INTERNATIONAL JOURNAL OF MODERN EDUCATION STUDIES

| Volume 7 - No 2 - December 2023 - ISSN 2618-6209 |

Research Article

Literacy in Indian Akshara and Other Transparent Orthographic Languages - Teacher Education Considerations

Srimani Chakravarthi[1] **Gowramma Ittira Poovaiah**[2]

Article Type
Theoretical conceptual article

International Journal of Modern Education Studies
2023
Volume 7, No 2
Pages: 346-370
http://www.ijonmes.net

Article Info:

Received : 30.06.2023
Accepted : 03.09.2023

Abstract:

Alphabet-based languages are more often researched in literacy acquisition and education than akshara languages. Languages that use alphasyllabaries including symbols, called aksharas, represent a large portion of the world's languages, including the languages of the second most populous country, India. This conceptual research paper addresses teacher education in literacy related to the akshara languages. Using the theory and research base of existing letter and akhara acquisition, with teacher education standards for literacy in alphabet-based languages, this paper presents a model for teacher education in literacy for akshara languages. This framework provides teacher education standards and other considerations, such as evaluation of teacher education curriculum and performance, to enable data-based decision making in literacy instruction. The premise of this paper is to approach the problem of dismal literacy rates by drawing into the robust research in alphabetic language literacy education by using a systematic approach to target the source – pre-service teacher education. While this paper addresses examples of languages in India, other transparent orthographies that use symbols or aksharas can draw from this to inform their teacher education in literacy

Keywords: Teacher education, Literacy, Standards, Akshara languages; Transparent orthography; India.

Citation:
Chakravarthi, S., Poovaiah, G., I. (2023). Literacy in Indian Akshara and Other Transparent Orthographic Language - Teacher Education Considerations. *International Journal of Modern Education Studies, 7*(2), 346-370. https://doi.org/10.51383/ijonmes.2023.329

[1] Srimani Chakravarthi, Professor, University of St. Francis, USA, schakravarthi@stfrancis.edu
Orcid ID: 0000-0001-8777-3273
[2] Gowramma Ittira Poovaiah, Regional Institute of Education, National Council for Educational Research and Training, New Delhi, India, gowriip@gmail.com Orcid ID: 0000-0002-9419-9879

INTRODUCTION

Literacy skills are one of the topmost priorities in most education systems around the world and are emphasized in education policies, curriculum frameworks, and mandates. However, attention to literacy acquisition has largely focused on alphabet-based systems of reading, such as in English, while language systems that follow alphasyllabaries or aksharas (symbols) have limited research and recommendations (Landerl, Castles & Parrila, 2022), especially for teacher education.

The origin of orthographies of South and Southeast Asia have been attributed to the ancient Brahmi script and are referred to as Indic alphasyllabaries. The symbol units of Indic alphasyllabaries are called aksharas. Vowels (/V/) and consonants (/C/) are represented by different aksharas. Aksharas, which represent syllables and phonemes (hence named alphasyllabary), could include just the vowels, consonants, as well as consonants with an inherent or marked vowel (e. g. /Ca/, /CV/, called *mathras* in Hindi) and consonant clusters with the inherent or marked vowels (e. g. /CCa/, /CCV/, /CCCV/; called *samyukthaksharas* in Hindi) (Nag, 2014). The markers for consonant-vowel pairs and consonant-consonant clusters may be nonlinear but are largely in predictable locations (Nag, 2017), making the orthography transparent. Several Indian languages, such as Kannada, Hindi, Marathi, Bengali, Telugu, Tamil, Gujarati, and Odiya, use this largely transparent orthography, with an extensive system of aksharas. Several global languages such as Spanish, Turkish, Latin, Italian, Finnish, and Lithuanian use similar transparent orthographies.

Research confirms that poor readers struggle with decoding the akshara (Nag-Arulmani, 2003) and that the visuospatial nonlinear arrangements of markers in the akshara also influence reading (Wali, Sproat, Padankannaya & Bhuvaneshwari, 2009). Evidence shows that specific akshara knowledge training improves reading levels in alphasyllabaries (Nag-Arulmani, 2003). However, the differences between alphabet and alphasyllabaries have not been factored into teacher education in South Asia, especially in India. Studies involving large data sets, such as the Literacy Research in Indian Languages by Menon et al. (2017) and Nakamura and de Hoop (2014), point to a lack of awareness of the knowledge and skills that teachers need to successfully teach early literacy and '*an urgent need to equip teachers with a sound knowledge base related to the teaching of early literacy*' (Menon et al., 2017).

The purpose of this article is to examine the foundational skills for literacy instruction to achieve the goals of national and international initiatives in alphasyllabaries or akshara-based languages, such as those in South Asia. This article examines existing standards for teacher education in literacy, analyzes them in the context of differences in alphabet-based and akshara-based languages, and proposes other considerations for teacher education for literacy instruction in alphasyllabaries.

Literature Review

India, like many developing countries, is yet to achieve the goal of literacy for all. In 2017, the National Council for Educational Research and Training (NCERT) conducted a nationwide National Achievement Survey (NAS), which showed deterioration in achievement of reading competencies as students advanced from the 3rd to the 8th grades.

Further analysis by state shows an increasing number of students achieving below 50% as the grade advances in almost all states in language achievement (NCERT, 2023). According to the Annual Status of Education Report (ASER Center, 2022), in India, more than 51% of the students in Grade 5 are unable to read 2nd grade level textbooks and only 20.5% of Grade 3 Indian students can read a Grade 2 level textbook. Furthermore, there is notable disparity in gender and social classes, with literacy rates in females and the lower social classes being significantly lower (Chauhan, 2008).

Consequently, it is not surprising that the recent National Education Policy (NEP) (2020) of India places the highest importance on the achievement of Foundational Literacy and Numeracy (FLN), stating, "*The rest of this policy will become relevant for our students only if this most basic learning requirement (i. e., reading, writing, and arithmetic at the foundational level) is first achieved*". To realize the goal of FLN, an implementation strategy, the 'National Initiative for Proficiency in Reading with Understanding and Numeracy' (NIPUN) (Ministry of Education, 2021), was developed, which aims to achieve foundational literacy and numeracy skills for all by the year 2026-27. NIPUN recommends curricular revisions based on scientific principles of learning, revamping of the assessments with focus on competency-based assessment for learning, among other measures such as teacher education, to ensure maximum gains for early graders (Ministry of Education, 2021).

To begin the journey toward these goals, the processes determined to be effective for teaching akshara-based languages were examined in this study. Most students in India are bilingual or multilingual, which prompts consideration of effective literacy approaches for multilingual students, which differs from monolingual literacy development (Escamilla, Olsen and Slavick, 2022). Although limited in number and focusing on one or a few of the akshara-based languages, research has pointed to some key components and differences in literacy instruction compared with alphabetic instruction, serving to draw some basic conclusions on the content of instruction and pedagogy. One similarity is that phonological awareness skills, which are the precursor and an established pre-requisite in alphabetic literacy, have also been correlated with proficiency in reading in akshara-based literacy (Nag & Snowling, 2012). A distinction is that syllable awareness appears to be correlated to akshara knowledge and akshara orthography more than phoneme awareness (Nakamura, Joshi & Ji, 2017). In addition, akshara-based languages use syllabification with orthographic syllables rather than phonological syllables (E. g. Mohanan, 1989; Murty, Otake, & Cutler, 2007, Sailaja, 2007). Unlike in alphabetic literacy emergence, phonemic awareness does not occur for all aksharas before reading begins. It appears that increasing orthographic experiences and fluency is associated with greater phonemic processing skills, which shows that phonemic processing continues to grow over the years of literacy instruction and fluency development (Nag & Snowling, 2012). With regard to language features, an important difference in akshara languages is the presence of inflectional morphemes such as postpositions, negation, and question markers, which occur as word endings to the noun or verb, changing the form of the word and conveying grammatical and semantic information. Another feature distinctive to the akshara language is the sandhi (morpho-phonologically combined words) and samas (compound words), which follow certain phonological rules that determine the combined resulting sound (in sandhi) and word (samas). Research shows that the relationship between morphology acquisition and literacy

suggest reciprocity, with more literacy awareness leading to better morphological awareness, especially with higher order forms and nuances (Nag, 2017).

The processing of aksharas appears to be influenced by their visual arrangement, particularly non-linear arrangements and other visuo-spatial factors (Vaid & Padakannaya, 2004; Wali et al., 2009). Therefore, it is not surprising that greater analytical skills for phonemic markers and fine-grained phonological processing appear to define the akshara learning system (see Nag & Snowling, 2012). Since aksharas increase in complexity, word recognition grows as better insights into the principles of the writing system and recognition of cues from the lexical context are improved (Nag, 2017).

In conclusion, aspects of akshara literacy learning that concur with research in alphabetic languages are that they both emphasize the same cognitive-linguistic foundational factors: vocabulary, visual memory, phonological processing skills, phonological memory, and rapid automatized naming (RAN) (Nag & Snowling, 2012; Marasinghe et al., 2018). In addition, the conscious mapping of akshara to oral language aids word recognition (Nag & Snowling, 2011). As with alphabetic literacy, strong associations between word decoding, akshara knowledge, phonological skills, and analytical approach to word identification have been found to improve word-naming accuracy and fluency (Nag, 2007; Vaid & Gupta, 2002), pointing to the importance of teaching awareness about phonemic markers and multiple levels of mapping to phonology to make the processing of words more analytic and strategic (Nag, 2017). Furthermore, Nag (2017) hypothesizes that increasing akshara knowledge may increase akshara-based syllabification. For effective decoding in the akshara languages, the 'alphasyllabic principle' of the writing system (rules for aksharas, *mathras* and *samyuktaksharas*) must be mastered (Nag & Snowling, 2012). Alphasyllabic competence may start with breaking the akshara code, but complex akshara decoding results in the greatest gains in RAN, which highlights the importance of building akshara knowledge systematically while considering orthographic knowledge of akshara acquisition (Nag, 2014). In addition, linguistic knowledge about syllabification, etymology,, and morphology seems to provide insights into mastering these complex akshara orthographies.

Oral language plays a crucial role in word identification in aksharas, beyond just phonological acquisition, with strong associations with phrase repetition and word identification. Using lexical repertoire to gain complex akshara knowledge facilitates processing (Nag, 2017). Spelling in akshara languages confirms that the more complex visual features and multiple phonemic markers are more difficult to acquire than shorter aksharas that only have an inherent vowel (/Ma/, /Pi/). In addition, phonologically close neighbors are prone to spelling as in reading (Nag, Treiman & Snowling, 2010). Another complexity of akshara languages is the occurrence of dialects of languages involving phonological and morpho-phonological alterations, which may translate to writing and spelling differences. With regard to reading comprehension, the findings mirror alphabetic languages, with reading accuracy, phonological processing, knowledge of vocabulary, and inflectional morphology positively correlated with reading comprehension (Nag & Snowling, 2012).

Nag (2017) outlines several implications for instruction based on the analysis of current research in akshara acquisition:

1) The explicit instruction of a synthetic phonics scheme, with attention to similarities and variations in the visual, auditory,, and oral production, with explicit attention to phonemic markers.
2) The sequence for teaching the aksharas needs to be re-examined, with high frequency akshara, particularly those akshara that help construct words that are common in early vocabulary, being taught first.
3) The explicit instruction of parts of an akshara helps in abstracting the combining rules and thereby in decoding and printing the akshara.
4) The separation of symbol sets (/V/, /Ca/, /CV/ and /CVV/) is artificial, requiring the teaching of some common complex akshara that occur in phonological patterns of the spoken language and are familiar to younger grade readers (ex. /mma/ as in /amma / (mother).
5) A robust oral language program must accompany akshara practice, even when the language of instruction is the child's native/home language.
6) Considering the sheer number and complexity of aksharas, repeated reading of the same book severely limits opportunities for implicit akshara learning.
7) Introduce children of all ages to variety and complexity in narratives, both spoken and written language.

However, these recommendations for akshara literacy have yet to seep into the curriculum and teacher education. Several agencies, including both governmental and non-profit organizations, are involved in literacy initiatives at local, state, and national levels, with initiatives in curriculum development and creating materials and tools for literacy assessment and instruction. More importantly, the multilingual and socio-cultural diversity in the second most populous country in the world requires a collaborative synchronized approach toward achieving literacy for all. Teachers at the foundational stage of literacy can be empowered to move the dream of literacy for all into reality by unifying teacher education in the country with guided outcome-based standards for literacy instruction. Several researchers have recommended reform in teacher education programs addressing literacy (Nakamura & de Hoop, 2014; Menon et al., 2017, Nag, 2017), with strengthening the early literacy component in training programs designed for preschool and early grade teachers. The considerations required for such effective teacher education are therefore the focus of this conceptual research.

Theoretical and Conceptual Foundations

Literacy instruction in the alphabet system is based on the five core reading skills identified by the National Reading Panel (2000) – phonemic awareness, phonics, fluency, vocabulary, and comprehension, which are essential foundational requirements for literacy proficiency. The National Curriculum Framework for foundational stage (NCF, 2022) in India and the UNICEF Guidelines for Design and Implementation of Early Learning Programmes (UNICEF, 2019) underscore the importance of these five domains of reading skills for literacy instruction at the foundational stage. These core areas of reading are combined with decades of accumulated knowledge on the process of reading acquisition to inform the Science of Reading (SOR), which has been validated over the past several years of research in interdisciplinary areas including neuroscience, psychology, and education. SOR can be applied to students who are linguistically diverse and speak/read English as a

second language, with attention to oral language development (Goldenberg, 2020). In studying language variations across languages and writing systems, Kim, Boyle, Zuilkowski, and Nakamura (2016) suggest explicit instruction depending on the features of the language and orthographic symbol for print awareness, teaching orthographic symbol knowledge, manipulating phonological units, and recognizing morphemes in oral and written languages. Using the SOR framework covering the five core reading components and evidence-based reading instruction in alphabetic languages as the theoretical basis, this conceptual research examined them in the context of alphasyllabic, akshara-based languages. The principles of literacy instruction from research in akshara-based languages that were analyzed and evaluated by researchers (e. g. Nag, 2011; Nag & Snowling, 2012; Nag, 2017) also inform the theoretical base for this study.

The varied components of word recognition and language comprehension in alphabet-based literacy acquisition are visually depicted as strands by Scarborough (2001) as a reading rope to show how they are strategically developed and integrated into skilled reading. Figure 1 shows the application of the reading rope to akshara-based languages based on the studies on akshara language acquisition.

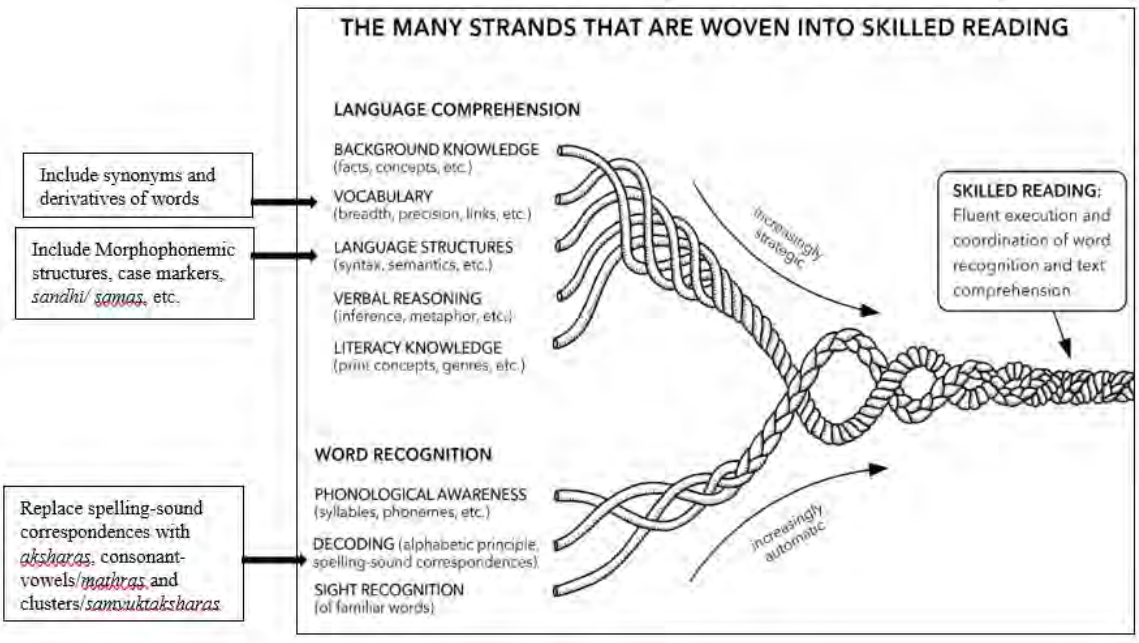

Figure 1. Reading rope by Scarborough (2001) adapted to akshara-based languages. (Printed with written permission from the author and Guilford Press).

While the reading rope informs the components of reading to target for instruction, the key to improving literacy skills lies in empowering teachers with the language and pedagogy related to teaching literacy skills in oral language, reading, and writing. Therefore, using the components in the reading rope for alphasyllabic languages as the base, the best practices for teacher education in literacy (e. g. Joshi, Binks, Hougen, Dahlgren, Ocker-Dean & Smith, 2009; Spear-Swerling, 2007; Kosnik & Beck, 2008; Kilpatrick, 2015) were analysed to study the intersection between the components of reading instruction and teacher education requirements. Teacher standards developed by two leading associations in literacy- the International Literacy Association (ILA) (2017) and the International Dyslexia

Association (IDA) (2018), guided the development of standards for teacher education in akshara languages in this study. These include foundational knowledge of language components such as phonology, morphology, semantics, syntax, and pragmatics, relationships between the components, knowledge about variations in language structure, and rules that govern written script of languages. Teachers of literacy must also be familiar with how to assess students' reading skills in each of these component areas and how to use assessment to inform literacy instruction. In addition, teachers must be familiar with explicit and structured reading instruction for all students who do not learn language in the conventional incidental format (International Literacy Association, 2017; International Dyslexia Association, 2018). These recommended standards and practices for teachers were analyzed in the context of linguistic and research foundations underlying the acquisition of alphasyllabic languages to inform this conceptual research outlining considerations for teacher education.

Considerations for Teacher Education for Literacy in the Akshara languages

While most teacher education programs in India address teaching reading, what needs clarification are the knowledge and skills in literacy instruction that every teacher at the foundational stage of schooling needs to be equipped with. National level policies such as NIPUN (Ministry of Education, 2021) and NCF (2022) and researchers (Nakamura & de Hoop, 2014; Menon et al., 2017) have reiterated the importance of reading instruction in the foundational stage to be guided by research-based practices. To realize this goal, teacher education should incorporate standards to guide training and address the varied components of literacy instruction. A clear set of standards for each of the areas that every literacy teacher needs to master and implement that could be applicable both to English and akshara-based languages is foremost.

Teaching literacy to school-age students involves considering multilingual communities and their language abilities in local languages and English, since English is also one of the languages taught in Indian schools. Teacher education in India can accelerate progress by imbibing and adapting research-based materials and applying them to akshara-based and multi-linguistic socio-cultural contexts. Drawing from the wisdom of decades of progression in reading and teaching of reading research in alphabet-based languages, India can leap into successful practices and accelerate growth in reading instruction. In addition, the vast cultural assets, human resources, infrastructure, and socio-cultural assets will help India make the transformation to teacher education, leading to achieving the goals of NIPUN. The standards for teachers of literacy presented here will address a means to achieve these goals for foundational literacy.

The following questions were targeted in this study, to draw considerations for teacher education in literacy:

1) Can standards be established in teacher education for Akshara-based languages that address all the scientific components of reading instruction while considering akshara language acquisition and other akshara-based literacy research?
2) How can these standards be used to inform the coursework in teacher education in literacy?

3) How can these standards be used to assess outcomes and facilitate data-based decision making in teacher education in literacy?

Standards for Teachers of Literacy (SToL)

To address the first question, four essential teacher preparation standards that all teachers of literacy in the foundational stage of literacy development should know and practice are proposed. These reflect the International Dyslexia Association (IDA, 2018) and International Literacy Association (ILA, 2017) standards:

- Standard 1: Foundations of Language and Literacy Acquisition
- Standard 2: Assessment of Literacy
- Standard 3: Structured Literacy Instruction
- Standard 4: Professional Dispositions and Ethical Practices.

Each standard is subdivided into several benchmarks that outline the component areas under each overarching standard. These four key areas are used as a foundation to create and adapt the benchmarks under each standard to suit akshara-based literacy education. These Standards for Teachers of Literacy (SToL) serve as a broad outline of what teachers who teach 3-8 year-old students in the foundational stage of learning should *know* and *demonstrate* to teach literacy effectively. These standards are deliberately broad to facilitate simplicity and ease of transfer to varied contexts. The *Discussion* section provides additional details for benchmarks under each standard, which would need clarification and examples. Tables 1 through 4 outline these four standards and the corresponding benchmarks under each standard.

Table 1

SToL Standard 1 and Benchmarks - Foundations of Language and Literacy Acquisition

Standard 1: Foundations of Language and Literacy Acquisition
Benchmarks:
1.1 Explain the 5 language domains: Phonology, morphology, syntax, semantics, and pragmatics
1.2 Determine how the 5 language domains affect reading and writing outcomes.
1.3 Understand that phonemes differ among languages and know the difference in sounds in English and the local Indian language being taught, in contrast to the native/home language.
1.4 Understand the differences in morphology, syntax, semantics,, and pragmatics of the language in context (Ex. English, Hindi, other languages)
1.5 Understand that explicit instruction in reading and writing requires attention to the variation between spoken and read/written forms and dialectal differences in home and school languages.
1.6 Understand the relationships among phonemic awareness, rules and exceptions for

consonant vowels (CV) *mathra* and clusters or combined letters (CCV) *samyuktakshara*, decoding, word recognition, spelling, and vocabulary knowledge.

1.7 Understand that features in the language script that vary with each Indian language may cause reading difficulties.

1.8 Understand that vocabulary must be developed during the stage of word and *akshara* level identification through read-alouds and classroom conversations.

1.9 Focus on language comprehension (including listening comprehension) at all levels of readers.

Table 2

SToL Standard 2 and Benchmarks – Assessment of Literacy

Standard 2: Assessment of Literacy

Benchmarks:

2.1 Know about different types of assessments in literacy and their use

2.2 Understand the basic principles of test construction and formats (e.g., reliability, validity, criterion, normed) for all assessments in Indian languages.

2.3 Understand how to interpret the NAS and other assessments survey results of literacy.

2.4 Understand how to create curriculum-based assessments for each language domain, administer them, and summarize how to use the results to monitor progress.

2.5 Create informal diagnostic surveys of phonological and phonemic awareness, decoding skills, oral reading fluency, comprehension, spelling, and writing.

2.6 Teachers should use psychological test results and reports to determine the implications for the classroom instruction. Teachers should use test results for instructional decisions and communicate the results and progress regularly to all involved (other teachers and parents).

Table 3

SToL Standard 3 and Benchmarks – Structured Literacy Instruction

Standard 3: Structured Literacy Instruction

Benchmarks:

3.1 Use a systematic and explicit approach to literacy instruction to suit students' linguistic and sociocultural backgrounds.

3.2 Understand the progression of phoneme and *akshara* (including *mathras* and *samyuktaksharas*) development and logically sequence them according to ease of sounding, frequency of occurrence, *and difficulty levels*.

3.3 Know and apply the rules for *mathras* and *samyuktaksharas* during word reading and writing

Table 4

SToL Standard 4 and Benchmarks – Professional Dispositions and Ethical Practices

Standard 4: Professional Dispositions and Ethical Practices
Benchmarks:
4.1 Perform the role in the best interest of every student toward acquiring literacy.
4.2 Provide literacy instruction using the following approaches that have research evidence
4.3 Promote literacy development among children from socio-cultural deprivation as a priority by considering the uniqueness of all learners as assets.
4.4 Use learner difference or deviation as a resource to nurture literacy skills
4.5 Take responsibility for developing literacy among everyone, irrespective of the origin of birth and background
4.6 Strive to engage learners of diverse backgrounds with the same enthusiasm, without bias, in activities to nurture literacy skills
4.7 Respect the cultural and social status of a child and preserve the same while planning literacy instruction and performing activities to promote literacy

DISCUSSION

The foundational pillars of the quality of education lies in the adequacy of teacher training. İt is apparent that the solution to raising literacy lies in improving the quality of teacher education. The dearth of research in the area of teacher education for akshara-based languages warrants attention, based on careful research on the nuances of language and research in acquisition of literacy. The conceptual framework of teacher education practices for literacy presented in this article provides innovative ways to utilize literacy acquisition research while carefully analyzing the nuances and research in akshara-based language studies. While the teacher education standards presented apply to almost all akshara-based transparent orthographies, the following section provides additional details of skills under each standards to facilitate identification of course content for teacher education and elucidate implementation. This section also includes examples to guide teachers in applying the standards to linguistic variants and dialects across diverse populations. The discussion section concludes with a proposed framework for teacher education coursework and using the standards for developing evaluation methods of teacher preparation, to complete the data-based decision-making process.

Standard 1: Foundations of Language and Literacy Acquisition

In this foundational standard 1 of SToL, benchmark *1.5 Understand that explicit instruction in reading and writing requires attention to variation between spoken and read/written forms and dialectal differences in home and school languages*, can be achieved by considering literacy experiences varied by social/cultural factors and differences in home and school dialects and languages. For example, the western part of Odisha speaks the same state language- Odiya, but uses a different dialect. Similarly, Kannada, the language of Karnataka, has several dialects in different regions of the state. These dialectal variations occur worldwide in most languages, even alphabetic ones. In addition, cultural differences that occur within regions and states, such as differences in traditions, habits, and experiences; should be factored into vocabulary and usage instruction.

Similarly, for benchmark 1.6, to facilitate *Understanding of the relationships among phonemic awareness, rules and exceptions for consonant-vowel (CV) mathras and clusters or combined letters (CCV) samyuktaksharas, decoding, word recognition, spelling, and vocabulary knowledge*, coursework that includes the following relationships, rules, and exceptions can be included in teacher education:

- Articulate relationships in aksharas, consonant-vowel *(CV)(mathras)* and clusters *(CCV) (samyuktaksharas)*, specific to language(s) of instruction. Teachers should also be able to identify differences in phonemes in home and school languages and dialects. For example, Kodava, a language spoken in the state of Karnataka in India, does not use the sound /sh/, which is common in Kannada, the official state language of Karnataka. When teachers understand these language and dialectal phonemic differences, they can relate to students' challenges and identify interventions.
- Attention to rules underlying clusters (*samyuktaksharas)* pronunciation/reading and sequence of sounding out written letter clusters. For example, the visual arrangement of akshara clusters (*samyuktaksharas)* generally correlates with the auditory sequence of phonemes. Similarly, the *mathras* are one symbol for one sound in most languages, except for the long vowel sound 'kee' and 'koo' in Kannada, which have two symbols.
- Teachers should know the rules for clusters (*samyuktaksharas)* and the exceptions to these rules. Most aksharas retain the visual features as in the /C/ when they occur in clusters /Cc/ or /CcV/ or /CvC/. However, those that visually differ from the letters they represent should be explicitly addressed, drawing attention to the visual differences.

For benchmark- *1.7 Understand that reading difficulties can also be caused by features in language script that vary with each Indian language*. Examples include samyuktakshara sequence changes from language to language and within language. These difficulties may also be complicated by visual-spatial processing difficulties related to similarity in *mathras*, for example, in Hindi 'pi' and 'pī'; 'pu' and 'pṛ' and aksharas. See *Figure 2* for a sample of these visual differences. Specific attention should be paid to teachers' knowledge of the following akshara-based nuances

- Understand the developmental progression of *mathras* (Does introducing them together cause confusion to the student(s)? Will student(s) learn better when introduced separately for all letters? Does using letter charts to show the similarity in vertical columns between the *mathras* and the letters help make explicit the relationships and similarities?).
- Similarly, with *samyuktaksharas*, the sequence to teach should be developed based on visual similarities, simple to complex (same *samyuktakshara* as the letter to different *samyuktakshara*/letter combinations), frequency of occurrence and use, etc.

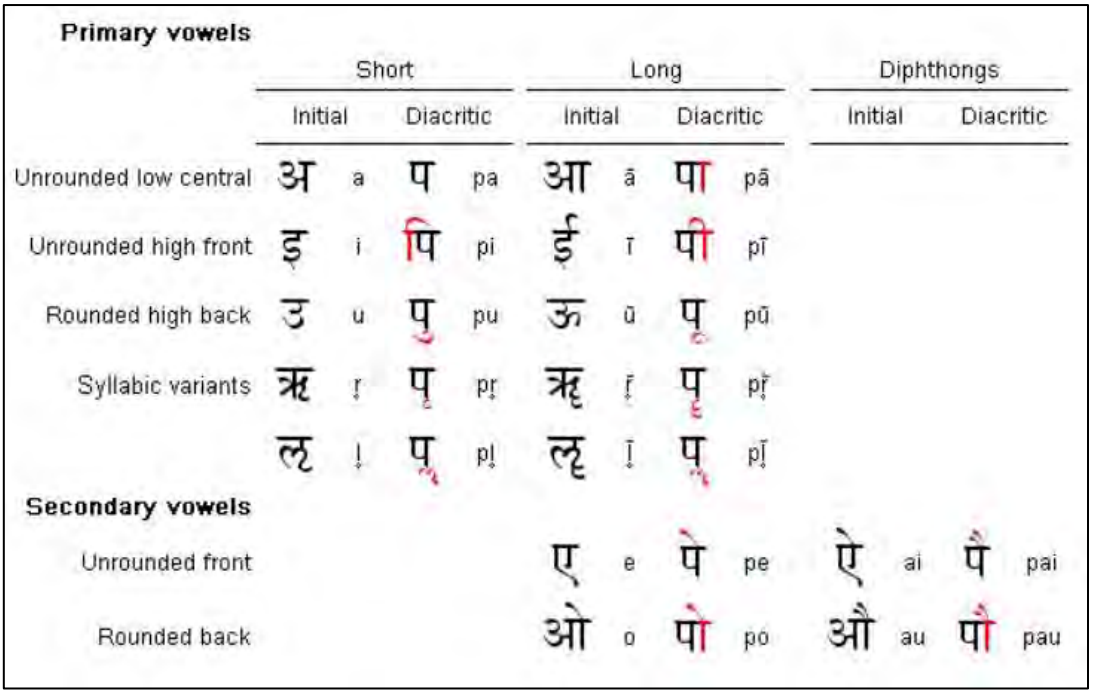

Figure 2. Sample vowel-consonant combinations in Hindi aksharas highlighting visual features (Source: https://omniglot.com/writing/devanagari.htm)

In targeting the benchmark, *1.9 - Focus on language comprehension (including listening comprehension) at all levels of readers*, opportunities for children to listen to narration by others in school language (which may be different from home) on topics that are culturally relevant and of common interest must be considered. This would help develop listening comprehension skills and gain pre-reading skills such as phonological awareness, phonics, familiarity with complex aksharas, and making visual-auditory connections. Repeated exposure to print materials and oral narratives also helps in vocabulary development.

Standard 2: Assessment of Literacy

The second standard of SToL discusses knowledge and practice in relation to the assessment procedures, including all literacy assessments. The benchmark, *2.1 Know about different types of assessments in literacy and their use* includes screening assessments that identify students at risk for falling behind in reading and those with reading difficulties and to address subskills such as - Akshara, *mathras* and *samyuktakshara* naming, phoneme

isolation and identification, segmentation, blending, and/or manipulation, phonics correspondences (sound-symbol relationships), spelling and phonetic accuracy of spelling attempts, word reading, real and/or nonsense words, oral reading fluency (timed reading of short passages), and reading comprehension. Similarly, the other types of assessments - diagnostic and progress monitoring assessments determine domains of language strengths and needs. (See *Conclusion and Limitations* section for information on assessment requirements).

Benchmark *2.5 Create informal diagnostic surveys of phonological and phonemic awareness, decoding skills, oral reading fluency, comprehension, spelling, and writing,* can be achieved by having the following assessment knowledge and practice fostered in teachers for pinpointing students' strengths, weaknesses, and instructional needs in the component literacy areas:

- Phonological sensitivity (manipulate sounds, understanding rhymes, etc.)
- Phonemic awareness (sounds that letters/aksharas represent)
- Accuracy and fluency of akshara naming/distinguishing similar aksharas, *mathras*, and *samyuktakshara* naming, and distinguishing
- Using aksharas, *mathras, and samyuktakshara for* word reading and spelling/writing
- Reading an oral passage with fluency and comprehension
- Silent reading of passages with comprehension and recall
- Listening comprehension and recall
- Morpheme recognition
- Automatic recognition of commonly used words (high-frequency)
- Writing performance (punctuation, the order of aksharas and samyuktakshara, syntax, organization, content, spelling, vocabulary)

Standard 3: Structured Literacy Instruction

SToL Standard 3 targets a systematic approach to teaching literacy. Under this standard, to achieve benchmark *3.1 Use a systematic and explicit approach to literacy instruction to suit students' linguistic and sociocultural backgrounds. Teaching* should include procedures such as the following:

- Introduce simple picture story books that can build vocabulary and listening comprehension (before the students learn to read). These books, when also read aloud by adults, can introduce complex forms and reinforce aksharas, *mathras* and *samyuktaksharas*. Other decodable books that introduce aksharas in progression, such as books that use certain aksharas, *mathras* and *samyuktaksharas*, can be used for decoding and fluency. While teaching decoding,
    - Use decodable books that align with the progression of aksharas, *mathras* and *samyuktaksharas* (gradually increasing in complexity and building on the previous concepts) and progress to a complex text as the student internalizes the aksharas and builds fluency.
    - Differentiate instruction based on the acquisition of students into akshara, *mathra* and *samyuktakshara* levels.
    - Become sensitive to and aware of text complexity (Are varied *mathras* introduced randomly and not in the sequence of acquisition? Are complex

samyuktaksharas introduced before students can master the *mathras*?). Are structured literacy materials used? Are practices structured on the basis of the science of reading?

- Become aware of the cultural and social relevance of reading materials and vocabulary.
- Use multiple modalities (audio, visual, kinesthetic) to facilitate familiarity with the visual and auditory features of aksharas. In addition to multimodalities, sociocultural factors such as pairing vocabulary with culturally familiar terms and in their first/home language are imperative.
- Be sensitive to differences in vocabulary, representing food, objects, and fruits that are familiar to students (ex. Vegetables of the region, cuisine, dress habits, and art forms).

For benchmark *3.2 Understand the progression of phoneme and akshara (including mathra and samyuktakshara) development and logically sequence them according to ease of sounding, frequency of occurrence, and levels of difficulty. Teacher* education coursework should include pedagogy and research on literacy instruction that applies to alphabet- and akshara-based languages and should know and practice the following:

- Teach decoding and writing using simple aksharas before teaching *mathras* and *samyuktaksharas* to build on the simple vowels /V/ and consonants /C/ akshara foundational knowledge. Note that complex forms (*mathras* and *samyuktaksharas)* can be introduced orally and referred to in written text to familiarize the reader with the visual sequence and complexity and facilitate acquisition.
- Introduce the progression of aksharas, *mathras*, and samyuktaksharas from simple to complex with reference to familiarity of meaning, frequency of occurrence in local cultural context, auditory and visual features, and order of acquisition. Some complex forms may be more frequent in occurrence and use than simple forms.
- Use charts and visuals to explicitly show the visual similarities and contrasts between aksharas.
- Work collaboratively with speech/language pathologists and audiologists to identify the progression of teaching phonemes in varied languages with specific attention to the nature of difficulty and the gradual increase in complexity
- Distinguish between sounds such as /l/ and /L/ and /s/, and /sh/. The phonology of specific language and similarities/differences must be clarified.
- Explicit instruction in phonemes that do not occur in the home language, with attention to distinguishing features and how to pronounce (ex. where the tongue should be positioned, etc.)
- Provide practice distinguishing the new phoneme from similarly articulated phonemes (e.g., for children who speak Tamil, the state language in Tamil Nadu, classifying spoken words in Kannada as starting with /sh/ or with /s/).
- Deliberately choose wide (e.g., /m/, /z/) or narrow (e.g., /m/, /n/) phoneme contrasts during instruction, depending on the students' phase of phonemic awareness development.
- Attention to distinguishing features of script occurrence with pronunciation (ex. Order of written aksharas/*samyuktaksharas* versus the order of pronunciation)

should be explicitly taught so that it translates to writing fluency.

- Attention to the sequence of phoneme acquisition in Indian languages (listening and production).
- Identify word lists in Indian languages that have rhyming words according to the number of syllables/aksharas. Choose wide contrasts for the beginning rhyme tasks
- Isolate individual sounds in *mathras* and in *samyuktaksharas*.
- Use phonological awareness activities involving *mathras* and *samyuktaksharas*.
- Use various activities for each level of aksharas, *mathras* and *samyuktaksharas* awareness.
- Align phonological awareness, akshara, *mathra*, and *samyuktakshara* instruction with reading and spelling goals.
- While instructing on reading, spelling, and vocabulary, use akshara awareness, *mathra* and *samyuktakshara* instruction
- Use tactile and kinesthetic aids, such as blocks, chips, sound boxes, body mapping, finger tapping, and left-to-right hand motions, in learning a variety of early, basic, and more advanced phonological awareness activities

For benchmark, *3.3 Know and apply the rules for mathra and samyuktakshara during word reading and writing*, the following components should be addressed in teacher education:

- Know and let students know that once students master the rules underlying *mathras and samyuktakshara*, reading becomes easier.
- Cumulatively build on the *mathra and samyuktakshara* knowledge, progressing from simple to complex, while introducing complex forms to build familiarity.
- Correct student errors in word reading and writing by providing the rules that govern *mathra* and *samyuktakshara* pronunciations. Point to the structure of *mathras* and *samyuktaksharas*; indicating the order of the pronunciation of *samyuktaksharas*.
- Teach word roots and commonalities among languages. Ex. '*Jal*' in Hindi/'*jala*' in Kannada
- Teach words that have the same meaning. For example, *adavi, kaadu,* and *vana* all refer to the word 'forest' in Kannada; *jal, paani,* and *neer* all mean 'water' in Hindi. Teach usage norms that are context specific and govern the use of words.
- Explicitly teach students how to identify the root word, case markers, PNG (Person, Noun, Gender) markers, and affixes. Teach affixes and how they vary (ex. In Hindi, by using '*laa*' as a prefix to the word '*waris*', it becomes the opposite of '***laa****waris*', while prefixing '*be*' to *sharam*, the word '***be****sahram*' is the opposite of '*sharam*'). Teach rules (if any) for making opposites/antonyms in relation to the language (and how they differ from their first language, whenever possible).
- Compound words (*Sandhi* and *samas)* must be explicitly taught, with rules underlying the combination.
- Affixes that change words (ex. Plurals, and possessives) need to be taught explicitly. Many variations exist between and within Indian languages. (Ex- the suffix '*galu*' makes the plural form of some words as in '*bandhu****galu***' or '*ru*' as in '*jana****ru***' in Kannada. There are many such suffixes that make plural forms of

words in Kannada, while it changes for other languages)

Standard 4: Professional Dispositions and Ethical Practices

Certain ethical beliefs and professional dispositions essential for teachers are the focus of SToL Standard 4. Under this standard, for benchmarks 4.3 and 4.4, beliefs such as the child's lack of potential or background as a hindrance for acquiring literacy skills should be replaced with a philosophy of belief in their potential to learn and requiring novel means of teaching literacy. Teachers of literacy should try varied approaches to literacy instruction to take on the responsibility of achieving foundational literacy in all.

Using Standards to focus on Coursework in Teacher Education

The SToL can provide a systematic approach to teacher education by focusing on teacher preparation knowledge and skills to achieve foundational literacy goals. Teacher education programs can evaluate their courses against these literacy standards to ensure that they are addressing each of them at varied stages of teacher preparation within their programs. A sample table that could be used for this purpose is provided for a few of the benchmarks under Standard 1 as an overview of such a cross-walk between the standards and the coursework (see Table 5). This alignment would help determine the scope and sequence of courses and corresponding assessments within courses that would target the specific standard under SToL and the benchmark.

Table 5

Cross-walk between coursework and benchmarks within standards identifying coverage and proficiency levels.

SToL Standard and Benchmark	**Core Courses** *(Include course name and where this competency is assessed below)*	**Enhancing Professional Competencies** *(Include course name and where this competency is assessed below)*	**Curriculum and Pedagogy Courses** *(Include course name and where this competency is assessed below)*	**Field Engagement** *(Include course name and where this competency is assessed below)*
Standard 1 Benchmark 1.1	X* [Course name & corresponding assessment name] [I/D/M]**		X [Course name & corresponding assessment name] [I/D/M]	
Standard 1 Benchmark 1.2		X [Course name & corresponding		

	assessment name] [I/D/M]
Standard 1 Benchmark 1.3	X [Course name & corresponding assessment name] [I/D/M]

*X determines whether the benchmark is addressed in the course

**I/D/M designates if the benchmark is introduced (I), developed (D), or mastered (M)

Using Standards to focus on Outcomes Assessment and Data-Based Decision Making

STоL standards can also be used to evaluate teacher education quality. One measure is to adopt the designation of coursework and assessment that moves the student teacher from a beginning level where the knowledge and/or skill is introduced (I), developed (D), or mastered (M). This designation by the assessments in Table 5 will help identify course-level progression in literacy knowledge and skills. The goal is to have the student teacher involved in at least one course assessment that involves evaluating mastery (M) of content. Using such data will help inform course-level changes guided by STоL benchmarks.

Another assessment that could be built using the standards are checklists based on the STоL benchmarks that could be used as an evaluation tool for student teachers during their internships or field experiences. An example is given in Table 6 for STоL Standard 3. The appendix provides a checklist for all the standards and benchmarks of STоL, which could be used to assess the quality of teacher training and the quality of teachers. Proficiency level indicates the ability to demonstrate the benchmarks during teaching and may be assessed during student teaching or other such opportunities. Data gathered at this level would indicate where teacher education programs have attained proficiency and where to target resources and additional training.

Table 6

STоL checklist for Standard 3 and benchmarks indicating proficiency levels

Standard 3: Structured Literacy Instruction	**Level of Proficiency**
3.1 Use a systematic and explicit approach to literacy instruction to suit students' linguistic and sociocultural backgrounds.	☐ Proficient ☐ Emerging ☐ Not proficient
3.2 Understand the progression of phoneme and akshara (including *mathras* and *samyuktaksharas*) development and logically sequence them according to	☐ Proficient ☐ Emerging

ease of sounding, frequency of occurrence, and difficulty levels.	☐ Not proficient
3.3 Know and apply the rules for *mathras* and *samyuktaksharas* during word reading and writing	☐ Proficient ☐ Emerging ☐ Not proficient

CONCLUSIONS AND LIMITATIONS

A systematic approach for building a strong foundation for literacy is required at the teacher education stage for akshara-based languages. The state report on Foundational Literacy and Numeracy (FLN) draws attention to inadequate research on foundational literacy skills, especially on the quality assessment of component reading skills and application in multilingual classrooms (Kapoor et al., 2021). Several key considerations for training teachers for instruction in literacy emerged in this study. First and foremost, the SToL, standards for teacher education that targets knowledge and skills in literacy acquisition, is based on akshara-based research and literacy acquisition. These standards addressing foundational knowledge, skills, pedagogy of literacy instruction, and professional dispositions can be used to assess teacher education quality and inform changes to teacher education in literacy. This approach will provide a systematic data-based decision-making opportunity for teacher education and will create opportunities to establish uniformity in teacher education endeavors across the multi-linguistic states of India and other akshara-based countries. The considerations proposed in this article, for assessing teachers' knowledge and practical skills in teaching literacy, will help move the needle toward achieving the literacy goal outlined in several national (Ministry of Education, 2021) and international efforts (UNICEF, 2019).

However, a few considerations limit this study. The standards may not encompass all the nuances of the diverse languages in India and represent the major languages as understood by the authors' research and other available literature and research in akshara-based languages. Dialects and languages may vary from those represented in the SToL standards and need to be factored in. In addition, to achieve the standards in assessment and pedagogy in the proposed teacher education standards, there is a dearth of research in akshara-based languages in several areas such as in

- Developing and culturally validating assessments in akshara-based languages for all reading foundational components. Organizations such as FABLe (Misquitta & Ghosh, 2021) are involved in some promising work in this field.
- Developing interventions based on the sequence of akshara acquisition
- Establishing research evidence for interventions in reading in all foundational components.
- Creating books for readingaloud and reading that are decodable, and developmentally and culturally appropriate.

The goal of literacy for all in India can be achieved with a collaborative approach that requires consolidation of several efforts by different sectors, public and non-profit organizations. This article serves to provide a starting point for teacher education in literacy in akshara-based languages and calls for using this systematic approach to empower

teachers with the knowledge and skills required to bring the much-needed boost in literacy rates.

REFERENCES

ASER Center. (2022). *Annual Status of Education Report 2022*. Link

Chauhan, C. P. S. (2008). Education and caste in India. *Asia Pacific Journal of Education*, 28 (3), 217–234. https://doi.org/10.1080/02188790802267332

Escamilla, K., Olsen, L., & Slavick, J. (2022). *Toward Comprehensive Effective Literacy Policy and Instruction for English Learner/Emergent Bilingual Students*. Link

Goldenberg, C. (2020). Reading Wars, Reading Science and English Learners. *Reading Research Quarterly, 55* (S1), pp. S131-S144. https://doi.org/10.1002/rrq.3440

International Dyslexia Association (2018). *Knowledge and Practice Standards for Teachers of Reading.* Link

International Literacy Association. (2017). *Standards for the Preparation of Literacy Professionals 2017*. Link

Joshi, R. M., Binks, E., Hougen, M., Dahlgren, M. E., Ocker-Dean, E., & Smith, D. L. (2009). Why elementary teachers might be inadequately prepared to teach reading. *Journal of Learning Disabilities*, 42, 392-402.

Kapoor, A., Jhalani, A., Vinayak, N. & Zutshi, S. (2021). *State of Foundational Literacy and Numeracy in India*. Institute of Competitiveness & EAC-PM. Link

Kilpatrick, D. A. (2015). Essentials of assessing, preventing, and overcoming reading difficulties. John Wiley & Sons Inc.

Kim, Y. S. G., Boyle, H. N., Zuilkowski, S. S., & Nakamura, P. (2016). *Landscape Report on Early Grade Literacy.* USAID.

Kosnik, C. & Beck, C. (2008). We taught them about literacy but what did they learn? The impact of a preservice teacher education program on the practices of beginning teachers. *Studying Teacher Education*, 4, 115-128. https://doi.org/10.1080/17425960802433603

Landerl, K., Castles, A., & Parrila, R. (2022). Cognitive Precursors of Reading: A Cross-Linguistic Perspective, *Scientific Studies of Reading*, 26 (2), 111-124. https://doi.org/10.1080/10888438.2021.1983820

Marasinghe, A., Wijaythilake, D. K., Parrila, R., Inoue, T. & Nag, S. (2018) Instruction Matters to the Development of Phoneme Awareness and Its Relationship to Akshara

Knowledge and Word Reading: Evidence from Sinhala, Scientific Studies of Reading, 22 (5), 420-433. https://doi.org/10.1080/10888438.2018.1466890

Menon, S., Krishnamurthy, R., Sajitha, S., Apte, N., Basargekar, A., Subramaniam, S., Nalkamani, M., & Modugala, M. (2017). *Literacy Research in Indian Languages (LiRiL): Report of a Three-Year Longitudinal Study on Early Reading and Writing in Marathi and Kannada*. Azim Premji University and Tata Trusts. Link

Ministry of Education (2021). National Initiative for Proficiency in Reading with understanding and Numeracy NIPUN BHARAT Guidelines for implementation. Department of School Education and Literacy, Ministry of Education, Government of India. Link

Ministry of Education. (2021). *National Initiative for Proficiency in Reading with understanding and Numeracy NIPUN BHARAT Guidelines for implementation*. Department of School Education and Literacy, Ministry of Education, Government of India. Link

Misquitta, R., & Ghosh, A. (2021). FABLe: A Mobile Application to Assess and Build Foundational Literacy Skills for All Children, Including Children with Disabilities in India, *International Journal of Disability, Development and Education*, 575-587. https://doi.org/10.1080/1034912X.2021.1901861

Mohanan, T. (1989). Syllable structure in Malayalam. *Linguistic Inquiry*, 20, 589–625.

Murty, L., Otake, T., & Cutler, A. (2007). Perceptual tests of rhythmic similarity: I. Mora rhythm. Language and Speech, 50(1), 99. https://doi.org/10.1177/00238309070500010401

NCF (2022). *National curriculum framework for foundational stage*. NCERT, New Delhi.

Nag-Arulmani, S. (2003). Reading difficulties in Indian languages. In N. Goulandris (Ed.), *Dyslexia in different languages:* Cross-linguistic comparisons. (pp. 235–254). Whurr.

Nag, S. (2007). Early reading in Kannada: The pace of acquisition of orthographic knowledge and phonemic awareness. *Journal of Research in Reading*, 30(1), 7–22. http://dx.doi.org/10.1111/j.1467-9817.2006.00329.x

Nag, S. (2011). The *akshara* languages: what do they tell us about children's literacy learning? In R. Mishra and N. Srinivasan, (Eds.). *Language-Cognition: State of the Art* (pp. 272-290). Lincom Publishers.

Nag, S. (2014). Alphabetism and the science of reading: from the perspective of the akshara languages. *Frontiers In Psychology*, 5: 866. https://doi.org/10.3389/fpsyg.2014.00866

Nag, S. (2017). Learning to read Kannada and other languages of South Asia. In L. Verhoeven & C. Perfetti (Eds.), *Learning to read across languages and writing systems* (pp. 104–126). Cambridge University Press.https://doi.org/10.1017/9781316155752.005

Nag, S. & Snowling, M. J. (2011). Reading comprehension, decoding and oral language. *The EFLU Journal. English and Foreign Languages University, 2* (2), 75–93.

Nag, S., and Snowling, M. J. (2012). Reading in an Alphasyllabary: Implications for a Language-Universal Theory of Learning to Read. *Scientific Studies of Reading*, 16 (5), 404-423. http://doi.org.tr/10.1080/10888438.2011.576352

Nag, S., Treiman, R. & Snowling, M. J. (2010). Learning to spell in an alphasyllabary: The case of Kannada. *Writing Systems Research*, 2, 41–52. http://doi.org.tr/10.1093/wsr/wsq001

Nakamura, P & de Hoop, T. (2014). Facilitating Reading Acquisition in Multilingual Environments in India (FRAME-India) Final report. American Institutes for Research. Link

Nakamura, P. R., Joshi, R. M., & Ji, X. R. (2017). Investigating the asymmetrical role of syllabic and phonemic awareness in akshara processing. *Journal of Learning Disabilities*, 51 (5), 499–506. doi: http://doi.org.tr/10.1177/0022219417718201

National Education Policy (2020). *Ministry of Human Resource Development Government of India*. Link

National Reading Panel (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (National Institute of Health Publication No. 00-4769). National Institute of Child Health and Human Development. Link

NCERT (2023). *National Achievement Survey*. https://ncert.nic.in/NAS.php

Sailaja, P. (2007). Writing systems and phonological awareness. In Bayer, J., Bhattacharya, T. & Batra, M. T. H. (Eds.), Linguistic theory and south Asian languages: Essays in honour of K. A. Jayaseelan (pp. 249–265). *Linguistics theory and South Asian Languages*. John Benjamins. https://doi.org/10.1075/la.102

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

Spear-Swerling, L. (2007). The research-practice divide in beginning reading. *Theory into Practice*, 46 (4), 301-308. doi: https://doi.org/10.1080/00405840701593881

UNICEF (2019). Guidelines for Design and Implementation of Early Learning Programmes. UNICEF and LLF, New Delhi.

Vaid, J. & Gupta, A. (2002). Exploring word recognition in a semi-alphabetic script: The case of Devanagari. *Brain and Language*, 81, 679–690. doi: https://doi.org/10.1006/brln.2001.2556

Vaid, J., Padakannaya, P. Reading and writing in semi-syllabic scripts: An introduction. *Reading and Writing 17*, 1–6 (2004). https://doi.org/10.1023/B:READ.0000013861.42512.b0

Wali, A., Sproat, R., Padakannaya, P., & Bhuvaneshwari, B. (2009). Model for phonemic awareness in readers of Indian script. *Written Language & Literacy*, 12(2), 161-169. doi: https://doi.org/10.1075/wll.12.2.02wal

Appendix

Evaluation Tool for Teachers of Literacy

Standards and Benchmarks for Teachers of Literacy (SToL)	**Level of Proficiency**
STANDARD 1: Foundations of Language and Literacy Acquisition	
1.1 Explain the 5 language domains: Phonology, morphology, syntax, semantics and pragmatics	☐ Proficient ☐ Emerging ☐ Not proficient
1.2 Determine how the 5 language domains affect reading and writing outcomes.	☐ Proficient ☐ Emerging ☐ Not proficient
1.3 Understand that phonemes differ among languages and know the difference of sounds in English and the local Indian language being taught, with contrast from native/home language.	☐ Proficient ☐ Emerging ☐ Not proficient
1.4 Understand the differences in morphology, syntax, semantics and pragmatics of the language in context (Ex. English, Hindi, other languages)	☐ Proficient ☐ Emerging ☐ Not proficient
1.5 Understand that explicit instruction in reading and writing requires attention to variation between spoken and read/written form and dialectal differences in home and school languages.	☐ Proficient ☐ Emerging ☐ Not proficient
1.6 Understand the relationships among phonemic awareness, rules and exceptions for consonant vowels (CV) *mathra* and clusters or combined letters (CCV) *samyuktakshara*, decoding, word recognition, spelling, and vocabulary knowledge.	☐ Proficient ☐ Emerging ☐ Not proficient
1.7 Understand that reading difficulties can also be caused by features in language script that vary with each Indian language.	☐ Proficient ☐ Emerging ☐ Not proficient

1.8 Understand that vocabulary must be developed during the stage of word and *akshara* level identification through read-alouds and classroom conversations.	☐ Proficient ☐ Emerging ☐ Not proficient
1.9 Focus on language comprehension (including listening comprehension) at all levels of readers.	☐ Proficient ☐ Emerging ☐ Not proficient
STANDARD 2: Assessment of Literacy	
2.1 Know about different types of assessments in literacy and their use	☐ Proficient ☐ Emerging ☐ Not proficient
2.2 Understand basic principles of test construction and formats (e.g., reliability, validity, criterion, normed) for all assessments in Indian languages.	☐ Proficient ☐ Emerging ☐ Not proficient
2.3 Understand how to interpret NAS and other assessment survey results pertaining to literacy.	☐ Proficient ☐ Emerging ☐ Not proficient
2.4 Understand how to create curriculum-based assessments for each domain of language, administer them and summarize how to use the results for monitoring progress.	☐ Proficient ☐ Emerging ☐ Not proficient
2.5 Create informal diagnostic surveys of phonological and phonemic awareness, decoding skills, oral reading fluency, comprehension, spelling, and writing.	☐ Proficient ☐ Emerging ☐ Not proficient
2.6 Teachers should use psychological test results and reports to determine implications for classroom instruction. Teachers should use test results for instructional decisions and communicate the results and progress regularly to all involved (other teachers and parents).	☐ Proficient ☐ Emerging ☐ Not proficient
Standard 3: Structured Literacy Instruction	
3.1 Use a systematic and explicit approach to literacy instruction to suit student's linguistic and sociocultural backgrounds.	☐ Proficient ☐ Emerging ☐ Not proficient
3.2 Understand the progression of phoneme and *akshara* (including *mathras* and *samyuktaksharas*) development and logically sequence them according to ease of sounding, frequency of occurrence and levels of difficulty.	☐ Proficient ☐ Emerging ☐ Not proficient

3.3 Know and apply the rules for *mathras* and *samyuktaksharas* during word reading and writing	☐ Proficient ☐ Emerging ☐ Not proficient
Standard 4: Professional Dispositions and Ethical Practices	
4.1 Perform the role in the best interest of every student towards acquiring literacy.	☐ Proficient ☐ Emerging ☐ Not proficient
4.2 Provide literacy instruction by following approaches that have research evidence	☐ Proficient ☐ Emerging ☐ Not proficient
4.3 Promote literacy development among children from socio-cultural deprivation as a priority by considering the uniqueness of all learners as assets.	☐ Proficient ☐ Emerging ☐ Not proficient
4.4 Use learner difference or deviation as a resource to be nurtured towards building literacy skills	☐ Proficient ☐ Emerging ☐ Not proficient
4.5 Take responsibility to develop literacy among everyone irrespective of the origin of birth and background	☐ Proficient ☐ Emerging ☐ Not proficient
4.6 Strive to engage learners with diversities with same enthusiasm, without bias, in activities to nurture literacy skills	☐ Proficient ☐ Emerging ☐ Not proficient
4.7 Respect the cultural and social status of a child and preserve the same while planning literacy instruction and performing activities to promote literacy	☐ Proficient ☐ Emerging ☐ Not proficient

Biographical notes:

Srimani Chakravarthi: Srimani Chakravarthi conducted research in Kannada, a South Indian language, with a focus on oral language acquisition in an Indian language and remediation. She has over 20 years of experience in teaching children with LD, ADHD and as a teacher educator.

Gowramma Ittira Poovaiah: Gowramma Ittira Poovaiah has several years of experience with students with exceptional needs and teacher education. She was a Fulbright Fellow,

studying socio-cultural practices in early childhood and their impact on reading skills at Florida State University.

Author(s)' statements on ethics and conflict of interest

Ethics statement: We hereby declare that research/publication ethics and citing principles have been considered in all the stages of the study. We take full responsibility for the content of the paper in case of dispute.

Statement of interest: We have no conflict of interest to declare.

Funding: None

Acknowledgements: None