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EVALUATING PHONOLOGICAL AWARENESS STANDARDS IN GHANA'S NATIONAL CURRICULUM

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Abstract

Phonemic awareness is a reliable predictor of later reading achievement and an essential component of early reading and language instruction. The evidence suggests that students who do not develop an understanding of the alphabetic principle, the relationship between phonological and orthographic units of language, are at increased risk for difficulties in word reading, fluency, and reading comprehension. While a substantial body of research has examined phonemic awareness through experimental and intervention-based studies, relatively little attention has been given to the extent to which national curriculum standards align with evidence-based practices in phonological awareness instruction. This study addresses this gap through a content analysis of Ghana's national language and literacy curriculum standards. Using the stages of the Phonological Awareness Screening Test (PAST) as an analytical framework, the study examined the presence and frequency of phonological awareness skills across the early, basic, and advanced developmental stages. Findings indicate that Ghana's curriculum standards are predominantly focused on the early and basic stages of phonological awareness development, with comparatively limited emphasis on advanced phonemic awareness skills. The results suggest a need to strengthen curriculum standards to better reflect the full developmental continuum of phonological awareness and evidence-based literacy instruction, particularly for early grade learners.

Keywords

Phonological awareness, phonemic awareness, curriculum standards, language instruction, reading instruction, alphabetic principle

1.0 Introduction

Phonological awareness is critical for learning to read in languages with alphabetic writing systems (NICHD, 2000). In some African countries, including Ghana, where multiple languages have alphabetic writing systems, the language-literacy issue remains a dominant concern for educators (Owu-Ewie, 2006). Given Ghana's linguistic diversity, national-level language and literacy instruction policies and interventions have largely been informed by multilingual and mother-tongue-based education approaches. The historical analyses of these language-in-education policies have been extensively documented by Ansah (2014) and Owu-Ewie (2006). Students in the public school system

start school learning in their first language; however, by grade 4, which is around age 10, children are taught to learn and read in English, as English is the official national language. This transition is mandated by the existing language policy in the Ghana Education Service. Several factors, including linguistic diversity and orthographical and pedagogical challenges, impede the acquisition and development of reading and literacy skills among multilingual learners in Africa (Share, 2023).

Phonological awareness is strongly related to word reading. The lack of phonological awareness abilities can be an underlying cause of reading difficulties (Hulme et al., 2012; Melby-Lervåg et al., 2012). The human brain automatically processes phonological codes during language learning; however, reading and writing in alphabetic languages require conscious awareness of the phonological processing aspect of speech (Moats, 2020). The explicit teaching of systems of language, including phonological awareness instruction, is beneficial for enhancing decoding and word-reading skills. Therefore, it is important to address gaps in the curriculum and learning materials that overlook subskills that contribute to reading development. Like many alphabetic coding skills, phonological awareness must be taught explicitly, and even when taught explicitly, some students still have difficulty acquiring it. In this study, we evaluate the phonological awareness standards and indicators in the national language and literacy curriculum for kindergarten and elementary school learners in Ghana's public school system.

Currently, Ghana's Language in Education Policy mandates the use of eleven (11) local languages as the language of instruction from kindergarten to primary 3, with English as a subject of instruction. Transitioning to English as the language of instruction after primary 3 presents many challenges for students. Learning to read in any of the 11 languages of instruction, including English, continues to be a struggle for learners in the early years of schooling. The Multiple Indicator Cluster Survey (Arthur et al., 2020) found that only 7% of children in grade 3 in Ghana exhibit grade-level reading skills (See the Education Analysis for Global Learning and Equity – EAGLE), and a significant number of public school students in Ghana do not develop foundational literacy skills after completing six years of primary education (Ghana Education Fact Sheet, USAID, 2023). Generally, deciphering the alphabetic principle and learning to decode words is challenging for some students (Byrne et al., 2005; Moats, 2020); thus, there is a need to teach all foundational reading skills, including phonological awareness, to all children using the most effective strategies.

Similar to English, the writing systems for the 11 languages of instruction used from kindergarten to grade 3 are alphabetic, consisting of vowels and consonants. Asante et al. (2022) identified distinct differences in the phonology of "Ghanaian English," particularly in consonant sounds. For students to learn to read, it is important to teach children the relationship between orthographic units (letters and spelling) and phonological units (sounds) in their first language during the learning-to-read phase.

In the recent past, efforts to improve early literacy achievement in Ghana's public school system led to the introduction of the Early Grade Reading Assessment (EGRA) and the Early Grade Mathematics Assessment (EGMA). The National Education Assessment Unit (NEA) of the Ministry of Education conducted the EGRA in 2013 and 2015. The EGRA assessments were intended to provide information on the state of reading achievement among primary two students in Ghana in both English Language and the 11 languages of instruction (Kochetkova & Brombacher, 2014). The EGRA reading tool

included subtasks measuring comprehension elements such as listening comprehension, letter-sound identification, non-word reading, oral passage reading, and reading comprehension. The EGRA assessment was administered to a random sample of Primary 2 pupils from 738 schools in English and the 11 languages of instruction across Ghana. The EGRA report concluded that across all 11 languages of instruction, at least half—and often more—of the pupils assessed were unable to read a single word correctly in their native language or English. Some pupils recognized a few words, but not enough to comprehend what they read (Ghana Education Service, 2016). The Early Grade Reading Assessment and the Early Grade Mathematics Assessment reported that out of the pupils assessed in each language, 2 percent or less could read with fluency and comprehension. Most children could not identify the sounds or phonemes of letters in the English language and the 11 languages of instruction. To date, Ghana's education system has not effectively addressed the challenges many students face in learning to read in the 11 local languages from grades K-3 and then in English.

Since the EGRA assessments, efforts have increased to align curriculum standards and learning materials with evidence-based practices in early literacy education. In this study, we evaluate the content of the National Council for Curriculum and Assessment (NaCCA) language and literacy standards with a specific focus on reading standards related to phonological awareness and their alignment with evidence-based practices for teaching phonemic awareness. NaCCA is a centralized national education agency responsible for developing national curriculum and assessment standards for Ghana's first and second-cycle schools in the public school system. To frame and contextualize this study, and evaluate the standards in the current curriculum, we reference the theoretical models of reading development that have shaped curriculum standards and the content of beginning reading instruction, highlighting how phonological awareness contributes to reading development.

1.1 Theoretical Models Informing Foundational Reading Standards

In English-speaking countries, the standards for foundational reading that are considered evidence-based draw on several theories and models of reading development, including the Simple View of Reading (Gough & Tunmer,1986), the National Reading Panel (2000), Scarborough (2001), the Cognitive Foundations for Reading and its Acquisition (Hoover & Tunmer, 2020), and the Active View of Reading (Duke & Cartwright, 2021).

As a framework for reading development, Gough and Tunmer's Simple View of Reading (SVR) posits that reading is a product of two sets of skills: word recognition and language comprehension. SVR emphasizes that successful readers have the knowledge and skills to identify words and comprehend text. Thus, the causes of reading difficulties may stem from problems with word reading, language comprehension, or both. SVR is used to identify different types of reading problems. According to the SVR conceptualization of reading development, the three varieties of reading difficulties have different causes. Word reading is the foundation for reading comprehension, and comprehension depends on the ability to decode (Snowling & Hulme, 2011). Word reading allows readers to focus their attention on comprehension. Scarborough (2001) illustrated the subskills for word recognition in a visual representation that includes sight words, alphabetic principle, phonological awareness, and phonemic awareness. As word reading becomes increasingly

automatic, successful readers also draw on higher-level language skills, including language comprehension, syntactic parsing, lexical access, semantic skills, background knowledge, and inferencing to extract meaning from connected text. The Cognitive Foundation for Reading Skills Acquisition (Hoover & Tunmer,2020) emphasizes the subskills for reading development. In the Active View of Reading, Duke and Cartwright (2021) argue that reading difficulties arise from causes beyond decoding and listening comprehension. Also, they contend that decoding and language comprehension overlap significantly, rather than functioning entirely independently. Other factors, including active self-regulatory processes, play a critical role in reading. Subsequent models of reading development expand on SVR by highlighting the complex, multidimensional nature of skilled reading and the many factors that account for reading comprehension, including general, contextual and cultural knowledge. All the models of reading development discussed recognize the pivotal role of phonemic awareness in word reading.

Deficiencies in phonemic awareness directly cause word-reading difficulties in beginning and struggling readers (NICHID, 2000). Bishop and Snowling (2004) found that challenges in learning to read may stem from impairments in phonological sensitivity and other oral language skills. Reading development heavily relies on early exposure to oral language skills. Therefore, we assert that language and literacy curriculum standards for foundational reading skills at the national, state, district, or school level must prioritize explicit instruction in phonemic awareness due to the reciprocal relationship between phonemic awareness and word reading. Also, phonemic awareness instruction is sometimes confused with phonics instruction. It is important to emphasize the difference to educators. Phonics instruction emphasizes the direct relationship between written language and spoken language. Phonics instruction teaches the correspondence between phonemes and graphemes. Phonemic awareness and phonics instruction teach students how to blend or segment the sounds in words using graphemes or letters.

In this study, we sought to evaluate the extent to which the components of phonological awareness instruction have been integrated into Ghana's national language and literacy standards for K-3, as outlined in the NaCCA's new syllabus for language and literacy. To do this, we pivot from the discussion of theoretical models that have influenced the content and methods of beginning reading instruction to the role of phonological awareness instruction in supporting reading development. We define the phonological and phonemic awareness concepts and discuss their contributions to reading development. We examine the relationship among phonemic awareness, word reading, and text comprehension. Additionally, we provide an overview of the role of standards in reading education and then present the argument for integrating and aligning a logical, well-sequenced phonological awareness framework with the national reading instruction curriculum standards for all beginning readers.

1.2 Phonological Awareness Instruction

Phonological awareness is a broad term that refers to the awareness of sounds in spoken words, including syllables, onset-rime, and phonemes. Phonemic awareness is a subset of phonological awareness and refers to the ability to notice, identify, and manipulate the individual sounds in spoken words. For example, the word "sat" has three phonemes: /s/, /a/ /t/, while "shot" also has three phonemes: /sh/, /o/, and /t/. Phonological

processing encompasses the automatic mental processing of speech codes during speaking, listening, reading, and spelling. When students cannot fully process individual sounds or phonemes they find it challenging to store spoken words with the level of specificity required for mapping the orthographic units (letters) to the phonological units (individual sounds) for reading and spelling (Perfetti, 2007). Although speaking does not require accurate spoken word memory, having a precise mental image of phonemes is essential for reading and spelling. So, phoneme awareness is a stronger predictor of reading than phonological sensitivity awareness, or the awareness of larger units of language, including syllables, onset, and rime (Brady, 2020).

Phonemic awareness does not seem to be the final stage in the natural development of phonological awareness. Studies have shown that in cultures with different literacy standards, individuals demonstrate phonological sensitivity but do not achieve full awareness of phonemes, even into adulthood (Morais et al., 1979). Thus, phonemic awareness instruction is the key goal of any phonological awareness instruction. The relationship between phonemic awareness and reading is likely reciprocal causation (Hogan et al., 2005; Perfetti et al., 1987) or mutual facilitation (Shaywitz, 2003; Liberman et al., 1974), so phonemic awareness instruction reinforces reading ability while reading also enhances phonemic awareness. Phonemic awareness is a key predictor of reading success (Al Otaiba et al., 2012; Blachman et al., 2000). Students learning to read may benefit from phonemic awareness instruction when taught within a structured literacy program delivered by capable and knowledgeable reading teachers (NICHD, 2000). Exposing children to phonological awareness instruction as early as preschool and continuing through second grade helps them focus on the sounds at the beginning, middle, and end of words over time. Beginning readers and those with weak phonemic awareness skills often struggle with word recognition and exhibit weaknesses in phonological processing. Therefore, phonemic awareness knowledge of preschool children is the best predictor of their future reading ability, better than either socio-economic status or intelligence (Bowey 2005; Melby-Lervåg et al., 2012). Goswami (2000) and Shaywitz (2003) suggest that learners struggling with basic alphabetic coding skills in decoding predictable consonant-vowel-consonant (CVC) and vowel-consonant (VC) words have difficulty perceiving sounds in spoken words that are unclear or inaccurate. Struggling readers often perform poorly on various phonological tasks. Phonological awareness tasks prescribed in reading curricula may include rhyming, repeating a short vowel sound, blending sounds (for example, combining /b/, /ɪ/, and /t/ to form the word "bit"), and separating the first sound in a three-sound word as in "mat," which breaks down to /m/ a/t/. Students who struggle to read and spell isolated words may benefit from explicit instruction in phonemic awareness, which can improve their ability to perceive speech sounds.

1.3 The Role of Phonemic Awareness in Second Language Reading

Phonemic awareness skills enhance word reading and other language abilities, including vocabulary, grammar, and reading comprehension (Muter et al., 2004; Al Otaiba et al., 2012). Research in many languages demonstrates that phonemic awareness skills developed in one language transfer to other known languages (Farrall, 2012). Koda (2007) explored the effects of first-language transfer on second-language word reading. Transfer is drawing on previously acquired skills to learn new skills (Gass & Selinker,1983). Phonological processing in the first language influences word reading in the second

language (Chow et al., 2005). Educators may identify dual language learners with difficulties learning to read through phonemic awareness and alphabetic coding assessments (Cárdenas-Hagan, 2020). While children in bilingual programs in non-native countries learning English as a second language may be familiar with the sound system of their mother tongue, not all children will be familiar with the phonemes in English. We argue that teaching early phonological awareness, basic phonemic awareness and advanced phonemic awareness should be at the core of any reading standards, and/or Language Arts curriculum standards for beginning readers.

1.4 Curriculum Standards and Phonological Awareness Instruction

With evidence-based reading instruction practices, curriculum standards for foundational reading skills serve as a roadmap for educators when selecting and designing reading programs and lesson plans. Generally, curriculum standards help teachers identify the key skills and knowledge students need to develop in any domain of learning. Curriculum standards provide guidance to users on how to sequence instruction in various areas of study. The positive effects of phonemic awareness instruction on decoding and language comprehension outcomes (Ehri et al., 2001) have led several states and districts to include phonemic awareness standards as part of foundational reading standards in their Language Arts curriculum standards. Additionally, curriculum standards for foundational reading skills serve as both an assessment and accountability measure, providing educators with tools to evaluate performance and track students' progress. By aligning assessments with standards, educators are better positioned to evaluate whether students are meeting grade-level expectations.

The curriculum standards for phonological awareness reflect the progression of phonological awareness development. Kilpatrick (2015) categorized the progression of phonological awareness into three stages: early phonological sensitivity, basic phonemic awareness, and advanced phonemic awareness. Early phonological sensitivity skills include awareness of larger speech sounds in spoken words, onset-rime, and syllables. Basic phonemic awareness encompasses awareness of individual sounds in spoken words with simple syllable patterns, as in CV, VC, and CVC words. Advanced phonemic awareness covers spoken words with advanced syllables and consonant blends (CCVC, CVCC, CCVCC). A consensus has been reached on the importance of teaching phonemic awareness in the early years. What is not so clear is how to teach phonological awareness logically and sequentially under different learning conditions. Blachman et al. (1991) argued that where there are time constraints, phonological awareness instruction may initially focus on teaching phoneme awareness and transition to phonics instruction without emphasizing phonological sensitivity. Also, Clemen et al. (2021) have questioned the benefits of teaching advanced phonemic proficiency in isolation without connecting it to letter knowledge. In the United States, the standards for foundational reading skills form part of the *Common Core Standards for English Language Arts and Literacy*, also referred to as the Common Core, which was developed by the National Governors Association and the Council of Chief State School Officers and launched in 2009 (National Governors Association Center for Best Practices, Council of Chief School Officer, 2010). The Common Core Standards for phonological awareness in the Common Core Standards for

English Language Arts are captured in LA -Literacy. R.F.K2 and CSS.ELA-Literacy.RF.1.2 as shown in Table 1 and Table 2 below.

Table 1

Standard CSS. ELA- RFK2 indicates that students are expected to demonstrate an understanding of spoken words, syllables, and phonemes.

Standard	Indicator
CSS.ELA-Literacy.RF.K.2	Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
CCSS.ELA-Literacy.RF.K.2a	Recognize and produce rhyming words.
CCSS.ELA-Literacy.RF.K.2b	Count, pronounce, blend, and segment syllables in spoken words.
CCSS.ELA-Literacy.RF.K.2c	Blend and segment onsets and rimes of single-syllable spoken words.
CCSS.ELA-Literacy.RF.K.2d	Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words. (This does not include CVCs ending with /l/, /r/, or /x/.)
CCSS.ELA-Literacy.RF.K.2e	Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.

Table 2

CSS.ELA-Literacy.RF.1.2 indicates that students are expected to demonstrate understanding of spoken words, syllables, and phonemes

Standard	Indicator
CSS.ELA-Literacy.RF.1.2	Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
CCSS.ELA-Literacy.RF.1.2a	Distinguish long from short vowel sounds in spoken single-syllable words.
CCSS.ELA-Literacy.RF.1.2b	Orally produce single-syllable words by blending sounds (phonemes), including consonant blends.
CCSS.ELA-Literacy.RF.1.2c	Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words.

CCSS.ELA-Literacy.RF.1.2d	Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes)

As indicated in Table 2, the scope and sequence of phonological awareness in the Common Core Standard for English Language Arts and Literacy reflect the full continuum of phonological awareness development. Most language and literacy standards documents will specify content, performance, and assessment standards for the strands. While content standards specify the knowledge and skills that students should be able to know and do at a particular grade level in a content area, performance standards describe the levels of achievement that students must demonstrate to show mastery of the content standards. Curriculum standards are accompanied by guidelines that help teachers assess student progress in the strands or subject domains for an area of study. Assessment standards often specify the methods for evaluating students' reading abilities. Most assessment standards utilize valid and reliable assessments that are aligned with content and performance standards. Effective teaching requires alignment and coherence among the curriculum standards and instructional and assessment practices.

In practice, the scope and sequence for phonological awareness instruction reflect the tasks captured in the three stages of phonological awareness development, which shows the continuum of phonological awareness development abilities by difficulty level. Carefully planned phonological awareness instruction has a significant influence on students' reading and spelling achievement (Ball & Blachman, 1991). For instance, because smaller linguistic units are more difficult to manipulate, most children may find it easier to identify the word *boy* than the consonant phoneme /b/ and vowel phoneme /oy/ that make up the word *boy*. Integrating phonological awareness tasks across difficulty levels is critical for maximizing the benefits of phonological awareness instruction for all students, particularly for children with deficits in this domain.

Having discussed the elements of standards and the content of phonological awareness instruction as specified by the Common Core standards, we will now examine the features of some popular tools used for assessing phonological awareness skills in early-grade classrooms. First, we discuss these tools because they provide background information on our approach and methods. Secondly, we also intend to clarify and explain our rationale and justification for using the Phonological Awareness Screening Test (PAST) as an analytical tool for evaluating the NaCCA standards in this study.

1.5 Instruments for Assessing Phonological Awareness and Phonemic Awareness

In improving reading achievement in early learners, assessing phonological awareness skills serves two purposes: early screening and progress monitoring. Early screening assessment tools are used to identify students who are at risk of reading difficulties. Screening assessment leads to the early identification of learners with specific language impairments and phonologically based speech impairments, and those at a heightened risk of encountering difficulties in reading. The predictive power of phonological awareness screeners may be attributed to their utility for measuring word reading skills and other semantic, syntactic, and morphological abilities that impede reading comprehension (Gillon, 2004, 2018; Kamhi & Catts, 2012). Progress monitoring

assessments are used to track learners' progress over time. The data gathered is used for instructional decisions. Common phonological awareness screeners include *Dynamic Indicators of Basic Early Literacy Skills* -DIBELS (Good and Kaminski, 2002)*, Phonological Awareness Literacy Screening* – Kindergarten PALS-K (Invernizzi et al., 2003), and *Phonological Awareness Screening Test* -PAST (Kilpatrick, 2015). DIBELS has been described as a research-based method for designing and validating curriculum-based measures of reading. The items on the DIBELS measure various language abilities, including phonological processing and other reading comprehension skills. The evaluation of the validity and effectiveness of DIBELS indicates that its measures are mostly accurate at predicting and identifying students who will later experience reading difficulties and need intervention (Good et al., 2001). Critics of DIBELS argue that it is not an adequate indicator of reading comprehension (Goodman, 2006; Manzo, 2005), the overall purpose of reading. On the other hand, PALS-K has been described as a criterion-referenced screening, diagnostic, and progress-monitoring tool. PALS-K and DIBELS have subtests that measure the foundational skills and abilities necessary for word reading. PA Screening tests usually assess rhyme detection, sound identification, phoneme blending and segmentation (Catts et al., 1997). Examples of tasks that screeners assess are captured in Table 3. Similarly, PAST is recognized as a valid and reliable tool for assessing phonological awareness. It takes 5-8 minutes to administer. It correlates strongly with word-level reading and other phonological awareness tests (Perfetti et al., 1987; Vellutino, 2004; Wagner et al., 1994). Also, the PAST is a readily available public domain resource. The PAST is a third-generation version of Rosner and Simon's Auditory Analysis Test developed five decades ago (Rosner and Simon, 1971). Kilpatrick revised it based on three decades of research and clinical experience. It is validated because it has been tested on diverse groups of users with samples comprising of kindergarten through college students.

We utilized the three stages in the PAST instrument as the measures for evaluating the standards in the NaCCA curriculum. To evaluate the extent to which c the components of phonological awareness instruction have been integrated into the NaCCA's current syllabi for K-3.

2.0 Methodological Approach

The evaluation of the scope and sequence of the NaCCA curriculum standards against the scope and sequence recommended by the stages and levels prescribed by PAST was intended to highlight the contrast between the scope and sequence of standards in the NaCCA curriculum and the research-based measures for scope and sequence of PA instruction. The measures captured in PAST were appropriate for use in the study because we sought to establish the extent to which the phonological awareness standards in kindergarten and grades 1-3 align with widely accepted research-based measures for phonological sensitivity, basic phonemic awareness, and advanced phonemic awareness development. The categorization of the standards and indicators in the national curriculum documents into the three stages made it possible to determine the extent to which elements of phonological awareness instruction in the NaCCA language and literacy standards align with the tasks on the PAST. Table 3 indicates examples of phonological awareness tasks that are specified in curriculum standards.

Also, we used content analysis as a methodology (Krippendorff, 2004, 2018) because content analysis is especially valuable for identifying trends and patterns in

documents that capture institutional or public policy. This makes content analysis suitable for analyzing educational standards, which convey priorities and values to both the public and educators (Krippendorff, 2018; Stemler, 2000). We drew on the comparative analytical approach to explore our research question: How do the phonological awareness standards and indicators outlined in NaCCA's standards-based language and literacy curriculum for English Language align with the stages of phonological awareness development outlined in the PAST? Using an evidence-based theoretical lens, we analyzed all standards and indicators in the national language and literacy curricula for kindergarten and primary 1-3 reading standards to determine the extent to which these standards converge or deviate from the measures specified by the PAST.

2.1 Defining the Units for Coding and Analysis

A key challenge faced while designing the study was identifying and defining the units for coding, analyzing, and interpreting the data. Thus, we coded all the standards and indicators in the national curriculum for both kindergarten and grades 1-3 documents using the codes captured in the qualitative content analysis codebook for evaluating language and literacy standards (Hammond & Kelley, 2024). After coding all standards and indicators using the codes for the subskills in the meaning emphasis, alphabetic-coding emphasis, and sociocultural clusters of codes, we conducted an in-depth, second-level analysis of all the codes that were related to phonological awareness instruction using the levels and stages in the Phonological Awareness Screening Test (Kilpatrick, 2015) as an evaluation tool to establish how the phonological awareness standards in each stage converge or deviate from the measures in the PAST elements as captured in Table 4.

2.2 Procedures for Coding PA Standards and Indicators

As indicated, the data analyzed comprises all standards and indicators from the entire kindergarten and primary 1, 2, and 3 curricula, as captured in syllabi published by the National Council for Curriculum and Assessment in 2019. We coded all standards and indicators related to phonological awareness in the kindergarten and grades 1-3 curriculum documents. Using the difficulty stages in the PAST as the measures, we recategorized the standards into early phonological sensitivity, basic phonemic awareness, and advanced phonemic awareness tasks. We conducted an in-depth analysis of the standards, categorizing each by the nature of the task (Table 3) and the stages (Table 4 below). Table 4 shows the stages of phonological development and examples of tasks in the early phonological sensitivity, basic, and advanced stages of phonemic awareness development. To evaluate and ascertain the alignment, or deviation, of national language and literacy curriculum standards for phonological awareness with evidence-based measures of phonological awareness instruction, we selected an evaluation instrument that is well-validated and reliable, and aligns with the scientific study of phonological awareness development. The measures on the PAST tests have been categorized to reflect the continuum of phonological awareness development.

Table 3

Progression of Early Phonological Awareness and Phoneme Awareness Development

Name of Task	Description of Task
Rhyming	Matching (Which words rhyme? Goat, say, boat) Production (Tell me a word that rhymes with sock.)
Alliteration	Matching (Which picture starts with the same sound as the zoo?) Categorization (Find all the things that start with /m/.)
Blending	Syllables (Put this word together: kan – ga – roo) Onset/rime units (Put this word together: s – ink) Phonemes (Put this word together: sh – ee – p)
Segmenting	Syllables (Say the syllables in Melanie.) Onset/rime units (Break van into two parts.) Phonemes (Say three sounds in mouse; move a chip into a box as you say each sound).

Adapted from Speech to Print: Language Essentials for Teachers (Louisa Cook Moats, 2020)

Table 4

Early to Advanced Progression of Phonological Awareness (based on Kilpatrick's Phonological Awareness Screening Test, 2015)

Stage	Task Focus	Task	Example
Early Phonological Sensitivity Tasks	Deletion of Syllable	Delete a syllable from two-syllable word	Say "bookcase" Now say "bookcase" but don't say "case."
	Deletion of syllable	Delete a syllable from three-syllable word	Say "December." Now say "December," but don't say "de."
	Deletion of Onset	Delete a syllable from a single syllable	Say "feet." Now say "feet," but don't say /f/.

	Change the Onset	Change the onset, keeping the rime	Say "done." Now say "done," However, instead of /d/, say /r/. (run)
Basic Phoneme Awareness Tasks	Deletion of Phoneme	Delete a beginning phoneme from a word that begins with a blend.	"Say, sleep. Now say sleep but do not say /s/."
	Substitution of Phoneme	Substitute an initial phoneme in a word beginning with a blend.	"Say, sleep. Now say sleep but do not say /s/."
	Deletion of the final phoneme	Delete a final phoneme	Say wheat. Now say wheat, but do not say /t/."
Advanced Phoneme Awareness Tasks	Substitution of vowel in one syllable	Substitute a medial vowel in a one-syllable word.	"Say ran. Now, say ran, but instead of /a/, say /u/."
	Deletion of a second phoneme	Delete the second phoneme in an initial blend.	Say bread. Now say bread but don't say /r/."
	Substitution of a second phoneme	Substitute the second phoneme in a blend.	Say, crew. Now, say crew, but instead of /r/ say /l/."
	Substitution of a final phoneme	Substitute a final phoneme.	Say some. Now say some, but instead of /m/, say /n/."
	Deletion of internal phoneme	Delete the internal phoneme in a final blend.	Say ghost. Now say ghost, but do not say /s/."
	Substitution of internal phoneme	Substitute the internal phoneme in a final blend.	Say west. Now, say west, but instead of /s/, say /n/."

Adapted from Speech to Print: Language Essentials for Teachers (Louisa Cook Moats, 2020

2.3 Analytical Approach

We used frequency measures to determine the occurrence of standards and indicators across the three stages in the PAST. In the following section, we present the results of the analysis by calculating frequency values as percentages, comparing them, and drawing inferences. We analyzed the frequency values of the early, basic, and advanced measures on the PAST. The data from the kindergarten and primary 1-3 documents were analyzed separately.

3.0 Results

The results presented are specific to standards and indicators in both the kindergarten and grades 1-3 curricula. First, we present the distribution of all phonological awareness standards by calculating the percentage of standards and indicators in kindergarten and primary 1-3 curriculum documents. We also examine the scope and sequence of phonological awareness skills by calculating the percentages of standards and indicators that reflect early phonological sensitivity, basic phonemic awareness, and advanced phonemic awareness skills, and discuss the results.

3.1 Distribution of Standards between Kindergarten and Primary 1-3

Overall, standards and indicators reflecting early phonological sensitivity, basic phonological awareness, and advanced phonemic awareness skills occurred fifty-five (55) times in both documents, where 39 (71%) of these 55 occurrences of phonological awareness skills were found in the kindergarten curricula standards document. In comparison, 16 (29%) of the 55 occurrences were in the primary 1-3 curriculum documents. Table 5 below presents the breakdown of standards across the kindergarten and primary 1-3 curricula, expressed in both numerical values and percentages.

Table 5.
Frequency and Occurrence of Phonological Awareness Standards between K and 1-3

Grade	Value	Percentage (%)
Kindergarten	39	71
Grade 1-3	16	29
N	55	100

3.2 Frequency and Occurrence of Early Phonological Sensitivity to Advanced Phonemic Awareness Skills

The scope and sequence for phonological sensitivity to advanced phonemic awareness skills is captured in Table 6, which shows the percentage of standards and indicators related to early phonological sensitivity skills, basic phonemic awareness skills, and advanced phonemic awareness skills.

Table 6
Frequency and Occurrence of Early Phonological Sensitivity to Advanced Phonemic Awareness *Skills*

Stage	Value	Percentage (%)

Early phonological sensitivity	34	62
Basic Phonemic Awareness	15	27
Advanced Phonemic Awareness	6	11
N	55	100

Findings on the scope and sequence for early phonological sensitivity to advanced phoneme awareness skills indicate that 34 (62%) of the 55 occurrences of the standards and indicators reflected early phonological sensitivity skills, as captured in Table 6 above. The early phonological awareness standards and indicators emphasized using songs to tune learners into sounds. The tasks in this phase emphasize syllable awareness, rhymes, and onset and rime awareness. 15 (27%) standards and indicators emphasized basic phonemic awareness skills, including phoneme blending and segmentation. Also, only 6 (11%) of standards and indicators represented advanced phonemic awareness skills, including detection and substitution of second and final phonemes and deletion and substitution of internal phonemes, as indicated in Table 6.

4.0 Discussion of Results

In general, curriculum standards, including phonological awareness standards, serve as a framework for instruction, guiding teachers on what to teach and establishing general expectations for children's learning at various stages. By understanding how phonological standards are organized and how they connect to established theories and research on phonological development, educators can ensure that these standards are educationally relevant and effectively support their teaching goals. The frequency and occurrence of the standards and indicators in both the NaCCA language and literacy curriculum (kindergarten and primary 1-3) suggest that standards and indicators largely reflect learning tasks that contribute to early phonological sensitivity to basic phonemic awareness skills. The breakdown of standards and indicators in both the kindergarten and primary 1-3 curricula suggest that the curriculum primarily emphasizes the development of early phonological sensitivity skills such as matching and producing rhyming words, matching pictures with the same sounds, and blending syllables. Early phonological sensitivity standards emphasized instruction on how to notice, think about, and work with larger units of language- syllables, onsets, and rime. On the other hand, basic and advanced phonemic awareness focus on manipulating phonemes at the beginning, middle, and end of words. The teaching materials and learning tasks prescribed in the curricula for developing phonological sensitivity include songs, poems, and games relevant to learners' daily lives and traditions. The results suggest no clear distinctions were made among the three levels: phonological sensitivity, basic phonemic awareness, and advanced phonemic awareness skills. The scope and sequence of instruction did not fully capture the research-based conceptualization of phonological awareness development as indicated on the *PAST*. In practice, the levels on the PAST provide teachers with guidance on where students are in their literacy development. School administrators and teachers may use the PAST to identify individual students who are likely to experience reading difficulties that may not be visible using informal assessments alone. Students at risk are to be monitored using

progress monitoring tools throughout the academic year. A well-designed scope and sequence for phonological awareness instruction includes all essential elements. It builds on prior skills, promotes smooth learning progression, addresses foundational competencies, and identifies gaps in knowledge while reducing redundancy across grades.

5.0 Recommendations

To enhance teachers' instruction of phonological awareness, the distinctions among phonological sensitivity skills (deletion of syllables, onsets, and rhymes), basic phonemic awareness skills (phoneme blending and segmenting), and advanced phonemic awareness skills (like the substitution of vowel phonemes and deletion of internal phonemes) should be clearly explained to teachers. Also, teaching phoneme manipulation, blending, and segmenting in words is likely to yield greater benefits when taught in conjunction with letters, as this approach is even more effective (NICHID, 2000). The syllabi for grades 1-3 must provide teachers with guidance on how to teach and assess phonological awareness logically and sequentially. Addressing this limitation is essential, as many users of the curriculum may struggle to integrate the subskills across the three levels of phonological awareness in lesson planning in a logical, sequential manner without guidance. Many teachers, particularly those new to the field, require ongoing professional development and support to effectively incorporate basic and advanced phonemic awareness instruction into their lesson planning. Providing clear and structured guidance on how to teach and assess phonemic awareness, particularly in the context of Ghanaian languages, Ghanaian English (GhE), and Standard English, is essential for supporting struggling readers. The articulation of the distinctions among the three levels will help clarify the complexities of integrating phonemic awareness into lesson planning for teachers, especially novice educators. To address the unique needs of children in Ghanaian classrooms who struggle with word reading in both Ghanaian languages and English, teachers should be aware of the similarities and differences in the phonological systems of Ghanaian languages, Ghanaian English (GhE), and Standard English. For phonological awareness instruction to be effective, it should focus on helping children distinguish the internal details of spoken words and accurately represent these internal differences in their memory. Thus, it is advisable to evaluate children in K–3 multiple times throughout the academic year to gauge their understanding, and ability to blend and segment of sounds in both their mother tongue and English. This allows for timely interventions for students who show deficiencies during the crucial stages of reading development.

In a multilingual context, teachers could identify phonological similarities and differences between English and the learner's first language to ensure instruction focuses on sounds that do not exist in the first language. (Cárdenas-Hagan, 2018). For example, in Ghana, it has been argued that consonant sounds corresponding to the dental sounds / θ / and / ð / do not occur in native Ghanaian languages. Because these sounds do not exist in the native languages of most Ghanaians, learners of English are tempted to insert the alveolar plosives /t/ and /d/ in place of the dental sounds, respectively (Asante et al., 2022). Ofori et al. (2014) argued that the nasal velar sound /ŋ/ is completely absent in "Ghanaian English" (GhE). Similarly, Koranteng (2006) argues that the sound has a phonetic realization as /n/ in GhE. Koranteng further explained that the nasal velar /ŋ/ may be pronounced as /n/, where /ŋ/ acts as a pre-velar allophone of /n/ in Ghanaian English. This suggests that Ghanaian English does not include the /ŋ/ sound in its phonetic inventory,

resulting in its replacement with /n/. Additionally, Huber (2008) also insists that, unlike Received Pronunciation (RP), Ghanaian English allows the /ng/ sound to occur in the coda position of words such as "sing" and "song". Depending on whether the orthography is shallow or deep, phonological awareness instruction may focus on larger units, such as syllables, or smaller units, including phonemes (Share, 2023). Children who struggle with reading in both English and any of the 11 languages of instruction in Ghana, and who may have underdeveloped phonemic awareness skills when they entered school, may benefit from phonological awareness instruction. Explicit and systematic teaching methods are particularly beneficial for all learners, especially those with limited oral language skills (Bursuck & Damer, 2011). It is also important to recognize that all the sounds in the International Phonetic Alphabet and the English alphabetic system have distinctive features and characteristics. As such, the differences should be taught explicitly, as the unique characteristics of the consonants and vowel phonemes in the language of instruction may not be apparent to early learners. The level of explicitness and systematic nature of instruction may need to vary based on the learner's skills (Smith et al., 1998; Archer and Hughes, 2011), especially for those at risk of reading difficulties. The literature suggests that frequent and intensive instructional sessions are crucial for effective phonemic awareness teaching (Elbaum et al., 1999; Gillon, 2004). Furthermore, the concept of the alphabetic principle requires clarification, as students must understand the differences between letters and sounds. This distinction is critical for developing word-reading skills. It is essential to teach all phonemes in English, including digraphs, trigraphs, vowel teams, blends, vowels, and diphthongs, using explicit and direct instructional approaches.

6.0 Conclusion

Phonological awareness is a crucial skill for learning to read in alphabetic languages. The process of reading development is complex and involves multiple facets. Word reading serves as a bridge between fluency and comprehension, and phonological awareness skills facilitate the development of both word reading and reading comprehension. The significance of phonological awareness in relation to word reading cannot be overstated. Using the PAST instrument, we evaluated the extent to which the elements of effective PA instruction have been integrated into Ghana's national language and literacy curriculum by analyzing the presence and frequency of occurrence of PA standards that reflect the stages of phonological awareness instruction in the K-3 curriculum of the NaCCA. The findings from the content analysis of the national curriculum documents indicated that the standards primarily address early to basic levels of phonological awareness, but there is less emphasis on advanced phonemic awareness skills. Furthermore, the organization of these standards lacks the systematic, structured, and organized approach recommended by evidence-based reading instruction principles. Regarding future directions for research, first, we acknowledge the limitations of content analysis, including its inability to establish causality in general, and other limitations specific to this evaluation, such as the inability to collect observation data from actual classroom environments and instructional practices that indicate how teachers use the standards in the curricula to develop lesson plans and teach in an actual lesson in a classroom context. Future studies seeking to improve phonological awareness instruction for children in Ghana's public schools may explore the link between teacher knowledge of

phonological awareness and its impact on the teaching of decoding, word reading, and spelling. Also, further research is needed to develop phonological awareness standards that are grounded in evidence-based practices and informed by the phonology of the languages of instruction in Ghana. Given the linguistic diversity and multilingualism in Ghanaian classrooms, most students will benefit immensely from phonemic awareness instruction when introduced to it early, as they can draw on the phonological awareness skills learned in their first language when learning to read in English.

References

Al Otaiba, S., Kosanovich, M. L., & Torgesen, J. K. (2012). Assessment and instruction for phonemic awareness and word recognition skills. In Kamhi, A. G., & Catts, H. W. (Eds.), *Language and reading disabilities* (3rd ed., pp. 112–140).

Ansah, G. N. (2014). Re-examining the fluctuations in language in-education policies in post-independence Ghana. *Multilingual education*, *4*(1), 12.

Arthur, A., Mishra, S., & Zenengeya, M. (2020). The 2020 MICS-EAGLE Ghana Education Fact Sheets: Analyses of learning and equity using MICS data [fact sheet].

Asante, E., Oppong-Adjei, B., Adjei, P.Y., & Okrah, E.K. (2022). Uniqueness of Ghanaian English pronunciation: analysis of dental fricative sounds. *European Journal of Literature, Language and Linguistics Studies* 5(4):114-131.

Ball, E.W., & Blachman, B.A. (1991). Does phoneme awareness training in kindergarten make a difference in early word recognition and developmental spelling? *Reading Research Quarterly* 26(1): 49-66.

Blachman, B.A., Ball, E.W., Black, R., & Tangel, D.M. (2000). *Road to the Code: A Phonological Awareness Program for Young Children*. Paul H. Brookes Publishing Co.

Bishop, D.V.M., & Snowling, M.J. (2004). Developmental dyslexia and specific language impairment: same or different? *Psychological Bulletin* 130(6): 858–886. Available at https://doi.org/10.1037/0033-2909.130.6.858 (Accessed 10 March 2025).

Bowey, J. A. (2005). Predicting Individual Differences in Learning to Read. In: Snowling MJ and Hulme C (eds) *The science of reading: A handbook*. Blackwell Publishing, pp. 155–172 https://doi.org/10.1002/9780470757642.ch9

Brady, S. (2020). A 2020 perspective on research findings on alphabetics (phoneme awareness and phonics): Implications for instruction. *The Reading League Journal* 1(3): 20-28.

Bursuck, W. & Damer, M. (2011). *Teaching Reading instruction for students who at risk or have*
Disabilities: A Multi-Tier Approach (2nd ed.). Pearson.

Byrne., B. (2005). Theories of Learning to Read. In: Snowling, M.J. & Hulme, C. (eds) *The science of reading: A handbook.* Blackwell Publishing, pp. 104–119. Available at https://doi.org/10.1002/9780470757642.ch6 (Accessed 10 March 2025).

Cárdenas-Hagan, E. (2018). Cross-language connections for English learners' literacy development. *Intervention In School and Clinic* 54(1): 14-21. Available at https://doi.org/10.1177/1053451218762583 (Accessed 10 March 2025).

Cárdenas-Hagan, E. (2020). *Literacy foundations for English learners: A Comprehensive Guide to Evidence-Based Instruction*. Paul H. Brookes Publishing Co.

Catts, H.W., Wilcox, K.A., Wood-Jackson, C, Larrivee, L.S., & Scott, V.G. (1997). Toward an understanding of phonological awareness. In: Leong, C. & Joshi, R. (eds). *Cross-language studies of learning to read and spell: Phonologic and orthographic processing*. Kluwer Academic Press, pp. 31-52.

Chow, B.W.Y., McBride-Chang, C., & Burgess, S. (2005). Phonological processing skills and early reading abilities in Hong Kong Chinese kindergarteners learning to read English as a second language. *Journal of Educational Psychology* 97(1): 81-87. Available at https://psycnet.apa.org/doi/10.1037/0022-0663.97.1.81 (Accessed 10 March 2025).

Clemens, N. H., Solari, E., Kearns, D. M., Fien, H., Nelson, N. J., Stelega, M., ….& Hoeft, F. (2021). They say you can do phonemic awareness instruction "in the dark", but should you? A critical evaluation of the trend toward advanced phonemic awareness training.]

Duke, N.K. & Cartwright, K.B. (2021). The science of reading progresses: Communicating advances beyond the simple view of reading. *Reading Research Quarterly* 56(11): S25-S44.

Ehri, L., Nunes, S., Willows, D., Schuster, B., Yagoub-Zadeh, Z., & Shanahan, T. (2001). Phoneme awareness instruction helps children learn to read: Evidence from the National Reading Panel's Meta-Analysis. *Reading Research Quarterly* 36(3): 250-287.

Ehri, L.C. (2020). The science of learning to read words: A case for systematic phonics Instruction. *Reading Research Quarterly* 55(S1): S45– S60. Available at https://doi.org/10.1002/rrq.334 (Accessed 10 March 2025).

Elbaum, B., Vaughn, S., Hughes, M., & Moody, S. W. (1999). Grouping practices and reading outcomes for students with disabilities. *Exceptional Children* 65(3): 399–415. Available at https://doi.org/10.1177/001440299906500309 (Accessed 10 March 2025).

Farrall, M. L. (2012). *Reading assessment: Linking language, literacy, and cognition.* John Wiley and Sons Inc. Available at https://doi.org/10.1002/9781118092668 (Accessed 10 March 2025).

Gass, S.M. & Selinker, L. (1983). *Language transfer in language learning. Issues in second language research*. Newbury House Publishers, Inc.

Gillon, G.T. (2004). *Phonological awareness: From research to practice.* Guilford Press.

Gillon, G.T. (2018). *Phonological awareness: From research to practice* (2nd ed.). Guilford Press.

Good, R.H. & Kaminski, R.A. (2002). *Dynamic indicators of basic early literacy skills (6th ed.)*.

Goswami, U. (2000). Phonological and lexical processes. In: Kamil, M.L., Mosenthal, P.B., Pearson, P.D., & Barr, R. (eds) *Handbook of reading research* Vol. 3. Lawrence Erlbaum Associates Publishers, pp. 251–267.

Hogan, T.P., Catts, H.W. & Little, T.D. (2005). The relationship between phonological awareness and reading: implications for the assessment of phonological awareness. *Language, speech, and hearing services in schools* 36(4): 285–293.

Available at https://doi.org/10.1044/0161-1461(2005/029) (Accessed 10 March 2025).

Hoover, W.A. & Tunmer, W.E. (2020). The cognitive foundations of reading and its acquisition: A Framework with Applications Connecting Teaching and Learning (1st Edition). Springer International Publishing.

Huber, M. (2008). Ghanaian English: Phonology. In: Mesthrie, R., Kortmann, B., & Schneider, E. (eds) Varieties of English: Africa, South and Southeast Asia. pp. 67-92.

Hulme, C., Bowyer-Crane, C., Carroll, J.M., Duff, F. J., Snowling, M J (2012). The causal role of phoneme awareness and letter-sound knowledge in learning to read: Combining intervention studies with mediation analyses. Psychological Science, 23(6), 572-577.

Invernizzi, M., Juel, C., Swank, L., & Meier, C. (2003). *Phonological Awareness Literacy Screening: Kindergarten (PALS-K).* University Printing Services.

Kamhi, A.G., & Catts, H.W. (Eds) (2012). *Language and reading disabilities* (3rd ed.). Pearson.

Kochetkova, E., & Brombacher, A. (2014). Ghana 2013 Early Grade Reading Assessment and Early Grade Mathematics Assessment: Report of Findings. Final Version (May 2014). USAID Ghana Partnership for Education: Testing. USAID, Washington, DC, and RTI International, Research Triangle Park, North Carolina.

Koranteng, L. (2006). *Ghanaian English: A description of its sound system and phonological features.* PhD Dissertation, University of Ghana, Ghana.

Kilpatrick, D.A., Kaufman, A.S., & Kaufman, N.L. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties (Essentials of Psychological Assessment).* John Wiley and Sons.

Kilpatrick, D. A., & McIniss, P.J. (Undated). The Phonological Awareness Screening Test (PAST): An Initial Report. https://cehs.usu.edu/teal/centers-and-labs/literacy-clinic/files/kilpatrick-resources/past-reliability-and-validity-data-copy-2021.pdf

Koda, K. (2007). Reading and language learning: Crosslinguistic constraints on second language reading development. *Special issue of Language Learning Supplement* 57 (S1): 1–44. Available at https://doi.org/10.1111/0023-8333.101997010-i1 (Accessed 10 march 2025).

Krippendorff, K. (2004*). Content analysis: An introduction to its methodology*. Sage Publications.

Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. Sage Publications.

Liberman, I.Y., Shankweiler, D., Fischer, F.W., & Carter, B. (1974). Explicit syllable and phoneme segmentation in the young child. *Journal of Experimental Child Psychology* 18(2): 201-212. Available at https://psycnet.apa.org/doi/10.1016/0022-0965(74)90101-5 (Accessed 10 March 2025).

Melby-Lervåg, M., Lyster, S.A. & Hulme, C. (2012). Phonological skills and their role in learning to read: A meta-analytic review. *Psychological bulletin* 138(2): 322–352. Available at https://doi.org/10.1037/a0026744 (Accessed 10 March 2025).

Ministry of Education (2019). *English language curriculum for primary schools* (Basic 1-3). Available at: ENGLISH-LOWER-PRIMARY-B1-B3.pdf (nacca.gov.gh) (accessed 10 March 2025).

Ministry of Education (2019). *Kindergarten curriculum for preschools* (Kindergarten). Available at: https://nacca.gov.gh/wp-content/uploads/2019/06/KG-Curriculum.pdf(accessed10 March 2025).

Moats, L. C. (2020). Teaching Reading Is Rocket Science: What Expert Teachers of Reading Should Know and Be Able to Do. *American Educator* 44(2): 4–39

Morais, J., Cary, L., Alegria, J., & Bertelson, P. (1979). Does awareness of speech as a sequence of phones arise spontaneously? *Cognition* 7(4): 323-331. Available at https://psycnet.apa.org/doi/10.1016/0010-0277(79)90020-9 (Accessed 10 March 2025).

Muter, V., Hulme, C., Snowling, M., & Stevenson, J. (2004). Phonemes, rimes, vocabulary, and grammatical skills as foundations of early reading development: evidence from a longitudinal study. *Developmental Psychology* 40(5): 665–681. Available at https://doi.org/10.1037/0012-1649.40.5.665 (Accessed 10 March 2025).

National Early Literacy Panel (2008). *Developing early literacy: Report of the National Early Literacy Panel*. National Institute for Literacy. Available at https://lincs.ed.gov/publications/pdf/NELPReport09.pdf (Accessed 10 March 2025).

National Governors Association Center for Best Practices & Council of Chief State School Officers (2010). *Common Core State Standards for English language arts and literacy in history/social studies, science, and technical subjects*. Available at https://learning.ccsso.org/wp-content/uploads/2022/11/ADA-Compliant-ELA-Standards.pdf (Accessed 10 March 2025).

National Institute of Child Health Human Development (2000). *Report of the National Reading Panel: Teaching children to read: an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups.* National Institute of Child Health and Human Development, National Institutes of Health. Availablehttps://www.nichd.nih.gov/sites/default/files/publications/pubs/nrp/Documents/report.pdf (Accessed 10 March 2025).

Ofori, S.G., Duah, I., & Minutah, K.C. (2014). Exploring the Feasibility of Proposed Ghanaian English Pronunciation Standard. *Journal of Education and Practice* 5(22): 49-53. Available at https://nyogyasi.wordpress.com/wp-content/uploads/2016/09/gheps-in-practice-2014.pdf (Accessed 10 March 2025)

Owu-Ewie, C. (2006, April). The language policy of education in Ghana: A critical look at the English-only language policy of education. In *Selected proceedings of the 35th annual conference on African linguistics* (pp. 76-85). Somerville, MA: Cascadilla Proceedings Project.

Pearson, P.D., & Gallagher, M. C. (1983). The instruction of reading comprehension. *Contemporary Educational Psychology* 8(3): 317–344. Available at https://psycnet.apa.org/doi/10.1016/0361-476X(83)90019-X (Accessed 10 March 2025)

Perfetti, C. A., Beck, I., Bell, L. C., & Hughes, C. (1987). Phonemic knowledge and learning to read are reciprocal: A longitudinal study of first-grade children. *Merrill-Palmer Quarterly* 33(3): 283–319.

Perfetti, C. (2007). Reading Ability: Lexical Quality to Comprehension. *Scientific Studies of Reading* 11(4): 357–383. Available at https://doi.org/10.1080/10888430701530730 (Accessed 10 March 2025).

Rosner, J., & Simon, D. P. (1971). The Auditory Analysis Test: An initial report. *Journal of Learning Disabilities* 4(7): 384–392. Available at https://doi.org/10.1177/002221947100400706 (Accessed 10 March 2025)

Scarborough, H.S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In: Neuman, S. & Dickinson, D. (eds.) *Handbook for research in early literacy*. New York: Guilford Press, pp. 97-110.

Share, D.L. (2023). Literacy and Illiteracy in Africa: The Tower of Babel Predicament. In: Joshi, R.M., McBride, C.A., Kaani, B.,7 Elbeheri, G. (eds.) *Handbook of Literacy in Africa.* Switzerland: Springer Nature, pp. 1-18. Available at https://doi.org/10.1007/978-3-031-26250-0_1 (Accessed 10 March 2025).

Shaywitz, S. (2003). *Overcoming dyslexia: A new and complete science-based program for reading problems at any level*. Alfred A. Knopf.

Smith, S.B., Simmons, D.C., & Kameenui, E.J. (1998). Phonological awareness: Instructional and curricular basics and implications. In: Simmons, D. C., & Kameenui EJ (eds) *What reading research tells us about children with diverse learning needs*. New York*:* Routledge, pp. 61–128.

Stemler, S. (2000). An overview of content analysis. *Practical Assessment, Research, and Evaluation* 7(1): 17. Available at https://doi.org/10.7275/z6fm-2e34 (Accessed 10 March 2025).

Torgesen. J.K., Wagner, R.K., & Rashotte, C.A.(1994). Longitudinal studies of phonological processing and reading. *Journal of Learning Disabilities* 27(5): 276–286. Available at https://doi.org/10.1177/002221949402700503 (Accessed 10 March 2025)

Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of child psychology and psychiatry* 45(1): 2-40. Available at https://doi.org/10.1046/j.0021-9630.2003.00305.x (Accessed 10 March 2025)