Narrowing the Language Gap for Africa's Learners: A Pathway for Change Model

Leila Schroeder
SIL

Abstract

Even a quick glance at international data reveals something troubling: There is an increasing economic and educational gap between Africa and the rest of the world. If we look just a bit deeper, we find that economic and educational stagnation may simply be the inevitable outcomes of broad educational failure for millions of rural African children. Behind that educational failure is a "gap," a chasm that most African learners must leap in order to succeed academically to benefit the entire continent. I suspect it is linguistic to its very core.

This research follows a backward trail all the way from university level to the point of entry for early grade teaching across Africa. It asks three questions: 1) Why isn't L1 reading instruction giving students success in the primary school years? 2) Why are students not gaining adequate oral L2 for use as medium of instruction beyond primary? And 3) How might a reading transfer curriculum close the final gap, providing meaningful access to L2 textbooks for all African students? As these questions are answered by current research, the findings suggest solutions. I propose a series of three language-related strategies aimed at closing the education gap—a yawning chasm—for all African youth.

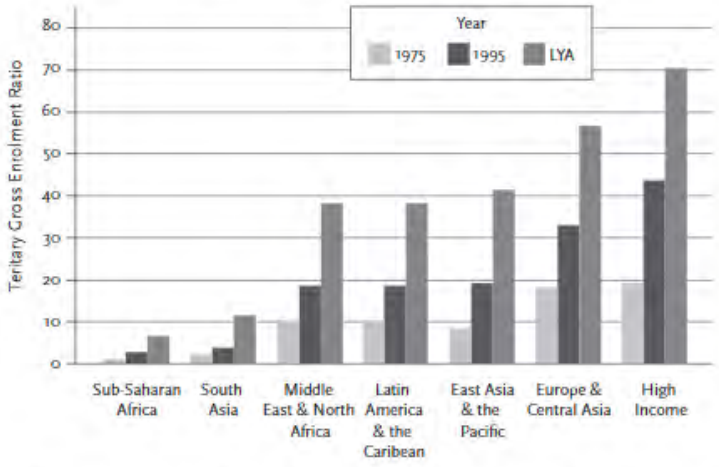
Keywords

language transfer; orthographic distance; linguistic distance; equal access to learning; L1 reading; late exit models; disempowerment; oral language development

Illiteracy, academic exclusion and poverty

Enrollment rates for higher education in Sub-Saharan Africa are by far the lowest in the world, at 6% (Bloom et al., 2014). The causal connections between lack of education and poverty have long been acknowledged (USAID, 2018; World Bank, 2011). These connections are certainly believed by the parents of those children entering sub-Saharan Africa's education systems continent-wide, but they don't seem to understand the power of their own languages to enable learning (Muthwii, 2002). Educational impoverishment is visible to researchers in three areas: enrollment rates for higher education, academic research across the continent, and a failure to use the languages people speak in children's education. Trudell, Schroeder & Mercado (in press) carried out an extensive desk review of multilingual education programs on the continent in order to propose any changes which could lead to long-term academic success for millions. This article

Figure 1. Sub-Saharan Africa falls further behind.



Note: These data are the most recent available for each country, a range between 2005 and 2010, with most countries supplying data for 2010. We then aggregated these data for region.
Source: World Bank (2013).

Citation: Schroeder, Leila. (2020). **Narrowing the Language Gap for Africa's Learn**ers: A Pathway for Change Model. *Global Education Review*, *7* (3), 1-21.

follows up on the data gathered there, suggesting a series of three macro strategies which could lead to equal access to quality education for millions of young people.

1.1 Limited access to higher education

Enrollment rates for higher education in Sub-Saharan Africa have been found to be the lowest in the world (Bloom, Canning, Chan & Luca, 2014; Gandhi, 2018).

Low enrollment in higher education and a lack of academic research papers (Bloom et al., 2014) suggest a widespread disempowerment of thousands of language communities across Sub-Saharan Africa. Sub-Saharan Africa contains a populace of over 611 million people, speaking 2,368 languages (Eberhard, Simons & Fennig (eds.). 2020).

There is a language connection behind these indices, and it can be tracked back from university level to early primary classrooms. UNESCO data on urban vs. rural access to education is a strong ethnolinguistic indicator of unequal access to higher education for linguistic minorities. The impact of linguistic disempowerment shows up quite clearly in the articles of several Africans. Kenya (in East Africa) provides one example, described in the following paragraphs.

Kenya's ethnic groups have historically resided in certain counties, all "ethnically based" (Taaliu, 2017). In Kenya, colonizers settled first in the Gîkûyû area near Mt. Kenya, good for growing coffee, tea, and cotton. A regional imbalance for equal access to education began there, and its impact is still felt at every level, from primary through secondary school and university. Taaliu found that Gîkûyû, which represents an ethnic and linguistic group comprising 17% of Kenya's population, enjoy 23.6% of all jobs in the public universities and colleges.

Ten ethnic groups and their languages take up 96.3% of the total workforce in Kenya's public universities (National Cohesion and Integration Commission, 2016). This means that 36 other language groups are often geographically isolated from higher education. Of Kenya's 47 counties, only 20 have a public university or constituent college. Seventeen do not have a single one. Nairobi alone has five major public universities, so the linguistic isolation of the most rural language groups is obvious.

1.2 Secondary level attendance in minority language areas

Equal access to secondary education for these groups is of course limited as well. Students are admitted to high school after sitting for the Kenya Certificate of Primary Education (KCPE) exams, following seven years of instruction primarily using the English language. It is predictable, then, that students admitted in county and sub-county secondary schools "have fewer marks" on those exams than those admitted at the prestigious national secondary schools (Education for All, 2019). The exam process ultimately leaves those same students unable to enter national level universities as well.

1.3 Limited enrollment and attendance in rural primary schools

The trail of disempowerment can be followed all the way back through secondary to primary level education, where 88% of children ages 6-14 are not gaining minimum proficiency levels in reading. Secondary enrollment is also disproportionately low in rural, ethnic minority areas, paired with lower attendance rates and higher dropout rates. Predicting these indicators of disengagement, primary school success rates are lower in rural areas, which house a large

number of linguistic minority communities (Heugh, 2011). Another clue to the importance of the language issue can be the hardest to measure: a true passion for learning. Disengagement may go deeper than the traditionally embraced concepts of African formal education and be invisible to the authorities who forbid the use of learners' languages in classrooms (Clegg & Afitska, 2011 Since data-gathering is no substitute for children's experiences, I include visual data here, gathered during a series of Maasai school visits where grade 2 children were so delighted with their L1 reading curriculum that they grabbed the teacher's Big Book when he left the room and tried to read it for themselves. Grade 1 children also appeared very proud of what they were learning. Our L1s, the first languages we hear and speak, often run as deeply as our worldviews and convey human emotions automatically.

Figure 2

Grade 2 Maasai students grab a teacher's book to try L1 reading for themselves

Figure 3

Grade 1 Maasai school children enjoy using their language.

More importantly for this research, L1 is a proven vehicle for children's intellectual development (Baker, 2006; Caldas, 2014; Dutcher, 1995).

A Pathway for Change

Gillies (2014) Envisioning a research-based curricular sequence from preschool through upper primary school (Heugh, 2011), I propose that most secondary school students would truly understand their textbooks and be able to write comprehensible essays in the L2 of their countries if given enough exposure to these three language-based knowledge-and-skill sets and the learning strategies listed in Table 1.

A hoped-for result would be lasting change to the trends described earlier, resulting in greater enrollment in national or international institutions of higher education. The harder-to-measure impact of equal access to higher education for young representatives of thousands of African language communities just might also enable those language communities to use their languages and cultures to support their education and development goals, making sustainable poverty alleviation possible.

Table 1
The Big Picture

Project Description	Long-Term Indicators	Sources of Verification	Assumptions
Overall objective: A pathway to develop children's L1 and L2 skills as they learn. Students will use L2 textbooks well once they begin secondary school.	Countrywide results: regional national exam averages, secondary school entrance stats and registration for colleges and universities	National education institutions at secondary and university level, UNESCO data, internationally accepted exams	National political and educational infrastructures will commit to and strategically support these changes which involve adjustments in multiple levels of teacher training, policy, and practice.
Purpose: All African children can access learning via a language they speak (and read) fluently.	Learners grade 1-7 learn all subjects via their L1. Learners grade 1-7 study oral L2. Learners grade 8 transition to reading and learning via L2.	See three charts of phases, in Figures 4, 5 and 8.	National achievement scores of learner cohorts completing grades 1-7 +2 weeks of grade 8 are significantly higher than average. At end of secondary school, average scores on national exams show significant improvement.
Results: Raised exam scores, acceptance into institutions of higher education, raised employment figures.	Learners progress through the primary grades, displaying superior knowledge, skills and attitudes (KSAs) for all subjects, including oral L2.	See objectives and results for each phase	Teachers support the program, parents support the program, politicians, Ministries of Education (MoEs) and teacher unions support the program.

The author will show that learners' first language (L1) is currently minimally used to develop children's cognitive and communicative abilities, including literacy. While normal intellectual development takes place through a child's language, if that process is suppressed daily in schools, even the ability to acquire an L2 suffers because that L1 hasn't been developed enough to strengthen oral communication via a second, unrelated one (Milligan, 2016).

Third, even in those coveted L2s, English and French, literacy isn't really mastered by many, despite the fact that L2 textbooks are usually the only ones used in schools. When African children reach the secondary level, few in grades 1-6 can decode and comprehend English well (Walter, 2007). This means they are unprepared to use L2 textbooks for learning, as indicated by comprehension rates between 30-40% by grades 5 and 6.

Trudell, Schroeder & Mercado (in press) examined twenty five countries, only to find four in which African multilingual education (MLE) programs had sufficient power to produce students who could leverage their biliteracy skills to succeed academically in secondary school or to enter universities. Of those four programs, only one continues to be supported and implemented today in Ethiopia (Aaron, 2019; Bender, personal comment with permission, 2020; Heugh & Skutnabb-Kangas, 2010; Ilboudo, 2010).

Researchers looked for factors in the success of the aforementioned four programs. Factors they were able to identify and study were (a) years of learning via L1; (b) L1 use for textbooks; (c) adequate teacher training; (d) years of L1-medium instruction across the curriculum, except for oral L2 learning; (e) delay of L2 reading instruction until L1 literacy is established; (f) adequate oral L2 skills development; (g) L2 academic skills systematically developed; and (h) L1 as an

examinable subject. One singular factor was present in all of the programs with successful long-term outcomes: number of years (i.e., 6-8) with L1 as medium of instruction (Trudell, Schroeder & Mercado, in press).

They also identified five "less successful" programs for similar analysis. Most were missing the features identified above. Common weaknesses identified by data-gatherers across Africa were inadequate teacher preparation for MLE (Fafunwa, 1978), lack of ESL curriculum development, and lack of government support (Trudell, Schroeder & Mercado, in press).

This paper follows those findings with three causal questions regarding long-term success/failure, and proposes a series of solutions. All revolve around the use of language in education.

1. Why isn't children's L1 reading instruction giving learners long-term success in school?

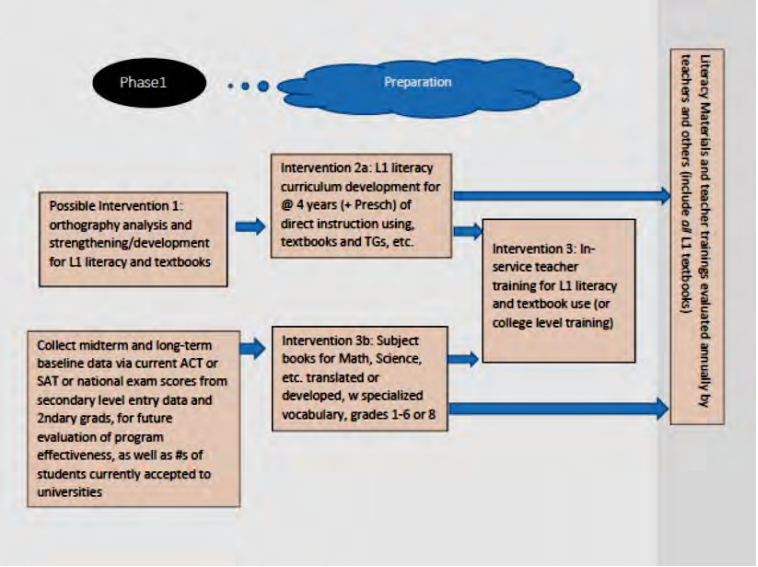
Context 1.1: Minimal time given to L1 literacy

Across most of sub-Saharan Africa, if L1 reading is taught at all, children aren't getting enough class time to use it for learning (Walter, 2003), for cognitive development and self-expression, or to gain true and lasting fluency and comprehension of texts, even though "first-language literacy is essential to second language reading" (Koda, 2005). Local, institutional, and infrastructure support for the above is needed. Immediate and extended outcomes include children reading L1 well, and learning and communicating content area concepts and vocabulary via their L1 so that their learning is not linguistically impeded but facilitated.

Phase 1 in an intervention should involve the following activities and intermediate outcomes (see Figure 4, which depicts the sequences of activities and their expected results).

Figure 4

Solution: Phase 1



Phase 1 activities:

- Preschool pre-reading curriculum development in L1; L1 reading curriculum development, alongside
- use of L1 as medium of instruction for decoding accuracy, fluency, and comprehension skills
- teacher capacity development for reading instruction, and
- L1 textbook development for subjects, grades 1-7.

Assumption #1.1. Strong, research-based reading methodologies are already in use in some places and can be applied consistently to this context, so essential components of literacy skill development are present from pre-reading onward. The most effective, research-based approaches must be applied in this phase. The following skills, either for alphabetic or alpha-syllabic scripts, must be taught: (a) phonological awareness; (b) phoneme-grapheme recognition; (c) recognition of all taught letters/graphemes

within the context of L1 syllables and words; (d) ability to identify those syllables within words, blending syllables left to right for quick whole word recognition; (e) various comprehension skills; (f) various fluency skills; (g) spelling skills; and (h) age-appropriate creative writing ability (Seymour, 2006).

L1 reading instruction should guide learners to recognize chunks larger than individual phoneme/graphemes, because research has substantiated the effectiveness of syllable recognition for decoding fluency. This certainly applies to African languages, often having metered syllables and distinctly enunciated vowels.

Recognition of a larger "grain size than the single letter will later facilitate transfer to L2 reading, with European orthographies" (Fender, 2008). These inputs can significantly affect outcomes of readers in the final phase of this plan. Such recognition of syllables as pronounceable chunks can benefit African literacy significantly. Strategic syllable practice doesn't violate the alphabetic principle but uses it to full advantage while avoiding awkward and slow phoneme "blending" in favor of simple, pronounceable consonant and vowel substitution in syllables (Lee, 1982; Schroeder, 2013). Instead of awkward isolation and "blending" of consonants, consonant substitution in simple rhyming activities does the "isolating."

Assumption #1.2. Adults' language attitudes have played a central role in implementation of MLE programs in Africa. In "The Impact of Language Policy and Practice on Children's Learning: Evidence from Eastern and Southern Africa," Barbara Trudell says, "Education stakeholders and institutional partners must think together and act collaboratively in order that all the crucial features of quality education, including language instruction, may be successfully addressed" (Trudell, 2016, p.120). For this reason, there must be coordinated high-level support from national-level African institutions for full L1 literacy skill development, with curricula which develop spelling and creative writing, using a variety of literature.

Assumption 1.3. The educational infrastructure would also need to recruit sufficient numbers of L1-speaking teachers, and place them strategically in all of the primary grade classrooms affected.

2. Why are Students not gaining adequate oral L2 skills for use beyond primary level?

So much of the potential for success or failure, whether we analyze exams, matriculation rates, or employment stats, hinges upon mastery of L2 literacy and vocabulary. Below is a summary of the challenges the authors found in children's L2 acquisition across the continent.

Prominent observations from multiple researchers include the following: (a) not enough time for L2 language, literacy, and content; (b) lack of teacher proficiency in speaking the L2; (c) lack of teacher proficiency in teaching L2 language, literacy, and content; (d) lack of curriculum planning for teaching L2 skills; and (e) lack of materials to support L2 reading and content acquisition (Trudell, Schroeder & Mercado, in press).

A cross-cutting theme through each of these observations is the issue of linguistic distance, which increases the difficulty of ensuring students have adequate proficiency in the dominant language.

Context 2.1: Language distance

The term "language distance" implies geography. The literal distance is certainly measurable, with an ocean between the North American continent, and a distance of 9,881 km

by air between sub-Saharan Africa and the British Isles. The distance is also great in terms of numbers of people speaking English (or French) in Africa.

American teachers explicitly teach less than 400 new words per year, following curriculum guidelines (K. Walter, 2005). The list is small because the curriculum developers expect children to acquire thousands of words naturally, in their environment. On the other side of the Atlantic, African children aren't immigrants, so they do not see or hear English used outside of schools, unless they live in urban areas.

Their languages are as distant from ours as the Western reader can imagine! The "linguistic distance" (Koda, 2005) is discernible in the language family to which an African language or a European language belongs. In the United States, most immigrants receiving ESL instruction are Spanish-speaking. Spanish, like English, is Indo-European, from the same language family as English or French. African languages are grammatically and phonologically very different from both English and French. The challenge of L2 acquisition, again, is far greater in Africa than it is in the United States, the United Kingdom, or France because Indo-European grammar and phonology and writing systems are very different from theirs.

A grammatical example of the distance for Africans is the important role of tone for more than half of Africa's languages. For many, tone signals whether a word is subject or object of a sentence, singular or plural, past or future (Schroeder & Schroeder, 2016.). Another grammatical example of the distance is that of affixation. African languages not only use prefixes and suffixes, but also infixes to convey all kinds of meaning, including probability, causation, plurality, tense, or intentionality. Westerners primarily use individual words to convey these concepts. Bantu languages, on the other hand, spoken by nearly 240,000,000 Africans (Nurse & Philippson, 2003), contain verbs with dense grammatical information (Schroeder, 2013). For example, <a-li-ni-pik-ia>, contains the verb root -pik-, and includes a person marker, a tense marker, an applicative (like an indirect object), and a verb-final mood marker.

African languages contain several examples of phonological distance. For instance, a single consonant may be pronounced as a distinct syllable, and that syllable may be an auxiliary verb or a pronoun. Other consonants, unlike our consonant clusters, contain consonant sounds pronounced simultaneously rather than sequentially, such as Dagbani <gb>, <kp>, and <ŋm> (Pazzack, 2013). Even melodies or individual tones distinguish meanings in over half of Africa's languages. For the Maasai, tone distinguishes singular and plural nouns, negativity or positivity in commands, and identifies the subject and object in sentences (Payne, 2012).

The phonology of English also makes it "distant" from African languages. Consonants are more frequent than vowels in the average English word, but this is not the case for most African words. Count the vowels for the same Swahili and English words, in bold:

> Examples here from Swahili: kuku fikiri kuketi uende taka (13)
>
> The same words in English: chicken think sit go (imp.) want (6)

Context 2.2: Lack of curricular planning for second language acquisition

We have established that the need for strong oral L2 curricula is very high across the continent. English is rarely explicitly taught to children as a second language beyond Ethiopia and Eritrea, and the importance of teaching it (listening, speaking, reading, and writing) in the

content areas is often ignored (Uys, M. et al, 2007; Kembo & Ogechi, p. 104; Orwenjo et al., 2014. There is plenty of evidence supporting use of well-developed curricula, though. Teaching an L2 orally, with a focus on vocabulary development, syntax, and grammar has been shown to significantly contribute to reading success in that L2 (Lee & Schallert, 1997).

A reality anywhere in the world where an L2 is a foreign language to most of the population is that learners need plenty of time to acquire vocabulary and grammar and the phonemic awareness required for comprehension (Anthony et al., 2009). Kelly Walter (2003) assessed the academic readiness of Eritrean children who had experienced L1 as the medium of instruction through grade 5. She studied all the English-language textbooks for content areas, beginning with grade 6.

Walter compared data from the Eritrean National Reading Survey and the vocabulary counts from the curricula of grades 2-5 and grade 8. The National Reading Survey provided results on vocabulary mastery and reading comprehension from a sample of students in each language group for grades 2, 3 and 5. Her findings, using relevant correlations, word counts, density and frequency measures, showed clear evidence that the material in the grade 6 curriculum was beyond the level that grade 5 students had attained in relation to vocabulary (Walter, 2003).

Walter's analysis focused on vocabulary used in grade 6 curricula and related words used in the grades 2-5. Results showed a large number of words which would be completely new to grade 6 learners. Clearly, they would be unprepared to master thousands of English words for only two subject areas. Her conclusion was that 75.9% of the word families used in grade 6 had never been presented in any formal way in the earlier grades. Not only that, but it is clear that not all of the word families that were presented in grades 2-5 had actually been mastered.

Context 2.3: Lack of Teacher Proficiency in using the L2

Some attempts at getting teachers ready to teach oral English have been met with difficulty (Benson et al, 2010) due to the vastness of the language chasm , yet "everyone" sees the need for access to all the economic and academic doors English opens for African children (Wolff, 2006). Despite the desire for English communication skills in schools, teacher capacity can't be assumed. It must be built, step by step. ELIP, Early Learners International Preschool, was a program in Ethiopia which endeavored to do this (British Council, 2019).

Teachers in Canada, the United States, Australia, New Zealand, and the United Kingdom are usually L1 speakers of English. But we can't make that assumption about a continent of over 2,140 living African languages, where relatively few speak it, either as a first or second language according to Eberhard et al. (2019). Population percentages are taken here from five African non-Francophone countries: Kenya, with 6% of the population speaking English as an L1; Ethiopia, .2%; Nigeria, 32%; and Uganda, 7%. The case among rural public school children is of course more extreme than that of their teachers.

Further evidence of the L2 "distance" teachers experience shows up in several countries studied. Ugandan teachers had trouble combining advanced subject content with developing students' English (Orwenjo et al., 2014). In Kenyan coastal schools, researchers observed that there was an emphasis on oral language skills, but limited opportunities for students to interact with text, and deficiency in teaching letter-sound relationships in English (Dubeck et al., 2012). Some Kenyan teachers did not teach English phonics at all, because they

didn't remember it from teacher training (Dubeck et al., 2012). Tanzanian secondary teachers believed there should be in-service training so they could improve their teaching approaches. Primary head teachers also believed that in-service courses for English teachers would help (Qorro, 2006). Researchers also felt that Namibian grade 4 teachers needed additional training in bilingual teaching (Wolfaardt, p. 2005).

Finally, though the need for L2 instructional training is widespread, there is already evidence that such training makes a big difference in student outcomes. South African teachers who received coaching in English as a second language had students with better English listening comprehension and English vocabulary (Kotze et al., 2018).

A realistic assessment of the "language distance" should be the first step toward bridging the gap. Now that the need for oral L2 instruction in many African public schools is obvious, we can examine the effectiveness of such programs in the rare cases where they've been implemented.

Context 2.4 tested and proven prototypes for something better

The Ile-Ife experiment in Nigeria gives much hope for a heavy emphasis on oral English before learners are exposed to it in writing:

> One of the major responsibilities the English teacher had was that of ensuring that the correct staging of the learning process was adhered to. For example, the Project had the policy of extensive oral exercises to promote the functional use of oral English and to prepare pupils adequately for reading with good comprehension. But, because reading normally started a few months earlier in the average primary school than was recommended on the Project, a great deal of pressure was brought by the parents on the teachers, for reading to begin at the usual time. Teachers had to be encouraged by the supervisors to abide by the Project policy until the extended oral language scheme could be proved superior. When the first set of pupils eventually began to read and they proved to be efficient and avid readers, the parents relaxed their pressure and the teachers felt more confident to continue with the scheme (Fafunwa, 1978, pp. 88).

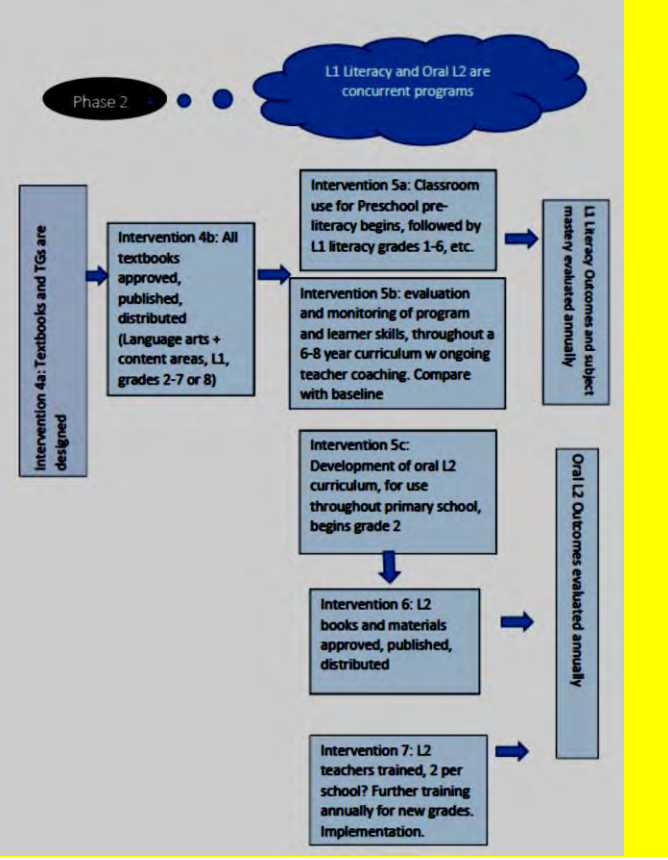
Crosslinguistic research shows that competence in the target language accounts for 30% of L2 readers' proficiency (Lems et al., 2017), which is larger than the 20% of proficiency that L1 literacy accounts for, showing how critical it is that learners have strong L2 language skills before they read the L2.

Droop and Verhoeven (2003) note that "because reading instruction strongly builds on oral language proficiency, second-language speaking children may…experience a considerable gap" (p.1). We have described the "gap" between native English speaking countries and African ones as very large indeed. Below we explore current attempts to narrow it for primary school children, with the hope that by the time they reach grades 6 or 7 and transition into English only as medium of instruction (MoI) in grade 8, they may continue learning in all areas of a secondary curriculum.

Two kinds of capacity building are essential: 1) proficiency in oral English, and 2) ability to teach English reading and specialized English vocabulary during the Primary school years. So Phase 2 should involve the following activities and intermediate outcomes shown in Figure 5.

Figure 5

Solution: Phase 2



Phase 2 key assumptions. Because of the phonological and orthographic distance of English and French from all African languages, it will be important that no English reading is introduced while children are still learning to decode and process their L1 orthography (classes 1-5), avoiding interference from conflicting orthographies. Implementers will insist upon adherence to the plan to delay English reading until a strong transfer curriculum can be introduced (Fafunwa, 1978), and until enough oral English grammar can be mastered to support reading comprehension. Kusumarasdyati and Ramadhani (2018), while recognizing that L1 reading skills promote successful reading in an L2, note that "reading teachers should ensure that the learners' FL [oral] proficiency passes the threshold level to facilitate the learners' reading comprehension" (p.5). Many researchers have reached that same conclusion: Learners need time to master an L2 in order to read it with comprehension. Research support for Cummins (1976) and Toukomaa & Skutnab-Kangas' (1977) Threshold Theory is evident in the literature (e.g., Bialystok, 2001; Clarkson & Galbraith, 1992; Walter, 2003). As competence in two languages increases, so do the reasoning skills for the content areas, such as mathematics. Cummins' Threshold Hypothesis seems to be borne out in the decades of research carried out around the world by the above mentioned researchers and many others.

Phase 2 activities. ESL curriculum development begins with class 2. Teacher capacity is developed via college-level and/or in-service training (preferable from British trainers). Classroom ESL instruction begins at class 2 and continues through class 7.

Phase 2 outcomes.

- Teachers or L2 specialists capable of involving children in learning and using English to understand and express themselves in L2.
- Children progressing in mastering the L2 orally.
- Their vocabulary and (oral) awareness of phonemic contrasts between 12 English or 16 French vowel phonemes, including 4 nasals (Collins & Mees, 2013).

3. How might a reading transfer curriculum provide meaningful access to L2 textbooks for all African students?

If a strong, fully developed L1 reading program has been undertaken, and the oral L2 has been taught well over several years, students will have the vocabulary and grammar

background they need, and away they go toward L2 reading.

Research by Laufer (2003) suggests that adult L2 readers must master a base vocabulary of 3000 word families or about 5000 individual word form, in order to reach a threshold level of reading ability. Below this level, a reader cannot fully comprehend a typical adult text. At the time of their research, conducted with adult English learners, if a good L1 reader knows around 5000 words in English, he/she will be able to perform well enough to achieve a minimum passing grade on a comprehension test, with 56% comprehension as the standard.

Context 3.1: There is a big orthographic ***distance between the colonial languages'*** *writing systems and those of most African languages*.

Orthography researchers and psycholinguists agree that "transfer can be defined as automatic activation of well-rehearsed first-language mapping procedures, triggered by (oral) second-language input" (Koda, 2005). However, African readers face another hurdle to this "automatic" activation.

For most recently developed writing systems, there is a fairly close matching of symbols and sounds. English and French orthographies are not transparent, shallow or consistent, because those languages used a Roman alphabet to represent their sound systems, and that alphabet did not have enough vowel symbols to represent all their vowel contrasts. This means that children who have developed fluency using a system with fairly close one-to-one correspondence between symbols and sounds must now look at a larger grain size within words and memorize many spelling patterns. In all cases of the example below, the reader must look beyond a simple vowel symbol to a letter or letters which follow it in order to access pronunciation and meaning.

Figure 6

Grain sizes necessary to indicate English short vs. long vowels

Man	main	mane	Champagne
Pan	pain	pane	Campaign
Ran	rain	lane	Reign
Plan	plain	plane	Feign
can	Cain	cane	Duquesne
List 1.1	List 1.2	List 1.3	List 1.4

Orthographic processing has been shown to contribute to reading fluency for students of either high or low ability, and for reading accuracy in good readers (Cardoso-Martins, et al., 2019; Probert & de Vos, 2016). For readers of African languages to transfer to a very deep and inconsistently spelled orthography, they will need to make some changes in their decoding and word recognition strategies.

Rakhlin et al. (2019) noted that "this finding [that readers will need to use new reading strategies] suggests that interventions, particularly for students past the initial phase of reading instruction, should include training for new orthographic processing skills and unitized reading to a much greater extent than is currently done." These new readers of English or French must now balance their decoding prowess with attention to context clues and memorized spellings for both meaning and pronunciation, using a sub-lexical route to reading (Probert & de Vos, 2016; Randall, 2005).

English has 12 simple vowel phonemes (DSF Literacy Resources, 2019) and several complex syllable onsets and codas. Expected problems include consonant clusters, short and long vowels distinctions, and substitution of certain vowel letters, and word-final clusters which often indicate grammatical meaning, such

as tense or plurality (Randall, 2005). Presumably the harder vowel grapheme combinations would follow simple ones, i.e., <ay>, <ai>, <ee>, <ea>, <oo>, <oa>, <aCe> and many more (Schroeder, 2007). For more information, see Cook, 2004; Johnston et al, 2009; Bear et al, 2012; and Tyner, 2012.

A significant orthographic feature of English is the fact that virtually none of the vowel letters and sounds of English (less significant for French) match the sounds those letters are given in their L1s. Maasai, a Nilotic language, is an example of this. The chart below compares the way 5 of our 12 English vowel sounds are written, with the symbols used to write those sounds in the Maasai language, which has many more distinct vowel sounds, including tone and length, so this chart gives only a partial example of the contrasts between the ways African languages are written, and English writing (Payne, 2008).

Figure 7

English vowel sound/graphemes vs. Maasai vowel sound/graphemes

English vowel	Maasai vowel
I *or iCe*	ai
o	ou
ay *or* ai *or* aCe	ei
uCe (cute)	iu
E *or* ee	ii

For orthography-related reasons, I suggest a combination of two simultaneous pedagogical approaches: a) Treat the English or French orthographies as if they were simple and regular at first, using English CVC short-vowel words in rhyming patterns to build confidence in the decoding abilities they already possess; and b) using global techniques, help L1 readers to transfer their decoding skills to a deeper, more complex writing system such as English or French, while also helping them quickly recognize frequent words which are often grammatical but not simply decodable.

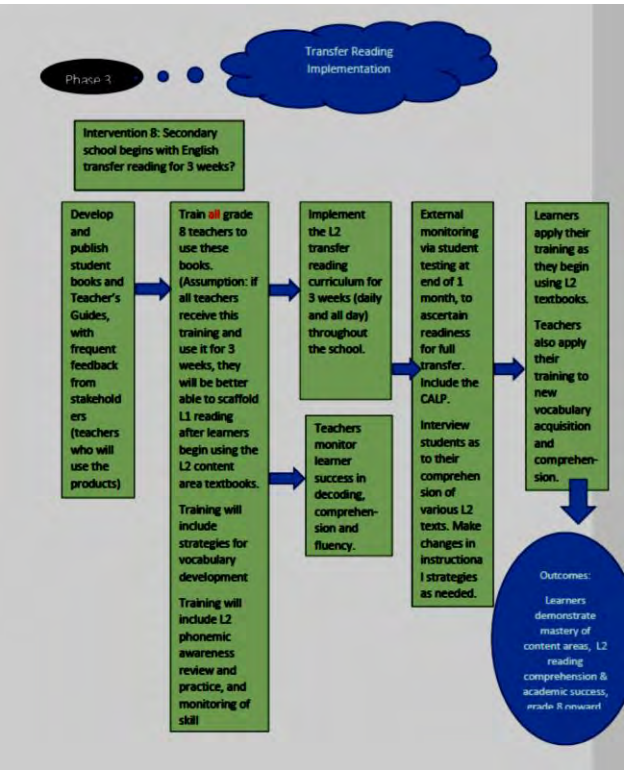
Optimal age for transfer is around age 12-14, by which time children are strong readers of their own language (Koda, 2008; Stephen L. Walter, 2013) and can understand the L2 enough to gain metalinguistic awareness during L2 reading study (Koda & Zehler, 2008). A good placement for literacy transfer teaching is at the start of "upper primary" level or "secondary school" so learners and their teachers get off to a running start with a new orthography, all of them understanding the unique orthographic features of the L2.

Of course, if learners have truly become strong in L1 literacy skills, and have learned oral English fairly well, the job will no longer be as daunting as it sounds. The chasm will have narrowed considerably. The author proposes that if children are given enough time to really read for meaning with fluency, using L1 textbooks for Mathematics, Social Studies, and Science, etc., they will have developed strong tools for comprehending and analyzing what they read. This will reduce the effort required to learn via a second language such as English when they reach secondary level.

Phase 3 activities and outcomes, shown in Figure 8 below, should reflect this context.

Figure 8

Solution: Phase 3



Phase 3 key assumptions.

Assumption 1. Most students, nearing entry to grade 8, have been able to learn via their L1, and can now read content area textbooks with comprehension and fluency.

Assumption 2. Most of these students, nearing entry to grade 8, will have a degree of L2 oral fluency which approaches level 3 or 3.5. They will have mastered most content area concepts with adequate L2 technical vocabulary.

Assumption 3. These learners will have at their disposal a number of cognitive skills including phonological and morphological awareness, but these are mediated by the structures of their L1 and the target L2. The way words are expressed visually in African languages differs quite a bit from the way L1 words are encoded: clear sound-symbol relationships vs. unique whole-word representations going beyond a simple sound-symbol representation (Schroeder, 2013; Scholfield & Chwo, 2005). Recognition of L2 prefixes, suffixes and grammatical words will play an important part in access to meaning (Koda, 2005; Bear et al., 2012).

Assumption 4. Learners are accustomed to orthographies which encourage dependence upon decoding skill alone. They will now need immediate whole word recognition of hundreds of frequent homophones such as <sea> vs, <see>, <slay> vs. <sleigh>, <to>, <two> and <too>, <would> and <wood> (van Berkel, (2004), as cited in Cook & Bassetti, 2005 p. 109).

Assumption 5. Learners will need to recognize many spelling patterns for the same sounds, within different whole word and syllable patterns (Seymour 2006; Ziegler & Goswami, 2005), such as the different sounds of <y> in <cry> vs. <baby>, as well as <y> as a constituent in diphthongs such as <say>, so an essential strategy will be recognition of spelling patterns/vowel sounds which are letter combinations, such as <at> vs. <ate>, <et> vs. <eat>, and <cut> vs. <cute>.

Assumption 6. Learners are at a threshold for transferring their L1 reading skills to L2, though the L2 orthography will require adjustments of their decoding and word recognition strategies (Probert & de Vos, 2016; Frost & Katz, 1992).

Assumption 7. Learners will benefit, as they did for L1 reading, from attending to grain size (Goswami, 2008; Bear et al, 2012; Rixon, 2011), patterns within words and syllables in English. They will have mastered syllable recognition with African words, but for English reading, they will need to distinguish a multiplicity of spelling patterns, as shown in figure 6. Since they now speak and understand English, the reading transfer will not take long. Rhyming patterns (Figure 9) can leveraged for either English or French (Schroeder, 2016).

Figure 9
Rhyming drill used to teach English syllable patterns

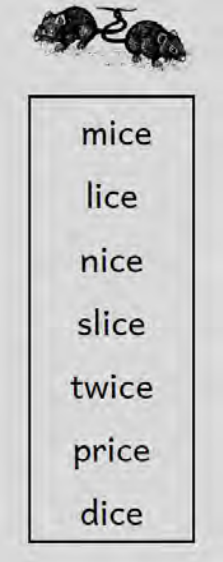
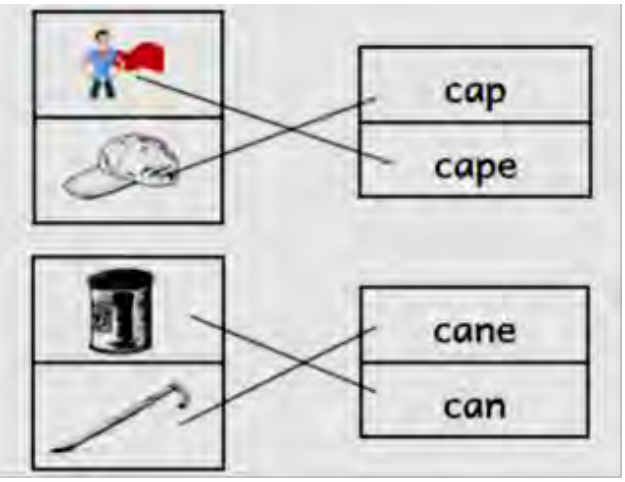


Figure 10
Matching activity used to develop vowel discrimination



Assumption 8. Learners will also need practice distinguishing visually what they have already learned to hear and use of the spelling patterns studied at the ends of monosyllabic words (Seymour, 2006), shown in Figure 6 from Schroeder (2016). Make the European orthography seem regular at first, using rhyming patterns like those in Figure 1, because the strength of most African L1 orthographies is their regularity, or transparency. Research shows that the "slower average rate of learning to read English" is caused primarily by its orthographic inconsistency (Ziegler & Goswami, 2005).

Assumption 9. Because many frequently occurring English words are spelled irregularly, recognition of them, especially the grammatical ones, will be presented in a context which forces the reader to memorize their unique appearance. For example, some prepositions are regularly spelled, such as <in> and <on>. But <to> is not. Some frequent verbs are regularly spelled, such as <sit> and <jump>. But <come> and <walk> are not. Some nouns are regularly spelled, such as <pig> and <pit>, but <shoe> is not. It does not rhyme with <toe> or <hoe>! Sight words, which are printed words stored in memory by the reader that can be read immediately without decoding strategies (Bear, et al., 2012), should be introduced strategically and gradually.

Assumption 10. The L2 transfer curriculum will enable the teacher to self-monitor comprehension and study skills as they are applied to grade 8- and 9-level fiction and nonfiction texts.

Assumption 11. Many grade 8 teachers will need some oral L2 retooling to ensure that their pronunciation accurately represents all the vowel sounds of the L2 (Smith et al, 2012; Goswami, 2006). Phonological awareness and pronunciation scaffold auditory discrimination and comprehension of words such as <cat> vs. <cut> and <caught>, and a strong L2 academic vocabulary allows teachers to communicate the content areas well.

The "distance" is great on many levels, yet the gap can be narrowed considerably via

expert teachers and strong curricula. The entry point is learners' L1, the ideal vehicle for developing their cognitive abilities, alongside 5-6 years of oral L2 instruction. Then a linguistically and orthographically focused transitional reading curriculum should close the L2 reading gap. This sequencing of curricula should allow class 1 children to focus on reading their L1 while they continue developing their cognitive skills via their language. It also allows class 1 teachers to focus on one new, highly significant and complex pedagogical strategy: teaching L1 reading, and using that language all day as L1-medium textbooks are used for teaching the other subjects. Oral L2 instruction, according to this Pathway of Change, begins in grade 2 and continues for thirty minutes to one hour daily through grade 7, for six years.

Phase 3 activities. At the start of grade 7 or 8, use a transitional reading curriculum with four streams: (a) recognition of English vowel sounds and their spellings; (b) recognition of English morphology and English sight words; (c) use and review of existing oral ESL vocabulary; and (d) higher-level CALPS comprehension skills, using specialized subject vocabulary and concepts. This curriculum— if implemented for an entire school day for three weeks—could launch successful reading of an L2 which learners can already speak. If it is taught by teachers of every grade 8 subject, as though they were homeroom teachers of one class for the 3-week course duration, those teachers would know what their L2 readers are facing daily when they resume regular teaching of their subjects, and they will possess skills to continue developing new vocabulary in their students.

Phase 3 inputs. A transfer curriculum should develop the following skills: (a) vowel phoneme-grapheme mapping within syllables or words (Anthony et al, 2009) applying L2 phonemic awareness (Koda, 2005); (b) rhyming words with initial consonant substitution (Rixon, 2011); (c) ability to recognize and decode L2 consonant cluster patterns, especially for L1 transfer from Abugida scripts (Ahlberg, 2020); (d) a global approach to sight words, always giving them a meaningful context, because many frequently occurring words are grammatical in nature, with little pictureable meaning of their own (for, to, there, were, who, are, you); and (e) connected text with advanced comprehension activities and "reason to read," so that as learners continually encounter more abstract text, they will have the study skills needed.

Help will also be needed, due to the orthographic gap, in (a) activities including morpheme recognition with prefixes and suffixes (Kearns, 2015); (b) recognition of the larger grain size needed for vowel sounds via spelling skill development involving initial C substitution and patterns such as <ay>, <ai>, <eigh>, <aCe>; (c) context clue skill development using cloze and other activities (Ehri, 2005); (d) English vocabulary and grammar reinforcement games (visual), and (e) study skills honed with L2 texts adapted from content textbooks.

Phase 3 outputs. Outputs n this phase include a cadre of middle school students who can read their English textbooks with comprehension and problem-solving skill, and can express themselves well in writing. See below for longer-term outcomes.

4. What long-term outcomes should we expect?

African youth enter secondary schools able to use their English textbooks for learning. Measureable evidence include raised achievement scores, increased numbers of youth qualifying for enrollment in universities, and increased access to the job market after graduation from secondary school.

The author proposes a prototype intervention in an African country that includes

a complex Causal Pathway like the one described, which would be implemented in three phases of curriculum development, taking place throughout primary school and the start of grade eight. The midterm outcome of Phase 2 should reflect a large proportion of learners entering grade 8 equipped with reading and comprehension skills fully developed via their L1, L2 phonemic awareness (Koda, 2005), and vocabulary and communication skills that enable them to learn using L2 textbooks and study all secondary school subjects via the L2.

The goal beyond the scope of this program would be for youth to graduate from secondary schools able to use their academic skills for further learning, either formally or informally. Beyond that, language communities would eventually be equipped to use their languages to support their education and development goals, enabling sustainable poverty alleviation.

Dialog and partnership with government /education infrastructure representatives is assumed to precede the three phases described. It is assumed that there would be early opposition from various levels of power in the ministries of education and also from elected officials. If the populace of both rural and urban areas were truly awakened to the economic benefits gained by use of the L1 in education, they might insist upon change.

References

Aaron, M. (2018). *The feasibility of sustainable Obolo Bilingual Education in Nigeria*. (Unpublished PhD dissertation). University of Reading.

Ahlberg, A. K. (2020). *How abugida readers learn alphabetic literacy skills: The role of phonemic awareness in the transfer process in the Konso language, southwest Ethiopia*. JYU Dissertations 237. University of Jyväskyla.

Anthony, J. L., Schoger, K, Solari, E., Williams, J. & Zhang, Z. (2009). Development of bilingual phonemic awareness in Spanish-speaking English language learners: The roles of vocabulary, letter knowledge, and prior phonological awareness. *Scientific Studies of Reading*, 13(6), 535-564.

Aro, M. (2005). Learning to read: the effect of orthography. In R.M. Joshi & P.G. Aaron (Eds.) *Handbook of orthography and literacy* (pp.531-550). Lawrence Erlbaum.

Baker, C. (2006). *Foundations of bilingual education and bilingualism*. Buffalo, NY: Multilingual Matters.

Bear, D. R., Invernizzi, M., Johnston, F., & Templeton, S. (2012). *Words Their Way: Word Study for phonics, vocabulary, and spelling instruction*. Pearson Education, Inc.

Bear, D.R., Johnston, F. Invernizzi, M. & Templeton, S. (2009). *Words their way: Word sorts for syllables and affixes spellers*. Pearson.

Bender, P. April (2002). Notes from the presentation on Mali. Paper presented at the World Bank brown bag luncheon on indigenous languages in education. Retrieved from Global Reading Network interest group on reading comprehension, March 23, 2019.

Benson, C., Heugh, K., Bogale, B. & Gebre Yohannes, M. A. (2010). Multilingual education in Ethiopia: what assessment shows about what works and what doesn't. In K. Heugh & T. Skutnabb-Kangas (Eds.), *Multilingual education works: From the periphery to the centre* (pp.287-315). Blackswan.

Berg, R. Botha, S., Uys, M. & Walt, J., (2007). English medium of instruction: a situation analysis. *South African Journal of Education,* 27, 69-72.

Bialystok, E. (2001) *Bilingualism in development: Language, literacy and cognition*. Cambridge University Press.

Bloom, D. E., Canning, D., Chan, K., & Luca, D.L. (2014). Higher education and economic growth in Africa. *International Journal of African Higher Education*, 1(1). https://doi.org/10.6017/ijahe.v1i1.5643

British Council. (n.d.). *Sustainable international development: Research reports: Next generation Ethiopia*. https://englishagenda.britishcouncil.org/global-projects/track-record/english-language-improvement-project-elip-ethiopia

Caldas, S. J. (2013). Assessment of academic performance: The impact of no child left behind policies on bilingual education. In V. C. M. Gathercole (Ed.,) *Issues in the assessment of bilinguals*. Springer.

Cardoso-Martins, C., Grigorenko, E.L., Kornev, A. N., Mourges, C. & Rakhlin, N.V. (2019). Orthographic processing is a key predictor of reading fluency in good and poor readers. *Contemporary Educational Psychology*, 56, 250-261. https://doi.org/10.1016/j.cedpsych.2018.12.002

Clarkson, P. C, & Galbraith, P. (1992). Bilingualism and mathematics learning: Another perspective. *Journal for Research in Mathematics Education*, 23(1), 34-44.

Clegg, J. & Afitska, O. (2011). Teaching and learning in two languages in African classrooms, *Comparative Education*, 47(1), 61-77. https://doi: 10.1080/03050068.2011.541677

Cleghorn, A. (1992). Primary level science in Kenya: constructing meaning through English and indigenous languages. *International Journal of Qualitative Studies in Education*, Oct-Nov, 311-323.

Collins, B. & Mees, I. M. *Practical phonetics and phonology: A resource book for students*. Routledge. https://en.wikipedia.org/wiki/French_phonology#Vowels

Cook, V. (2004). *The English writing system.* Oxford University Press.

Cummins, J. (1976). The influence of bilingualism on cognitive growth: A synthesis of research findings and explanatory hypotheses. *Working Papers on Bilingualism* 9, 1-43.

Cummins, J. (1986). Empowering minority students: a framework for intervention. *Harvard Educational Review* 56(1),18-36.

Droop, M. & Verhoeven, L. (2003). Language proficiency and reading ability in first- and second-language learners. *Reading Research Quarterly*, 38(1), 78-103.

Dubeck, M. M., Jukes, M.C. H., & Okello, G. (2012). Early primary literacy instruction in Kenya. *Comparative Education Review,* 56 (1), 48–68. https://doi.org/10.1086/660693

Dutcher, N. (1995). *The use of first and second languages in education: A review of international experience.* Collaboration by G. R. Tucker. Pacific Islands Discussion Paper Series 1. Washington, D.C.: World Bank.

D. S. F. Literacy Resources (2019). https://www.dvusd.org/cms/lib/AZ01901092/Centricity/Domain/3795/Sound_Spelling_Chart.pdf

Eberhard, D. M., Simons, G. F., & Fennig, C. D. (2020). *Ethnologue: Languages of the World*. Twenty-third edition. Dallas, Texas: SIL International. Online version: https://www.ethnologue.com

Education for All, Kenya (2019). *Unequal access to the school system*. https://www.dw.com/en/kenya-unequal-access-to-the-school-system/a-15880333

Ehri, L. (2005). Alphabetics instruction helps students learn to read. In R. M. Joshi & P. G. Aaron (Eds.), *Handbook of orthography and literacy* (pp. 649-677). Lawrence Erlbaum.

Fafunwa, A. B. (1978). *Education in Mother Tongue: The Ife Primary Education Research Project (1970-1978).* Reproductions supplied by EDRS. 196 pages.

Fender, M. (2008). Arabic literacy development and cross-linguistic effects. In Koda & Zehler, (Eds.) *Learning to read across languages* (pp. 101-124). Routledge.

Funnell, S. C. & Rogers, P. J. (2011). *Purposeful program theory: Effective use of theories of change and logic models*. [Kindle DX version]. Retrieved from Amazon.com

Coulibali, B. & Gandhi, D. (2018). *Mobilization of tax revenues in Africa: the report*. Brookings. https://www.brookings.edu/research/mobilization-of-tax-revenues-in-africa/

Goswami, U. (2006). Orthography, phonology, and reading development: A cross-linguistic perspective. In Joshi & Aaron (Eds.), *Handbook of orthography and literacy*, pp.463-480.

Goswami, U. (2008). Reading, complexity, and the brain. *Literacy*, 42(2), 67-74.

Heugh, K. (2011). Theory and practice - Language education models in Africa: Research, design, decision-making and outcomes. In Ouane & Glanz (Eds.) *Optimizing learning, education and publishing in Africa: The language factor*, pp. 105-156. UIL/ADEA.

Heugh, K. & Skutnabb-Kangas, T. (2010). Introduction. In Kathleen Heugh & Tove Skutnabb-Kangas (Eds.) *Multilingual education works* (pp. 3-39). Hyderabad, India: Orient Blackswan Private.

Ilboudo, P. T. (2010). *Bilingual Education in Burkina Faso: An Alternative Approach for Quality Basic Education*. 1st ed. African Experiences – National Case Studies. Association for the Development of Education in Africa.

Kearns, D. M. (2015). How elementary-age children read polysyllabic polymorphemic words. *Journal of Educational Psychology*, 107, (2), 364-390.

Kembo-Sure & Ogechi, N. O. (2016). Literacy through a foreign language and children's rights to education: An examination of Kenya's medium of instruction policy. *Nordic Journal of African Studies,* 25, 92-106.

Koda, K. (2005). Learning to read across writing systems: Transfer, metalinguistic awareness, and second-language reading development. In V. Cook & B. Bassetti (Eds.) *Second language writing systems*, (pp. 311-334). Multilingual Matters.

Koda, K. & Zehler, A. (2008). Introduction. In K. Koda & A.M. Zehler (Eds.) *Learning to read across languages* (pp. 1-9). Routledge.

Koda, K. (2008). Impacts of prior literacy experience. In K. Koda & A.M. Zehler (Eds.), *Learning to read across languages* (pp. 68-96). Routledge.

Fleisch, B., Kotze, J. & Taylor, S. (2019). Alternative forms of early grade instructional coaching: Emerging evidence from field experiments in South Africa*. International Journal of Educational Development.* 66(4), 203-213.

Krashen, S. (2002). *Second language acquisition and second language learning*. First internet edition. Retrieved from http://www.sdkrashen.com/content/books/sl_acquisition_and_learning.pdf

Kumarasdyati & Ramadhani, F. (2018). *Slips of the ear performed by non-native speakers to make sense of English*. Paper presented at Seminar Nasional PPM Unesa 2018. https://www.researchgate.net/figure/Slips-of-the-Ear-due-to-Phonetic-Knowledge_tbl1_332524265

Lee, E.W. (1982). *Literacy primers: The Gudschinsky method*. SIL.

Lee, J. W. & Schallert, D.L. (1997). The relative contribution of l2 language proficiency and l1 reading ability to l2 reading performance: A test of the threshold hypothesis in an EFL context. *TESOL Quarterly,* 31, 715.

Lems, K., Miller, L.D. & Soro, T. M. (2017). *Building Literacy with English Language Learners, second Edition: Insights from linguistics*. Google Books.

Laufer, B. (2003). The lexical plight in second language reading: Words you don't know, words you think you know, and words you can't guess. In Coady, J. & Huckin, T. (Eds.), *Second Language Vocabulary Acquisition* (pp.20-34). Cambridge University Press.

Little, D., Goullier, F., & Hughes, G. (2011). *The European language portfolio: The story so far (1991-2011).* Strasbourg, France: Council of Europe. http://www.coe.int/t/dg4/education/elp/elpreg//Source/Publications?ELP_StorySoFar_July2011_Final_EN.pdf

Milligan, L. (2016). English as a medium of instruction in postcolonial contexts: moving the debate forward. *Comparative Education*, 52(3), 277-280.

Muthwii, M. J. (2002). *Language policy and practices in education in Kenya and Uganda: Perceptions of parents, pupils, and teachers on the use of mother tongue, Kiswahili and English in primary schools.* Phoenix Publishers.

National cohesion and integration commission. (2016). *Ethnic audit of parastatals. Nairobi, Kenya: NCIC Publication No. 2/2016.* https://www.cohesion.or.ke/images/docs/Ethnic_and_Diversity_Audit_of_Commissions_2016.pdf

Nurse, D. & Philippson, G. (2003) Identifying the Bantu languages. In D. Nurse & G. Philippson (Eds.), *The Bantu languages* (pp. 1-12). Routledge.

Mwangi, P., Ndungu, R., Njoroge, M. & Orwenjo, D. O. R. (2014). *Multilingualism and education in Africa: The state of the state of the art*. Cambridge Scholars Press.

Payne, D. (2008). *The sounds of Maa. The Maasai language*. Retrieved September 1, 2019, from. https://darkwing.uoregon.edu/~maasai/Maa%20Language/maphon.htm

Payne, D. (2012). *Phonological Variation in Maa Varieties. Occasional Papers in Linguistics, 4*. University of Dar Es Salaam.

Pazzack, A. P. (2013). *Dagbani: An introductory course for beginners*. Pedaddo Ventures.

Phonemes and their role in dyslexia. The Reading Well. Retrieved August 15, 2019 from https://www.dyslexia-reading-well.com/

Piper, B & Kim, Y. (2018). *Cross-Language Transfer of reading skills: an empirical investigation of bidirectionality and the influence of instructional environments. Reading and writing*. Retrieved from https://doi.org/10.1007/s11145-018-9889-7

Probert, T. & de Vos, M. (2016). Word recognition strategies amongst isiXhosa/English bilingual learners: the interaction of orthography and language of learning and teaching. *Reading & Writing*, 7(1). 10 pgs.

Qorro, M. (2013). University of Dar es Salaam. Language of instruction in Tanzania: Why are research findings not heeded? *International Review of Education*.

Randall, M. (2005). Orthographic knowledge and first language reading: Evidence from single word dictation from Chinese and Malaysian users of English as a foreign language. In V. Cook & B. Bassetti (Eds.), *Second language writing systems* (pp.122-146). Lawrence Erlbaum.

Rixon, S. (2011). *Beyond ABC: Investigating current rationales and systems for the teaching of early reading to young learners of English*. University of Warwick, Centre for Applied Linguistics.

Ruddell, R. B. & Unrau, N.J. (1994). Reading as a meaning-construction process: The reader, the text, and the teacher. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading* (pp. 996-1056) Newark, DE: International Reading Association.

Scholfield, P. & Chwo, G. S. (2005). Are the L1 and L2 word reading processes affected by more by writing system or instruction? In V. Cook and B. Bassetti (Eds.), *Second language writing systems* (pp.215-237). Lawrence Erlbaum.

Schroeder, L. (2007). Promoting cognitive development in children from minority language groups: A mother-tongue curriculum for language arts*. International Journal of Learning,* 14(7), 179-188.

Schroeder, L. (2013). Teaching and assessing independent reading skills in multilingual African countries: Not as simple as ABC. In C. Benson & K. Kosonen (Eds.), *Language Issues in Comparative Education* (pps. 245-264). Sense Publishers.

Schroeder, L. (2016). *English Transitional Reading Book 1.* First edition. SIL.

Schroeder, L. & Schroeder, H. (2016). Orthographies in a rapidly changing world: Negotiated compromises between several parties*. College of Humanities and Social Sciences (CHSS).* SIL International and University of Nairobi. http://erepository.uonbi.ac.ke/handle/11295/96108?show=full ; http://www.academia.edu/25553742/ORTHOGRAPHIES_IN_A_RAPIDLY_CHANGING_WORLD_NEGOTIATED_COMPROMISES_BETWEEN_SEVERAL_PARTIES_1

Seymour, P. H. K. (2006). Theoretical framework for beginning reading in different orthographies. *Handbook of orthography and literacy* (pp.441-480). Lawrence Erlbaum and Associates.

Skutnabb-Kangas, T. (1995). Introduction. In Skutnabb-Kangas, Tove (Ed.). *Multilingualism for All* (pp. 7-20). Swets and Zeitlinger.

Smith, C., Stone, R., & Comings, J. (2012). Literacy policy and practice in Ethiopia: Building on the TELL program and EGRA results. *Field Study Report.* Amherst, MA: Center for International Education. Retrieved from https://www.air.org/sites/default/files/downloads/report/TELL_Field_Study_-_Literacy_Policy_and_Practice_in_Ethiopia_0.pdf

Taaliu, S. T. (2017) Ethnicity in Kenyan Universities*. Open Journal of Leadership*, 6, 21-33. doi: 10.4236/ojl.2017.62002. https://www.scirp.org/journal/paperinformation.aspx?paperid=76754

Taylor, S. K. (2010). MLE Policy and Practice in Nepal. *Multilingual Education Works* (pp. 204-223). Hyderabad, India: Orient Blackswan, LTD.

Toukomaa, P. & Skutnab-Kangas, T. (1977). *The intensive teaching of the mother tongue to migrant children at pre-school age* (Research Report No. 26). Department of Sociology and Social Psychology, University of Tampere. https://www.researchgate.net/publication/319018542_Tove_Skutnabb-Kangas

Trudell, B. (2016). *The impact of language policy and practice on children's learning: Evidence from Eastern and Southern Africa*. UNICEF. https://www.unicef.org/esa/reports/language-and-childrens-learning

Trudell, B., Schroeder, L. & Mercado, M. (In press). Research in multilingual learning in

Africa: Assessing the effectiveness of multilingual education programming. In E. Erling (Ed.) *Multilingual Learning in Sub-Saharan Africa*. Oxford, UK: Oxford Press.

Trudell, J. & Cheffy, I. (2017). We also wanted to learn: Narratives of change from adults literate in African languages. *International Review of Education* 63, 745–766.

Tyner, B. (2012). *The literacy jigsaw puzzle: Assembling the critical pieces of literacy instruction*. International Reading Association.

USAID. (2018). *US. government strategy on international basic education: Fiscal years 2013-2019*. https://www.edu-links.org/sites/default/files/media/file/USG-Education-Strategy_FY2019-2023_Final_Web.pdf

Van Berkel, A. (2004). Learning to Spell in English as a Second language. *International Review of Applied Linguistics in Language Teaching*, 42(3), 239-257.

Venezky, R. (2006). Foundations for Studying Basic Processes in Reading. In R.M. Joshi and P. D. Aaron (Eds.) *Handbook of Orthography and Literacy* (pp. 735-758). Mahwah, NJ: Routledge.

Walter, K. (2003). *The Eritrean English curriculum grades 2-6: Assessing academic readiness.* (Master's degree thesis) GIAL (Graduate Institute of Applied Linguistics), SIL.

Laitin, D. D., Ramachandran, R. & Walter, S. L. (2005). The legacy of colonial language policies and their impact on student learning: Evidence from an experimental program in Cameroon. Economic Development and Cultural Change. *The University of Chicago Press Journals*, 68(1), https://www.journals.uchicago.edu/doi/pdf/10.1086/700617

Walter, S. L. (2007). Development of reading in multilingual education. In C. Benson & K. Kosonen (Eds.), *Language Issues in Comparative Education* (pps. 265-282). Sense Publishers.

Williams, E. (1998). *Investigating bilingual literacy: Evidence from Malawi and Zambia. Education Research*. Serial #24.

Wolff, E. (2011) Background and history: Language politics and planning in Africa. In A. Ouane & C. Glanz (Eds.), *Optimizing learning, education and publishing in Africa: The language factor*. Hamburg, Germany: UIL/ADEA.

Wolfaardt, D. (2005). *Proceedings of the 4th international conference on bilingualism: Namibia, a case for a gradual transitional bilingual language programme.* J. Cohen, K. T. McAlister, K. Rolstad, & J. McSwan (Eds.). Cascadilla Press.

World Bank. (2011). Learning for all: investing in people's knowledge and skills to promote development. *World bank group education strategy 2020.* The international Bank for Reconstruction and Development/ The World Bank. http://pubdocs.worldbank.org/en/418511491235420712/Education-Strategy-4-12-2011.pdf

Ziegler, J. C. & Goswami, U. (2005). Reading acquisition, developmental dyslexia, and skilled reading across languages: A psycholinguistic grain size theory. *Psychological Bulletin*, 131(1), 3–29. https://doi.org/10.1037/0033-2909.131.1.3