over desk/table at an odd position or is close to the desk/table instead of sitting up straight.

Give the student a point for each correctly traced symbol that matches

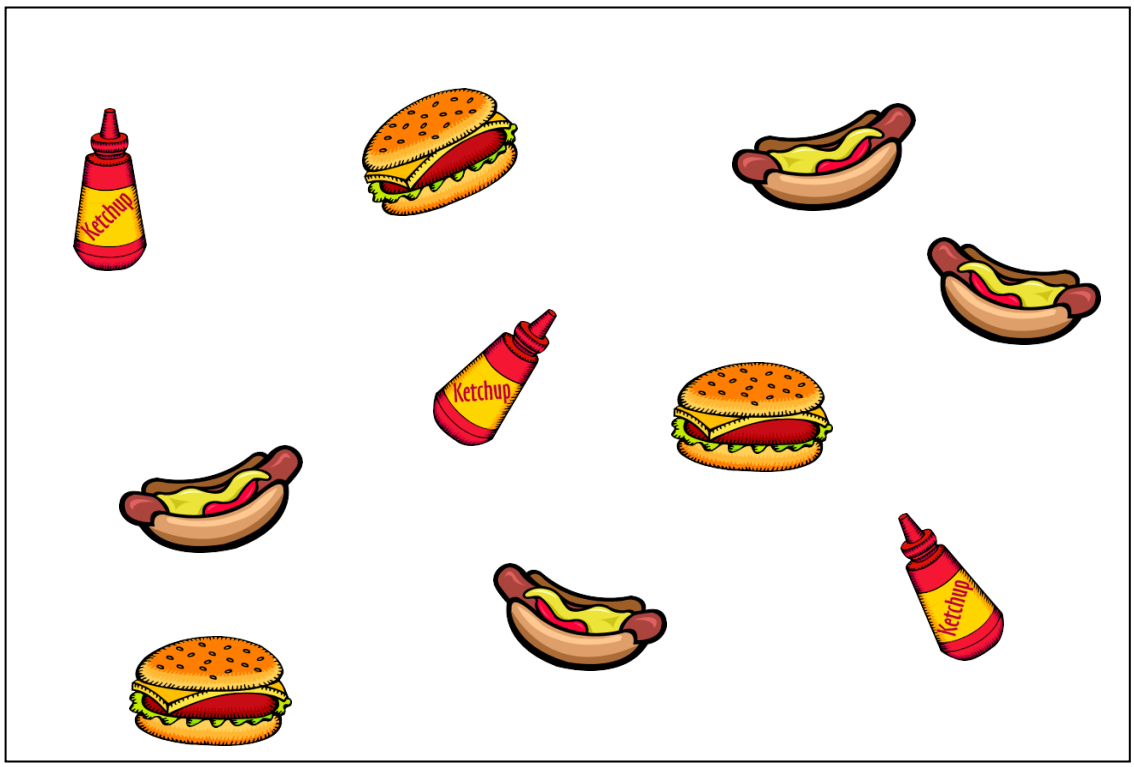
the criteria from above. The total possible number of points is 5. ____

8. Give the student a marker or pencil and the age appropriate trapping sheet. Instruct the student to use the marker to circle the objects on the page. The student is to circle an object as quickly as possible without lifting the marker or pencil and then move on to the next object and circle it. The student is not to touch any of the objects with his/her marker. The student can start anywhere on the page and is not to stop or lift the marker until finished circling every object. There will be a line from one object to the next. The student cannot cut across an object on his/her way to another object.

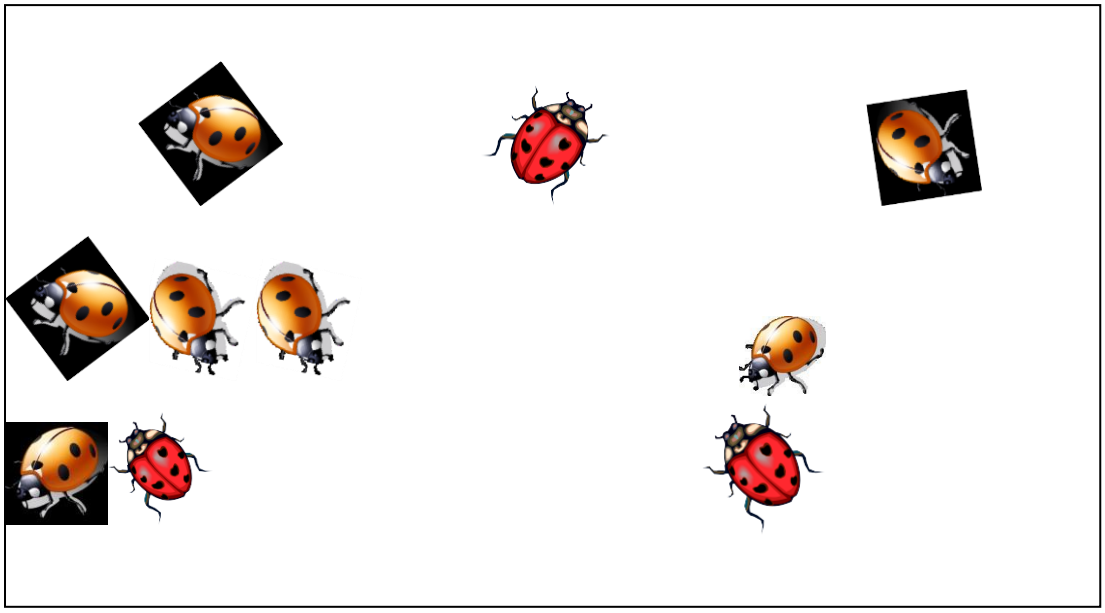
The following is an example of how the objects should be circled:



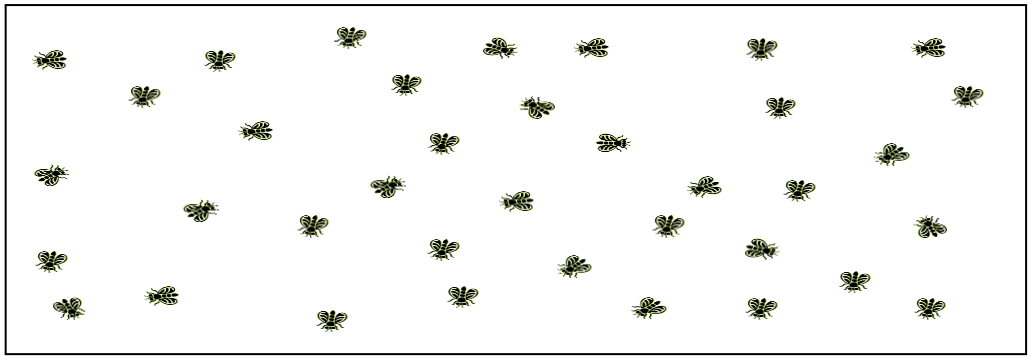
For Kindergarten to 2nd Grade Students



For 3rd to 5th Grade Students



For 6th Grade and Above Students



For grades Kindergarten to 2nd, give 1 point if the student follows the directions without lifting pencil or marker or touching any objects within 20 seconds. _____

For grades Kindergarten to 2nd, give 1 point if the student follows the directions without lifting pencil or marker or touching any objects within30 seconds.

For grades Kindergarten to 2nd, give 1 point if the student follows the directions without lifting pencil or marker or touching any objects within 40 seconds. _____

Total score:___-

Adapted from: Harp, (2015).

c) **The Check-List of indicators of Dysgraphia**

1) poor spelling
2) frustration when writing
3) poor organization of ideas when writing
4) avoidance of writing
5) discrepancy between vocabulary and writing abilities
6) mixing print and cursive when writing
7) saying letters or words out loud when writing
8) staring into space and saying "I'm thinking," when asked to write
9) tiring and fatigue when writing
10) poor self-esteem
11) poor grades
12) taking too long to complete a simple written assignment
13) difficulty understanding and applying grammar in writing

Adapted from: Harp (2015).

d) An Interview Schedule For Class Seven English Language Teachers

Name of School: ……..…. Primary School

Date ……..

1. Within which range of years have you been teaching English?
   1-5 …… 6-10 …… 11-15 …….. 16-above …….

2. Which academic qualifications do you have in Special Needs Education?
   None ……. Certificate ……. Diploma ……. Degree ……. Any other ……..

3. Do you have learners in Class Seven with extreme spelling problems in written English?

4. Please explain how you identify the instructional needs of the learners in Class Seven with extreme spelling errors.

5. Which are the most common spelling errors that you encounter with learners with extreme spelling problems in Class Seven?

6. Please explain how you remediate the spelling challenges you have identified above among learners with extreme spelling problems in Class Seven.

7. Within which age bracket would you say is the study participant in?
   10-14 …… 15-19 …… 20-above ……..

8. About how many years has the learner been in Class Seven and why?

9. How do learners with extreme spelling challenges in Class Seven performance in the English languages?

e) Elementary Spelling Inventory

This Elementary Spelling Inventory is a study tool meant to establish the spelling errors of Class Seven pupils with writing difficulty. Since no penalties are meted out for any misspelling, pupils are encouraged to attempt each target word. The pupil will write each word on an answer sheet numbered 1 to 25 for each word. A sentence for each word will be read out to provide the contextual meaning of each target word to help the pupil understand the required spelling. The pupil may not need an eraser.

1. bed	I slept on my bed.	*bed*
2. ship	A ship travels in the ocean.	*ship*
3. kick	The goalkeeper will kick the ball.	*kick*
4. lump	He had a lump on his head after he fell.	*lump*
5. float	I can float on the water when am swimming.	*float*
6. train	A train carries many things.	*train*
7. place	I found a new place to put my books.	*place*
8. drive	I learned to drive a car.	*drive*
9. bright	My friend is very bright in class.	*bright*
10. shopping	She went shopping for new shoes.	*shopping*
11. padlock	A padlock keeps our house safe.	*padlock*
12. serving	My mother is serving food.	*serving*
13. chewed	The dog chewed my food.	*chewed*
14. trough	The animals are feeding from the trough.	*trough*
15. marched	We marched in the parade.	*marched*
16. shower	The shower in the bathroom was very hot.	*shower*
17. trophy	Our team won a trophy.	*trophy*
18. favour	He did his brother a favour by buying him a soda.	*favour*
19. ripen	The mangoes will ripen and we will eat them.	*ripen*
20. collar	The collar of my shirt is dirty.	*collar*
21. pleasure	It was a pleasure to listen to the choir sing.	*pleasure*
22. fortunate	I was fortunate to see our president.	*fortunate*
23. confident	I am confident that we can win the game.	*confident*
24. civilize	They wanted to civilize the forest people.	*civilize*
25. opposition	The government said the opposition was strong.	O*pposition*

Adapted from: Pearson Education. (2008). *Words Their Way*: Word Study for Phonics, Vocabulary, and Spelling Instruction.

f) **Spelling Inventory Answer Sheet**

School Code: ..... Pupil's Code: .....

1.....

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Source: Researcher

g) ***Words Their Way*** **Elementary Spelling Inventory Feature Guide**

Student's Code ..... Teacher ..... Grade: ..... Date .....

SPELLING STAGES →	**Emergent**		***Letter Name-Alphabetic***			**Within Word Pattern**		***Syllabic and Affixes***			**Derivational Relations**			
	Late	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Late*	*Early*	*Middle*		
Word-Features →	consonants: Initial	consonants: Final	Short Vowels	Digraphs	Blends	Long Vowels	Other Vowels	Inflected Endings	Syllable Junctures	Unaccented Final Syllables	Harder Suffixes	Bases or Roots	Words Spelled Correctly	
1. bed	b	d	e											
2. ship		p	i	sh										
3. kick	k		i	ck										
4. lump	l		u		mp									
5. float		t			fl	oa								
6. train		n			tr	ai								
7. place					pl	a-e								
8. drive		v			dr	i-e								
9. bright		t			br	igh								
10. shopping			o	sh				pping						
11. padlock	p		a-o	ck	dl									
12. serving	s						er	ving						
13. chewed				ch			ew	ed						
14. trough				gh	tr	ou								
15. marched	m			ch			ar	ed						
16. shower				sh			ow			er				
17. trophy			o	ph	tr	y								
18. favour	f		a						v	our				
19. ripen	r					i			P	en				
20. collar	c		o						ll	ar				
21. pleasure											ure	pleas		
22. fortunate							or				Ate	fortun		
23. confident											ent	confid		
24. civilize											ize	civil		
25. opposition											tion	pos		
Totals		/15	/9	/9	/9	/10	/4	/4	/3	/4	/5	/5	/25	

Adapted from: Pearson Education. (2008). *Words Their Way*: Word Study for Phonics, Vocabulary, and Spelling Instruction

h) ***Words Their Way*** **Elementary Spelling Inventory Class Composite**

SPELLING STAGES →													
	Emergent		Letter Name-Alphabetic			**Within Word Pattern**			Syllabic and Affixes			**Derivational Relations**	
	Early	*Middle*	*Late*	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Late*	
Respondent's Code ↓	consonants	Short Vowels	Digraphs	Blends	Long Vowels	Other Vowels	Inflected Endings	Syllable Junctures	Unaccented Final Syllables	Harder suffixes	Basses or Roots	Words Spelled Correctly	
Possible Points →	**15**	**9**	**9**	**9**	**10**	**4**	**4**	**3**	**4**	**5**	**5**	**25**	

Adapted from: Pearson Education. (2008). *Words Their Way*: Word Study for Phonics, Vocabulary, and Spelling Instruction.

i) Consent Form

I..... (name of parent), of national identity card number ..... from ..... village, ... division, ... location in ..... Sub-County, Lamu County, do voluntarily consent to have my child in Class Seven in ..... Primary School to participate in this academic study titled The Influence of Spelling Errors on English Language Performance among Learners with Dysgraphia in Public Primary Schools in Lamu County, Kenya.

Parent: Mr/ Ms: ..... (parent of minor) on this ..... day of ....., 2017.

Witness: Mr/ Ms ..... Signed: ..... (English language teacher for Class Seven in ..... Primary School, 2017).

Researcher: ..... Signed: ..... Date: .....

Source: Researcher

j) Participants' Class Compositions

1) Learner 01

01

MY FAMILY

My family is known as the bilow family. It lives in manyatta village in Ndambwe sub location Ndambwe location Mpeketoni division in lamu west sub county in lamu county. It has ten members.

These are Bilow Ahmed who is our father, Dela Abdi who is our mother, Ali Bilow who is our first bron, Halima bilow our second born, zeinab Bilow is our third born, fatuma bilow our fourth, zamzam bilow our fith born, mohamed bilow our sixth Born, Abdirazak Bilow our seventh bron, Naima bilow eight bron, and Abdullahi Bilow our last bron.

Our father is a manager in nairobi. My muther is a doctor in mombasa hospital. The first born is a engineer in sudan while the second born is a pilot in moi intanatural airport. The third born is Journalist wroks in kisumu. The fourth born a studying at Nairobi univers[ity]. The fifth born I am in class six. The sixth born is in class three. The seventh born is in class Two. The eight born is in class one and the last born is in baby class.

Father pays school fees, buys food and us to school in his marcedes Benz. Our mother cooks for us and buys dolls. The sibling assist in washing utensils...

30/40

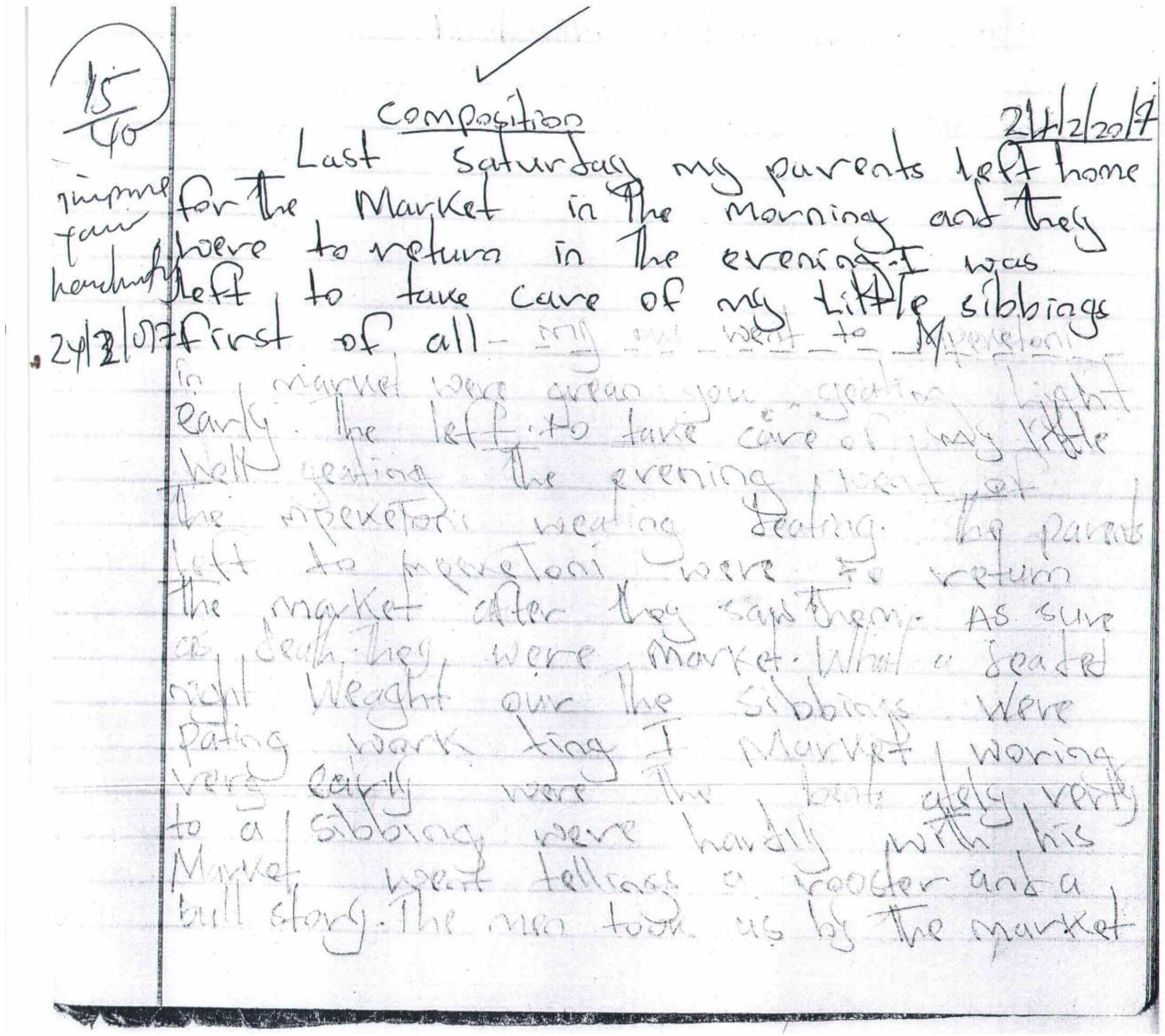
good work / natural ...

1) Learner 05

My family

My family is know as the mohame
family, It live in manyatta villeg in Ndambu
sub-location Ndambwe location MPeketion
division lamu west sub county in Lamu county
It has seven members.
These are Mohamed Abdi who is our
father halima Hussen who is our mother Has
mohamed who is our first born Abdi mohamed
our second born Zakaria mohamed our third born
Amina mohamed our fouth born our last
born anzal
our fathe is manage in Nairobi. My m
is a doctor in kisumu hosPital. The first in
a studying at american univesity. The sec
born is in form four. The third born is in form
two. The third
born is studing at nairobi pailot in Jomo Kenya
air Pot.
our father PAY school fees, buys
food and takes and buys clothes The siblin
assist in washing utsfi sweeping
the compaund washing the gar seeding
chiken and looking after the animals
we eat, Play wach the televisino g
the mus zus and other Places together
we love on other. I love my fami

2) Learner 07



15/40

Improve your handwriting

Composition 24/2/2017

Last Saturday my parents left home for the Market in the morning and they were to return in the evening. I was left to take care of my little sibbings

24/2/017 first of all my ... went to Mpeketoni in market were ... early. I left to take care of my little ... the evening ... the Mpeketoni ... the parents left to Mpeketoni were to return the market after they saw them. As sure as death they were market. What a ... night ... our the sibbings were ... Market ... were early were the ... to a sibbing were hardly with his Market went tellings a rooster and a bull story. The men took us by the market

3) Learner 08

23/1/2017.

A TRIP TO MASAI MARA

It was monday morning when i Preparing food i was Sow the mother and my brother was Prepering the food thind Cloth when i was weke up on the Chair i took the bag and the money i Put on my jeans back side and waiting the bus Prepare the to travel

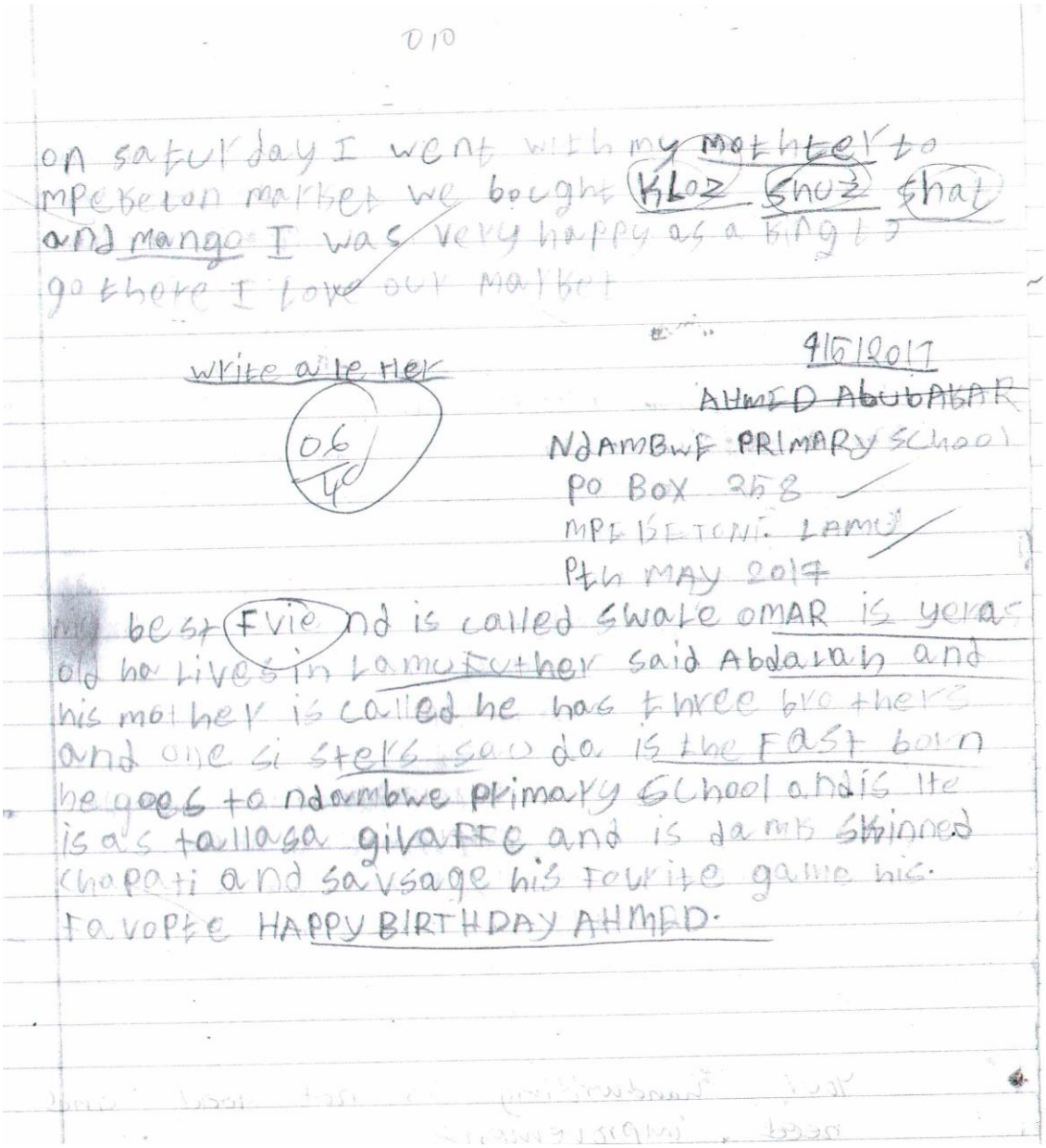
The bus was not came to the Stage why dont you Stop hae my brother was the enjoy to the bus the bus was came and Stop on the Stage of simba Coach why dont you waiting waiting the bus only i Put it the bag and the food on the bus the bag i put it on the boot of bus

I was sit on the Chaes and waiting the bus to Start the State to driving i was on the road why do you Carring the camera and Phone the driver aske them why then i saw the Animals on the bush and the road i took the Phone the was no the Spur of the moment. we reched

I Slumbing on the Park i Sawo the mout Elgon a place well-know for its Steepness. Marion was happy to see the beautifull slopes and rock bearing valley. The air was filled with merry Chattering monkey and flattering of bat. Finally we arrived. Ripple of joy filled our heart when we saw monkeys jumping from tree to tree. We wore our jacket and sat under atree to have a meal. Marion, who was as Playfull as a kitten had a banana in her hand. Suddenly a monkey grabbed the banana from her. Astonished my Parent, marion and i chased the monkey with joy as it jumped

. That [illegible]

4) Learner 010



010

on saturday I went with my mother to mpeketon market we bought kloz shoz that and mango I was very happy as a knight to go there I love our market

write a letter

06

4

9/5/2017

AHMED ABUBAKAR

NDAMBWE PRIMARY School

Po Box 258

MPEKETONI. LAMU

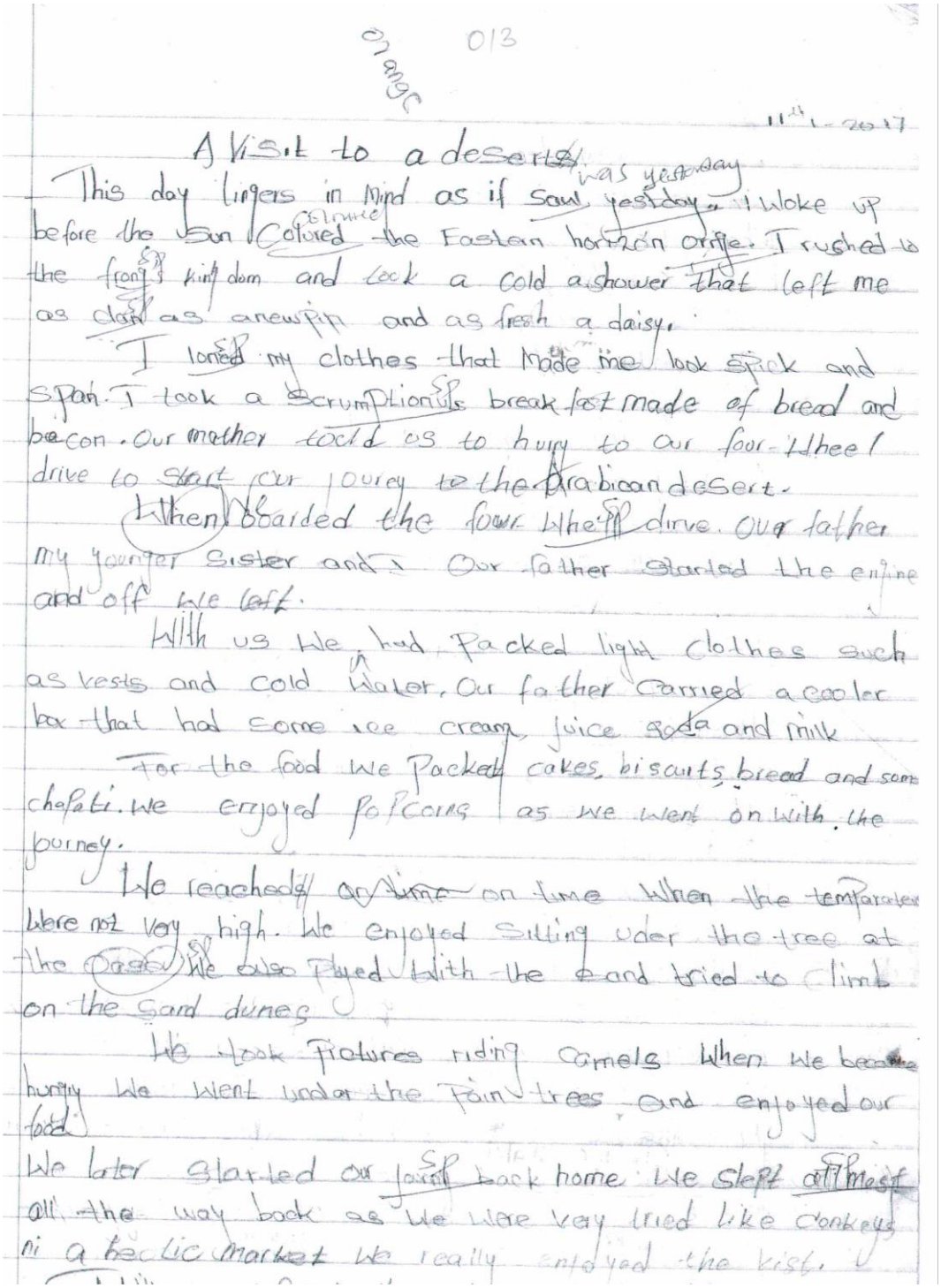
9th MAY 2017

my best friend is called Swale OMAR is years old he lives in Lamu Further said Abdallah and his mother is called he has three brothers and one sisters saw da is the FAST born he goes to ndambwe primary School and his ite is as tallasa giraffe and is dams skinned chapati and savsage his favrite game his favorite HAPPY BIRTHDAY AHMED.

5) Learner 012

My hobby

6) Learner 013



013

11th 1 2017

A visit to a desert

This day lingers in mind as if saw yesterday. I woke up was yesterday
before the sun Colored the Eastern horizon orange. I rushed to
the front bathroom and took a cold shower that left me
as clean as a new pin and as fresh a daisy.

I loved my clothes that made me look slick and
spam. I took a scrumptious breakfast made of bread and
bacon. Our mother told us to hurry to our four-wheel
drive to start our journey to the Arabian desert.

When boarded the four wheel drive. Our father
my younger sister and I. Our father started the engine
and off we left.

With us we had packed light clothes such
as vests and cold water. Our father carried a cooler
box that had some ice cream, juice soda and milk

For the food we packed cakes, bisaurts, bread and some
chapati. We enjoyed popcorns as we went on with the
journey.

We reached on time when the temperatures
were not very high. We enjoyed sitting under the tree at
the oasis. We also played with the sand and tried to climb
on the sand dunes.

We took pictures riding camels. When we became
hungry we went under the palm trees and enjoyed our
food.

We later started our journey back home. We slept almost
all the way back as we were very tried like donkeys
in a hectic market. We really enjoyed the visit.

8) Learner 015

ko

USeS of TREES

1) trees have many uses
like [trees] rees is left again they
give timbers. things. dont know
Trees is [are] important to a
people [because] Treea is [are] used
to make many things in a life.
of apeople.
17/20 apeopleT were lorandad by people
Trees help to River Soil erosion
peltclal together There big Tree
like baobab
Trees provi de raw material
forinthe constrition of houses.
Trees provide raw timber wheh
used by carpenter to make
beds chairs desks The trees
makes wod fire inkant Arta
keir tall and thy
Trees provi de wood and abcre
used for colthings dont cating
the trees hes important to people

9) Learner 017

017

13/2/2018

It was a dark lonely night and my uncle had Just arrived from an assignment up country. It was an lonely night and having finished my home work. My uncle had already got some Jobs up country. (he just come) write about the night

12/40

The next day will was a monday. My uncle will Went to uganda. I am anxiushly in my house after sometime me sleeping in the house.

"Where is your uncle?" asked one man who seemed to be the gang leeder. (reader) "He has travelled to Kampala in uganda," I responded.

At that moment, the three gigantic had started ransacking the house and were looking for any valuable item from the house.

One of the gigantic will use smoking bang. The asked for money but I had no money. Nothing valuable was found in the house and this angered the men.

They started beating me mercilessly. I listen for help but I was ordered to keep quiet. Whithin two shakes of a bulbs. (lamb's tail) The three gigantic argument to each other and went in. (went in where)

What is your ~~Uncle~~ ~~number in our~~ Phone number ~~Phone~~ I quickly gave them the number. One of ~~gigantic~~ them had red scary eyes ~~the eyes is red~~.

My uncle will call them the police officer. After sometime the police officer will come home. Police come home the

10) Learner 018

11) Learner 019

USES OF TREES/ 13-2-2018

Trees hale many use
llnoee is cet rain they give tmber
ther use to bild the hoases cn many
ther i dont unow

Trees is impartant to a
people becose tree is im the soil
Partiiclal: fogef her

Treess Provide raw t.ynsis
far in tue consyuction of houses
chanrs dethd sinils copn is bouts on

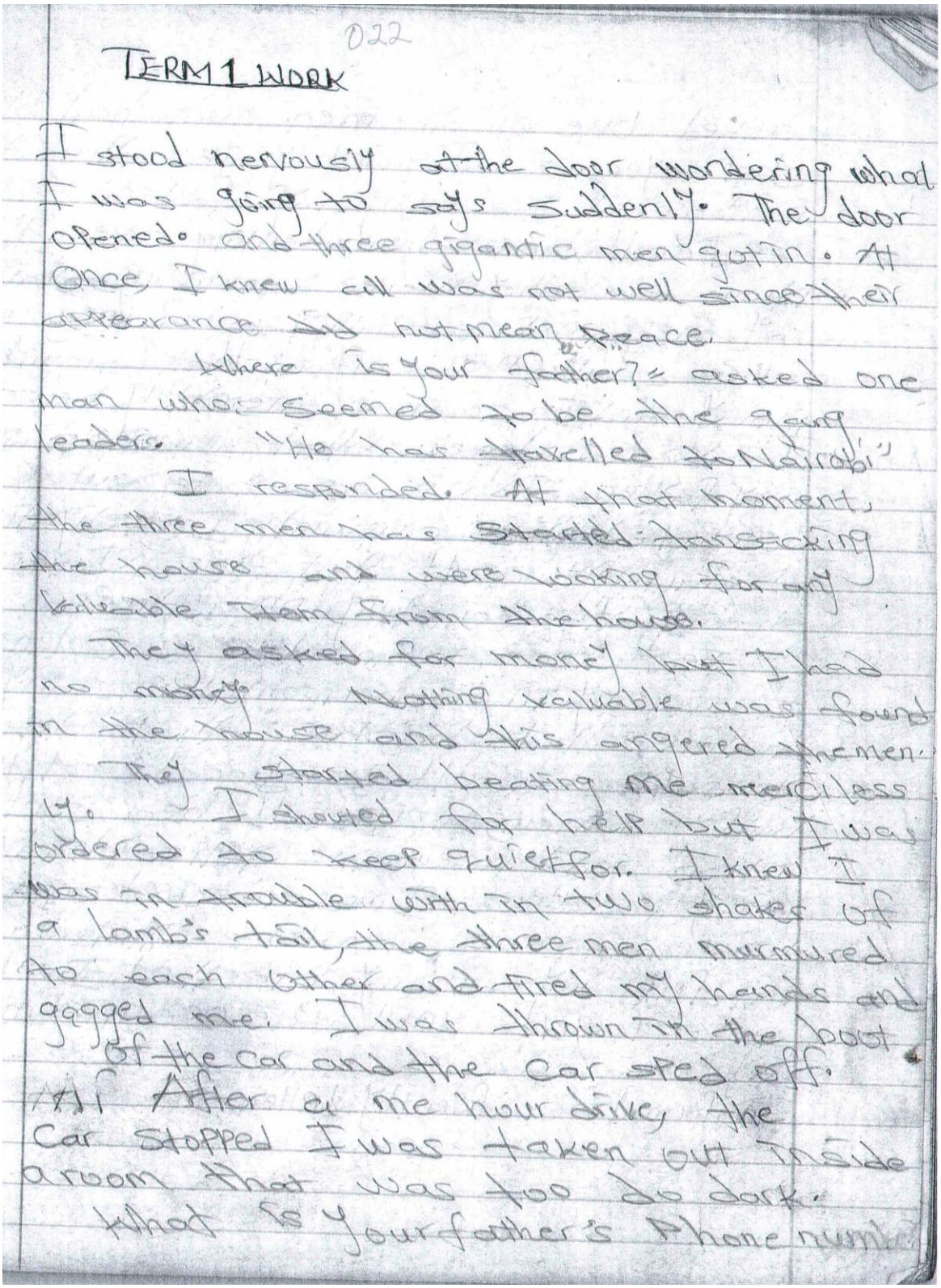
Thmaees Provide tim boatsto cn an
hey mamape by hary weg trees and

hes tribeulong hime, fomature
heo cr a tail andue bigny
rees Provid fir wod aneu cal

12) Learner 020

13) Learner 021

14) Learner 022



022

TERM 1 WORK

I stood nervously at the door wondering what I was going to say. Suddenly. The door opened. And three gigantic men got in. At once, I knew all was not well since their appearance did not mean Peace.

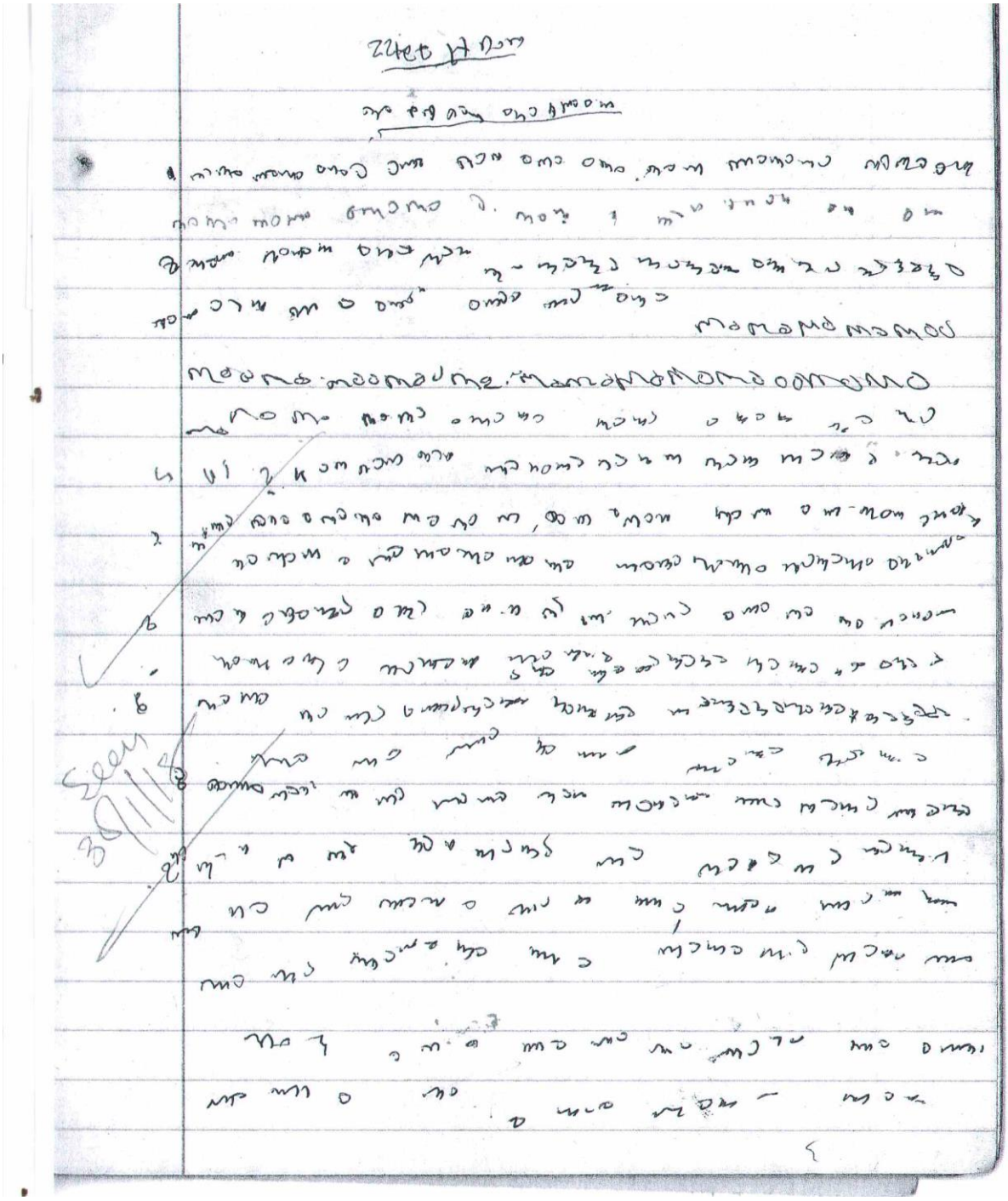
Where is your father? asked one man who seemed to be the gang leaders. "He has travelled to Nairobi" I responded. At that moment, the three men had started ransacking the house and were looking for any valuable item from the house.

They asked for money but I had no money. Nothing valuable was found in the house and this angered the men. They started beating me mercilessly. I shouted for help but I was ordered to keep quiet for. I knew I was in trouble with in two shakes of a lamb's tail, the three men murmured to each other and tied my hands and gagged me. I was thrown in the boot of the car and the car sped off.

After a one hour drive, the car stopped I was taken out inside a room that was too do dark.

What is your father's Phone numb

15) Learner 023



k) **The Spelling Inventory Answer-Sheets**

(d) SPELLING TOOL ANSWER SHEET

School: 23 Pupil's Code: 01

1. bed
2. ~~sheep~~ sheep
3. Kiike
4. Lnf
5. Slow
6. treuling
7. bells
8. bevgil
9. bels
10. Sabkk
11. Sholk
12. S?Salis
13. Chekds
14. Kavgst
15. Magihtc
16. S?w
17. boutg
18. feivgv
19. hopen
20. Sole
21. pellsq
22. Solhenc
23. hov very
24. SIVisye
25. bodecamesitin

(d) SPELLING TOOL ANSWER SHEET

School: 06 Pupil's Code: 03

1. bed
2. Ship
3. kicik.
4. Lamp
5. ~~fater~~ fating.
6. Rallowy.
7. plas
8. ~~diren~~ divevir
9. Plort
10. Spory
11. ~~goiru~~ Sore
12. ~~gutte~~ Salive
13. tead
14. ~~Vals~~ ~~carie~~ Corring.
15. ~~Match~~ motch
16. Sapy.
17. bottle
18. Faveing
19. ~~Vapen~~ Veper
20. Cole
21. Plavia
22. fofanng
23. ~~Cordair~~ Cofder
24. Seeving
25. ~~opzin~~ Conpzin

(d) SPELLING TOOL ANSWER SHEET

School: 09 Pupil's Code: 04

1. Bed
2. Slup
3. Keyz Kyg
4. Lamp
5. floot
6. tren
7. Place
8. ~~dre~~ drav
9. bright
10. ShoPag
11. Spoa
12. Saving
13. ~~Cher~~ Cheud
14. Carrize
15. match
16. Shew
17. ~~bottle~~ bottle
18. fever
19. Teipend
20. ~~Collar~~ Collar
21. PLasher
22. foChonet
23. Conefedet
24. Severxlz
25. oPPosition

(d) SPELLING TOOL ANSWER SHEET

School: 21 Pupil's Code: 05

1. beda
2. Shup
3. KiKi
4. laizu
5. fuketa
6. reihi
7. Pelec
8. clarafu
9. brati
10. Chopa
11. Sipali
12. Safi
13. Chileda
14. Carisi
15. machiti
16. Chalwa
17. botoli
18. fefa
19. rai pen
20. Calo
21. Pala cho
22. fotautetie
23. Cofideti
24. sifu Sifilai
25. opozicha

(d) SPELLING TOOL ANSWER SHEET

School: 017 Pupil's Code: 06

1. ~~bedie~~ bedi
2. Ship
3. Kiky
4. ~~Lapupu~~ Lamupu
5. fuliote
6. ~~ta~~ tervnigs
7. be pelese
8. frivevse
9. bevitingi in the class
10. Shopping
11. Sepbele
12. Savering
13. Chiondi
14. Carise
15. Machedi
16. Shawa
17. Putule
18. Fefara
19. reapingthe
20. Cola
21. ~~pa~~ ~~preasha~~ pealisha
22. ~~fotimite~~ fogginite
23. Covidete
24. Sevivitase
25. ~~opositi~~ oposiche

(d) SPELLING TOOL ANSWER SHEET

School: 03 Pupil's Code: 07

1. bed
2. Sheap
3. Ceek
4. larmp
5. Flourt
6. trein
7. drive
8. place
9. brite
10. Shorping
11. pardlock
12. Sarving
13. Cheeurd
14. theart
15. Machted
16. Sharwar
17. thorfeed
18. feaver
19. tiped
20. courlar
21. pleaser
22. Fortunited
23. comfeedent
24. Seevelans
25. oporsition

(d) SPELLING TOOL ANSWER SHEET

School: 12 Pupil's Code: 08

1. Bed
2. Ship
3. Kick
4. Lamp
5. float
6. train
7. Drawer
8. Place
9. bright
10. Shopping
11. Padlock
12. Serving
13. Cheild
14. Naffer
15. Mached
16. Shawer
17. Traff
18. Fever
19. Rainpan
20. Cola
21. Playsher
22. fourchunel
23. Counvident
24. Seevelecer
25. OPPosion:

(d) SPELLING TOOL ANSWER SHEET

School: 28 Pupil's Code: 09

1. Bed
2. Ship
3. Kick
4. Lamp
5. Float
6. Train
7. drive
8. Place
9. bright
10. Shoping
11. Padlock
12. Serving
13. Child
14. Traf
15. Match
16. Shower
17. Trophy
18. Fever
19. ripen
20. Color
21. Pleasure
22. Faturet
23. Confident
24. Civilies
25. Opposition

(d) SPELLING TOOL ANSWER SHEET

School: 11 Pupil's Code: 010

1. Bed.
2. Sheip.
3. kick.
4. Lamp.
5. flaot.
6. Strain.
7. Drive.
8. Places.
9. Brit.
10. Shoping.
11. Padhoek.
12. Serving.
13. chuid.
14. Traf.
15. March.
16. Shower.
17. Trafic.
18. fever.
19. ripen.
20. colar.
21. Pleasure.
22. Tourchunient.
23. Cofindent.
24. Sivilis.
25. Opposition.

(d) SPELLING TOOL ANSWER SHEET

School: 14 Pupil's Code: 011

1. Bed
2. Ship
3. Kiked
4. Lamp
5. flat
6. trein
7. draw
8. flec
9. brait
10. Shoping
11. Padlock
12. Saving
13. shyd
14. trasu
15. machd
16. Shawa
17. trasing
18. feva
19. kaiPen
20. Cola
21. Plasha
22. fecunet
23. Confedent
24. Sevleis
25. elaeshon

(d) SPELLING TOOL ANSWER SHEET

School: 24 Pupil's Code: 012

1. bed
2. Shep.
3. Kiock
4. lame
5. flat
6. train
7. dreve
8. sples
9. barit
10. Shopping
11. Padlock
12. sevcing
13. chevoa)
14. taxf
15. machel
16. showa
17. toxfi
18. fevar
19. xipepen
20. ckole
21. ploysfea
22. forchunet
23. kofidont
24. Seavelas.
25. operzishen

(d) SPELLING TOOL ANSWER SHEET

School: 02 Pupil's Code: 013

1 bed
2. sheep
3. ceke
4 Lonp
5. Floto
6. theen
7. dreer
8. Pheas
9. blaet
10 shepen
11 Polok
12. sakeq
13. chedk
14. thar
15. mochtd
16. shawa
17. thofed
18 Fera
19. heepen
20 Cola
21 Phesha
22 Fechunez
23. confednt
24 coveranz
25 popozeshen

(d) SPELLING TOOL ANSWER SHEET

School: 22 Pupil's Code: 014

1. ~~Bebe~~ Bed
2. ~~Seneke~~ s hep
3. Kige
4. Lapw
5. [illegible]
6. Lexes
7. [illegible]alfi
8. Pesl
9. Bat
10. Shoplo[illegible]
11. Palef
12. SafiNi
13. [illegible] here
14. Lasw
15. Maich
16. Chame
17. Pesth
18. fevej
19. kay
20. koba
21. Pacla
22. fanesti
23. kafaatr
24. Sheron
25. oPeSe

(d) SPELLING TOOL ANSWER SHEET

School: 04 Pupil's Code: 015

1. Bed
2. ~~sh se sheet~~ ShiP
3. K.ck
4. Lamp
5. Slot
6. tren
7. Draive
8. Ples
9. Brait
10. Shoping
11. Pad lock
12. ~~Saving~~ saving
13. Che ut
14. trag
15. mached
16. Shawa
17. ~~trafin~~ ~~tra~~ trafe
18. feva
19. ~~Yait~~ Yaipen
20. Chola
21. Plesshe
22. fechunet
23. Chansidsnt
24. Sivalaize
25. ~~OPositon~~ oposishen

(d) SPELLING TOOL ANSWER SHEET

School: 17 Pupil's Code: 016

1. BED
2. ~~Shirp~~ ship
3. Kck
4. Lamp
5. flout
6. Train
7. drive
8. Place
9. Bright
10. Shopping
11. Padlock
12. Saving
13. chewword
14. trfgh
15. ~~Marhk~~ March
16. Shorwere
17. trothy
18. fevar
19. ripen
20. Colar
21. Plesre
22. fochunets
23. Confidendt
24. Civilines
25. oppovethon

(d) SPELLING TOOL ANSWER SHEET

School: 02 Pupil's Code: 017

1. bed
2. Ship
3. kick
4. Lamp
5. foot
6. train
7. Place
8. drive
9. brite
10. Shoping
11. Padrock
12. Saving
13. Chewld
14. krof
15. Machd
16. Shawer
17. trofe
18. faver
19. dripen
20. colb
21. PlaShen
22. fochunech
23. confident
24. Sivelaives
25. opozition

(d) SPELLING TOOL ANSWER SHEET

School: 14 Pupil's Code: 018

1. bead
2. Sheepl
3. foik foul ball
4. Slowu
5. Peal
6. Ramboletion
7. Rece
8. diveres
9. dir bider
10. SRota
11. Poaddoad
12. Paleral
13. Childers friaroad
14. Setiar
15. Paleala
16. Sarilapeathar
17. Patl ayat lea
18. sarkcasiol/aralale
19. wife fcall
20. dian jala
21. Cha kiaratning
22. Carakcathecal
23. Clg athing Uea
24. Seeliving
25. a fothr othing

(d) SPELLING TOOL ANSWER SHEET

School: 19 Pupil's Code: 019

1. Beni
2. ESiPiS
3. KiBiBi
4. katui
5. fLtitbi
6. tenNHi
7. PASH
8. GAlfi
9. BaPti
10. Shtihtp
11. Papatip
12. Shthtfep
13. ChiPti
14. tAPati
15. Maohi
16. GbAiDw
17. tAPiti
18. fAfAt
19. MAiPi
20. CorAwi
21. BALTk
22. faiDr
23. CfiHbi
24. SIGAiti
25. OPHShiP

(d) SPELLING TOOL ANSWER SHEET

School: 21 Pupil's Code: 020

1. Bebe
2. sepu
3. kiki
4. ramp
5. botje
6. tlnie
7. pasp
8. baiut
9. bret
10. sapin
11. pablisu
12. savino
13. cuba
14. turatl
15. malite
16. sana
17. twke
18. fatae
19. lappen
20. kota
21. presa
22. ttoinee
23. cobere
24. sirler
25. ~~tot~~ f or

(d) SPELLING TOOL ANSWER SHEET

School: 28 Pupil's Code: 021

1. Bead
2. Sipu
3. Kiki
4. Lamup
5. Fuloti
6. tirean
7. Pulms
8. Direivu
9. Hulili
10. Sorin
11. Pabiroer
12. Saxin
13. Chuti
14. tirafa
15. machin
16. Sawa:
17. tirofia
18. Fepa
19. Laipeni
20. Cola
21. malesa
22. Fork Chonet
23. Confider
24. Sivilaiva
25. Opozisen

(d) SPELLING TOOL ANSWER SHEET

School: 13 Pupil's Code: 022

1. Bed
2. sheep
3. Kinki
4. ramp
5. flont
6. traini
7. Pras
8. Drair
9. Brait
10. shapin
11. paddok
12. sharin
13. chiuld
14. trafu
15. mg chit
16. shawg
17. trofi
18. fa va
19. rai pen
20. kora
21. prasha
22. fochangt
23. konfindenit
24. siriran
25. opozishen

(d) SPELLING TOOL ANSWER SHEET

School: 01 Pupil's Code: 023

1. tBri θ
2. A e i ι pAi
3. K o e i ι K θ
4. w r e i ι A
5. 6 A i ι Ai
6. ℓ i e t e ei
7. ι θ t i p r i
8. t A c A A c e
9. t A o A ι t o ι
10. e A c A t 12 e
11. t p A o i c 2 t i
12. t 1 A 6 A c A B
13. 6 A c A b A A t
14. 6 A A A 2 K o
15. 6 r p 2 A o A i 0
16. K 6 A 6 A o A 6
17. p A A o A A A ι
18. 6 A i A 2 A o A
19. 6 p U e e i 6 A
20. A 6 p 2t A o e A
21. 6 p i o A o A ci
22. 6 p e 2 a A 6 A c A i
23. A U o i A e A l
24. 6 A 6 A A u A o A i e
25.

(d) SPELLING TOOL ANSWER SHEET

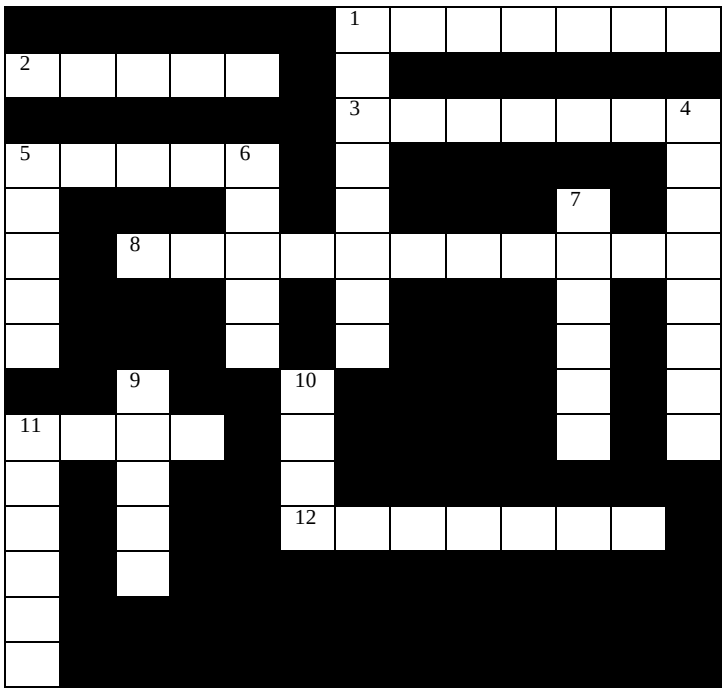
School: 09 Pupil's Code: 024

1. bed
2. Sheep
3. Kigi
4. Yabu
5. fuLoto
6. tite
7. piLes
8. Sitafu
9. buLati
10. cho ba
11. ba do [illegible]
12. Sa Vi
13. Chi Udo
14. fiKafu
15. Ma ch[illegible]i
16. chewa
17. fi Lofi
18. Fefa
19. tape
20. Kota
21. piLeCha
22. fa chiRati
23. KoVe[illegible]
24. Si vates
25. Ko PaVicho

Appendix III: An example of a puzzle that teachers used

Across

1. A zebra is ……. to a donkey.
2. To move your shoulders up and down to mean something.
3. We …….. our volleyball captain because he is a good leader.
5. The upper part of a leg.
8. We …… with one another mainly by speaking and writing.
11. One of the dull colours.
12. Play a game where one competitor tries to throw his opponent down.



Source: Mathenge et al. (2014).

Down

1. We are going to …… the compound with a bamboo hedge.

4. Never try to …… a dog because it can bite you.

5. A group of scouts.

6. A person.

7. Move from place to place.

9. To annoy somebody by making fun of him.

10. Crush with teeth

11. How animals keep their hair or fur clean.

Appendix IV: Permits

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

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

Ref: No.

Date:

NACOSTI/P/16/84427/13648

27th October, 2016

Paul Kimani Njenga
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Influence of spelling errors on english language performance among learners with dysgraphia in public primary schools in Lamu County Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Lamu County** for the period ending **24th October, 2017.**

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

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

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

THIS IS TO CERTIFY THAT:
MR. PAUL KIMANI NJENGA
of KENYATTA UNIVERSITY, 0-80503 MPEKETONI,has been permitted to conduct research in *Lamu County*

on the topic: *INFLUENCE OF SPELLING ERRORS ON ENGLISH LANGUAGE PERFORMANCE AMONG LEARNERS WITH DYSGRAPHIA IN PUBLIC PRIMARY SCHOOLS IN LAMU COUNTY KENYA*

for the period ending:
24th October,2017

Permit No : NACOSTI/P/16/84427/13648
Date Of Issue : 27th October,2016
Fee Recieved :Ksh 1000

.....
Applicant's Signature

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

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEACH CLEARANCE PERMIT

Serial No.A 11448

CONDITIONS: see back page

THE PRESIDENCY
Ministry of Interior and Coordination of National Government

Email:lamucounty12@yahoo.com
Telephone: Lamu 633511
Fax: 042-4633511

COUNTY COMMISSIONER'S OFFICE,
P.O. BOX 41 - 80500
LAMU COUNTY.

When replying please quote;

REF. No: ADM 15/3 VOL.IV/188

Date: **18th November, 2016**

Deputy County Commissioner
Lamu West Sub-County

All Assistant County Commissioner's
Lamu West Sub-County

RE: RESEARCH AUTHORIZATION.

Reference is made to a letter REF No. NACOSTI/P/16/84427//13648 from the National Commission for Science, Technology and Innovation dated 27th October, 2016 written to Mr. Paul Kimani Njenga and copied to us among others on the above subject.

Mr. Paul Kimani Njenga of ID No. 13634728, Tel 0723584918 has been authorized to carry out a research on ***"Influence of spelling errors on English language performance among learners with dysgraphia in Public primary schools in Lamu County Kenya,"*** in the County between October 2016 – October, 2017.

Please accord him necessary assistance.

(S.K. SANGOLO)
FOR: COUNTY COMMISSIONER
LAMU COUNTY.

Copy to:-

- National Commission for
  Science Technology and Innovation
  NAIROBI
- Mr. Paul KimaniNjenga

REPUBLIC OF KENYA
MINISTRY OF EDUCATION
STATE DEPARTMENT OF BASIC EDUCATION.

Telephone: 0715409024
When replying please quote
Email: educationlamuwest@yahoo.co.uk

COUNTY DIRECTOR OF EDUCTION,
LAMU
P.O.BOX 75-80500
LAMU.
DATE: 18th November, 2016

REF: LM/CDE/P.41/6

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION
PAUL KIMANI NJENGA

The above is a student of Kenyatta University and has been authorized to carry out research on topic "Influence of Spelling Errors on English Language in Performance among learners with dysgraphia in Public Primary Schools in Lamu County Kenya" Vide NACOSTI/16/84427/13648 dated 27th October, 2016.

You are expected upon completion to submit a copy of the research report to this office.

Accord him necessary support.

COUNTY DIRECTOR OF EDUCATION
LAMU
P. O. Box 75-80500,
LAMU.

Peter M. Magiri
County Director of Education
LAMU