The Influence of Orthography in Early Grade Letter Knowledge among Sidaama School Children

Samrawit Bekele[1] and Abraha Asfaw[2]

Abstract

Though the use of similar scripts in two or more language curricula is common in Ethiopia, the literature on orthographic influences on reading ability development is thin so far. The purpose of this study was, therefore, to examine the facilitating or hindering effects of orthography in letter name identification and letter-sound correspondence tasks in Sidaama and English languages that use Latin-based script. Data were collected from randomly selected grade 2 students in two Hawassa city administration schools using a survey. The descriptive statistical analysis technique on the reading tests showed greater accuracy of children when reading letters and sounds in Sidaama (transparent orthography) than in English, which is characterized by a deep orthographic system. Confusion was observed in both languages across the two tasks where children mixed up letters with sounds, especially when they tried to distinguish between identical letters and sounds in both languages. Such influence comes because the two languages share a common script, though their orthographic consistency differs by language, which has important implications for classroom instruction and curriculum organization.

Keywords: Reading tasks, Early Grade, Letter identification, Letter-sound identification

Introduction

Ethiopian children today are learning to read in two or more languages. In the context of this study, for example, Sidaama is a medium of instruction in primary schools in the Sidaama region, and it is offered as a subject starting from grade 1. English is used as a subject at the primary level, starting in grade 1 and offered as a medium of instruction at the secondary education level. The orthography[3] of each language is unique regardless of the script

[1] Ph.D. candidate in Linguistics, AAU: samrawit306@gmail.com

[2] PhD, works for both Department of Curriculum & Instruction, and Center for ECCE, College of Education and Behavioral Studies, Addis Ababa University.

[3] Different scholars give different but nearly similar definitions of the word orthography (Faber, 1987; Watt, 2013; Daniels, 1986). A very detailed definition of orthography has been given by Cahill and Karan (2008:3) as follows: 'An orthography is a system for representing language in written form. It encompasses more than the symbols that represent the sound (often called characters, letters, or

differences or similarities of the languages involved (Bialystok et al., 2005). However, the degree of similarity or difference in orthographic depth has an effect on reading skill development even in languages using similar scripts (Rossi et al., 2006). If the languages involved have common orthographic similarities, the positive transfer of knowledge of reading in their learning could facilitate the reading development (Bild & Swain, 1989; Carrasco-Ortiz, Amengual & Gries, 2021). However, if the two languages using similar scripts have a wide variance in their letter-sound correspondence, there will be some confusion because of the errors created by their differences. For example, Carrasco-Ortiz, Amengual, and Gries (2021) showed that though both Spanish and English groups benefited from orthographic similarity when reading, the positive effect was restricted to words with shared phonology in the two languages.

The reading ability of children is highly connected with orthography, as letter learning and linking letters with sounds are the basis for reading ability development. In this case, Georgiou et al. (2012) showed how (in) consistent letter-to-sound relationships (known as orthographic consistency) predicted differently in letter knowledge, non-word reading, and spelling abilities among Greek, Finnish, and English-speaking children. These consistency or inconsistent relationships further cause poor overall reading performances in the early grades. In this regard, Miller (2019) and Seymour et al. (2003) demonstrated the impact of orthographic complexity on reading development by evaluating 13 European orthographies. As indicated by Bassetti et al. (2020), the use of similar orthography in two different languages may lead to sound addition, deletion, or substitution in reading, the last one being the most common experience so far.

Research in the area in the Ethiopian context, however, is scarce to inform policy and practice. Therefore, this study was enthused to investigate the influence of script similarity on the early-grade reading outcomes of learners in the two languages (Sidaama and English). This was done through letter-name identification and letter-sound correspondence tasks. The findings of this study could help identify children who are struggling with making the connection between the printed letter and its oral counterpart and understand

graphemes). Orthography also covers the relative placement of these symbols, word breaks, punctuation, capitalization, and other aspects that might be regulated in a written standard.' In this paper, the last definition has been used, for it encompasses a wide range.

more of their challenges in reading. It could also inform policymakers, researchers, and practitioners regarding the instructional implications of orthographic (in) consistency in early grade reading development.

Rationale of the Study

Recent studies report a significant decline in the learning outcomes of Sidaama children in the early grades. EGRA of grade 2 and 3 children among seven mother tongue languages in Ethiopia reveals that 34% of grade 2 students are unable to read even a single word, and 48% of the children could not comprehend a single question. Specifically, 69.2% of Sidaama children were unable to identify a single letter in words correctly (Piper, 2010). Furthermore, in all the consecutive reports, major declines remain to be observed, especially with the Sidaama students in grade two (Read M&E in 2016, and 2019). Problems related to the curriculum, a lack of limited effective teachers' training, and poor parental support for children's reading are some of the major factors that are mentioned as responsible factors for low reading ability (Piper, 2010; Ligembe, 2014; Solomon, 2014). In addition, the script difference has also been taken as a cause for this failure. Piper and Ginkel (2017) stated that Ethiopian languages use Latin or Geez scripts as appropriate, with significant implications for letter learning approaches. While Geez scripted needed more time for letter learning to cover varied numbers of symbols that was not the case in Latin.

Learning the same script across different languages also poses certain challenges. This phenomenon is known as cross-language learning, and it presents unique obstacles that must be overcome to achieve successful language acquisition in terms of the degree to which graphemes correspond to phonemes (Ortega, 2008; Miller, 2019). The continuum of this variation in the correspondence is referred to as orthographic depth, which predicts how orthographic depth influences reading processes (Katz and Frost, 1992; Borleffs et al., 2019). In the argument, one perspective proposes that young learners are more capable of acquiring reading skills in a second language once they have a strong foundation in their native language's structure. On the other hand, the opposing view suggests that there should be no difficulty in learning to read in both languages simultaneously. The inconvenience regarding orthographic features is one reason for the contribution or influence of learning to read in languages of the same script (Ziegler & Goswami, 2005). Similarly, in our context, the most prominent one is that children learn to read in two languages starting in grade one, and the two languages have different orthographic depths, which may influence the students' reading.

There is, however, a lack of studies that investigate reading in the Sidaama context. This study, therefore, could contribute to filling this gap by trying to map and analyze some of the problems and could thus be used to understand more of the low reading results among Sidaama schoolchildren. We believe one of the reading component which needs attention is letter knowledge. In this study, one of the components of reading that we consider deserving of careful attention is letter knowledge.

Letter knowledge, or alphabetic knowledge, is closely linked to orthographic depth and the connection between letter and sound. Letter knowledge is fundamental for early reading development and can predict later reading development and reading difficulties (Foulin, 2005; Hulme et al., 2022). Knowledge about letters may help children understand that language, both written and oral, may be divided into segments: graphemes and phonemes. This knowledge is necessary to crack the reading code and learn to read. As to Foulin (2005), letter knowledge can be treated in two fragments: (a) letter-name knowledge, which is an important predicator of learning to read, especially in English-speaking countries, and often works as precursors of letter-sound knowledge; and (b) letter-sound knowledge, which is important to understand the alphabetical principle and link the right sound to the letter. This is crucial for blending and putting sounds together to form words, essential in reading in languages such as Sidaama but also English, though to a lesser degree.

In our context, however, there is not so much knowledge about the cross-linguistic transfer between Sidaama and English, though both share similar scripts and are parts of the school curricula. There is only a small amount of research on the Sidaama students' reading competence, but less is known about predictors. Pursuing these problems, the current study examines the influence of the orthographies on the early reading outcomes, focusing on Sidaama and English that share a similar script, i.e., Latin. The investigation was further delimited to letter identification and letter-sound correspondence tasks regarding orthographic depth or consistency to answer the following basic question: In what ways do orthographic differences facilitate or hinder letter name identification and letter-sound correspondence among grade two children in Sidaama and English?

Theoretical Framework

This study uses the theory of reading across languages, which is mainly concerned with orthographic depth. Orthographic depth generally refers to the reliability of grapheme-to-phoneme correspondences (Barntiz, 1978; Daal and Wass, 2016). In this regard, literature shows that children's reading development in two languages with similar orthography and provided simultaneously is associated with the complexity of letter- and letter-sound correspondences called shallow and opaque (Schmalz, Marinus, Coltheart, & Castles, 2015). In a shallow orthography, there is a one-to-one correspondence between the phonemes and graphemes, and the letters in the alphabet and the sounds they stand for are the same. In opaque orthographic languages, however, this relationship is complex and irregular, which means the same phonemes, can be found with different graphemes in words (Rey & Schiller, 2005).

The characteristics of orthography and the features of reading are inherently linked to each other, which would affect students' reading processes (Barnitz, 1978; Katz & Frost, 1992). According to Schmalz et al. (2015), the concept of orthographic depth is twofold, dealing with both the complexity of correspondences between grapheme and phoneme ("print-to-speech") and the unpredictability of these correspondences. Research findings so far are consistent in showing that children find it relatively easier to read letter sounds in shallow than opaque orthographies in which English is consistently grouped later (Ellis et al., 2004; Ziegler et al., 2010; Daal & Wass, 2016). In other words, it is known that the deep orthography of English presents a substantial challenge to many L2 learners because of its high degree of irregularity (Miller 2019). The use of an orthographic depth theoretical framework in the current study, therefore, intends to test this hypothesis in the Ethiopian context in Sidaama and English.

In other words, though Sidaama and English have a similar base script, Latin, they are different in their orthographic qualities. Sidaama is alphabetic, and the correspondence between the symbol and the phonemes is one-to-one. Sidaama has 28 consonant phonemes, and gemination and vowel lengthening are phonemic. The maximum number of consonants that can occur successively in Sidaama is two, and these clusters appeared inter-vocalically (Kawachi, 2007). Regarding vowels, Sidaama has a five-vowel system, and words in Sidaama end in vowels. The Latin script was adopted for Sidaama in 1994. Currently, the Latin-based orthography of Sidaama is in use, especially in schools, colleges, and at the university level.

On the other hand, English has 26 letters with approximately 44 phonemes in the sound system. There are 24 consonants, of which 15 are voiced and 9 are voiceless, and the rest are vowels and diphthongs. The twenty-six letters of the English alphabet correspond with the twenty-six letters of the Sidaama alphabet, but all of the vowels and some consonants are different in the way they are pronounced. Thus, English is not claimed to be phonemic since there is variation between the grapheme and its phonemic counterparts. In this way, the students are exposed to transfer complications from one language to another when learning to read because of the difference in language development (Yri, 2004; Anbessa, 2019). Based on this assertion, we intend to measure the students' reading of letter names and letter sound identifications in light of orthographic depth to determine the influence of orthography in early-grade readings of Sidaama and English. The use of an orthographic depth theoretical framework will help us test this hypothesis and understand the relationship between the characteristics of orthography and the features of reading that affect students' reading processes.

Research Methodology

Research Design and Sampling

A survey design (using reading skill tests) has been employed to examine the influence of orthography on early-grade reading as a result of using the Latin-based script. As to Creswell et al. (2018), survey design provides a quantitative description of trends, attitudes, and opinions of the population, or tests for associations among variables, using a randomly selected sample of students. In the reading skill tests, (a) there was an item test that measured respondents' ability to decide whether they knew the item in the first place and to measure whether they were confused about answering similar content-wise questions across the two target languages in a limited time; (b) responses have been registered in scores to see the level of confusion and the influence of orthography that occurred because of the script sameness across the two languages.

The study was conducted in the Hawassa city administration, in Sidaama language mother tongue schools. The low performance of the targeted grade students in Sidaama stimulated the researchers to draw evidence on the contributions of orthography in languages (Sidaama and English) that share a similar script in learning. For this purpose, a preliminary analysis was conducted on the proportion of lower primary students in Hawassa City whose mother tongue is Sidaama. This criterion was set intentionally to minimize the

influence of language difficulty from orthographic interference on reading development. Accordingly, this study sampled two primary schools (designated as school 1 and school 2 for anonymity purposes) with low reading performance in previous studies and included over 90% of children whose mother tongue is Sidaama, the language of instruction in the region.

Afterwards, the first author had been to the schools for a preliminary visit to get the consent of the respective head teachers to set a timetable and prepare logistics for fieldwork purposes. School-based data showed that each school had four grade 2 sections, with about 45 students attending their education. Thus, the sampling at this level included a total of four randomly (using the lottery method) selected sections (i.e., two from each one). In the four sections of targeted population, there were a total of 180 (90 from school 1 and 90 from school 2). It was from this population of students that 15 from each (total of 30 children) were selected using the systematic random sampling technique. In other words, children in the selected section were lined up in the respective schools with a list of names in alphabetic order, and we gave every student a number. We choose a random number for the starting point of 1 with a six-sample interval. The 15 children selected for this study were, therefore, composed of 15 girls and 15 boys (eight girls and seven boys from school 1 and otherwise from school 2). These selected children took both the English and Sidaama tests developed based on the Early Grade Reading Assessment (EGRA) format, specifically letter and letter-sound reading, administered on a one-on-one basis where responses are recorded by the assessor and not by the children.

Data Collection Tool

For this study, the main research tool was a reading skill test, commonly named the Early Grade Reading Assessment (EGRA) test format. The EGRA test package includes letter naming, sound reading, familiar and unfamiliar words, about 60 passages, and comprehension questions, out of which the part for this study was extracted. It has been validated and has been used in Ethiopia since 2010. For the purpose of this study too, reliability was computed for both Sidaama and English language tests.

The final sample size for the test was obtained from 30 students in grade two. Two tests have been prepared in each language, one for English and the other for Sidaama. Therefore, a total of 60 test measures (30 in Sidaama and 30 in English) were administered. Though the tests were standard tests taken from the EGRA test, some structural and content-wise revisions have been made

based on the specific interests of this study. The test assesses the influence of orthography in early-grade reading as a result of using the Latin-based script in the areas of letter identification and letter-sound correspondence. In each test, the test took 23 minutes with 7-minute breaks, of which 30 minutes to finish one examination.

Letter Name Identification (LNI) is children's knowledge of naming letters in the alphabet. In this subtask, assessors[4] present students with a sheet listing 26 letters of the English alphabet and 34 letters of Sidaama. The letters were displayed randomly in rows, with four categories for Sidaama and three for English. The three categories have the same letter sets. Hence, the first category presented 17 letters (u, f, n, z, k, q, I, a, h, s, r, m, x, l, c, y, and w) with similar symbols but different pronunciations in the two alphabets. In the second category, there are six letters (b, d, o, p, t, and v) that have similar shapes and pronunciations in the two languages. In the third category, four letters (e, I, g, and j) have the same pronunciation but different shapes in the two alphabets. The fourth category contained seven additional letters (ch, dh, ny, ph, sh, ts, and zh) of Sidaama. The letters appeared only once, with upper and lower cases under each category. Students were asked to provide the names of the letters in each category, and results were registered under four parameters: correctly read, confusingly read, incorrectly read, and scores for couldn't read.

Letter-sound correspondence (LSC) is the ability to match symbols or letters with the sounds they stand for. Here, 10 sets of monosyllabic words were presented in a column for the students, and the students were asked to identify the graphemes and the phonemes they represented. The words were selected from the 2nd-grade textbook.

Quality Control

To enhance the quality of the data and findings, the researchers used an established EGRA format customized to the context of the study. Short training sessions were also organized for assistants (selected based on qualification, language proficiency in Sidaama, and previous experience). In the reading tests of both languages, the assessors checked the students' score sheets to see whether each student's tests in English and Sidaama were parallel, following their code and name written on the test sheets. The data

[4] The first author and a research assistant with Sidaama as his first language

collectors checked each examination sheet at least twice, gave corrections for errors in the meantime, and prepared the data for entry. The student's scores in each reading test were coded and entered into a database using Statistical Package for Social Sciences (SPSS 25) software.

Reliability

Reliability is about the internal consistency of the measurements, which expects study participants to have similar responses each time the test is completed. Therefore, the internal consistency was computed for the quantitative tests through statistical software (SPSS version 25), and the Cronbach alphas for Sidaama and English were found to be 0.77 and 0.84, respectively, acceptable for such studies (Cohen et al., 2002).

Data Analysis

The data presentation and analysis are primarily based on descriptive statistics. Each subtest is used to analyze the quantitative data gathered from students' reading skill tests. The test results were registered in four categories. These tests were standard tests taken from the EGRA test. However, some structural and content-wise revisions have been made based on the specific interests of the study. In each test, one student was tested for both English and Sidaama measures. In the first category, assessors marked students' results when reading the letter or letter sound correctly. In parallel, assessors circled the letter if students named it incorrectly in the second category. In the third category, the assessor marked students' results with a slash (/) if confusion was found between Sidaama and English while students read the letters/ letter-sounds. Sound omissions were also registered, while students omitted some sounds while reading. The assessor could stop the test if the student made four consecutive errors in their reading. The test results of such cases had been registered under the 'cannot read' category in the test measurement. Finally, the collected data were cleaned, coded, and entered into SPSS. Data analysis was made using the same package software (SPSS).

Ethical Considerations

Before data collection started, the head teachers of the schools were briefed about the nature, objectives, and procedures of the study. After obtaining consent from the head teachers, sample students were determined, and the researchers explained the objectives of the study, the limited use of the information, anonymity, and the possibility to withdraw at any stage of the

data collection to each participant child. Data collection, in all cases, started after obtaining informed assent from each child.

Results

This section provides a presentation and analysis of the results obtained from reading skill tests. In this section, results were organized into sub-titles based on the issues raised under the specific research questions that the study tended to answer.

Sidaama Letter Name Identification

Category 1: *17 letters (u, f, n, z, k, q, I, a, h, s, r, m, x, l, c, y, w) with similar symbols but different pronunciations in the two alphabets*

Students' performance in this basic subtest is encouraging; however, the rate was high for students' confusion in identifying the letters. But still, the frequency distribution across the letters shows some variance. 40% of students were confused in identifying the Sidaama letter 'x'; instead, they named the letter 'esk'. A quarter of students were confused in identifying the Sidaama letters 'c' (33%) and 'y' (23.3%) in this subtest. Similarly, confusion was also made in identifying other letters in this category (see table 1 below).

Table 1: Sidaama letters that have the same grapheme but different pronunciations with English

Sidaama letters	Correctly read	Incorrectly read	Confusing with English letters	Can't read	Total
"u"	80	0	13.3	6.7	100
"r"	90	0	3.3	6.7	100
‘'n"	83.3	10	0	6.7	100
"z"	76.7	3.3	13.3	6.7	100
"k"	90	0	3.3	6.7	100
"h"	73.3	6.7	13.3	6.7	100
"c"	50	10	33.3	6.7	100
"i"	83.3	6.7	3.3	6.7	100
"a"	83.3	0	10	6.7	100
"s"	90	0	3.3	6.7	100
"f"	83.3	6.7	3.3	6.7	100
"m"	83.3	0	10	6.7	100
"x"	40	10	40	10	100
"l"	80	10	3.3	6.7	100
"w"	83.3	6.7	3.3	6.7	100
"q"	60	30	3.3	6.7	100
"y"	56.7	13.3	23.3	6.7	100

Category 2**:** *six letters (b, d, o, p, t, and v) that have similar shapes and pronunciations in the two languages*

The majority of students did well (correctly read) in identifying the letters in this category. The result clearly illustrated that children are free of confusion in identifying the letters under this category (see Table 2 below). The result shows that students performed better in identifying the names of the letters of such kinds than the rest of the letters under the other categories across the two languages.

Table 2: Sidaama letters that have the same grapheme and pronunciation as the English letters

Sidaama letters	Correctly read	Incorrectly read	Confusing with English letters	Can't read	Total
"b"	80	13.3	0	6.7	100
"d"	86.7	6.7	0	6.7	100
"o"	90	3.3	0	6.7	100
"p"	73.3	20	0	6.7	100
"t"	93.3	0	0	6.7	100
"v"	76.7	16.7	0	6.7	100

Category 3**:** *four (e, I, g, and j) letters that have the same pronunciation but different shapes in the two alphabets*

The results from this subtask revealed that the influence of English orthography was highly reflected. The frequency distribution was also high (20% - 63%) unlike the two subtests presented under the letter name identification subtask. Accordingly, while we see the frequency distribution of each letter under the subtest, most (63.3%) students were confused about how to read the Sidaama letter "e" with its English equivalence. 46.7%, 26.7%, and 20% of students were confused to read the letters 'g', 'i', and 'j' consecutively under this subtest. This confusion was because the first two letters ('e' and 'i') and the last two letters ('g' and 'j') have shared similar pronunciations in L1 and L2. To be clear, the Sidaama letter 'i' has an equivalent pronunciation to the English 'e'. Also, the letter 'j' in Sidaama is pronounced like 'g' in English.

Table 3: Sidaama letters that have different grapheme but the same pronunciation as the English letters (e-i and g-j) (%)

Sidaama letters	Correctly read	Incorrectly read	Confusing with 2nd language	Can't read	Total
'e"	26.7	3.3	63.3	6.7	100
"i"	63.3	3.3	26.7	6.7	100
'g"	40	6.7	46.7	6.7	100
'j"	56.7	13.3	20	10	100

Category 4: *seven additional letters (ch, dh, ny, ph, sh, ts, and zh) of Sidaama*

In this task, some respondents identified the digraphs as two letters. For example, 23.3% of children identified the letter 'sh' as two letters, as 's' and 'hhh'. While a quarter of students struggled to identify the additional letters in their mother tongue (see table 4).

Table 4: Sidaama Additional Letters (%)

Sidaama letters	Correctly read	Incorrectly read	Confusing with 2nd language	Can't read	Total
"ch"	53.3	6.7	16.7	23.3	100
"dh"	43.3	6.7	30	20	100
"ny"	56.7	-	36.7	6.7	100
"ph"	53.3	3.3	33.3	10	100
"sh"	63.3	6.7	23.3	6.7	100
"ts"	36.7	-	36.7	26.7	100
"zh"	53.3	-	36.7	10	100

Sidaama Letter and Sound Correspondence Subtest

In this test, most students correctly read the first sounds of the words. Letter-sound 'r', 'k', 'b', and 'a' were among the most (93.3%) students who performed in this subtask. Whereas, only a few students confusedly read the letter sounds (see table 5); i.e., letters 'e' and 'u' were confusingly read by 6.7% and 13.3% of students in this subtest, respectively. In this task, it has been revealed that second language interference was observed while students identified the sounds the letters represent in their mother tongue. For example, the sound 'l' has the same representation in the words 'kuula' or 'luulo', unlike the English one, which is complex. However, some students identified the sounds of English instead of L1.

Table 5: Letter and sound correspondence task (%)

Sidaama letters	Correctly read	Confused with English	Incorrectly read	Can't read	Total
"j"	90	3.3	-	6.7	100
"c"	86.7	3.3	3.3	6.7	100
"e"	83.3	6.7	3.3	6.7	100
"r"	93.3	-	-	6.7	100
"k"	93.3	-	-	6.7	100
"u"	86.7	6.7	-	6.7	100
"b"	93.3	-	-	6.7	100
"a"	93.3	-	-	6.7	100

English Letter Name Identification

Category One**:** *17 letters (u, f, n, z, k, q, I, a, h, s, r, m, x, l, c, y, w) with similar symbols but different pronunciations in the two alphabets*

Under this category, students' performance was relatively good compared with other subtests in the letter name identification. However, the percentage showed a decline in this language. The majority (above 71%) of students correctly identified the letters 'h', 'c', 'f', and 'm', and 60-70% of students correctly read the letters 'u', 'r', 'l', 'n', 'z', 's', and 'w'. While 3.3-36.7% of students responded incorrectly to the letters provided in this subtest, the frequency distribution across the letters shows some variance, just like the SA test measure, i.e., the 'letter 'm' has been correctly responded by 83.3% of students, while the letter 'i' was correctly read by 43.3% of students. Students named the Sidaama letters instead of the English ones. The result can reveal that MT orthographic influence has been witnessed while students identified letters that have similar symbols but have different pronunciations in the second language, such as the Sidaama letter 'x' pronounced like the English letter 'eks", the letter 'c' as 'ts', the letter 'q' as 'k'' in Sidaama, and others.

Table 6: English letters having the same grapheme but different pronunciations with Sidaama (%)

English Letters	Correctly read	Incorrectly read	Confusing with Sidaama letters	Can't read	Total
"u"	63.3	10	20	6.7	100
"r"	66.7	6.7	20	6.7	100
"n"	63.3	16.7	13.3	6.7	100
"z"	60	3.3	30	6.7	100
"k"	53.3	6.7	33.3	6.7	100
"h"	70	10	13.3	6.7	100

"c"	73.3	10	10	6.7	100
"i"	43.3	6.7	43.3	6.7	100
"a"	56.7	3.3	33.3	6.7	100
"s"	66.7	3.3	23.3	6.7	100
"f"	80	6.7	6.7	6.7	100
"m"	83.3	3.3	6.7	6.7	100
"x"	76.7	3.3	13.3	6.7	100
"l"	70	16.7	6.7	6.7	100
"w"	66.7	16.7	10	6.7	100
"q"	46.7	36.7	10	6.7	100
"y"	53.3	26.7	13.3	6.7	100

***Category Two**: six letters (b, d, o, p, t, and v) that have similar shapes and pronunciations in the two languages*

Table 7: English letters that have the same letters and pronunciations as the Sidaama letters (%)

English letters	Correctly read	Incorrectly read	Can't read	Total
"b"	90	3.3	6.7	100
"d"	90	3.3	6.7	100
"o"	90	3.3	6.7	100
"p"	63.3	30	6.7	100
"t"	90	3.3	6.7	100
"v"	70	23.3	6.7	100

Students performed well (63.3% - 90%) in this identification subtest while very few students were registered for lower scores (see table 7 above). Hence, the frequency distribution of students under the correctly read category rated between 63.3% and 90%.

***Category 3**: four (e, I, g, and j) letters that have the same pronunciation but different shapes in the two alphabets*

In this task, 60%, 50%, 43.3%, and 40% of students have correctly identified the letters 'j', 'e', 'i', and 'g', respectively. However, while we see the scores under the confusingly read category, the majority of students confusedly read the letter 'i' (43.3%). Students also confusingly read 'the letter 'g' (40%), the letter 'e' (33.3%), and the letter 'j' (23.3%) in this task. Students read the English letter 'e' instead of the Sidaama letter 'I', and the English letter 'g' instead of the Sidaama letter 'j'. These confusions happened because the letters 'e' and 'I' and the letters 'g' and 'j' have equivalent pronunciations in English and Sidaama.

Table 8: Letters that have the same pronunciation but different shapes in the two alphabets (%)

English letters	Correctly read	Incorrectly read	Confused with Sidaama	Can't	Total
'e"	50	10	33.3	6.7	100
"i"	43.3	6.7	43.3	6.7	100
'g"	40	13.3	40	6.7	100
'j"	60	10	23.3	10	100

English Letter-Sound Correspondence Task

In this test measurement for the correctly read parameter, LS 'o' rated the highest (86.7%) frequency, while LSC 'f' and 'p' scored above 70%, and LS 'd' and 'e' scored 80% in the frequency distribution. Regarding the confusion rate, LS 'g' (66.7%), 'm' (30%), 'c' (20%), and the digraph 'ch' (30%) were among the LS that most students were confused about (see table 9). The test result revealed that confusion mostly happened because of the MT orthographic influence and the complex nature of English in the sound-letter association.

Table 9: Letter Sound Correspondence task in English (%)

English letters	Correctly read	Confusing with Sidaama	Incorrectly read	Sound omission	Can't read	Total
"b"	60	0	40	0	0	100
"ch"	26.7	13.3	20	10	30	100
"p"	73.3	0	16.7	0	10	100
"o"	86.7	0	3.3	0	10	100
"m"	56.7	30	3.3	0	10	100
"c"	66.7	20	3.3	0	10	100
"f"	73.3	6.7	10	0	3	100
"d"	80	0	10	0	10	100
"e"	80	3.3	6.7	0	10	100
"g"	66.7	10.7	6.7	0	10	100

Discussion

The purpose of this study was to examine the influence of orthography on the early-grade reading of letters and sound identification tasks in Sidaama and English as a result of using the Latin-based script. The result generally showed that the frequency distribution is higher in the language with transparent orthography than in the language with opaque orthography. Overall, students were more accurate when reading letters and sounds in Sidaama than in English. The transparency difference between the languages might have caused challenges for students to identify letters' names and sounds.

To begin with, the achievements in the letter name identification task in the three categories, i.e., the 17 letters including similar symbols but different pronunciations in the two alphabets in the first category, the six letters that have similar shapes and pronunciations in the two languages in the second category, and the four letters having the same pronunciation but different shapes in the two alphabets in the third category across the two languages, are encouraging. This result is also consistent with the early grade reading assessments across the years in Ethiopia (Ligembe, 2014; Piper, 2010; RTI, 2015; Read M&E, 2016, 2019). However, the frequency distribution showed a decline in the English letter name identification test, and a higher number of students were found to be confused while reading the English letter names. In this reading test, the cumulative frequency of Sidaama was higher than in the English test. Scholarly works of reading, regarding languages of different orthographies, show that the level of complexity of two orthographies could influence the learners' understanding of the tasks in reading. (Aro, 2004; Seymour et al., 2003). This complexity affects reading acquisition, starting with the basics of learning, such as letter naming. For example, children learning with transparent orthographies spend less instructional time than in languages with opaque orthographies (Seymour et al., 2003).

The data analysis also showed that some students were confused when reading the letters in the subtasks. As expected in both languages, most of the students were confused about how to read the letters in the first and third categories, where there are letters that have identical shapes but different pronunciations in L1 and L2. In both Sidaama and English letter name identification tests, students got confused while identifying the letters 'e', 'I', 'g', and 'j'. This confusion was because the first two letters ('e' and 'i') and the last two letters ('g' and 'j') have shared similar pronunciations in L1 and L2. The Sidaama letter 'i' has an equivalent pronunciation to the English 'e', and the letter 'j' of Sidaama is pronounced like 'g' in English.

The study revealed similar results in the letter-sound (LS) correspondence reading tests of both languages. Most students struggled to match letters with the sounds they stand for in English than in Sidaama. Regardless of the variation in the English sounds, students used the same sounds throughout all the letters while reading. This result may be seen in connection with the difference in orthographic depth between the languages. This finding has been supported by Katz and F (1992); Barnitz (1978); and Schmalz et al. (2015) and indicates that LS correspondence is highly dependent on the orthographic depth of a certain language. Accordingly, languages with shallow

orthographies (Sidaama in our case) have relatively simple, consistent, and complete connections between letters and phonemes, which help readers, perform the task easier. The orthographic depth hypothesis predicts that the more transparent the orthography, the faster the children will learn to read aloud (Ellis et al., 2004). The overall frequency distribution under this category also showed that there has been confusion. Confusions occur when students identify identical symbols that have different pronunciations in L1 and L2. Students recognized the Sidaama letter names instead of the English ones.

Conclusions and a Way Forward

The research findings are clear: early-grade learners face significant obstacles when attempting to read in two languages, particularly if those languages share a writing system with notable differences in their orthographic structures. When tested for reading, children exhibit greater accuracy when reading letters and sounds in Sidaama's transparent orthography than in English's deep orthographic system. However, confusion was still observed across the two languages, with students often mixing up their letters and sounds. Confusion arises when students attempt to distinguish between identical letters and sounds in both languages.

Since letter knowledge is a fundamental component of reading in the early grades, it is important to address these challenges from the beginning. Struggling learners in the early grades are also at risk of developing reading difficulties (Acha, 2023). Therefore, the study strongly recommends that educators focus on clearly teaching the orthographic variances between the two languages to their students and prioritize identifying and addressing any reading difficulties in the early stages of learning.

References

Acha, Joana, Nuria Rodriguez, and Manuel Perea.2023. "The role of letter knowledge acquisition ability on children's decoding and word identification: Evidence from an artificial orthography." Journal of research in Reading 46, (4): 358-375.

Anbessa, Teferra. 2019. The past and present orthographies of Sidaama (Sidaamu Afoo). *Ethiopian Journal of Languages and Literature*. (15) 35-56.

Aro, Mikko. 2004. "Learning to Read: The Effect of Orthography". In *Social Research.* University of Jyuvaskyla Press.

Barnitz, John G. 1978. “Interrelationship of orthography and phonological structure in learning to read.” *Center for the Study of Reading Technical Report; no. 057.*

Bassetti, Ben, Paolo Mairano, Jackie Masterson, and Tania Cerni. 2020. “Effects of Orthographic Forms on Second Language Speech Production and Phonological Awareness, With Consideration of Speaker-Level Predictors.” *Language learning* 70, (4): 1218-1256.

Bialystok, Ellen, Gigi Luk, and Ernest Kwan. 2005. “Bilingualism, biliteracy, and learning to read: Interactions among languages and writing systems.” *Scientific studies of reading* 9, (1): 43-61.

Bild, Eva-Rebecca, and Merrill Swain. 1989. "Minority language students in a French Immersion program: Their French proficiency." *Journal of Multilingual & Multicultural Development* 10, (3): 255-274.

Borleffs, Elisabeth, Ben AM Maassen, Heikki Lyytinen, and Frans Zwarts. 2019. «Cracking the code: The impact of orthographic transparency and morphological-syllabic complexity on reading and developmental dyslexia.” *Frontiers in Psychology* (9): 2534.

Cahill, Michael, and Elke Karan. 2008. “Factors in designing effective orthographies for unwritten languages." *SIL International.*

Carrasco-Ortiz, Haydee, Mark Amengual, and Stefan Th Gries. 2021. “Cross-language effects of phonological and orthographic similarity in cognate word recognition: The role of language dominance.” *Linguistic approaches to bilingualism.* 11 (3): 398-417.

Cohen, Louis, Lawrence Manion, and Keith Morrison. 2002. *Research methods in education (7thed.).* Routledge : Taylor & Francis Group.bb

Creswell, John W., and J. David Creswell. 2018. Research Design*: Qualitative, quantitative, and mixed methods approaches.* Los Angles: SAGE publications.

Daniels, P.J.1986. “Cognitive models in information retrieval—an evaluative review.” *Journal of documentation* 42, (4): 272-304.

Ellis, N. C., Natsume, M., Stavropoulou, K., Hoxhallari, L., Van Daal, V., Polyzoe, N., Tsipa, M. & Petalas, M. 2004. The effects of orthographic depth on learning to read alphabetic, syllabic, and logographic scripts. *Reading Research Quarterly.* 39, (4): 438–468.

Faber, David. 1987. "The accentuation of intransitive sentences in English1." *Journal of Linguistics* 23, (2): 341-358.

Foulin, J. N. 2005. Why is letter-name knowledge such a good predictor of learning to read? Reading and writing (18):129-155.

Georgiou, G. K., Torppa, M., Manolitsis, G., Lyytinen, H. & Parrila, R. 2012. Longitudinal predictors of reading and spelling across languages varying in orthographic consistency. *Reading and Writing.* 25, (2): 321–346.

Hulme, Rachael C., Laura R. Shapiro, and Joanne SH Taylor. 2022. "Learning new words through reading: do roust spelling-sound mapping boost learning of word forms and meanings?" Royal Society Open Science 9, (12): 210555.

Katz, Leonard, and Ram Frost. 1992. "Orthography, phonology, morphology, and meaning: An overview." *Advances in Psychology* (94): 1-8.

Kawachi, Kazuhiro. 2007. *A grammar of Sidaama (Sidamo), a Cushitic language of Ethiopia*. State University of New York at Buffalo.

Ligembe, Nestory Nyamwala. 2014. "Factors Affecting the Acquisition of Reading Skills in Kiswahili in Primary Schools: The case of Musoma municipal and Misungwi district council*."*

Miller, Ryan T. 2019. "English orthography and reading." *The TESOL encyclopedia of English language teaching* (1): 7.

Ortega, Mireia. 2008. "Cross-linguistic influence in multilingual language acquisition: The role of L1 and non-native languages in English and Catalan oral production." *Íkala, revista de lenguaje y cultura* 13, (19): 121-142.

Piper, Benjamin. 2010. "Ethiopia Early Grade Reading Assessment regional findings annex." *Research Triangle Park, NC: RTI International*.

Piper, Benjamin & Agatha J. van Ginkel. 2017. "Reading the script: How the scripts and writing systems of Ethiopian languages relate to letter and word identification." *Writing Systems Research* 9, (1): 36-59.

Read M & E. 2016. Reading for Ethiopia's Achievement Developed Monitoring and Evaluation*. Center for the Study of Reading Technical Report,* (057)*.*

Read M & E. 2019. "Reading for Ethiopia's Achievement Developed, Monitoring & Evaluation." *(READ M & E) Early Grade Reading Assessment (EGRA) in Three Mother Tongues (Aff Somali, Sidamu Affoo and Tigrigna)*. Data Analytic Report.

Rey, Arnaud, and Niels O. Schiller. 2005. "Graphemic complexity and multiple print- to-sound associations in visual word recognition." *Memory & cognition* 33, (1): 76-85.

Rossi, Sonja, Manfred F. Gugler, Angela D. Friederici, and Anja Hahne. 2006. "The impact of proficiency on syntactic second-language processing of German and Italian: Evidence from event-related potentials." *Journal of cognitive neuroscience*, 18, (12): 2030-2048.

RTI International. 2015. *Annual report*, July 2014–June 2015. Prepared for USAID under the Reading for Ethiopia's Achievement Developed (READ) Technical Assistance project, Cooperative Agreement No. AID-663-A-12-00013. Addis Ababa and Research Triangle Park, NC: RTI reading 9, (2) : 167-188. *Review of Education.*

Schmalz, Xenia, Eva Marinus, Max Coltheart, and Anne Castles. 2015. "Getting to the bottom of orthographic depth." *Psychologic bulletin & review* 22, (6): 1614-1629.

Seymour, Philip HK, Mikko Aro, Jane M. Erskine, and Collaboration with COST Action A8 Network. 2003. "Foundation literacy acquisition in European orthographies." *British Journal of psychology* 94, (2): 143-174.

Solomon, Abera. 2014. "Status and Determinants to Reading Skill Development: Grade Four." *Unpublished MA Thesis. Addis Ababa: Addis Ababa University*.

Van Daal, Victory HP, and Malin Wass. 2016. "First- and Second-Language Learnability Explained by Orthographic Depth and Orthographic Learning: A "natural" Scandinavian Experiment. *Scientific Studies of Reading.* 21, (1): 46-59.

Watt, William C., ed. 2013. Writing systems and cognition: Perspectives from psychology, physiology, linguistics, and semiotics. Vol. 6. *Springer Science & Business Media*.

Yri, Kjell Magne. 2004. "Orthography and phonology in Sidaamu Afoo (Sidamo)." *Journal of Ethiopian Studies (*37) : 41-56.

Ziegler, Johannes C., & Usha Goswami. 2005. "Reading acquisition, developmental dyslexia, and skilled reading across languages: a psycholinguistic grain size theory." *Psychological bulletin* 131, (1): 3.

Ziegler, Johannes. C., Bertrand, D., Tóth, D., Csépe, V., Reis, A., Faísca, L., Saine, N., Lyytinen, H., Vaessen, A., & Blomert, L. 2010. Orthographic depth and its impact on universal predictors of reading: A cross language investigation. *Psychological Science* 21, (4): 551-559.