Writing Proficiency across Diverse Writing Systems: An Evaluation of the Effects of Orthographic Depth

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Abstract

This paper seeks to compare the effects of orthographic depth on 4th graders' writing skills among Nyanja-English bilinguals in Zambia. The paper was premised on the assumption that orthographic depth would considerably affect writing development in similar ways as reading acquisition, and it was, therefore, envisaged that the dynamics observed in reading would be replicated in writing. To evaluate this hypothesis, Nyanja and English writing samples of six 4th graders were analysed to determine differences in writing mechanics and intelligibility in the scripts using a sequential mixed-methods case study design. Results show a significantly high word account in the English scripts, while the Nyanja scripts had more word variety. Additionally, English scripts were generally longer and had more syntactically complex sentences, while Nyanja samples had more word variety. It was difficult to differentiate intelligibility because participants failed to follow the basic convention of the main idea-supporting sentence paragraphing in both languages. The other major difference in the scripts was related to word spellings as most irregular English words were phonetically spelled. Majority of the Nyanja spelling errors were mostly over-generalisations of the English conventions. Basically, the study reveals that orthographic transparency, as shown in the acquisition of reading skills, exerts some influence on the development of writing skills as well. In conclusion, it was noted that despite being orthographically opaque and more challenging to master, pupils still have a slight advantage in English writing over Nyanja because of the availability of practice material, although oral vocabulary helps in generating more variety in the latter.

Keywords: English, Nyanja, orthographic transparency, writing, Zambia

Introduction

Reading and writing are two of the most important human inventions in modern times (Graham & Herbert, 2010). They enable us to understand issues that go beyond the realm of the word of mouth. Through reading people are able to delve into the writers' internal personal opinions and feelings, while using writing skills individuals express their private thoughts, ideas and attitudes, and preserve them for posterity. While the development of reading skills and its pedagogical considerations have been receiving more than its fair share of research attention over the years (Buswell, 1922; Thorndike, 1917; Huey, 1908), writing has been largely neglected by the scientific community. Consequently, reading instruction is driven by more empirically well-tested best practices than writing instruction in the classroom. This is despite Graham and Harris' (2013) observing that good writing skills correspondingly "enhances students' learning as well as their ability to read effectively" (p. 3). It is, therefore, imperative that teaching children to write in the formative years should receive the same level of attention so they complement each other.

Research on emergent writing and reading

The nature of the orthographic depth of the language of instruction plays an important role in determining the teaching-learning outcomes of literacy skills among pupils. Developmental trajectories of both monolingual and bilingual pupils' reading acquisition seem to vary significantly depending on the letter-sound consistency, also known as orthographic depth, of the instructional language (Seymour *et al.,* 2003; Goswami, 2003; 2005; Landerl & Wimmer, 2008). On the other hand, the little available empirical literature on the development of writing does not involve cross linguistic comparisons (Berninger, 2008; Graham, 2006; Graham et al., 2001; Graham *et al.,* 1998). Although there is a large corpus of research exploring the development of reading and its cognitive prerequisites showing a significant advantage of learning to read in transparent orthographies—languages with consistent grapheme-phoneme correspondences—over opaque ones (Bar-Kochva & Breznitz, 2014; Furnes & Samuelsson, 2011; Landerl & Wimmer, 2008; Aro & Wimmer, 2003; Seymour *et al*., 2003), it is not clear how variations in orthographic depth affect writing development, especially among bilinguals, like Zambian children. Additionally, it has not yet been clearly established whether developmental trajectories of the writing process are similar in nature across orthographies. Similarly, current literature is clear whether beginning learners draw on the same cognitive processes and, linguistic and literacy skills in the early stages of learning to writes as in reading (Harrison *et al.*, 2013).

Reading and writing skills rely on a lot of shared processes (Graves & Hansen, 1983; Smith, 1983), but they are also quite different in many ways (Harrison *et al.*, 2013). According to the simple view of reading (SVR), reading comprehension is a function of decoding (word recognition) and listening comprehension—oral language skills (Joshi & Aaron, 2000; Hoover & Gough, 1992). On the other hand, the goal of writing is to convey information to persuade, to explain, and to convey experience, real or imagined (The National Assessment of Educational Progress [NAEP], 2011). Therefore, in reading the interpretation of the text is guided by appreciating the writer's intentions, competence, and knowledge of the writing process and the subject matter. To produce an intelligible text, writers navigate a milliard of steps, such as planning, revising, and editing (Graham & Perin, 2007a; Graham, 2006;). Thus, learning to write "engages children's burgeoning awareness

of the symbolic representation of spoken language to convey meaning" (Harris *et al.*, 2013, p. 62).

Pupils' writing proficiency, like reading, has been a major concern to both teachers and researchers (Henriques & Madeira, 2017; Graham, 2006). Learning to write is more challenging than reading, and takes much longer and effort to be fully developed (Kellogg, 2008). In fact, of the three language-related human abilities—speaking, reading, and writing—writing is not only the last, but also the most challenging to acquire. Kellogg argues that writing skills "typically develop over a course of more than two decades as a child matures and learns the craft of composition through late adolescence and into early adulthood" (p. 1). Troia (2007) reported that in 2002 "only 28% of 4th graders, 31% of 8th graders, and 24% of 12th graders achieved at or above a proficient level of writing performance" (p. 130) in the United States. These figures do not only show how difficult writing skills are to acquire, but also how urgent the situation is in need of attention.

The development of writing among novices is influenced by several factors; which either foster or hinder the production of grade or age appropriate pieces of writing (Geva, 2006; Berninger *et al.,* 1996; Kress, 1994; Hartley, 1991). For instance, bilingualism affects both writing acquisition and proficiency in their second language. Geva stated that—although evidence is still emerging—children learning English as a second language (ESL) do not achieve the same levels of proficiency both in writing and reading in English as they do in their first language. Additionally, ESLs fail to match word-level proficiency to their text-level skills. And according to Harrison *et al.* (2013, p. 63), "It has been suggested that this inconsistency between word level and text-level skills among ESL children is due to oral English proficiency, and there is an association between well-developed oral English skills and English writing achievement." This argument is essential to this study as the intention is to simultaneously assess the effects of orthographic depth on writing among pupils learning in a transparent Nyanja, a Zambian language and the English language.

Other factors inducing poor writing relate to literacy practices—especially the quality of instructions that pupils are exposed to—and also due to the participants' gender. Additionally, there is a general consensus among scientists and in literature that success in both writing and reading activities are heavily dependent on the literacy practices learners are exposed (Berninger *et al.,* 1996; Kress, 1994). Pupils taught to read and write by well-trained teachers; teachers who possess a good understanding of linguistic concepts and employ empirically-tested strategies, out-perform their counterparts exposed to conventional instruction methods (Cantrell *et al.,* 2012; Applegate & Applegate, 2004). Hartley (1994) notes that girls have always out-witted their male counterparts in idea generation and writing quality.

Universal conventions of good writing

Several research-based recommendations have been proposed together with best practices for classroom-level and individual-level instruction to foster good writing skills among pupils (Graham *et al.,* 2011; Troia, 2007; Graham *et al.,* 1998). It has also been established that pupils who are good writers pay particular attention to good writing conventions, such as writing mechanics, selecting and using appropriate vocabulary. They adhere to proven writing strategies by paying attention to sentence structure, organization, ideation, voice, and genre elements (Graham & Perin, 2007b). In a nutshell, a well-written

paragraph or essay is judged by a discernible overall main idea accompanied by supporting sentences to authenticate and amplify the main idea written in a logical and coherent fashion.

Effects of orthographic opacity on literacy

The consistency of correspondences between orthographic and phonology vary significantly across languages. Some languages (e.g., Finnish) have highly transparent with almost one-on-one grapheme-phoneme correspondences (GPC), while in others (like English) these mappings are highly inconsistent, thereby constraining spelling of words based on letter-sound manipulations. As a result, Ziegler and Goswami (2005) proposed the psycholinguistic grain size theory (PGST)—theoretical framework to explain discrepancies in reading between languages—and by extension writing, proficiency between transparency and opaque orthographies. This theoretical framework posits that inconsistencies of GPC across orthographies demand that readers invoke varying strategies to ensure smooth word decoding. It therefore, proposes two word recognition routes defined by the grain size at which the words are read. Due to consistency of GPCs in Finnish, novice readers rely exclusively on small-grain sizes by simply invoking their sublexical skills (phonological recoding) to read or write any word or legitimate letter strings they encounter. On the other hand, in inconsistencies writing systems, like the English orthography, beginning readers and writers rely on large grain processing to read irregularly-spelled words such as *choir* or *thorough* which cannot be accessed by means of phonological recoding, in addition to the sublexical processing for regular words, like *hat*.

Consequently, available empirical evidence shows that these orthographic variations affect rates of development and nature of reading—and probably affects writing in similar ways (Share, 2008; Ziegler & Goswami, 2005; Seymour *et al.*, 2003). Seymour and colleagues found significant variations in rates of reading acquisition of word and non-word reading among first grade pupils in 14 European languages (Austrian-German, Danish, Dutch, English, Finnish, French, German, Greek, Icelandic, Italian, Norwegian, Portuguese, Spanish, and Swedish). Results from this study reveal that at the end of the first grade when Finnish learners were reading words and non-words close to ceiling, their English counterparts were still reading around 50% level. Languages can, therefore, be placed on a continuum based on their orthographic depth in relation to others (see Table 1 below).

Table 1: Hypothetical classification of participating languages relative to the dimension of syllabic complex (simple, complex) and orthographic depth (shallow to deep)

		Orthographic depth				
		Shallow				**Deep**
Syllabic Structure	***Simple***	Finnish	Greek Italian Spanish	Portuguese	French	
	Complex		German Norwegian Icelandic	Dutch Swedish	Danish	English

Note: Adapted from Seymour et al. (2003)

Unfortunately, majority of the literacy research evaluating the influence of orthographic depth has been in the area of reading. However, the few available studies show that orthographic transparency also affects writing development (Angelelli *et al.,* 2003; Iribarren et al., 2001; Luzzi *et al.,* 2001). Initially, Ardila (1991) noted that scientists believed that dysgraphia (writing disorder) does not exist in transparent orthographies. In Italian—a highly transparent language—Angelelli et al. had reported finding pupils who exhibited symptoms of developmental dysgraphia. Acquired dysgraphia was also reported by Iribarren and colleagues among Spanish pupils. The findings of the foregoing cements the notion that both writing and reading problems are universal to all languages and not unique to opaque orthographies.

The Present Study

Regrettably, there are few studies focusing on the influence of orthographic depth on the development of writing, especially among bilinguals in learning to write in two languages with orthographically diverse writing systems. This study sought to compare writing skills of Nyanja-English bilingual learners in a Zambian school. Specifically, the study compared hand written Nyanja and English narrative story samples of six 4th graders from one primary school in Lusaka District. The study was aimed at answering the following general research question: Are there orthography variations in narrative writing proficiency between Nyanja and English language bilingual learners in Zambia? How does orthographic depth influence the quality of pupils' narrative writing? The specific research questions were: What are the major structural writing differences between the two orthographies? If any, what are the major word and textual variations induced by orthographic depth?

Evaluating the effects of orthographic depth on writing ability and quality, like reading, of pupils in developmental stages will provide great insights into developing appropriate and evidence-based instruction strategies for bilingual pupils. Most of the current literacy development theories and models are developed from the Anglocentric perspective despite repeated scientific calls suggesting that the English language has an outlier orthography to provide the basis for the development of theories and models with universal applicability (Seymour *et al.,* 2003; Goswami, 2003; 2005; Joshi & Aaron, 2005; Share, 2008). Another justification for this research endeavor is to evaluate the effects of orthographic opacity on writing proficiency in a resource-poor developing country, where classroom literacy instructions are less than optimal (Stemler *et al.,* 2009), resulting from inadequate teachers preparation (Kaani, 2018) and critical shortage of teaching-learning materials (Kaani, 2006; Nkamba & Kanyika, 1998).

Orthographic depth: Nyanja versus English languages

Compared to the opaque English writing system, the orthography of Nyanja has very consistent GPCs with close to one letter-sound ratios (Chimuka, 1977). Therefore, if the teaching-learning process focused on the alphabetic principle, reading and probably writing skills would be well facilitated in Nyanja than in the English language. This is because the 44 graphemes used in the English orthography to represent more than 250 phonemes obfuscates the process of learning to read and write. Whereas in Nyanja orthography, this tasks is quite easy and straight-forward because the number of phonemes is almost equal to the graphemes they represent, which translates into virtually one letter-sound ratio (Kalindi

& Kaani, 2017; Kaani, 2014; Kaani & Joshi, 2013; Kaani, 2012). Thus, it is envisaged that because of Nyanja's orthographic transparency, once beginning readers master basic alphabetic knowledge, they would not only be able to read, and probably also spell, any legitimate regularly-spelled word using the self-teaching mechanisms (Kaani *et al.,* 2016; Share, 1995).

Methodology

Research Design and Participants

An exploratory sequential mixed-methods case study design was used to evaluate various aspects of six 4th grade participants' Nyanja and English language narative writing samples. This design allowed for collection and analyses of appropriate data to answer both qualitative and qualitative research questions raised. Initially, a quantitive analysis compared participants' narrative scripts on the mechanics of writing such as number and variety of words and sentence structure before focusing on their qualitative characteristics such as intelligibility and spelling error analyses. The sample was comprised of three boys and three girls with ages ranging 10 to 13 years old drawn from an ordinary government primary school. The school is located in a medium socioeconomic status community of Zambia's national capital, Lusaka. None of the participants reported learning disabilities that could attenuate the quality of their writing skills. In addition to being a poorly resourced school, classes in the school were generally over-enrolled, as some classes were reported to have 60 pupils against the recommended 45 pupils per class. The participants' teacher had more than 15 years post-graduation teaching experience.

Data collection instruments

Visual Writing Prompts: Two visual prompts were used to elicit and guide the pupils' writing process. In eliciting writing in English, the picture used depicted a school setting with pupils playing and teacher, while the Nyanja prompt was showing a village setting with activities typical to the rural setting in Zambia. The two prompts are commonly used for instructional purposes in the schools at this level in the respective languages.

Assessment procedure

Writing assessments were conducted in a quiet classroom by the author over a period of two days. Nyanja writing tests were conducted on the first day followed by an English writing session on the second day of data collection. During each assessment session, pupils sat on separate desks and were each given a pencil and a paper. The picture prompt were pasted on the soft board in front of the classroom. Participants were told to write a story in their own words in line with the story sequence displayed in the visual prompts placed before them. Each assessment session lasted 40 minutes and the written samples were retrieved from the participants for analysis.

Results

Pupils' narrative writing samples were analyzed for two main aspects. The first aspect considered was the mechanics of writing, which covered sentence structure such as number and nature of sentences, and also types of words used in the writing sample. The second aspect assessed was intelligibility—extent to which the narrative was coherent. This aspect

looked at whether the pupils' paragraphs interconnected overall by depicting a main idea to the story accompanied by appropriate supporting details. The spelling errors participants committed were also analyzed and compared across the languages.

Mechanics aspects of pupils' writing

Data analyses evaluated student's mechanics of writing focused at word level; such as number of words written, percentage of correct words, and unique words used (variations in words used). At sentence level, the analysis focused on the number of sentences written and whether the sentences learners produced were grammatically correct or not. Characteristics of the sentences written were reviewed before turning to the number and nature of words in the participants' written samples.

Word level analyses across orthographies

The participants used simple every day words in writing their stories in both orthographies, relying almost exclusively on very high frequency vocabulary in their writing. According to Table 2 below, there were a total of 179 words in English compared to 109 words in Nyanja. The amount of Nyanja words accounted for only 37.84% [109/ (109 + 179)] of the combined total of all the written words across orthographies compared to 65.16% in English. In Nyanja, the mean number of word written was 18.17 words per individual student with the range of six to 32 words while the mean for English was 29.83 words (ranging from 20 to 45).

With reference to the number of correctly written words, there were 25.69% and 69.72% in Nyanja and English language respectively. Interestingly, despite writing fewer words, there was proportionally more variety in vocabulary used per writing sample in Nyanja (82.14%) than in English (68.72%) language. For instance, one student wrote a 15-word narrative script with 15 different and correctly written words. In English, on the other hand, the variety in vocabulary was restricted to very high frequency one syllable words. The most commonly used English words were; *boy*, *girl*, *is*, *he*, *she*, *ball*, and *kicking*. The word *kicking* was the most misspelled word in the English writing samples.

Table 2: Summary of words written, correct, and uniqueby language/orthography

		Nyanja			**English**		
	Name	**Total #**	**Correct**	**Unique**	**Total #**	**Correct**	**Unique**
1	Ruth*	12.00	4.00	2.00	23.00	16.00	6.00
2	Nelly*	23.00	5.00	2.00	20.00	5.00	7.00
3	Gift*	6.00	0.00	0.00	25.00	11.00	7.00
4	Mark*	15.00	15.00	15.00	27.00	24.00	8.00
5	Jessica*	21.00	0.00	0.00	45.00	36.00	12.00
6	Robert*	32.00	4.00	4.00	39.00	31.00	10.00
	Total	**109.00**	**28.00**	**23.00**	**179.00**	**123.00**	**50.00**
	M	**18.17**	**25.69%**	**82.14%**	**29.83**	**68.72%**	**40.65%**

*All names are pseudo names

Characteristics of sentences

Table 3 below shows a summary of the sentence level analyses for the six participants in the languages. The results show that learners produced more sentences in English (28) than Nyanja language (20), with mean number of sentences being 4.67 and 3.33 per student

respectively. Similarly, comaprative analyses of syntactical and semantical features revealed that while the Nyanja orthography writing samples had only 30% of the total grammatically correct sentences, in English, the proportion of correctly constructed sentences was at 40%. The overall was mean of one correct sentence per student in Nyanja and 1.17 in English. Majority of the sentences written by pupils were simple in structure with Subject Verb Object (SVO) word order. Only one Nyanja sentence, although grammatically wrong, had two simple sentences connected by the word *ndi* (*and*) to form a complex sentence. Although the structure of English sentences was similarly simple, they were much longer. This dispropotionate discrepancy of grammatically correct writing reported in participants' samples is counter-intuitive considering that children should be more conversant with the mother-tongue. Although this may be explained by the agglutinative nature of the Nyanja language, which tend to shorten sentences. Matiki (2000, p. 50) argued that "it is not uncommon for agglutinative and polysynthentic languages omit the nominal head noun altogether because it is already marked on the verb".

In both languages, five out of the six participants wrote narratives that followed language- specific grammatical structure—word order. Although it is difficult to comprehend what was being communicated, they managed to follow the correct syntactic conventions in writing their sentences. Majority of the sentences written had the correct SVO word order of the English language. For instance, the sentence; *The boy is kicking the ball* in English are good examples, reflect syntactic conventions specific to each language.

Table 3: Number of sentences written and correctly written sentences in each language

		Nyanja		English	
	Age	**Number**	**Correct**	**Number**	**Correct**
1 Ruth	11.00	4.00	0.00	4.00	1.00
2 Nelly	9.00	4.00	2.00	4.00	2.00
3 Gift	10.00	1.00	0.00	5.00	0.00
4 Mark	10.00	3.00	3.00	4.00	3.00
5 Jessica	10.00	4.00	0.00	6.00	1.00
6 Robert	9.00	4.00	1.00	5.00	0.00
Total		**20.00**	**6(30%)**	**28.00**	**7 (40%)**
#/student		**3.33**	**1.00**	**4.67**	**1.17**

Intelligibility of the narrative writing samples

The samples were also analysed for overall intelligibility; that is whether the writing was coherent with well-structured story-line from the beginning to the end. The idea was basically to see whether their work varied significantly between the two languages. The analyses also focused on paragraphing, main idea/sentence accomapanied by supporting sentences, and adherence to orthography-specific word spelling conventions.

Paragraphing and story coherence

Although the writing instructions required pupils to produce at least one paragraph to describe the main idea or activity depicted in the visual prompt by writing a main idea sentence and at least two or more supporting sentences, no participant managed to correctly follow this convention in both orthographies. In many cases, the main idea sentences were

standalone disposition, not supported by subsequent details. In the Nyanja, where the visual prompt depicted a woman (a mother) balancing a gourd calabash (a dried hardened pumpkin shell used for water-carrying container in some parts of Zambia) on her head after fetching water, but no one included the circumstances around this activity in their writing. According to Appendices A and B attached, there were no marked differences in intelligibility between Nyanja and English languages. This may be a function of the quality of instruction pupils receive as reflected by lack of teaching-learning materials in schools and an indication of low quality of teacher education in the country. In short, it could be assumed that children are not taught the structure of writing in schools.

Adherence to language-specific spelling conventions

Most of the participants' inability to yield intelligible writing samples in both orthographies may be attributed to poor spelling. One would have expected learners to use their oral familiarity with Nyanja vocabulary to produce correct spellings. Although majority of the words used in writing were among the most frequently used in their oral conversations, many words were misspelled in both languages. Additionally, the results also show that there was confusion in the use of phonetic spelling rules, especially for English words. In Nyanja, some participants used English conventions in spelling Nyanja words; using the grapheme *c* for the /k/ sound in the word *cuyenda* instead of *k (kuyenda).* Whereas in English, the word *waving* was misspelled as *weving—we* is the only Nyanja convention for the sound /*wei*/. Other interesting English spelling errors committed were writing the word *calling* as *caleing, playing* as *piloying,* and *kicking* as *keking.* Nasal clusters spellings also posed significant challenges in Nyanja spellings, words like *anyamata (boys)* and *kunyumba (house)* were written without *y* as *anamata* and *kunumba.* Similarly, the grapheme *n* nasal sound /n/ in *vintu (things)* is omitted and spelled as *vitu.*

Discussion

The aim of this mixed-methods case study was to evaluate and compare the influence of orthographic depth on writing proficiency of six 4th graders in Zambia in orthographically contrasting writing systems. The study focused on English-Nyanja bilinguals and highlighted differences in writing quality between these orthographies. The mechanics, intelligibility, and word spelling in pupils' narrative writing samples were the main foci of the current study.

In summary, the results revealed that participants were able to write more words and longer sentences in English than in Nyanja. They produced almost double number of sentences in the former compared to the latter. However, there was more word variety in Nyanja samples than English. Nyanja narrative samples contained variety in words used compared to English scripts, whereas the same words were repeated several times over. Despite the relative difficulty posed by the English orthography, pupils seem not only to be more conversant with the English language as shown by the amount of sentences produced, but also wrote longer sentences. This finding was unexpected and counterintuitive to available research that show the orthographic depth does not facilitate both reading proficiency for pupils writing in Nyanja than English (Kaani & Joshi, 2013; Kaani, 2008; Share, 2008; Seymour *et al.*, 2003), and by extension in writing and spelling.

The participants' ability to write more words and longer complete sentences may be attributed to two main factors. Firstly, although government through the Ministry of Education is strongly promoting mother tongue-based literacy instructions, both teachers and pupils, and to some extent society, emphasise English because it is viewed as a means for social mobility later in life (Marten & Kula, 2008). Competent in both spoken and written English is a means to more coveted white collar jobs and a sense of higher social status. Secondly, even though there is significant linguistic intelligibility among the close 70 languages and dialects in Zambia, the seven main languages used for instructions are limited by lack of scientific jargon necessary for effective learning in the content areas, especially in the hard sciences (Chanda, 2008), and therefore, the English language is the only means to access that knowledge.

Additionally, English plays the role of both a lingua franca and national unification in the midst of linguistic and ethnic diversity. Contrastingly, the wide variety in number of Nyanja words used in the samples is a function of the participants' proficiency in oral vocabulary. Thus, learners' ability to produce wide-ranging and correctly spelled Nyanja words than English may have been made possible by evoking of self-teaching mechanisms after the GPCs have been mastered (Share, 2008; 1995). According to Goswami (2005; 2003), once GPCs are grasped in transparent orthographies, such as Nyanja, novices are able to use their phonological recoding skills through synthetic phonics to write correct spellings of any word from their oral Nyanja vocabulary.

The intelligibility in the writing samples was difficult to determine due to poor sentence construction and coherence in both languages. In both languages, pupils were unable to produce coherent texts of writing at paragraph level. In most scripts, there were no sentences outlining the main idea, and when it was provided there was no evidence to support subsequent sentences. Majority of the sentences produced were stand-alone ideas; as each sentence was focusing on an entirely different idea. This failure can be attributed to classroom practices employed in the process of teaching writing skills (Graham & Harris, 2013) and may be explained in terms of the Peter Effect (Binks-Cantrell *et al.*, 2012). The Peter Effect phenomenon—based on the biblical story in which St. Peter told a beggar that he could not give what he did not have (Acts 3:5)—postulates that teachers who are not well trained, nor possess appropriate pedagogical-content knowledge (Shulman, 1987; 1986), cannot teach writing effectively. Teachers in elementary schools in Zambia received two-years of training which does not include elements of good literacy instruction. Hence, the lack of appropriate teaching skills among teachers is clearly in their pupils' writings.

Analyses of spelling errors types committed by the pupils revealed interesting findings. The most common spelling error in pupils' writing sample was related to over-generalisation in application of English spelling conventions to Nyanja words and vice-versa. For instance, replacing *c* for *k* for the sound /c/ in *kuyenda (cuyenda)* and *k* for *c* for the same sound in *akala (acala)* are examples of pupils' overgeneralisation of decoding skills across the orthographies. This shows a cross-transfer effect of metacognitive skills (Forbes & Fisher, 2018), an important facilitator of literacy development between first and second language among bilinguals. Interestingly, as reported in studies by Alcock and Ngorosho (2005), and Kaani and Joshi (2013), this study also comfirmed that nasal cluster omissions in both medial position (*Anamata* for *Anyamata*) are typical in transparent languages.

Conclusion and implications for policy

In conclusion, despite limitations of a small sample size, and the use of unstandardized writing prompt and script evaluation guide, which may have influenced generalisability of the results, this study yielded very interesting findings and provided insights into the effects of orthographic depth on writing proficiency. Zambian learners seem to have experienced fewer problems writing in English despite reading challenges posed by its orthography's idiosyncracies (Kaani & Joshi, 2013). However, there is very limited variety in terms of vocabulary used. Children showed high reliance on a limited number of every day words in English than in their Nyanja samples, where there was more variety on vocabulary used. This is seemingly because of their familiarity with the Zambian languages in their every day conversations and play activities. Additionally, the observed marginal differences in spelling variations between the two languages was unexpected and counter-intuitive because one would have expected participants to find Nyanja words easy to spell due to the its orthography's relative consistence (Kaani, 2014; 2008).

This study has significant implications on policy to improve classroom practice. Thus, the curriculum should be drawn in such a way that it takes advantage of learners' proficiency in the mother-tongue by encouraging teachers to teach writing skills with what children know (using common everyday oral stories, folktales, etc.) to the unknown (transcribing this oral knowledge into print). This will lessen the cognitive burden on beginning writers as their main focus will be writing instead of the novelty of the narrative exposition at hand. In view of the above conclusions, cross-language research comparing the English language and other Zambian languages are needed to clearly determine the effects of orthographic depth on writing skill development. This future proposed research should be based on randomised controlled trials and also account for influences of teacher demographics, such as pedagogical content knowledge, and instructional strategies used to shed some light on the subject.

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APPENDICES

Appendix 1: Pupils' Nyanja writing characteristics

	Sentence structure and Spellings	**Main ideas**	**Supporting sentences**	**Paragraphing**	**Score for story (10)**
Ruth	Sentences have discernible structure with subject, verb, and object, but the spellings are incorrect.	No main idea sentence; sentences are standalone	No supporting sentences; sentences are standalone	No paragraphs; sentences are standalone	4/10 – story is not coherent
Nelly	Sentences have discernible structure with subject, verb, and object, but the spellings are incorrect. Most of the spelling errors are omission of nasal sound in medial position, e.g., */k/ with a c, kuyenda = cuyeda,*	No main idea sentence; sentences are standalone.	No supporting sentence; sentences are standalone.	No paragraphs; sentences are standalone.	4/10 – story is not coherent, but length suggests
Gift	Sentences have no discernible structure without subject, verb, and object.	No main idea sentence	No supporting sentence;	No paragraphs.	0/10, student has no idea about narrative writing.
Mark	Sentences have discernible structure with subject, verb, and object, and correct spellings.	No main idea sentence; sentences are standalone	No supporting sentence; sentences are standalone	No paragraphs; sentences are standalone.	7/10, story is not coherent, but all the sentences and spellings are well writing.
Jessica	Sentences have discernible structure with subject, verb, and object, but all spellings are incorrect.	No main idea sentence; sentences are standalone	No supporting sentence; sentences are standalone	No paragraphs; sentences are standalone	0/10 - student has no idea about narrative writing.
Robert	Sentences have discernible structure with subject, verb, and object, but the spellings are incorrect.	No main idea sentence; sentences are standalone	No supporting sentence; sentences are standalone	No paragraphs; sentences are standalone	4/10 – story is not coherent

Appendix 2: Pupils' English writing characteristics

	Sentence structure and Spellings	**Main ideas**	**Supporting sentences**	**Paragraphing**	**Score for story (10)**
Ruth	Sentences have discernible structure with subject, verb, and object, but the spellings are incorrect.	No main idea sentence; sentences are standalone	No supporting sentence; sentences are standalone	No paragraphs; sentences are standalone	4/10 – story is not coherent
Nelly	Sentences have discernible structure with subject, verb, and object, but the spellings are incorrect. Most of the spelling errors are omission of nasal sound in medial position, e.g., */k/ with a c, kuyenda = cuyeda,*	No main idea sentence; sentences are standalone.	No supporting sentence; sentences are standalone.	No paragraphs; sentences are standalone.	4/10 – story is not coherent, but length suggests
Gift	Sentences have no discernible structure without subject, verb, and object.	No main idea sentence	No supporting sentence;	No paragraphs.	0/10, student has no idea about narrative writing.
Mark	Sentences have discernible structure with subject, verb, and object, and correct spellings.	No main idea sentence; sentences are standalone	No supporting sentence; sentences are standalone	No paragraphs; sentences are standalone.	7/10, story is not coherent, but all the sentences and spellings are well writing.
Jessica	Sentences have discernible structure with subject, verb, and object, but all spellings are incorrect.	No main idea sentence; sentences are standalone	No supporting sentence; sentences are standalone	No paragraphs; sentences are standalone	0/10 - student has no idea about narrative writing.
Robert	Sentences have discernible structure with subject, verb, and object, but the spellings are incorrect.	No main idea sentence; sentences are standalone	No supporting sentence; sentences are standalone	No paragraphs; sentences are standalone	4/10 – story is not coherent