Effects of Orthographic Depth on Morphological Awareness Among Silozi – English Bilingual 6th Graders in Mongu Primary Schools, Zambia

By

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DECLARATION

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ABSTRACT

Orthographic depth affects reading development among beginning readers. Morphology Awareness (MA) is one of the often-overlooked building blocks for reading fluency, reading comprehension, and spelling. Research has demonstrating the importance of strong morphological teaching as early as first and second grade. Where traditionally it has been the focus in middle and high school years.

This study investigated the effects of orthographic depth on morphological awareness among sixth graders. The purpose of the study was to determine cross-linguistically how orthographic depth affects (MA) among Silozi and English learners at grade 6 level at Mongu primary school, western province of Zambia. In order to measure their (MA), a test was designed in each of the two languages. The quasi-experimental design in this study aimed at answering production (derivational) and decomposition measurement tasks in both Silozi and English as main tool for the assessment of (MA). The Silozi version was a direct translation of the English one. Each assessment task sheet had two sections with 20 items on decomposition and 18 on derivation. To that end, both versions of the morphological awareness MA tasks, were administered to 120 children who were English – Silozi bilinguals.

The quantitative data was analysed using Descriptive and inferential statistics. Therefore, in order to explore differences in performance between the Silozi and English languages, analysis of variance (ANOVA), linear regression and correlations were used. The results of the statistical analysis indicated high levels of reliability for both versions of the MA tasks. Generally, the results show statistically significant variations in MA decomposition and derivational between Silozi and English languages. However, the results revealed that learners performed better in English language than Silozi language.

Key words: *Orthographic Depth, Morphological Awareness, derivational, decomposition*

DEDICATION

To my Mother: Albertina Mulima Munyinda Nalishuwa (Deceased)

You are the unsung heroine of this process.

Others may never know the extent of many sacrifices you made for me.

I will always remember.

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ABBREVIATION

BTL	Break through to Literacy
L1	First Language
L2	Second Language
MA	Morphological Awareness
NBTL	New Breakthrough to Literacy
PGST	Psychological Grain Size Theory
ANOVA	Analysis of Variance

OPERATION DEFINITION OF TERMS

Orthographic Depth Hypothesis – States that "lexical word recognition in shallow orthographies is mediated primarily by phonemic cues generated pre-lexically by grapheme-to-phoneme translation. In contrast, lexical access for word recognition in a deep orthography relies strongly on orthographic cues" (Frost, Katz, & Bentin, 1987).

Deep Orthographies – Orthographies with less direct or highly inconsistent letter-sound correspondences, which make decoding print more challenging for novices.

Derivation – is the process of creating a new word out of an old word usually by adding a prefix or a suffix.

Decomposition – is a creation of a root word by removing a prefix or suffix.

Dyslexia - also called specific reading disability, is a developmental disability in learning to read.

Granularity - the size of phonemic or morphological aspects of a language.

Grapheme - letter symbols represented in written language**.**

Lexical word – is a single word/ a part of a word/ or a chain of words that forms the basic elements of a language's lexicon. It can also be defined as the meaning of a base or root word without considering any prefix or suffix which may be attracted. (Example the meaning of *walk* in the conjunctions *walks/walked/walking*).

Morpheme - the smallest grammatical unit of written language.

Morphological Awareness - is defined as the recognition of the different parts forming a word (Carlisle, 2000).

Non-lexical words – are extra words which comes meaninglessly in case of verbal communication. Specifically, all sounds which are not laughter and not words were labelled as non-lexical. (Example: uh, ah, mmm, er, hmm, sh).

Opaque language- a language whose phonological and orthographical systems do not match on a one-to-one correspondence, for example, English language.

Orthography- the accepted way of spelling and writing of words.

Phoneme- the smallest sound unit of a language realized through graphemes.

Phonological Awareness -the ability to perceive and attend to a word's sound-structure, as opposed to its meaning.

Psycholinguistic Grain Size Theory (PGST) – presumes that "dramatic differences in reading accuracy and reading speed found across orthographies reflect fundamental differences in the nature of the phonological recoding and reading strategies that are developing in response of the orthography" (Ziegler & Goswami, 2005).

Shallow Orthographies – Orthographies with highly regular sound-symbol correspondences. The consistent letter-sound correspondences make word decoding relatively easy because of fewer letter-sounds mappings to deal with.

Sub-lexical - ability to understand portions of vocabulary.

CHAPTER I

INTRODUCTION

1.1 Overview

This chapter provides the general background information that sets the context of the research. The background is followed by the statement of the problem under investigation, the purpose of the study, the research objectives, questions and the significance of the study. The chapter also presents the theoretical framework in which this study is situated followed by the definition of terms as they have been used in the study.

1.2 Background

Orthographic depth affects reading development among beginning readers (Seymour, Aro, & Erskine, 2003; Goswami & Ziegler, 2005). Orthographic opacity of an alphabetic orthography indicates the degree to which a written language deviates from simple one-to-one letter – phoneme correspondence: shallow orthographies are easy to pronounce based on the written word, and deep orthographies are difficult to pronounce based on how they are written.

Morphology Awareness is one of the often-overlooked building blocks for reading fluency, reading comprehension, and spelling. Research has demonstrated the importance of strong morphological teaching as early as first and second grade (Apel & Lawrence, 2011), where traditionally it has been the focus in middle and high school years. morphological awareness is the recognition, understanding, and use of word parts that carry significance, but it is often overlooked in the learning process. According to Carlisle (2000), morphological awareness refers to the ability to reflect

on and manipulate morphological structure of words as well as morphemes. Wolter and Pike (2015) state that morphological awareness is the metalinguistic ability to understand and manipulate the smaller meaningful parts of language such as prefixes (e.g. re-), base words/roots (e.g. cycle), and suffixes (e.g. -ing, -ist) to develop morphologically complex word forms (e.g. recycle, cycling, recycling, cyclist). Learn activities that help integrate Morphological Awareness for students learning to read and write. For example, root words, prefixes, suffixes, and grammatical inflections (e.g., -s or –es for plurals) are all morphemes which can be added or taken away from a word to alter its meaning.

One characteristic of morphemes that obscure the internal structure of a word and the semantic relationship between base and derived form is referred to as opacity, which can take phonological or orthographic forms (Carlisle, 2000). Phonological opacity, or a phonological change, occurs when a suffix is added to a base word and there is an alteration in the stress and/or vowel sound to create the derived word form. Orthographic opacity, or an orthographic change, occurs when the addition of a suffix alters the spelling of the base word to create the derived word form. Carlisle (2000) and Leong (1999) categorized relationships between a base word form and its derived word form into four types: (1) no change (e.g., dry–dryer), (2) orthographic change (e.g., begin–beginner), (3) phonological change (e.g., courage–courageous), and (4) both orthographic and phonological change (e.g., deep–depth). Opacity affects the accuracy and speed of producing and reading morphologically complex words (Leong, 1999). Researchers consistently find that students are most likely to orally produce derived forms accurately when no change in the orthographic or phonological form is required (Carlisle, 2000; Wade-Woolley & Heggie, 2009; Fowler & Liberman,1995; Jarmulowicz, 2006). The ability to identify a base form

given a morphologically complex derived form when there is a phonological or both change (in which there is some phonological complexity) distinguished less skilled and skilled readers in upper elementary school children (Fowler & Liberman, 1995).

The ability to read morphologically complex words, especially derived words, may be complicated by the fact that they are typically longer (multisyllabic words), lower in frequency, more abstract tin meaning, and more phonologically and orthographically complex. Carlisle (2010) investigated Morphological Awareness in fourth, sixth, and eighth graders. Students were asked to provide derivations in response to base words and to name base words of derived forms. In the derivation task, students were given the example, '*Warm.* He chose the jacket for its (*warmth*)', and an example of decomposition would be supplying the word *danger* in a sentence after hearing *dangerous*. The students were more successful in providing the base words when given the derived form than providing derived words when given the base form, and older students were more successful than younger students. The most difficult word conversions involved phonological changes, such as *admit/admission*. Middle-school students demonstrated weaker oral production performance when producing derived forms of words with both orthographic and phonological changes (e.g., decide to decision) than on words transparent in both phonology and orthography (e.g., enjoy to enjoyment), phonological changes (e.g., magic to magician), and orthographic changes (e.g., day to daily).

Orthographic Depth may affect Morphological Awareness at which children do learn the code, and those early skills, both in word recognition and the basics of spelling and then of course on higher level skills. This is absolutely different between learners of deep and transparent writing systems, in just the level of performance that

they reach with the orthography at a particular age. The factors that distinguish the transparent ones from the deep or opaque system is the inconsistency in the mapping between letters and phonemes. The extent to which a language allows multiple correspondences from print to sound and from sound to print, is what makes it more or less opaque, more or less ambiguous, and makes it more or less difficult to learn, at least in the fundamental coding aspects.

Ziegler and Goswami (2005) drew together cross-linguistic findings to explain morphological awareness development across languages, proposing three contributing factors. The first factor was the availability of different sound units prior to reading. The second factor was the degree of consistency seen in the associations between the sounds and the symbols of the language. The third factor was granularity which refers to the level of mappings between the sounds and symbols in the language, whether they were smaller or larger sized units. The authors also argued that the nature of instruction is important for understanding morphological awareness development. The *Psycholinguistic Grain Size Theory* (PGST) considers morphological awareness development to depend upon the abstraction of optimal mappings between orthographic units and the sounds of the language.

Studies carried out on morphological awareness revealed that in many instances students with the ability to break words into their meaningful parts, not only build up their vocabulary but also have a better comprehension of reading and therefore, build up their skills in writing (Karimi, 2012; Kieffer & Lesaux, 2007). An awareness of derivational morphemes often gives students an indication of word meaning and thus acts as a guide in enabling better comprehension of words and texts (Kieffer &

Lesaux, 2012). It has also been argued that morphological awareness shares a link with a student's ability to not only describe complex words, but also indicate his/her ability with regard to reading comprehension and writing (Carlisle, 2010). A critical awareness of both morphology as well as phonology has an impact on language learners' ability to both write, listen and speak efficiently in Silozi or English.

Indeed, there is a relationship between learners' knowledge of the base form of the word and their ability to recognize words efficiently enough to be able to speak or write in a coherent manner (Kieffer & Lesaux, 2009). Given that morphology is said to play a critical role in aiding language learners effectively pick up vocabulary, a keen knowledge of derivational and decomposition morphemes may aid them in significantly improving their writing, listening and speaking skills as well. Indeed, language learners benefit significantly from the use of morphology to critically determine word meanings that are crucial towards ensuring that they improve their literacy skills. Moreover, Morphological Awareness may aid the students in detecting semantic irregularities and therefore, has a greater understanding of the meaning associated with different words in English. This is significant since it impacts on their pronunciation skills (Kieffer & Lesaux, 2009). The (PGST) emphasizes the role of complex correspondences in driving cross-linguistic differences in the difficulty of acquiring a given orthography.

According to the (PGST), children learning to read in a deep orthography attempt to minimize the unreliability of their sub-lexical correspondences by relying on larger units because these tend to be more predictive of a word's correct pronunciation (Ziegler & Goswami, 2005). As a result, children learning to read in a deep orthography need to learn a greater number of correspondences: children in a

hypothetical perfectly shallow orthography can simply learn the letters and their corresponding sounds, and decode all words with perfect accuracy using only those small units. According to this view, the necessity to learn many print-to-speech correspondences in deep orthographies slows down the process of reading acquisition, leading to the well-established behavioural pattern where children learning to read in a deep orthography lag behind children learning to read in a shallow orthography based on word and non-word reading tasks (Landerl, 2000; Seymour, Aro & Erskine, 2003; Wimmer & Goswami, 1994). However, the present study seeks to determine the effects of orthographic depth on Morphological Awareness among Silozi – English bilingual children.

1.3 Statement of the Problem

Morphological Awareness, phonemic awareness, letter identification, pseudo-word reading, real word reading and comprehension are affected by orthographic depth, for example phonemic awareness predict reading in English but not in Silozi, although Silozi is better in transparent languages. Researchers have indicated that orthographic depth has an important role in beginning reading development, but little is known about the effect of this language characteristic beyond the third grade. However, it is widely assumed that by fourth grade, readers of all languages have made the transition from *learning to read* to *reading to learn*, and thus it is thought that orthographic factors cease to have an effect on the reading process. This is the rationale for implementing cross - linguistic comparisons of literacy beginning at the fourth grade (Carlisle, 2010). Despite the assumption that students have mastered word-recognition skills, theoretically, word identification is thought to be supportive of, intertwined with, and in constant interaction with the comprehension process

(Goswami & Ziegler, 2005). However, to date, there are no any studies conducted to evaluate orthographic depth on morphological awareness among 6th graders Silozi – English bilingual learners, hence the reason for conducting this study.

1.4 Purpose of the Study

The purpose of the study was to determine cross-linguistically how orthographic depth affects morphological awareness among Silozi and English readers at grade 6 level in Mongu primary schools, western province of Zambia.

1.5 Specific Objectives

1) Comparing the outcomes of Silozi decomposition and English decomposition morphological awareness on children's literacy ability.
2) Comparing the outcomes of Silozi derivational and English derivational morphological awareness on children's literacy ability.
3) To find out whether morphological awareness abilities in Silozi and English vary as a function of orthographic depth.

1.6 Research Question

1) Comparing Silozi and English decomposition, are there statistically significant difference in Silozi decomposition and English decomposition morphological awareness among the children?
2) Comparing Silozi and English derivational, are there statistically significant difference in Silozi derivation and English derivational morphological awareness among the children?
3) Did morphological awareness abilities in Silozi and English vary as a function of orthographic depth?

1.7 Significant of the Study

In agglutinative languages, Morphological Awareness is very important because out of base word, a number of words can be created, in Silozi (for example; *nuka: kanukana, nukana, kanuka, linuka, nukanyana, binuka, tunukana)* that may not be possible in English to create a number of words, unless from words of French and Italian, (for example; *rupt: disrupt, disruptive, disruption, rupture, ruptured*). Therefore, the study may establish Morphological Awareness which, involves changing part of a word, in addition to the base word's meaning (*explain-explanation* a verb transforming into a noun by adding a nominalizing morpheme) to the 6^{th} graders in Silozi and English as they shift from lower level with literacy skills in a familiar local language and step into Grade five where they start learning literacy skills in English. It may also help teachers as well as curriculum specialists in devising best practices and teaching – learning materials for the effective teaching of literacy skills in both languages. Furthermore, it was also hoped that the information generated might add to the existing body of knowledge about Morphological Awareness skills associated with teaching and learning of English and Silozi languages.

1.8 Theoretical Frameworks

The study was guided by Psycholinguistic Grain Size Theory. The development of reading depends on phonological awareness across all languages so far studied. Languages vary in the consistency with which phonology is represented in orthography. The psycholinguistic grain size theory (Ziegler & Goswami, 2005), is a variant of the orthographic depth hypothesis, hence share considerable characteristics and assumptions. For instance, both theories presume writing systems vary

significantly regarding the translation of phonology into their respective orthography, and that these variations call for diverse decoding strategies (Seymour et al., 2003; Ziegler & Goswami, 2005). Whereas reading in transparent orthographies require simple Grapheme phoneme correspondence (GPC) rules**,** deeper orthographies call for complex and multiple pathways. However, advocates of psycholinguistic grain size theory believe that the orthographic depth hypothesis is too rigid to properly account for the wide spectrum of reading characteristics exhibited by students across languages.

However, Maike, Nel, and van de Vijver (2014) acknowledged that while the two theories have some considerable overlap between them, orthographic depth hypothesis emphasizes mutually exclusive routes, with the phonological non-lexical route, on one end, and the orthographic lexical-based route on the other. While the psycholinguistic grain size theory focuses on a single phonological route in which specific reading strategies are determined by the nature of orthography. Ziegler and Goswami (2005) argue that lexical and sublexical routes are not mutually exclusive, but decisions regarding the choice of route used are defined by the grain sizes. The psycholinguistic grain size theory places "special emphasis on the development and use of different grain sizes across visual and auditory domains and across languages" (Ziegler & Goswami, 2005), based on the following three linguistic characteristics; (i) availability—the accessibility of phonological units in the spoken language to ease the process of learning to read, (ii) consistency—regularity of mappings between phonological and orthographic units should ease learning to read, and (iii) granularity—number of mappings a single grain size represents.

In short, students reading transparent orthographies focus on more letter sound associations (smaller grains) to be successful word readers because of the predictable grapheme-phoneme correspondences. Letter-sound knowledge allows novice readers to decode new words or letter strings whose meaning they do not know. The size of large grains which vary depending on whether it is only part of the word or a whole word can be read using rimes, syllable patterns, and whole words strategies. This is because strategies based on small grain sizes will not be appropriate in processing words such as *yacht* which do not follow consistent letter-sound spelling conventions. This is a significant departure from orthographic depth hypothesis, which advocates for the existence of two independent lexical and sub lexical routes.

The psycholinguistic grain size theory has gained prominence both over the central processing and orthographic depth hypotheses primarily due to its flexibility regarding the level of word processing. Instead of adhering to the traditional presumptions arguing for rigid mono or mutually exclusive dichotomous routes of reading development. Ziegler and Goswami (2005) opted for a single phonological processing-based route of reading whose development is determined by the degree of orthographic depth. Compared to central processing and orthographic depth hypotheses, it provides a more plausible explanation because its flexible nature makes it applicable to a wide range of orthographic variability.

1.9 Limitation of the Study

The findings of this study may not be generalized to the general population of primary schools in Mongu district, but may provide general clues on challenges involving the effects of orthographic depth on morphological awareness.

1.10 Delimitation of the Study

This study targeted all school going children in Mongu district, although sampling may be restricted to only grade six pupils within township schools.

1.11 Summary

In summary, this introductory chapter was intended to serve as a preamble whereby the background to the present study as well as its problem statement, and purpose of the study, research objectives and questions could be presented. The chapter has also provided the theoretical frameworks that have guided the study. It has also been used to briefly define some key terms. The next chapter will discuss the literature that informed this study.

CHAPTER II

LITERETURE REVIEW

2.1 Overview

This chapter reviews the literature which informed this study. Literature review is about locating and evaluating what has been written relevant to the research title. Literature reviewing is an appropriate step in the research process which makes the research problem clear. More so, literature review helps a researcher to get acquainted with relevant theories to tie to the investigation.

2.2 Orthographic Depth and Morphological Awareness

Orthographic depth of an alphabetic orthography indicates the degree to which a written language deviates from simple one-to-one letter-phoneme correspondence (Landerl, 2000). It depends on how easy it is to predict the pronunciation of a word based on its spelling; shallow orthographies are easy to pronounce based on the written word, and deep orthographies are difficult to pronounce based on how they are written (Share, 2008).

In shallow orthographies, the spelling-sound correspondence is direct: from the rules of pronunciation and one is able to pronounce the word correctly. In other words, shallow (transparent) orthographies, also called phonemic orthographies, have a one-to-one relationship between its graphemes and phonemes, and the spelling of words is very consistent (Casalis & Louis-Alexandre, 2000). By contrast, in deep (opaque) orthographies, the relationship is less direct, and the reader must learn the arbitrary or unusual pronunciations of irregular words (Landerl, 2000). In other words, deep orthographies are writing systems that do not always have a one-to-one

correspondence between sounds (phonemes) and the letters (graphemes) that represent them.

Morphological Awareness is the recognition, understanding, and use of word parts that carry significance, but it is often overlooked in the learning process. For example, root words, prefixes, suffixes, and grammatical inflections (example, - s or – es for plurals) are all morphemes which can be added or taken away from a word to alter its meaning. Morphology is one of the often-overlooked building blocks for reading fluency, reading comprehension, and spelling. Research demonstrate the importance of strong morphological teaching as early as first and second grade, where traditionally was the focus in middle and high school years (Apel & Lawrence, 2011).

Researchers who have assessed students' Morphological Awareness abilities have administered tasks in the spoken mode (Apel & Lawrence, 2011). When researchers have used tasks that involved written language, they frequently have read the items to the students and asked the students to respond orally. This is apparently based on the rationale that any written responses would be affected by the students' (potential lack of) orthographic knowledge, confounding the assessment of students' Morphological Awareness. This is an interesting perspective, given that part of Morphological Awareness necessarily involves an understanding of written morphemes, what they look like orthographically, how they are spelt, and how they attach to base words or roots. When this aspect of Morphological Awareness is not assessed, then a complete picture of students' Morphological Awareness abilities is lacking.

There has been also some confusion between the concepts of Morphological Awareness and morphological production, sometimes referred to as morphological knowledge. Morphological Awareness is a conscious reflection on morphemes. Morphological production involves the unconscious use of morphemes, typically during spontaneous spoken language. When individuals converse, they produce morphemes but typically do not think actively about the morphemes they are producing. Mature writers also may write without thinking actively about the specific morphemes they are writing, particularly when engaged in less formal writing situations, such as notes making, e-mails, and the like. In the past, however, researchers have not always kept these two notions distinct. For example, the two studies conducted by (Tyler, Lewis, Haskil, & Tolbert, 2002, 2003) focused on interventions to increase the production of spoken morphemes in pre-schoolers with speech and language impairments and not on Morphological Awareness that is with the goal to increase the children's ability to consciously consider or think about morphemes.

Children seem to simultaneously learn and integrate their phonological, orthographic, and morphological knowledge as they learn to read and write (Tyler, Lewis, Haskil, & Tolbert, 2002, 2003). Early learners may not always do so efficiently, but they do show evidence of emerging awareness. In some, Morphological Awareness is an integral part of reading instruction and is especially so for struggling readers. Explicit instruction that integrates morphological awareness with orthographical knowledge for example phonics, and phonological awareness provides the greatest impact. Students who learn how to attach meaning to parts of words will be empowered to be better readers and spellers.

Morphological Awareness is a higher order of cognitive ability which involves being conscious of and about the ability to manipulate the morphological units (Share & Stanovich, 1995). It involves the ability to identify root words and their inflected or derived forms. It is the ability to segment words into meaningful units and to manipulate morphemes to create new meanings, that is, to understand the structure of a word, its meaning, and the different combinations of its morphemes. Thus, Morphological Awareness can also refer to a conscious awareness of word structure and semantic– functional meanings while taking into consideration the root, structure, base form, and suffixes representing decomposition and derivational processes (Kieffer & Lesaux, 2008). For example, the English verbal lexeme "*work"* has the following word-forms: "*works"* (for example, he works), "*working"* and *"worked"* and from the same lexeme, is formed another lexeme "*worker."*

These word forms are structured as follow:

(1) a) *Work + s*

b) Work + ing

c) Work + ed

d) Work + er

According to Fortune (2001), the Silozi words '*mutu'* person, '*batu*' people, '*mwanana*' child, '*banana*' children, '*musali*' woman and '*basali*' women are morphologically analysed as follow:

(2) a) *Mu + tu*

b) *Ba + tu*

c) Mwa + na

d) Ba + na

e) Mu + sali

f) Ba + Sali

The elements work, '*s,' 'ing,' 'ed'* and '*er'* in (1) and the elements '*mu,' 'tu,' 'ba,' 'mwa,' 'na'* and '*Sali'* in (2) are called morphs are meaningful (for example they express some meaning). In word forms (1) '*Work*' as a root denotes concept of '*working'*, '*s*' means 'present simple 3rd person singular', '*ing'* means 'present participle', '*ed'* means either 'past simple or past participate' and '*er'* means 'agent' that is one who is a '*worker'*. In word forms (2) '*mu*' and '*mwa'* means 'singular', '*ba'* means plural, '*tu'* and '*na'* means person, and '*sali'* means 'woman'.

2.3 Reading Acquisition in Shallow and Deep Orthographies

In order to read the words in print, children must understand that speech is comprised sound segments at the level of phonemes (Blachman, 1994; Liberman, Shankweiler, & Liberman, 1989; Yopp, & Yopp, 2000). Studies demonstrate strong and specific relationship between phonological awareness and early acquisition of reading (Adams, 1990; Bradley, & Bryant, 1983; Bryant, MacLean, & Bradley, 1990; Goswami, & Bryant, 1990; Stanovich, 1992; Wagner, & Torgesen, 1987). Phonological awareness promotes children's understanding of the relationship between speech and alphabetic orthography. Children who have better abilities in analysing and manipulating rhymes, syllables, and phonemes are better at learning to read than children who have difficulties in acquiring these skills. Phonological awareness has a unique relation with word reading (Anthony, Philips, Purpura, Lonigan, Wilson, & McQueen, 2009).

Further, phonological awareness enables children to produce possible words in context from the partially sounded out words by elaborating similar phonemes in words. Indeed, children who are quick to develop the ability to analyse and to make

a connection between sound segments and letters almost invariably become better readers than children who have difficulties in developing these early skills (Share & Stanovich, 1995). A substantial positive correlation was found between the early phonological awareness and reading acquisition in kindergarten children in Hebrew. Phonological awareness had significant association with hearing children (Kyle & Harris, 2006). Recent researches evidence not only that reading skills and phonological awareness are associated but also that difficulties in phonological processing directly disturb the semantic process involved in comprehension. For instance, children with literacy disabilities presented deficits in phonological processing and language (Barbosa, Miranda, Santos, & Bueno, 2009).

Research across-languages has not only been key to unveiling the effects of orthographic depth on reading acquisition (Landerl & Wimmer, 2008; Seymour et al., 2003**),** but also in establishing the nature of factors that predict its development. And although orthographic transparency has significant effects on reading development, cognitive requisites necessary for acquiring reading skills—especially in alphabetic orthographies are relatively universal differing mostly in the amount of variance explained.

2.4 Reading Acquisition in Morphological Awareness

It is clear that morphology plays a role in reading acquisition. Morphological Awareness is in fact related to children's reading comprehension (Carlisle, 2000; Kuo, & Anderson, 2006; Singson, Mahony, & Mann, 2000), especially in elementary grades (Carlisle & Fleming, 2003). Young readers are sensitive to the morphemic structure of written words. And, normal readers' Morphological Awareness is crucial in predicting reading their comprehension (Siegel, 2008); and Morphological

Awareness actually contributes to reading comprehension (Nagy, Berninger, & Abbott, 2006; Mwanza – Kabaghe, 2015). This contribution increases with age as children are exposed to increasingly higher-level texts comprising unfamiliar everyday words.

The importance of morphological knowledge for reading increases over the school years, side by side with children's growth in literate lexicon (Carlisle, 2000; Singson, Mahoney, & Mann, 2000). Indeed, Morphological Awareness in kindergarten was found to predict reading comprehension in the first three years of elementary school (Casalis, & Louis-Alexandre, 2000). Morphological Awareness contributed significantly to the explained variance in reading comprehension in both English and Chinese for second, fourth, and sixth graders (Kuo, & Anderson, 2006). The contribution of Morphological Awareness to reading comprehension was higher for fifth graders than for third graders (Signson, Mahony, & Mann, 2000). Reading comprehension may be a matter of general language understanding and not a unique feature of reading (Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001). However, this applies more for adult and more fluent readers, than for those who learn to read.

While there can be relation between Phonological and Morphological Awareness among learners, studies demonstrated that Morphological Awareness contributes to reading comprehension independently of phonological abilities (Deacon & Kirby, 2004; Singson, Mahony, & Mann, 2000) and even beyond the contribution of phonological awareness (Casalis & Louis-Alexandre, 2000; Deacon, & Kirby, 2004; Singson, Mahony, & Mann, 2000). Morphological awareness develops throughout children's time in school. Children at the age of three could create compound words

to indicate meaning (Clark, 1995). Preschool children were able to begin to identify morphemes, including both inflections and derivations (Carlisle, 2003). In addition, third graders' knowledge of derived words increases sharply (Anglin, Miller, & Wakefield, 1993). Nagy, Diakidoy, & Anderson, (2006) also suggested that as the morphological complexity of text continues to increase, different aspects of Morphological Awareness would grow through high school. As a result, it might be expected that the predictive role of Morphological Awareness in reading comprehension would also increase with age. Morphological Awareness affected reading comprehension directly. It is explained that morphological or syntactic awareness leads to increased breadth and depth of word knowledge, which in turn affects reading comprehension (Guo, Ying, Roehrig, Alysia, & Williams, 2011).

2.5 Orthographic Depth on Reading Development

As noted earlier, phonemic awareness only develops once children are taught to read and write, irrespective of the age at which reading and writing is taught, and illiterate adults tend to lack

phoneme awareness skills. Children learning to read relatively consistent orthographies develop phonemic awareness more rapidly (Goswami, 2002). This demonstrates a most intriguing aspect of learning to read and write: the effect of literacy on spoken language processes and in particular the effect on restructuring phonological representations. As Frost (2005) has commented, the acquisition of an alphabetic code is like catching a virus: "This virus infects all speech processing, as now whole word sounds are automatically broken up into sound constituents. Language is never the same again". People familiar with an alphabet come to hear words as composed of the sounds represented by the letters in those words. Boucher (1994) pointed out that phonetic notation systems such as the International Phonetic

Alphabet were designed by (literate) adults to investigate basic units of speech, and used alphabetic symbols to represent distinctive features. This misleadingly suggested that alphabets represented "distinctions of sound". Ehri, (2005) showed that literate children find it difficult to count the same number of phonemes in /*rit_*/ and /*pit_/*, because the spellings of these words contain a different number of letters (*rich* vs. *pitch)*. Similarly, a person who has never acquired an orthographic system typically finds it very difficult to delete a phoneme at the beginning or at the end of a non-word (Goodwin & Ahn, 2013).

The influence of orthography on spoken word recognition and production has not only been demonstrated with children or illiterate individuals but even with completely literate college students (Frost, 2005). For example, skilled adults find it more difficult to judge whether two words rhyme when their rimes are spelled differently (e.g., *rye–tie*) than when their rimes are spelled the same. Similarly, using a phoneme detection task, (Singson et al, 2000) demonstrated that French listeners were more likely to misperceive the phoneme /*p*/ in /apsyrd/ than in /lapsys/. They argued that such misperceptions occurred because *absurde* is spelled with the letter *b*, whereas *lapsus* is spelled with the letter *p*. These orthographic effects clearly suggest that orthographic information can affect basic phonological processes. Nevertheless, some spoken language researchers have been reluctant to accept this notion. For example, it has been argued that this would only be the case in tasks with a strong meta-phonological component (Goodwin & Ahn, 2013**).**

In fact, orthographic effects have also been reported in tasks that do not necessarily involve meta-phonological components. For example, Jarmulowicz, (2006) studied phonological priming in a lexical decision task. Facilitator priming effects were

obtained only when primes and targets shared both phonology and orthography (i.e., *napkin–nap*). No priming was obtained when targets shared only phonology (e.g., *chocolate–chalk*) or only orthography (e.g., *fighter–fig*. Similarly, Ziegler and Goswami (2005) in an auditory lexical decision task, found that words with phonological rimes that could be spelled in more than one way (e.g., *"cheap"–"cheep"; /—ip/* may be spelled *—eap* or *—eep*) produced slower correct "yes" responses and more errors than did words with phonological rimes that could be spelled in only one way (e.g., *"duck"; /—uk/* may only be spelled *—uck*).

Ziegler and Goswami (2005) demonstrated orthographic effects in the offline task of neighbour generation. Participants were asked to generate phonological neighbours for words like *wipe*. They generated words that were both orthographic and phonological neighbours, so-called *phonographic* neighbours (e.g., *ripe*), significantly more often than chance, and more often than purely phonological neighbours (e.g., *type*), suggesting that orthographic information participates in the specification of phonological neighbours in literate undergraduates. This process probably originates during development, when phonological representations become amalgamated with orthographic representations as literacy is acquired.

2.6 Morphological Awareness Development

An aspect of Morphological Awareness that is worth examining now is how it develops. In his seminal work, Carlisle, (2000) found that knowledge of derivational morphology grows exponentially between 1st and 5th grades. In fact, he calculates an approximate acquisition rate for children between 3rd and 5th grades of over 20 derivative terms per day compared to 4 root words. By and large, the repertoire of inflected words is developed before the derivative lexicon, which consists of more

complex terms originating from the root words acquired first (Wimmer & Goswami, 1994).

The number of morphologically complex words continues to grow through elementary school reaching into the years of high school and beyond (Kuo & Anderson, 2006; Nagy, Berninger & Abbort, 2006). In brief, the picture that emerges after examining the research that has investigated how morphology and morphological awareness grow is one where "the acquisition of derivational morphology begins later and involves a longer developmental course". Whether these numbers are accurate or not, the fact still remains that derivational morphological awareness develops over a long time span that to date has been argued to start accelerating as of 3rd or 4th grade (Carlisle, 2000).

Based on the work conducted by Kuo and Anderson (2006) which outlines three main factors to explain the complexity of morphological development: first, the large number of suffix types (e.g., - able, -ment, -ize); second, the low frequency of the suffixed forms, especially at the oral level; and third, the complicated alteration in phonology and semantics of the morphologically complex derived terms. Considering, as stated before, the large number of morphologically complex words individuals have to deal with as they progress through their years of education and as reading evolves more and more, it does not seem surprising that morphological awareness develops in a parallel manner to the increase in size and depth of vocabulary. Some researchers have estimated that the vocabulary size of the morphologically derived words in children increases so much that by the end of primary school it is likely to be three times larger than the size of root words (Carlisle, 2000; Singson, Mahony, & Mann, 2000; Sternberg, 1987).

It is also interesting to note that although most of the research to explore Morphological Awareness has been conducted with children, (Share & Stanovich, 1995) found that young adult L2 learners in the UK also seem to lack some refinement in their morphological awareness as the results of their measures of productive knowledge of 16 word families indicated that it was rather exceptional for the individuals in the study to know the four members (noun, verb, adjective, and verb) of the word family. In other words, knowing some of the members did not necessarily help them to come up with the right derivative forms for the other members. "In a comparison of derivational mastery and knowledge of the prompt words on a four-stage developmental scale, the subjects showed increasing knowledge of noun and verb derivatives at each stage, but adjective and adverb forms appeared to be more difficult for them".

This interesting fact is easily explained by Landerl, (2000) active threshold hypothesis, which posits that "even though our passive vocabularies develop throughout our lifetime, long after the grammar of a language has been acquired, our productive lexicon will grow only until it reaches the average level of the group in which we are required to function". The reason this reference about morphological awareness in older learners is pertinent to us is twofold. First, it corroborates that morphological awareness is not something that develops easily and automatically over the years, and this seems to particularly be the case when it comes to L2 morphological awareness. Second, it would also confirm the fact that the issue of morphological awareness across languages is more complex than it may appear.

This study may enhance the existing literature on children with low literacy and demonstrate that morphological awareness is an important component skill of

reading comprehension for the population. This would have important implications for learners' literacy programs because explicitly teaching children to understand morphological rules and how to decompose words into constituent morphemes could improve their morphological awareness, vocabulary knowledge, and subsequently reading comprehension skills. For children, understanding morphemic structure aids them in understanding and figuring out unfamiliar words and directly corresponds to spelling.

The importance of rules regarding morphology and spelling contradicts some of the phoneme–grapheme correspondences when alternative pronunciations exist for word endings that are spelled the same way. For example, the past tense inflection, *–ed*, presents a challenge because *kissed* (*/t/* sound), *killed* (*/d/* sound), and *waited* (*/-əd/* sound) are all spelled the same but pronounced differently (Carlisle, 2010). Nunes, & Bryant (2009) proposed a reading program emphasizing spelling abilities by directly teaching morphemic spelling rules. This type of instruction would allow learners to focus more on word structure (learning prefixes and suffixes) and enable them to apply these rules to promote reading comprehension and expand vocabulary knowledge. Explicit morphological instruction (in both inflectional and derivational morphology) may be beneficial for children with low literacy skills because they struggle with morphologically complex words. Spelling research has found that this group suffers from poor understanding of morphological structure and underdeveloped phonological skills; however, they have better orthographic knowledge in comparison with children matched on achievement level (Goodwin & Ahn, 2013). Children struggle with morphologically complex words in passage reading and when identifying words presented in isolation. Therefore, an integrative instructional approach encompassing phonological, morphological, and orthographic

knowledge should be explored in children literacy programs. It is well established in the educational, psychological, and psycholinguistics research on children that morphological awareness plays an important role in word reading (Carlisle, 2000; Mahony, Singson, & Mann, 2000) and reading comprehension (Deacon & Kirby, 2004; Jarmulowicz, Hay, Taran, & Ethington, 2008; Nagy, Berninger, & Abbott, 2006), with findings of moderate correlations between Morphological Awareness and word reading and between Morphological Awareness and reading comprehension.

Phonological awareness has a greater impact on reading through the early elementary years, but morphological awareness plays an increasingly important role in reading through the later elementary years and beyond (Deacon & Kirby, 2004; Jarmulowicz et al., 2008; Nagy et al., 2006; Singson, Mahony, & Mann, 2000). In fact, Kuo and Anderson (2006) estimated that 60% of unfamiliar words encountered by school aged children are morphologically complex and can be understood by using familiar morphemes to infer their meanings. Morphological Awareness aids word recognition and reading comprehension by breaking down words into small meaningful units (such as prefixes, base words, and suffixes), creating more word associations in the mental lexicon, and improving the ability to define unfamiliar words (Carlisle, 2000; Pritchard, Coltheart, Palethorpe & Castles, 2012). Although phonological awareness and morphological awareness are related, research also shows that each provides a unique contribution to word reading and reading comprehension in upper elementary school children. Several studies have found that morphological awareness explains variance in real and pseudo word decoding abilities (Singson et al., 2000).

Singson and colleagues (2000) noted that above and beyond the (16 percent) contribution of short term verbal memory, morphological awareness provided a small (5 percent), but significant and unique contribution to explaining the reading variance among students in grades 3 through 6. Furthermore, in a series of hierarchical regressions for each grade level in which morphological awareness was entered first, the contribution of phonological awareness failed to reach significance in explaining total reading variance beyond the third grade. Their research suggested that morphological awareness played an increasingly important role beginning in fourth grade and provided a significant contribution, above and beyond phonological awareness, to reading ability in fifth and sixth grades.

Nagy et al, (2006) investigated the contributions of morphological awareness, phonological working memory, and phonological decoding to reading comprehension, reading vocabulary, and spelling among fourth/fifth, sixth/seventh, and eighth/ninth graders. For the two lower level reading groups (grades 4 through 7), only morphological awareness emerged as a significant unique predictor of reading comprehension. In contrast, for eighth/ninth graders, all three skills (phonological working memory, phonological decoding, and morphological awareness) accounted for unique variance in reading comprehension. For eighth/ninth graders, morphological awareness accounted for a greater percentage of the variance in reading comprehension than phonological working memory and decoding.

Tong, Deacon, Kirby, Cain & Parrila (2011) demonstrated a relationship between reading comprehension abilities and the rate at which children learn derivational morphology, showing that stronger reading comprehension abilities are associated

with early mastery of morphological abilities. Children with poor or average reading comprehension ability in third grade performed worse than third graders with good comprehension abilities in derivational morphology despite adequate phonological awareness, orthographic, decoding, and naming speed skills. Thus, the first goal of this investigation was to examine the role of morphological awareness to the word reading and reading comprehension abilities of adults with low literacy skills and skilled college readers, after controlling for decoding abilities.

2.7 Importance of Teaching Morphological Awareness

Goodwin, & Ahn (2010) found Morphological Awareness instruction to be particularly effective for children with speech, language, and/or literacy deficits. After reviewing 22 studies (Bowers, Kirby, & Deacon, 2010) found the most lasting effect of morphological instruction was on readers in early elementary school who struggled with literacy. Morphological awareness instruction mediates and facilitates vocabulary acquisition leading to improved reading comprehension abilities (Carlisle, 2010; Guo, Roehrig and Williams, 2011; Tong et al, 2011).

Unfortunately, as important morphological instruction is for vocabulary building, reading fluency, reading comprehension, and spelling, it is often overlooked during the school years until it's way too late. For example, traditionally morphological instruction only being in late middle school or high school but research actually found that in order to be effective one should actually begin teaching it as early as first grade (Apel, & Lawrence, 2011). To help with this, mounting evidence reveals that direct instructional approaches that increase number of words and word associations as well as variations of word meaning in different contexts have been found effective in facilitating reading comprehension and other literacy skills (Gay,

2010). Along the same lines, bilingual learners need strategies to augment their ability to comprehend texts with various degrees of vocabulary complexity and concept density (Clin, Wade-Woolley & Heggie, 2009). Empirical evidence shows that interventions including a MA component among bilingual learners provide the literacy support to help them catch up and increase literacy achievement (Carisle, 2010; Goodwin, 2011).

2.8 Frequency of affixes

Frequency has become the buzzword in much of the lexical research carried out over the last couple of decades (Laufer, 2012; Schmitt & Schmitt, 2012) because it has been thought that identifying the most frequent words should have a hugely positive impact on both L2 teaching and learning. Knowing what words to focus on in second language acquisition would promise the paradise of comprehension and production in a relatively short time. Should research find the most frequent words after long and meticulous examination of written and oral corpora, material designers, teachers and learners would then have the answers as to what to prioritize, how to get better return rates, clearly defined distinctions between various levels of language competency, and other issues of the same kind. As a matter of fact, this line of thinking has had an influential effect on many of the textbooks and dictionaries that have been published by the largest companies in the market. It has also led many researchers such as Nation and Schmitt to wonder what the ideal vocabulary size would be to aural and reading comprehension of a variety of texts (Schmitt, Jiang, & Grabe, 2011).

Although some of these promises need to be seen with caution because research has proven that language acquisition is an extremely complex reality that cannot be

simply encapsulated in finding the right number of high-frequency words, it is true that there is value in the idea that some words are more frequent than others. In the same vein of lexical frequency research, Bauer and Nation (2015) came up with a list of six levels of derivational affixes, which was later refined by Nation (2016). In the latter version there are five stages. The first four are based on frequency, regularity (the extent of change as a result of affixation), productivity (the connection between the affix and possible new words), and predictability (the quantity and frequency of all the meanings of the affix).

In this work, Thorndike analyses ninety English suffixes and presents many a useful idea. To begin with, he indicates the number of occurrences of these suffixes in words. Also, he explains how easy it would be for someone to figure out the meaning of a morphologically complex word just from knowing the meaning of the root word and the meaning of the suffix. Third, he gets to analyse the likelihood that a high school individual would recognize the suffix within any given word. Even though the final decision about what words to include in a measure of morphological awareness could not be solely based upon the sequenced list of derivational affixes compiled by Nation, it does seem obvious that it can be informed by such a list. Also Nation's work would offer the benefit of devising a measure that may contain different degrees of difficulty, going from an easy set to a more difficult one. Some resources are also very helpful to inform decisions about stems and derivative words that can be included or left out when designing a measure of morphological awareness. Another advantage of using this type of analysis, called lexical frequency profiling (Laufer & Nation, 1995), is that some researchers have started to bring it into the realm of other languages such as French (Cobb & Horst, 2004). Finding sources of information in Silozi, however, harder as most of the morphological

awareness or suffix frequency research has been conducted in English, although even English are somehow scarce and never came across with one done in Zambia. Laufer, (2012) came up with a list of frequent suffixes for adjectives in English. This rather useful list presents those suffixes in decreasing order and also includes comments about their functions.

2.9 Measuring Morphological Awareness

Most studies that have to date been published use several different measures to be able to tease it apart from other aspects such as vocabulary knowledge, isolated word reading, general reading comprehension, and spelling (Carlisle, 2000; Ku & Anderson, 2003). In light of the fact that morphological awareness seems to have a strong and often intricate relationship with other aspects of both linguistic and metalinguistic knowledge, some researchers have even included measures of verbal and nonverbal intelligence (Deacon, Wade-Wolley, Kirby, 2007), short-term memory (McBride-Chang et al., 2005), and IQ level (S. Lyster, 2002).

When conducting research with primary school children, who are just learning to read and write, it seems appropriate to measure phonological awareness in order to control for its effect and thus be able to draw valid conclusions about Morphological Awareness development. For example, in their four-year longitudinal study, Deacon and Kirby (2004) compared the impact of Morphological Awareness and phonological awareness on reading development for 2nd, 4th, and 5th graders. Their phonological awareness measure, adapted from Bradley & Bryant (1985), consisted of a task of 30 series of items, 10 for each word position (initial, middle, and final). For each series, "the child had to choose which of four orally presented words differed from the others by one sound (e.g., bud, bun, bus, rug)". In the same line of

thought, other researchers have included measures of phonological awareness in order to better isolate and examine the role and acquisition of Morphological Awareness (Deacon et al, 2007). Taking into account the information discussed so far, two things can be said. First, it seems both appropriate and useful to examine L1-L2 morphological awareness amongst primary school children in contexts where the likelihood of bilingual interaction would play a key role.

However, the scant research into multilinguistic interventions used to treat elementary students with reading disabilities generally do not measure growth of morphological awareness. In a review of interventions that incorporated morphological awareness instruction, Carlisle (2010) found 16 intervention studies in six languages that administered both a measure of morphological awareness and a measure of another literacy skill such as word reading or comprehension.

Since Carlisle's integrative review of Morphological Awareness interventions, one additional study has been published which fit these criteria (Wolter & Dilworth, 2014). Collectively, these studies measure a range of literacy outcomes including spelling, word reading rate, word reading accuracy, fluency, and reading comprehension. While it is important to measure targeted reading goals such as word accuracy or fluency in order to determine the magnitude of effect a treatment has on the desired outcome, those measures may not reveal the full effects of the intervention (Carlisle, 2010). It is critical to measure directly the morphemic analysis skills taught during intervention in order to determine whether significant, positive progress in literacy skills has been achieved. Investigations into the efficacy of interventions that include instruction of morphological awareness should measure changes in the specific morphemic analysis skills being taught and at least one other

literacy outcome (Carlisle, 2010) in order to determine whether morphological awareness is a causal contributor to other reading skills.

Morphological Awareness has been researched using a variety of study designs and a variety of tasks created to assess morphological awareness. This body of research includes studies that measure different types of Morphological Awareness used by various student populations, from children as young as four (Tyler, Lewis, Haskill & Tolbert, 2002) through adulthood (Leiken & Hagit, 2006). The developmental stages of the types of Morphological Awareness used by typical readers have begun to take shape. Research into the kinds of Morphological Awareness used by students with an array of reading difficulties has been included in both measurement studies (Gilbert, Goodwin, Compton & Kearns 2013).

Unfortunately, as important morphological instruction is for vocabulary building, reading fluency, reading comprehension, and spelling, it is often overlooked during the school years until it's way too late. For example, traditionally morphological instruction only being in late middle school or high school but research actually found that in order to be effective one should actually begin teaching it as early as first grade (Apel & Lawrence, 2011).

Apel, Diehm & Apel (2013) recommend multiple measures which include: phonological awareness tasks, word level reading tasks, as well as reading comprehension tasks. Carlisle, (2000) stated that one can test morphological awareness via production or decomposition tasks. In a production task a student is asked to supply a missing word, given the root morpheme (e.g., ''Sing. He is a great _____.'' Correct response: singer). A decomposition task asks the student to

identify the correct root of a given derivation or inflection. (e.g., ‘‘Walker. How slow can she __ ___?’’ Correct response: walk).

The table below shows direct examples of Morphological Awareness tasks from (Apel, Diehm, & Apel, 2013) study:

Table 1: Morphological Awareness Assessment Overview

Task Analysis	**Spelling Multimorphemic Word Task**	**Affix ID Task**	**Relatives Task**	**Rehit Task**
Stimulus/response	Oral/Written	Written/Written	Oral/Oral	Oral/Oral
Type of task	Production	Identification	Production	Production, Judgement
Type of word	Real multimorphemic words; inflectional and derivational	Non words with real affixes; inflectional and derivational.	Real base words; inflectional and derivational.	Real affixes and bases, combined to form pseudo words; inflectional and derivational.
Ability in MA demonstrated by	1.Spelling multimorphemic words.	1. Identifying and circling real affixes attached to base words not found in the English language.	1. Orally producing a related multimorphemic word when given a base word, in the context of a sentence.	1. Orally blending an affix to a base to create a pseudoword. 2. Defining the multimorphemic pseudoword. 3. Judging the acceptability of the multimophemic pseudoword in a sentence.
Example	1.Refill. Please *refill* the cookie jar. Refill.	1.Doeper, Rinning, Hetts, Friecely, undut, Remape.	1. *Friend*. The substitute teacher was very _____	1.Say ‘*re*’ Now say ‘*bit*’ those together to make a new word (*rebit*). 2. What do you think *rebit* means? 3. The *rebit* in on the bed. Does that make sense? (Y/N). Does that make sense? (Yes/No).

Another way to test morphological awareness is through completing analogy tasks since it involves both decomposition and production components (provide a missing word based on the presented pattern—crawl: crawled: fly: _____ (flew). Still another way to test morphological awareness with older students is through deconstruction tasks: Tell me what ____ word means? How do you know? (The student must explain the meaning of individual morphemes).

The present study adopted Carlisle (2000) production and decomposition measures to test 6th graders Silozi – English bilingual children. The reason to focus at grade six level was to assess high order comprehension of the learner as most of the studies that were revealed looked at low order comprehension. Low order comprehension, the focus is mainly for the children first to learn to read, much of their effort is on decoding and pronouncing each word correctly. While this kind of phonetic interpretation was essential, in order to become proficient readers' learners, have to be able to understand the meaning of what they read. This does not only require comprehension skills but ultimately good thinking skills, thus high order comprehension. As learners grow into mature readers, their comprehension and thinking skills should also mature. Reading comprehension involves the ability to not only rad the lines but also the abstract step of reading between lines.

2.10 The Language Policy in Zambia

Due to poor reading standards exhibited by students across the country (Chikalanga, 1991; Matafwali, & Bus, 2013; McAdam, 1973; Sharma, 1973; Williams, 1996), many attempts were made to change the language of instruction policy from *Straight-for-English* to local languages in lower grades from 1965 to the early 2000s

(Ministry of Education, 1977, 1992; 1996). The issue of literacy in Zambia has for some time been a subject of concern due to the low literacy levels observed among Zambian pupils, particularly those in public primary schools. After realizing that using English as the language of instruction, particularly at the primary level, did not enhance educational gains (MoE, 1992), it was decided that initial literacy be done in a local language predominantly spoken in an area (MoE, 1996). The teaching of initial literacy using the local languages was advocated for because of the low reading levels among learners in Zambia. Presently, initial reading in Zambia is done in the officially recognised local language of the region where the school is located. There are seven officially recognised Zambian languages: Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja, and Tonga.

In 1998, Break Through to Literacy (BTL) based on an initiative of a South African non-governmental organization, Molteno project was piloted in Kasama and Mungwi in Northern Zambia. This was among Grade One learners. IciBemba was used as the language of initial literacy. The results of the project were positive as learners were able to read in Grade One and by the time they reached Grade Two they were able to read at a level equivalent to those in Grade Four (Ministry of Education, 2001). The project which was renamed New Break Through to Literacy (NBTL) in 2000 was extended to Mongu, Chipata and Lusaka where Lozi and Nyanja, respectively were used to teach initial literacy. Since its inception in 2000 and in the few years that followed, the Primary Reading Programme recorded notable successes, the major one being Grade One children's accelerated reading and writing in a familiar language with an improvement rate from 23 percent to over 60 percent (MoE, 2002). However, the literacy levels of most Zambian school going children are still low and undesirable. It is clear that despite government and other stake holders working hard,

very little success has been achieved with regards to improving literacy levels among learners, especially at Basic school level (Matafwali, 2010).

Although NBTL had scored some success since its inception in Zambia, many learners in Grade One do not break through despite being taught in the local languages (Matafwali, 2010). This finding might be attributed to various challenges such as lack of teaching and learning material, poor language curriculum in teacher training institutions, lack of conducive learning environment, poor quality of teaching etc. Many times, especially in rural areas, teachers have to learn the native language spoken by their students (Croft, 2006).

According to Thomas and Thomas (2012), most teachers surveyed in their study described how they struggle greatly with differentiating curriculum to low achieving students and language barriers create even more obstacles than before. In another study, Clegg & Afitska (2011) report that many teachers are not very proficient in English, the language they are expected to teach in and model to children. With this backdrop, the challenge to teach children sometimes requires sacrificing native language literacy development and in some cases not providing adequate language modelling (Kashoki, 1990).

In 2013, the Zambian educational policy was revamped to include an exclusive use of native language medium of instruction and literacy development from grade 1 to 4 before children transition into English medium of instruction at 5^{th} grade (Ministry of Education, 2013). Research has shown that well developed-native language (L1) proficiency facilitates second language (L2) development (Collier & Thomas, 1995; Krashen & Biber, 1987). According to Kuo and Anderson (2012), balanced bilinguals (i.e., equal proficiencies in both languages) tend to be more sensitive to

language structures in general which helps them acquire literacy in their L2. Thus, the 2014 Zambian bilingual model for public schools fosters an additive bilingualism approach (Lambert, 1975) that values both languages and cultures associated with them and potentially positively impact a child's development. Pre- and post-British colonization promoted a subtractive bilingualism in which children were taught in English, the prestigious language, without appropriate support in native languages, such as Silozi.

A limited number of research papers have explored Morphological Awareness across languages both in Zambia and in foreign countries. de Marin (2016) studied across languages the role of morphemic awareness in literacy development among Nyanja speaking children. The results revealed the critical role of morphemic awareness in literacy development and can be argued that morphemic awareness need to be taught explicitly and symmetrically. Kaani (2014) studied across languages the influence of orthographic opacity on reading development among Nyanja-English bilingual. The results revealed that students acquired skills in one language may have been applied in learning to read in the other language. Pasquarella, Chen, Lam, Luo and Ramirez (2011) studied cross-language Morphological Awareness in Chinese-English bilingual children from 1st to 4th grade. Not surprisingly, given the different characteristics of each language, they found that English compound Morphological Awareness "was a significant predictor of Chinese vocabulary for the Chinese-English bilinguals"; however, "English derivational Morphological Awareness was not related to Chinese vocabulary" development.

Other studies have also looked into derivational morphological in two languages, namely Hebrew-English (Schiff & Calif, 2007), Arabic-English (Saiegh-Haddad &

Geva, 2008), and Spanish-English (Ramirez, Chen, Geva, & Kiefer, 2010). They have all observed some level of derivational Morphological Awareness across languages. However, to date, there are not any studies conducted to evaluate orthographic depth on Morphological Awareness among 6th graders in Silozi – English bilingual learners, hence this study.

2.11 Summary

This chapter reviewed the literature which informed and guided this study. The related reviewed literature showed that if morphological awareness was not over looked, learners were going to be able to read fluently, write and spell easily. Moreover, the related literature revealed that morphological awareness might aid the students in detecting sematic irregularities and therefore, have a greater understanding of the meaning associated with different words in Silozi and English languages. Indeed, language learners benefited significantly from the use of morphological awareness to critically determine word meanings that were crucial towards ensuring that they improve their literacy skills (Apel & Lawrence, 2011). However, there was no related literature that empirically presented information on the differences between Silozi orthography and English orthography. In addition, there was no study that placed morphological awareness comparisons in Silozi and English bilingual leaners to empirical test hence, the need for this study to fill in that gap. The subsequent chapter presents the methodology used on the study.

CHAPTER III

METHODOLOGY

3.1 Overview

This section covers research methodology. It is organized under the following sub-heading: research design, target population, sample size and sampling procedure, data collection procedure, instruments, reliability of research instruments and data analysis techniques.

3.2 Research Design

The study was quantitative in approach and used quasi-experimental design. The design was used to compare Silozi – English bilingual learners in Morphological Awareness. The other feature that justifies the quasi-experimental design is that children in the sample were tested in their normal setting with their teacher present though not conducting the tests.

3.3 Target Population

The targeted populations included all Grade Six pupils in primary schools of Mongu District. Grade Six pupils were targeted because they were expected to have acquired basic literacy skills in both Silozi and English languages, since the language policy in Zambia is that the medium of instruction shall be in familiar local language from Early childhood to the fourth grade (MoE, 2013). English language is introduced at fifth grade as a medium of instruction.

3.4 Sample Size

The sample size was 120 Grade six pupils, selected from 2 primary schools,30 pupils from each class of the 2 streams in each school. The following guidelines determined inclusion criteria of the research sample:

(i) In order to ensure consistency in Morphological Awareness skill of the pupils, only participants who have been taught by not more than two teachers took part. The reason behind this was to ensure that they had gone through similar learning environment and experience as the teachers might have different abilities, meaning that the task would not be measured accordingly. The participants were aged between 9 – 18 years.

(ii) In order to have standard measure of morphological awareness skill of the pupils, only participants who had not repeated a grade took part.

(iii) Knowing the language used at home for each participant, thus, whether it was Silozi, English, Mbunda, Luvale or Nyanja. These guidelines were important to avoid imbalance in the performance of participants.

Participation was voluntary and same learners were tested in both Silozi and English language assessments. The overall distribution of the participants based on gender, the proportion of boys 55(46 percent) was smaller than the proportion of girls 65(54 percent) in grade six. Age range was between 9 – 13 dominantly higher in percentage at 108(90 percent) and 14 – 18 very small in percentage at 12(10 percent) with an overall mean age of (M = 13.10) years (SD = 1.13).

Table 1 shows the languages mostly used at home. The majority of children used Silozi at home 95(79 percent), followed by Mbunda 8(7 percent), Bemba 6 (5 percent), Nyanja 4(3 percent), Tonga, English and Luvale 2(2 percent) other

languages such as Chokwe and Kaonde, were rare (less than 1 percent). Although some of the participants spoke more than two languages, Silozi language was predominantly used at home. The participants in this study were all considered English language learners given that their native language and primary home language was not English, but the language of instruction was English. This implied that pupils were expected to do better in Silozi than English test.

Table 2: Home Language Use Distribution

	Language	
	Frequency	Percent
Silozi	95	79.20
Other	1	.80
Mbunda	8	6.70
Luvale	2	1.70
English	2	1.70
Bemba	6	5.00
Nyanja	4	3.30
Tonga	2	1.70
Total	120	100.00

3.5 Sampling Procedure

The sample for the study was selected using simple random sampling, 120 Grade 6 pupils' participated. This technique involved putting of small pieces of paper in a box in which some were written "In" and others were written "out" participants were asked to pick a paper by category for example male participants pick first, then female participants pick second. From each category participants were selected equally to meet the sample required for this study at class room level. To enable every school in Mongu town an equal chance of being selected, the same technique

was used. This was done by putting the names of the schools in a box and randomly picking 2 schools.

3.6 Research Instruments

The present study used Morphological Awareness test tools to assess the effects of orthographic depth on morphological awareness.

3.6. 1 Decomposition and Derivational Measures

To elicit Morphological Awareness skills, Carlisle (2000) Morphological Structure Test was used in Silozi and English orthographies among 6^{th} graders. The Morphological Tasks, tested learners' ability to derive and decompose a word from a morphologically related word in order to complete a sentence. Derivational morphology, focuses on prefixes and suffixes added to words in order to either change their syntactic category or produce a new meaning. For example, as in the case of the word *do* that can be changed into *redo, doable, undo,* and *overdo.* Decomposition focuses on prefixes and suffixes removed from words. For example, a word *darkness* to *dark* and *corner* to *corn*. It was this type of derivation and decomposition morphological awareness that the instruments intended to measure.

Separate task sheets were prepared for each language, Silozi and English. Silozi tasks were a direct translation of English tasks. Back translation was also made, where the same tasks were back translated to English from Silozi and vice-versa. This was to ensure that grammatical errors in both Silozi and English languages were corrected on tasks before the administration of the test to participants. Task sheet for each language had three sections. The first section contained three items on

biography. The second section had 20 decomposition tasks items and third section had 18 derivation tasks items for both Silozi and English orthographies.

However, to ensure that the tasks were reliable, internal consistence was conducted to determine consistency and reliability in the responses of the learners. As Gregory (2007) stated, "reliability refers to the attribute of consistency in measurement". The Cronbach alpha for English Morphological Awareness decomposition section's reliability was at .88 whereas on Silozi Morphological Awareness decomposition section's reliability statistic was at .65, as indicated on the table 2. The Cronbach alpha analysis on English morphological awareness derivation task section's reliability statistics was at .91 whereas on Silozi morphological awareness derivation section's reliability statistics was at .77, as shown on the Table 2.

Table 3: Show Summary of the Cronbach's Alpha Coefficients for MA

MA subsets/sections	N of Items	Silozi MA	English MA
Derivation	18	.77	.91
Decomposition	20	.65	.88

3.7 Data Collection Procedures

Assessment Tasks for Morphological Awareness were administered in the participants' respective school premises. The test was conducted following Morphological Awareness testing protocol (Carlisle, 2000). The test was provided in written form using a pencil and paper. In a derivational task, learner was asked to supply a missing word, given the root morpheme (for example, ''*sing.* He is a great _____.'' Correct response: *singer*). A decomposition task asked the leaner to

identify the correct root of a given derivational or inflection. (for example, ‘‘*Walker*. How slow can she __ ___?’’ Correct response: *walk*). Testing time depended on how faster the participant answered the questions, although maximum control time allocated was 45 – 60 minutes.

3.8 Data Analyses

The quantitative data was analysed using Descriptive and inferential statistics. Therefore, in order to explore differences in performance between the Silozi and English languages, analysis of variance (ANOVA) and linear regression were used. The analysis involved calculating quantitative data by the assistance of computer generated tables.

3.9 Ethical Considerations

According to Wood and Wood (2006), ethics are “guidelines or set of principles for good professional practice which serve to advise and steer researchers as they conduct their work.” In this research, ethical concerns were given vital prominence considering that one has to enter into the inner lives and experiences of the participants. In order to fulfil ethical requirements, the research proposal was submitted for clearance to the University of Zambia Humanities and Social Sciences Research Ethics Committee IRB and approved the study noting that there were no ethical concerns (see appendix A). Informed consent from participants was obtained (see appendix B). An introductory letter from the University of Zambia (UNZA) was presented to the District Education Board Secretary (DEBS) and administrators in the schools who gave consent for the participants to be assessed (see appendix C). Respect for one’s participants is therefore of paramount importance and the researcher kept this in mind throughout the research period and his writing of the

Dissertation. Confidentiality was an essential element considered on the research agenda. Additionally, in ensuring that no form of information would be traced back to them, pseudonyms were used in the study to endeavour creating anonymity.

CHAPTER IV

PRESENTATION OF THE FINDINGS

4.1 Overview

This chapter presents the findings of the study aimed at comparing the outcomes of Silozi decomposition and English decomposition Morphological Awareness on Children's literacy ability. Comparing the outcome of Silozi derivation and English derivational Morphological Awareness on Children's literacy ability, as well as to find out whether Morphological Awareness abilities in Silozi and English vary as a function of orthographic depth.

4.2 Assumption Checking on Orthographic Morphological Awareness

The assumption checking analysis was conducted to determine how well both data on Silozi and English orthographies meet assumptions required for inferential statistical analysis. The assumption of homogeneity of variance was tested and found fully satisfying within orthographic parameters of Morphological Awareness using levene's statistic, F (1,238) = .87, p > .35.

4.3 Item Difficulty Analysis between Silozi and English Measures

The test was conducted to determine levels of difficulty as a measure of orthographic difference in decomposition and derivational items for both English and Silozi languages. Therefore, between-subjects measure was conducted to compare the levels between languages of the two sections (decomposition and derivational) in English and Silozi. The results revealed difficulty from the decomposition and derivational tests suggesting that both orthographic and Morphological Awareness skills were weak therefore impacting word recognition abilities in the items. For

example, (Density. *The smoke in the room was very densited;* Famous. *The actor would achieve much Famouses).* Silozi decomposition had more distinct levels of difficulty items experienced by learners (example, Liketisa. *Kiufi mutu yoba ketisa;* Ku sepahala. *Ana busepaha*; Kububana. *Mubapali upangile bana)* were found to be difficulty. Comparatively, the differences were more distinct than similarities in the decomposition.

Moreover, after running item difficult test for both Silozi and English derivational task, it was observed that derivational items were more difficulty than decomposition. It was also revealed that Silozi derivational had more distinct levels of difficulty than English as shown in Figure 1. Some examples of English difficulty items learners experienced were, (Humour. *The story was quite humourbor*; Produce. *The play was a grand producese*). Some examples of Silozi difficulty items experienced by learners were (Likana. *Bashimani ni basizana ba angiwa ka bunde*; Lunduluza. *Pampili ye kiya haye ya bubeli zetuna*). Comparatively, the differences were more distinct in the Morphological Awareness derivational.

Back translation also proved difficulty on both decomposition and derivational items, translating from one language to another was almost impossible especially across languages that are not orthographically equivalent. Translating derivational item (for example, Expand. *The company planned an expansion*. Kekezo. *Katenge ka hupuzi kuekeza)* from English to Silozi created more difficulty than it was in English. All the items had distinct levels of difficulty and differences between Silozi and English orthographies.

4.4 Descriptive Statistics Results on Orthographic Morphological Awareness

4.4.1 Means, Standard Deviation, and Correlation Coefficient on (MA)

In order to answer the first and second questions, are there statistically significant differences in Silozi and English decomposition as well as Silozi and English derivational morphological awareness among the children? Descriptive statistics results were used as displayed in Table 4. The results revealed high Mean score for English and low Mean score for Silozi in both decomposition and derivational orthographies.

In comparison English decomposition and derivational, were higher than Silozi decomposition and derivational. And the difference between Means for both orthographies were statistically significant. In other words, Morphological Awareness was easier in English for pupils than in Silozi.

Pearson correlation coefficient statistics indicated the strength of the relationship. The significant value indicates if this relationship is statistically different from 0. Pearson's correlation analysis was computed to assess the relationships of morphological awareness tasks between Silozi and English orthographies. Bivariate correlations are useful in examining the strength of associations between variables (Kremelberg, 2011). In the current study, close associations among variables were hypothesized because of differences in constructs involved between and within orthographies. Results of the correlation analysis are displayed in Table 4. There was very positive relationship or associations ranging from .21 to .68. The between measures, English decomposition and Silozi decomposition correlated at r (120) = .42, p = .01 while English derivational and Silozi derivation correlated at r (120) = .32, p = .01 indicating statistically positive relationship.

The within measures had higher correlation, English decomposition and English derivational correlated at r (120) = .69, p = .01 while Silozi decomposition and Silozi derivational correlated at r (120) = .52, p = .01 showing statistically positive relationship. Table 4 shows that all Pearson's correlation coefficients were statistically significantly positive related and were greater or equal to r (120) = .21, p = .05, two tailed. There were moderate to high positive statistically significant between and within morphological awareness across two languages correlations Silozi and English.

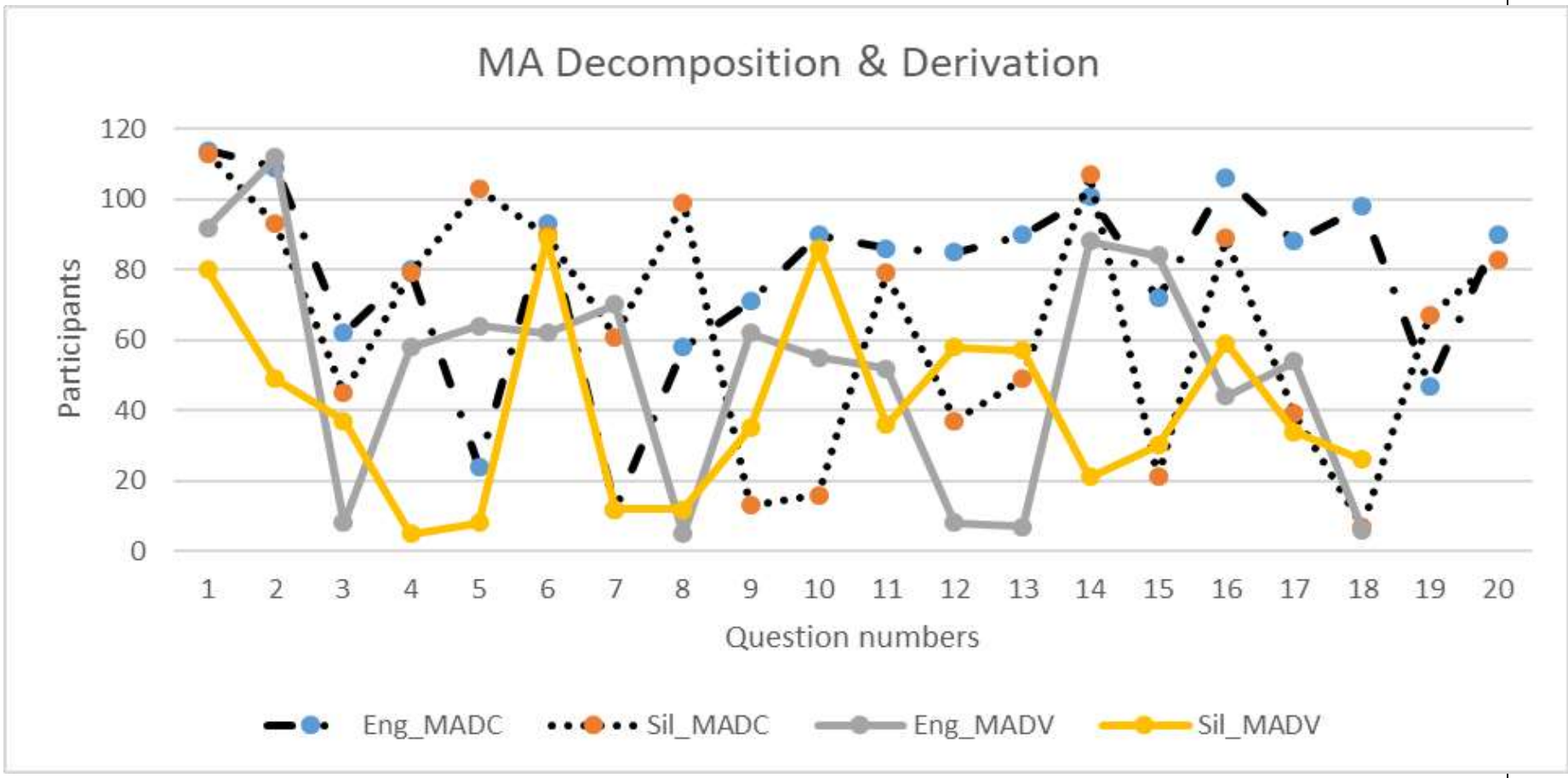

Figure 1: Ddistrubition of both English and Silozi Decomposition and derivational

Table 4: Relationship between Silozi and English Morphological Awareness

Variable	M	SD	1	2	3	4
1. EDC	13.13	4.65	1	47.61%	17.64%	4.41%
2. EDV	7.76	4.71	0.69**	1	23.04%	10.24%
3. SDC	10.75	3.02	0.42**	0.48**	1	27.04%
4. SDV	6.12	3.44	0.21*	0.32**	0.52**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Note: EDC = English Decomposition; EDV = English Derivation; SDC = Silozi Decomposition; SDV = Silozi Derivation

The percentage of shared variance is represented by the square of the correlation coefficient, r^2**.** In this case, the shared variance of between measures Silozi decomposition and English decomposition orthographies stood at 17.64 percent whereas shared variance of Silozi derivation and English derivational stood at 10.24 percent orthographies. The shared variance for within measures English derivational and decomposition stood at 47.7 percent and Silozi decomposition and derivational stood at 27.04 percent.

4.5 Inferential Statistic on Orthographic Morphological Awareness

In order to answer the third question on whether Morphological Awareness abilities in Silozi and English vary as a function of orthographic depth. Inferential statistics were used to statistically evaluate the variation among variables with reference to the effects of orthographic depth on Morphological Awareness. However, ANOVAs

were conducted to compare the levels of varying functions of orthographic depth between and within decomposition and derivation in both languages. A linear regression analysis was also performed to predict Morphological Awareness of varying orthography in each variable.

4.5.1 Analysis of Variance Between and Within Decomposition and Derivational

Scores on decomposition across two languages were compared and the contrast between and within Silozi and English orthographies was statistically significantly different, F (1,238) = 79.06, p = .01. Moreover, scores on derivational across two languages were compared and the contrast between and within Silozi and English orthographies was statistically significantly different, F (1,238) = 123.17, p = .01. The ANOVA results on decomposition and derivational in both Silozi and English orthographies indicates that items were statistically significantly different. Looking at the Tukey post hoc analysis to see where the statistical differences of Morphological Awareness across languages Silozi and English orthographies lies, could not be performed because post hoc tests were fewer than three groups. Instead, effect size was calculated and the results indicated that decomposition had 2.10 and derivational 1.12, both representing large effect sizes.

4.5.2 Results of Linear Regression on Orthographic Morphological Awareness

Linear regression analysis was conducted to determine the dynamics of predictors of Morphological Awareness of variables in each orthography. In this analysis, the researcher was interested in determining the predictive role of both Silozi decomposition and derivational as well as English decomposition and derivational orthographies on Morphological Awareness.

Both Silozi decomposition and derivation were used to predict English decomposition variance in the regression equation. The model was statistically significant F (2,117) = 18.17, $p < .01$, with a model accounting for approximately 18 percent (R^2 = .18, Adjusted R^2 = .16) of the English decomposition variance. Silozi decomposition and derivational were used to predict English derivational variance in the equation. The model was statistically significant F (2, 117) = 18.17, $p < .01$, with a model accounting for approximately 24 percent (R^2 = .24, Adjusted R^2 = .22) of the English derivation variance.

English decomposition and derivational were used to predict Silozi decomposition variance in the equation. The model was statistically significant F (2, 117) = 19.03, $p < .01$, with a model accounting for approximately 25 percent (R^2 = .25, Adjusted R^2 = .23) of the Silozi decomposition variance. English decomposition and derivational were used to predict Silozi derivation variance in the equation. The model was statistically significant F (2, 117) = 6.70, $p < .02$, with a model accounting for approximately 10 percent (R^2 = .10, Adjusted R^2 = .09) of the Silozi derivation variance.

Silozi decomposition was used to predict English decomposition variance in the equation. The model was statistically significant F (1, 118) = 25.13, $p < .01$, with a model accounting for approximately 18 percent (R^2 = .18, Adjusted R^2 = .17) of the English decomposition variance. Silozi derivational was used to predict English decomposition variance in the equation. The model was statistically significant F (1, 118) = 5.45, $p < .02$, with a model accounting for approximately 4 percent (R^2 = .04, Adjusted R^2 = .03) of the English decomposition variance.

English decomposition was used to predict Silozi decomposition variance in the equation. The model was statistically significant F (1, 118) = 25.13, $p < .01$, with a model accounting for approximately 18 percent (R^2 = .18, Adjusted R^2 = .17) of the Silozi decomposition variance. English derivational was used to predict Silozi decomposition variance in the equation. The model was statistically significant F (1, 118) = 35.24, $p < .01$, with a model accounting for approximately 23 percent (R^2 = .23, Adjusted R^2 = .22) of the Silozi decomposition variance.

Silozi decomposition was used to predict English derivation variance in the equation. The model was statistically significant F (1,118) = 35.24, $p < .01$, with a model accounting for approximately 23 percent (R^2 = .23, Adjusted R^2 = .22) of the English derivational variance. Silozi derivational was used to predict English derivational variance in the equation. The model was statistically significant F (1,118) = 13.50, $p < .01$, with a model accounting for approximately 10 percent (R^2 = .10, Adjusted R^2 = .09) of the English derivation variance.

English derivational was used to predict Silozi derivational variance in the equation. The model was statistically significant F (1,118) = 13.50, $p < .01$, with a model accounting for approximately 10 percent (R^2 = .10, Adjusted R^2 = .09) of the Silozi derivational variance. English decomposition was used to predict Silozi derivational variance in the equation. The model was statistically significant F (1,118) = 5.45, $p < .02$, with a model accounting for approximately 4 percent (R^2 = .04, Adjusted R^2 = .03) of the Silozi derivation variance. There were, however, considerable predictive effects on Morphological Awareness in both languages.

Table 5: Regression Analysis Results on Morphological Awareness

Predictors	Dependent	R. Square	Adjusted R. Square	B	β
SDV,SDC	EDC	.17	.16	SDC = .65 SDV= - .01	SDC = .42 SDV = .01
SDC,SDV	EDV	.23	.22	SDV =.13 SDC = .66	SDV = .09 SDC = .42
EDC,EDV	SDC	.24	.23	EDV=.23 EDC = .11	EDV = .36 EDC = .17
EDC,EDV	SDV	.10	.08	EDV = .24 EDC= -.01	EDV = .33 EDC = -.01

4.6 Summary of the Results

The results from the bivariate correlation analysis, analysis of variance and linear regression analysis provided some important insights into the effects of orthographic depth on Morphological Awareness across languages Silozi – English orthographies. It has been observed that English as an opaque orthography seems to favour pupils' Morphological Awareness in both derived and decomposed words. A more detailed discussion of the results, would be presented in the next chapter as main finding.

CHAPTER V

DISCUSSION OF FINDINGS

5.1 Overview

This chapter presents the discussion of the findings of this study. The main aim of the study was to compare Morphological Awareness skills between Silozi and English orthography among bilinguals of the two languages in Zambia.

5.2 Discussion of Findings on Orthographic Morphological Awareness

Generally, the results show statistically significant variations in Morphological Awareness decomposition and derivation between Silozi and English languages. It also revealed that participants in this study performed better in Silozi than English. The finding conforms Kaani's (2008) findings that students perform better in English than Nyanja a language widely used primarily in the capital of Zambia, Lusaka. These findings, do not support the hypothesis in literature that literacy skills in transparent orthographies is relatively easier than in orthographically opaque languages (Lander & Wimmer, 2008; Seymour et al., 2003).

These results were unexpected because Silozi is a language of play by children both at home and School predominantly 79.20 percent. However, English is not used frequently outside of academic contexts. The expectation was that participants would have done better in Silozi a transparent language than English an opaque language. The reason could be that outside of the academic realm, English was not used frequently in social settings where the majority of people speaking and listening interactions tends to occur. Social communication is not as demanding cognitively as academic language.

Social interactions help speakers understand quickly because they are context embedded, or they occur in a meaningful social context (Cummins, 2007). Pupils and teachers tend to speak the local language, in this case Silozi, at home, on the playground to support conceptual understanding. The time dedicated to developing academic language among children might be limited, although academic language is what needs to be developed first in both local language and English to achieve literacy proficiencies in both languages.

Nevertheless, the magnitude of the cross-orthographic Morphological Awareness mean differences between Silozi and English bilinguals was minimally noticed compared to student performances in monolingual education systems in for example, Finnish-English, cross-national studies (Seymour et al., 2003).

5.2.1 Item Difficulty Analysis on Orthographic Morphological Awareness

When item difficulty was as a measure of orthographic differences between the Silozi and English MA, the results on derivational MA performance in Silozi had more levels of difficulty than English. In the decomposition subtest, however, the level of difficulty was lower in both languages and had a few distinct difficulties. Silozi had more difficulty items than English on the decomposition subtest. The scores on the items difficulty levels across two languages were higher than those of the most difficult items. In other words, both Morphological Awareness tests in Silozi and English orthographies did have level of difficulty within each subtest.

Another observation made on the item difficulty analysis was that participants had more difficulties on derivational than decomposition in both languages. Decomposition and derivational words differ in the way are used as such makes them either simple or difficulty to the learners. Decomposition items were to do with

removal of some parts of a word, whereas derivational items were to do with building up a word. Learners did much better when decomposing and recognising complex words with transparent relationship (for example, *Growth*. She wanted her plant to ***grow***; *Teacher*. He was a very good ***Teacher***). When creating derived words given base word was difficulty to the learners (for example, *Expand.* The company planed an ***Expander***, ***Expanded***. Correct, *expansion*). It was also difficulty for learners to decompose less transparent words (for example, *Famous*. The actor would achieve much ***famoued***. Correct, *fame*)**.**

The errors observed might have been associated with not knowing the word's meaning of the derived words. These errors might also be associated with using the targeted complex words correctly but confusing other complex words. In decomposition test, learners struggled with correct word containing orthographic shifts, for example, *famous* - *fame*. However, there was evidence that learners' morphological knowledge was helping separate out base words when decomposing and making associations between words sharing of the same base. The formats for testing might also have been plausible factor in the performance among learners. This could be a reason noting that they might not have had many exposures with these kinds of tests. Given the achievement gaps in their orthography and Morphological Awareness understandings, the majority of learners might have depended heavily on phonological interpretations for spelling and at times did not know the correct affix to add or remove (de Marin, 2016**)**. However, improved instructions and practices could increase learners' MA to distinguish affixes related to the base words.

Moreover, explanations regarding items difficulty as a measure of differences for the Silozi and English decomposition could be further suggested. It was possible that there existed difficulty of Morphological processes. The reason for this might have happened more in Silozi orthography than in the English orthography could be the issue of local academic language usage. This also applied to the derivational subtest, where participants did not do well in Silozi than English.

5.2.2 Association of Variables

The correlation analysis was conducted to determine associations between the measures of Morphological Awareness whether are defined by the differences in orthography. It was established that the correlations were high and statistically significant but within language orthographies were higher than between language orthographies. Conventionally, measures of decomposition and derivational across-languages were expected to have higher correlation but they were not. On the measures of complementary skills across languages, Silozi - English decomposition had higher association compared to Silozi – English derivation. The expectation on decomposition or derivational was that if the languages were not different and if the orthography was the same, higher correlation should have been there for the measures of complementary skills despite the language but in this case they were not. Interestingly, the results revealed that within language correlations were higher such as Silozi decomposition and derivational within language; English decomposition and derivational within language than the between languages. This indicates that the amount of complementary skills was little between the two measures across languages. The effect size revealed the magnitude of the difference between derivational and decompositions across-language.

The hierarchical linear regression demonstrated that Morphological Awareness in Silozi decomposition and derivation contributed 18 percent above and beyond other variables in learner's ability with English decomposition words. In English derivation the two variables contributed 24 percent above and beyond other variables in learners' ability to drive words.

Morphological Awareness in English decomposition and derivation contributed 25 percent in Silozi decomposition and 10 percent in Silozi derivation respectively, above and beyond other variables in learner's abilities to decompose and derive words. However, linear regression analysis was conducted to determine the contribution of Morphological Awareness in other variables. It can be argued that by providing explicit Morphological Awareness instruction, these percentages could increase. Both decomposition and derivational are significant in all the regression models signalling their implication for effective text generation (word retrieval and syntax or sentence construction) in writing (Berninger et al 2006). Morphological Awareness facilitates decomposition and derivational because it forces the child to be aware of smaller meaningful units within words and how these units change (Deacon et al, 2010).

In spite, of the pupils performing better in English derivational and decomposition than in Silozi derivation and decomposition, there was a crucial mismatch here, Silozi in Mongu is dominantly used and that participants were expected to have performed better in both derivational and decomposition but it was not the case. In this study learners performed better in English. This might be not very strange because this study was conducted in the schools within township where most parents prefer taking their children to private pre-schools to learn, spoken English first before they can go to public primary schools.

Majority of the children living in township, first attended private pre-schools and are mostly taught spoken English and encouraged to use it at home, indicating that English is a stronger familiar language of communication. In most cases, some private pre-schools do not follow the present government curriculum, (Ndeleki, 2015), but manly focus on drilling learners to speak English doing away with other literacy skills. Technology also contributes more on the skills in English as most homes in townships have Televisions sets, Computer games and cell phones that children play with. This could not be overlooked because most children spend more time after classes watching games on TVs or computers games of which the language used is English. If this study dealt with participants in the rural Schools, the result might have been different in favour of Silozi orthographies to English orthography.

The same children in their various communities use local languages when they go out to play around with friends, as the result learners get confused. The same children when they leave private pre-schools to government public schools are introduced to a different curriculum which, in this case medium of instruction is in the predominately familiar local language. In Mongu where the study was conducted, Silozi is the predominately the language used and it is one of the major local languages in Zambia. The lack of consistency in the language of instruction in Zambia contributes to the poor performance of children which may interfere with learning to read (Matafwali, 2010; Mwanza, 2011, Tambulukani & Bus, 2012). This confusion make learners fail to build the required literacy skills such as acceptable way of speaking, writing, and reading.

A plausible reason for the lack of home literacy experiences could hinder continuity in home support after children have entered formal education or as already

mentioned the confusion surrounding language of children. The other reason could be lack of appropriate learning materials in the language of instruction used in schools to the learners. These assertions conform Matafwali (2010) who demonstrated that in typical Zambian communities, the set of objects that surround children does not include children's books, and where books are available they are not usually in the first (local) language. The activities that children shared in everyday situations typically lacked the element of literacy events in the sense described in Western societies (p.143). Therefore, this demonstrates that what western cultures describe as home literacy experience may be different in Zambia.

The MA achievement gap in Silozi and English at this stage of writing was also attributed to ineffectiveness of instructional methods adopted as a result of poor teacher preparation programs. Teachers might not be equipped with appropriate pedagogical content knowledge, they fail to focus on the transmission of appropriate linguistic constructs necessary for boosting pupils' skills (Cummins, 2007**)**. Most of the literacy teaching approaches adopted by teacher preparation colleges in Zambia do not adopt culturally responsive instructions (Gay, 2010). Literacy instructions do not focus on strengthening linguistic abilities that learners bring to the classroom such as accepted ways of spelling and writing in their first language (L1) or mother tongue. Teaching methods and activities are out of touch with learners' background knowledge, thereby failing to inspire them to build on what they already know. Nagy, Berninger, & Abbott, (2006) advised that Teachers should be responsive to the student's home language by allowing the students' cultural language to exist in the classroom and build upon this first language.'

5.3 Research Limitations

The first limitation of this present study was back translation in the creation of instrument. This was later managed and tested the reliability of the items by examining the internal consistency. Translating items across languages that are not orthographically equivalent proved challenging (Cohen, 2008). The internal consistency of the items as measured by the Cronbach's coefficients were reliable. There were some limitations that needed to be considered with future research and generalizing results. This study was also limited by not comparing classes represented in schools as well as comparing results from two different schools.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

6.1 Overview

This chapter presents the conclusions and recommendations arrived at after discussion of the results of the study. The purpose of this study was to determine cross linguistically whether Morphological Awareness vary as a function of orthographic depth.

6.2 Conclusions

The results revealed statistically significant variations in Silozi and English orthographies. The results also showed that the new language policy (MoE, 2013) of medium of instruction in primary schools seemed to fall short as unexpected. Learners performed better in English orthography than Silozi orthography way to unexpected. The evidence of this was shown clearly in various statistical procedures in between language fit on both derivation and decomposition morphological knowledge measures. Students manipulated various affixes onto base word forms in derivation and decomposition measure, although in most cases words were erroneously written in both Silozi and English languages. It was difficult at times to really know the exact derived or decomposed word, although effort was noted on the attempts made by learners to attach any known affix, although erroneously in many cases. Learners who understood how words are formed by combining affixes tended to have larger literacy skills than peers without switching off such knowledge and skills (Carlisle, 2010). Nagy (2007) proposed that the teaching of Morphological Awareness in schools might be the way to narrow the achievement gap for children

whose families differ in education and income levels, and ethnic or racial backgrounds. A deep and full knowledge and understanding of orthographies would improve outcomes for learners who struggle. A few recent studies had looked into Morphological Awareness across languages (Lyster et al., 2013; Pasquarella et al., 2011), the present study was the first one to look at Silozi and English Morphological Awareness of research. It could hardly be claimed that designing a test to measure Morphological Awareness in bilingual children is the core of bringing Morphological Awareness in Silozi a transparent orthography and English an orthography opaque research together. Morphological Awareness tasks, therefore, constituted a practical proposal that draws on tenets from different research paradigms to explore how the Silozi and English orthographies at the derivational and decomposition morphological level interacted and influenced literacy skills on such interaction.

As participant's performance in both Silozi and English orthographies revealed statistically significant difference. However, teaching of Morphological awareness to learners in primary schools in both languages should be encouraged. It is difficult to understand how words are formed and what we write if we don't know what the words mean or if we are unable to decode words into their oral presentation. According to Anglin (1993), younger students focus more on root word knowledge to understand unknown words in written texts. Generally, participant's performance was fair on both measures, indicating that pupils were relatively familiar with the affix words in English and Silozi**.**

6.3 Recommendations

Based on the outlined findings of this study, the following measures have been recommended to the Ministry of General Education to ensure improved teaching and learning strategies of Morphological Awareness in Schools:

I. Teachers should frequently select familiar affixes that commonly appear in the learner's everyday life in both Silozi and English languages. For instance, learners could easily grasp the meaning of the prefix /*un*/ meaning "*not*" when provided with recognisable examples such as *unlock*, *uncover*, or *unsafe*. In contrast, words such as *veracity* or *procrastinate* are much more unclear.

II. Teachers should choose imaginable words that are concreate so that it becomes easy for leaners to create a mental picture. For example, *raining* is easier to visualise than an abstract word such as *successful.*

III. Teachers should pick transparent words that are made up of "*transparent*" morphemes, meaning that it would be clear how each morpheme contributes to the meaning of the words. For example, it's easier for learners to understand that "*beautiful"* means "*full of beauty*," whereas the meaning of the word *assignment* is less apparent from its morphemes.

IV. Morphology should be taught as a distinct component of a literacy improvement program throughout the primary years. Learners also need to understand the use of affixes.

V. Morphology should be taught as a cognitive strategy to be learned. In order to break down a word into morphemes, learners might complete the following four steps

- Recognise that they do not know the word.
- Analyse the word for recognisable morphemes, both in the roots and affixes.
- Think of a possible meaning based upon the parts of a word.
- Check the meaning of the word against the context of the reading.

6.4 Suggestions for Future Research

Based on the results of the present study, the following research suggestions have been made regarding the Morphological Awareness among learners.

I. A test on baseline knowledge be considered to measure reading comprehension in both Silozi and English languages as well as intelligence quotient for easy generalization to the sampled population.

II. Future research, would be worthwhile to comparing classes and school-level effects.

III. This study only investigated children within township schools and did not deal with schools in the rural outskirts, which limits understanding with respect to performance on home and predominantly language. In view of this, future research may consider rural schools as well.

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APPENDICES

APPENDIX A: MORPHOLOGICAL AWARENESS TASKS

If you do not know the answer, please DO NOT GUESS

School _____

Demographic information

Gender: 1 [ ] Male 2 [ ] Female

Age: _____

1. What language do you speak at home as a family?

_____

Section 1: Decomposition

Example: Driver. Children are too young to **drive.**

Complete the rest of these sentences just like the example.

(1) Growth. She wanted her plant to _____.

(2) Dryer. Put the wash out to _____.

(3) Variable. The time of his arrival did not _____.

(4) Width. The mouth of the river is very _____.

(5) Density. The smoke in the room was very _____.

(6) Discussions. The friends have a lot to _____.

(7) Famous. The actor would achieve much _____.

(8) Description. The picture is hard to _____.

(9) Fifth. The boy counted from one to _____.

(10) Election. Which person did they _____.

(11) glorious. He was dancing in _____ to God

(12) absenteeism. She was _____ in class most of the time.

(13) healed. I took medicine to _____ my flu.

(14) shaded. A tree that is planted to provide _____.

(15) Third. Beth was number _____ in the race.

(16) Careful. Take good _____ of yourself.

(17) Disagreement. She does not _____.

(18) Faithful. He has no _____.

(19) Worker what time do you finish _____.

(20) Abilities. She has the _____.

Section 2: Derivation

Example: Farm. My uncle is a **farmer.**

Complete the rest of these sentences just like the example.

(1) Warm. He chose the jacket for its _____.

(2) Teach. He was a very good _____.

(3) Permit. Father refused to give _____.

(4) Profit. Selling drinks in October is _____.

(5) Appear. He cared about his _____.

(6) Remark. The speed of the car was _____.

(7) Protect. She wore glasses for _____.

(8) expand. The company planned an _____.

(9) revise. This paper is his second _____.

(10) major. He won the vote by a _____.

(11) equal. Boys and girls are treated with _____.

(12) absorb. She chose the sponge for its _____.

(13) active. He tired after so much _____.

(14) swim. She was a strong _____.

(15) wash. Put the laundry in the _____.

(16) humour. The story was quite _____.

(17) assist. The teacher will give you _____.

(18) produce. The play was a grand _____.

APPENDIX B: MORPHOLOGICAL AWARENESS TEST

Ausazibi kalabo, USIKE WANUHA

Sikolo _____

Demographic information

Gender: 1 [ ] Muuna 2 [ ] Musali

Age: _____

1. Ki mushobo mańi womu ambolanga kwa ndu ya mina? -

   _____

Section 1: Decomposition

Mutala wa za kueza: Muzamaisi. Banana ki baba nyinyani hahulu ku **zamaisa**.

U tazeleze mibamba ye tatama sina ka mutala

1. Kuhula. Na bata kuli kota yahae i _____.
2. Siomiso. Beya ze tapile fande li _____.
3. Kutokomelwa. Nako ya kufita kwahae nei _____.
4. Butuna. Mulomo wa nuka ki womu
5. Buńata. Musi mwa muzuzu neli wo mu _____.
6. Ngambolotuna. Balikani banana li _____ ze ńata.
7. Kububana. Mubapali upangile _____.
8. Kutalusa. Si swaniso sitata ku si _____.
9. Ketalizoho. Mutangana ubalile kuzwa ku kalikanwi kuya kuka _____.
10. Liketisa. Kiufi mutu yoba _____.
11. Bundetota. Na binela _____ bwa Mulimu.

12. Bulofa. Na _____ mwa sitopa haňata.

13. Kufolisiwa. Ni nwile muylani kuni _____ libelenge.

14. Mwamuluti. Kota ye icalezwi kufa _____.

15. Totulalu. Beth na tamile fa nombolo ya _____.

16. Kubabalela. Ui _____.

17. Kusalumela. A _____.

18. Kusepahala. Ana _____.

19. Mubeleki. U feza nako mańi mu _____.

20. Kutalifa. U nani _____.

Section 2: Derivation

Mutala wa za kueza: Simu. Bo malume ki **balimi.**

U tazeleze mibamba ye tatama sina ka mutala.

1. Futumala. U ketile paka bakenisa _____ kwayona.
2. Luta. Neili _____ yo munde.
3. Tima. Bo Ndate bani _____ sibaka.
4. Kekezo. Ku lekisa muchapi mbumbi ku nani _____.
5. Bonahala. Na tokomezi _____kwa hae
6. Komoka. Lubilo lwa motikala nelu _____.
7. Silelezo. Na tinile tu botela twa _____.
8. Kekezo. Katengo ka hupuzi _____.
9. Lunduluza. Pampili ye kiya haye ya bubeli _____.
10. Tuna. U winile liketisa _____.
11. Likana. Bashimani ni basizana ba angiwa ka _____.

12. Anya. Uketile siponji libaka la _____ kwa sona.

13. Kezo. Na katezi hahalu kasa mulaho wa _____.

14. Tapa. Neili _____ yo mutuna.

15. Tapisa. Beya ze _____mwa sikotolo

16. Taba. Li kande neli _____.

17. Tuso. Bo muluti baka _____.

18. Zusa. Papali nei _____ hande

APPENDIX C: ETHICAL APPROVAL LETTER

THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road | P.O. Box 32379 | Lusaka 10101 | **Tel:** +260-211-290 258/291 777
Fax: +260-1-290 258/253 952 | **Email:** director@drgs.unza.zm | **Website:** www.unza.zm

Approval of Study

30th January, 2019

REF. NO. HSSREC: 2018-AUGUST-010

Mr. Mushimbei Kufamuyeke
C/O School of Education
University of Zambia
Department of EPSSE
P.O Box 32379
LUSAKA

Dear Mr. Mushimbei,

RE: "EFFECTS OF OTHOGRAPHIC DEPTH ON MORPHOLOGICAL AWARENESS AMONG 6TH GRADERS IN MONGU PRIMARY SCHOOLS, ZAMBIA"

Reference is made to your request for waiver of ethical approval of the study. The University of Zambia Humanities and Social Sciences Research Ethics Committee IRB has approved the study noting that there are no ethical concerns.

On behalf of The University of Zambia Humanities and Social Sciences Research Ethics Committee IRB, we would like to wish you all the success as you carry out your study. In future ensure that you submit an application for ethical approval early enough.

Yours faithfully,

Dr. J. Ilubala-Ziwa
CHAIRPERSON
THE UNIVERSITY OF ZAMBIA HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE IRB

cc: Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies
Senior Administrative Officer (Affiliation), Directorate of Research and Graduate Studies

Excellence in Teaching, Research and Community Service

APPENDIX D: PARTICIPANT CONSET FORM

HSSREC FORM 1a

THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

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HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

PARTICIPANT INFORMATION SHEET & CONSENT FORMS

(This template is for research interventions that use questionnaires, in-depth interviews or focus group discussions)
(language used throughout form should be at the level of a local student of 6th/8th grade)

[Informed Consent Form for Pupils in Secondary school from Grade 6 in Mongu 8 District**_____]**

This informed consent form is for Primary School pupils who are in Grade 6 in Mongu District and who I am inviting to participate in the research titled, "Effects of Orthographic Depth on Morphological Awareness"

[Name of Principle Investigator]
Kufamuyeke Mushimbei

[Name of Organization]
University of Zambia

[Name of Sponsor]
Self

[Name of Project and Version]
Effects of Orthographic Depth on Morphological Awareness Among 6th Graders.

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the study with you)**
- **Certificate of Consent (for signatures if you choose to participate)**

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

Introduction

I am Kufamuyeke Mushimbei, a postgraduate student pursuing a Master Degree in Educational Psychology at the University of Zambia. I am conducting a research on Effects of Orthographic Depth on Morphological Awareness Among 6th Graders. I am going to give you information and ask you if you can participate in this study. You do not have to decide today whether or not you will participate in the study. Before you make a decision, you can talk to anyone you feel comfortable with about the research. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain.

Purpose of the research

The purpose of the study is to determine cross-linguistically how orthographic depth affects morphological awareness MA among Silozi and English readers at grade 6 level in Mongu primary schools, western province of Zambia.

Type of Research Intervention

This research will involve answering questions in a questionnaire which will takes control time of 45 to 60min.

Participant Selection

You are being invited to take part in this research because we feel your capability as a child can contribute to our understanding and knowledge of Morphological Awareness.

- *Do you know why we are asking you to take part in this study?*
- *Do you know what the study is about?*

Voluntary Participation

Your participation in this research is voluntary. It is your choice to participate or not. If you choose not to participate, the way you are treated at this school will not change in any way.

- *If you decide not to take part in this research study, do you know what your options are?*
- *Do you know that you do not have to take part in this research study, if you do not wish to?*
- *Do you have any questions?*

Procedures

A. Brief Description of the study procedure.

We are inviting you to take part in this research project. If you accept, you will be asked to write an assessment test which I am going to distribute. You may answer the task items yourself. You may also ask if need more explanation on some questions. The answers you provide will be regarded as confidential, meaning no one else will see them. Your name will not be written on the form but only a number will be used to identify you.

B. Type of Questions to be Expected

Task sheet for each language had three sections. The first section contained three items on biography. The second section had 20 decomposition tasks items and third section had 18 derivation tasks items for both Silozi and English orthographies.

Duration

Answering the task item may take about 45 minutes but could be extended 60 minutes and the research will be done in two days. This is because the task items are in two different languages, Silozi and English. The task items will be distributed in your classrooms during pre-time.

- *If you decide to take part in the study, do you know how much time will the interview take?*
- *Where will it take place?*

Risks

There are no risks, as the assessment is for academic purpose like any of those you are given by your teachers. However, no else will see that results. The information provided will be kept confidential. You don't have to take part in the study if you feel are not comfortable with one of the languages.

Benefits

There will be no direct benefits to you, but your participation is going to help us find out more about the effects of Orthographic Depth on Morphological Awareness. This will help us know how to improve teaching and learning approaches.

Reimbursements

There are no incentives to take part in this research.

- *Can you tell me if you have understood correctly the benefits that you will have if you take part in the study?*

Confidentiality

The research being done may draw the attention and if you participate you may be asked questions by other people in school. We will not share the results. The answers we collect from you will be kept private. It will be difficult to link the answers to you since you will provide answers on the task sheet without your name on it. Additionally, it will be kept under lock and key.

- *Did you understand the procedures that I will be using to make sure that any information that I collect about you will remain confidential?*

Sharing the Results

The research findings will be shared more broadly, for example through publications and conferences and no names will be mentioned because we are not getting your names.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so, and choosing to participate will not affect the way you are treated at this school.

Who to Contact

Provide the name and contact information of someone who is involved, informed and accessible - a local person who can actually be contacted. State also the name (and contact details) of the local IRB that has approved the proposal. State also that the proposal has also been approved by the WHO ERC.

If you have any questions, you can ask me now or later. If you wish to ask questions later, you may contact the local IRB that has approved the proposal.

Name_____ telephone_____

Email_____

Address_____

This proposal has been reviewed and approved by [name of the local IRB], which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find about more about the IRB, contact [name, address, telephone number.]). It has also been reviewed by the Ethics Review Committee of the World Health Organization (WHO), which is funding/sponsoring/supporting the study.

- *Do you know that you do not have to take part in this study if you do not wish to?*
- *You can say No if you wish to?*
- *Do you know that you can ask me questions later, if you wish to?*
- *Do you know that I have given the contact details of the person who can give you more information about the study?*
- You can ask me any more questions about any part of the research study, if you wish to
- Do you have any questions?

Part II: Certificate of Consent

I have been invited to participate in research about the Effects of orthographic Depth on morphological awareness.

(This section is mandatory)

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study/ to allow my child take part in this study.

Print Name of Parent_____ Signature_____ Date_____
Print Name of Participant_____
Signature of Participant _____
Date _____
Day/month/year

If illiterate [1]

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness_____ **Thumb print of participant**
Signature of witness _____
Date _____
Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant/ Parents of participants and to the best of my ability made sure that the participant understands that the following will be done:

1. **Information will be kept confidential**
2. **Anonymity will be guaranteed**
3. **Risks will be taken care of**

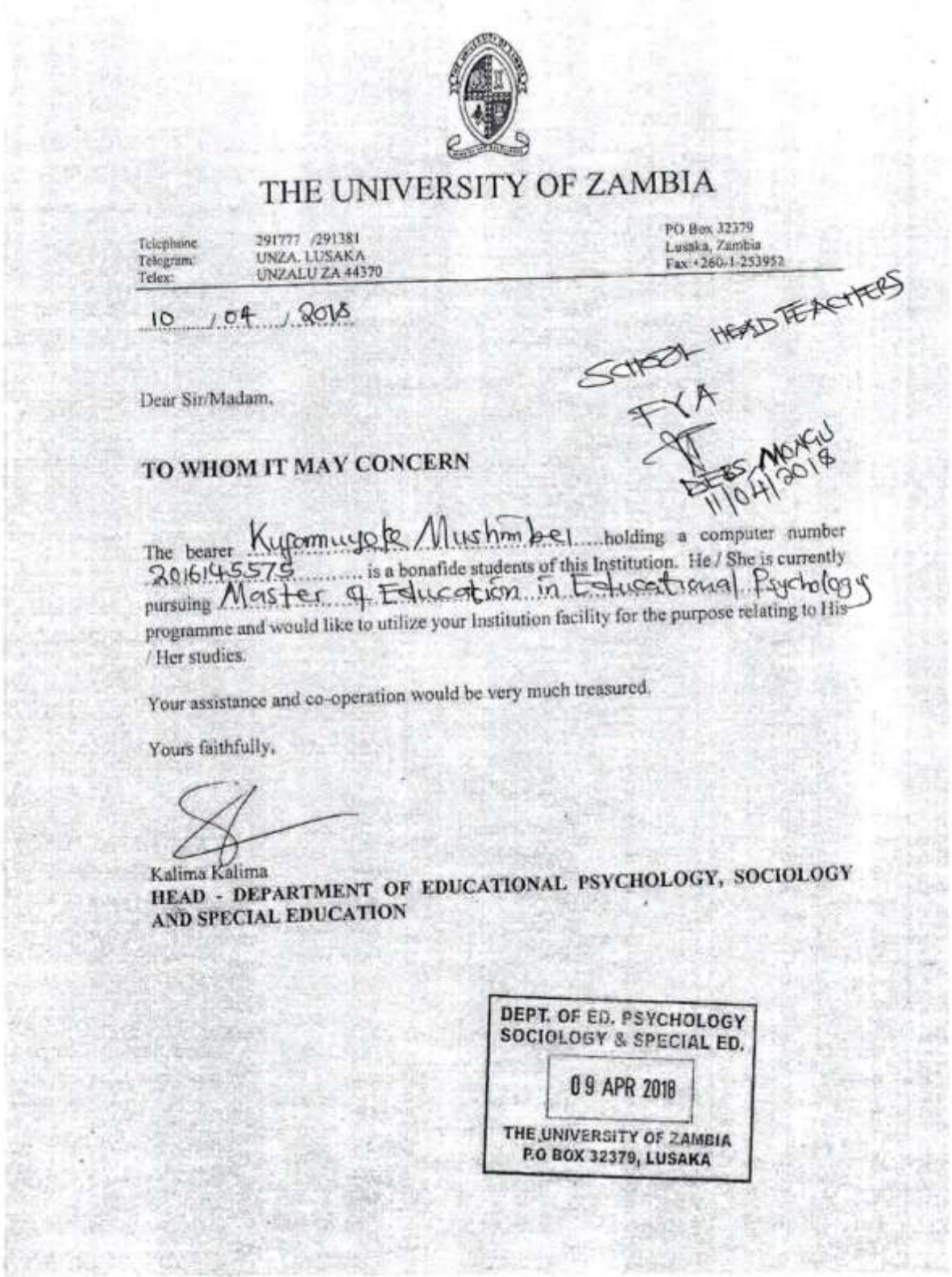
I confirm that the participant/ parent of the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant and the parent of the participant
Print Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____
Date _____
Day/month/year

[1] *A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.*

APPENDIX E: INTRODUCTORY LETTER



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10 / 04 / 2018

SCHOOL HEAD TEACHERS
FYA
DEBS MOAGU
11/04/2018

Dear Sir/Madam,

TO WHOM IT MAY CONCERN

The bearer Kyoomuyoke Mushimbei.....holding a computer number 201614557S..... is a bonafide students of this Institution. He / She is currently pursuing Master of Education in Educational Psychology programme and would like to utilize your Institution facility for the purpose relating to His / Her studies.

Your assistance and co-operation would be very much treasured.

Yours faithfully,

Kalima Kalima
HEAD - DEPARTMENT OF EDUCATIONAL PSYCHOLOGY, SOCIOLOGY AND SPECIAL EDUCATION

DEPT. OF ED. PSYCHOLOGY
SOCIOLOGY & SPECIAL ED.
09 APR 2018
THE UNIVERSITY OF ZAMBIA
P.O BOX 32379, LUSAKA