Identifying Students at Risk for Reading Difficulties in an Indian Context

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Abstract

The purpose of this study was to triangulate four data sources – Dynamic Indicators of Basic Early Literacy Skills (DIBELSNext), Easy Curriculum-Based Measures (easyCBM), Test of Silent Reading Efficiency and Comprehension (TOSREC), and Classroom-Based Written Assessment – to identify students at risk for reading difficulties. Participants were 1,025 students in Grades 1, 3, and 5 attending low-cost, middle-cost, and high-cost private schools in an urban city center in Southern India. In general, we found that a larger percentage of students were identified as being at risk when we used the reading measures alone, but the numbers reduced considerably when we triangulated those scores with the written assessment. For students in Grade 1, we found that a median of 5% of students were identified as at risk across all school sites using the four data sources; for students in Grades 3 and 5, this percentage increased to 20%. Implications for reading assessment and intervention in the Indian context are discussed.

Keywords: Triangulation of data, reading difficulties, curriculum-based measures, at risk, India

Linguistic Background and the Role of English

English and Hindi are the two official languages of India, but English is used as the link language for most people who speak different state languages (National Council of Educational Research and Training, 2011). It is the primary language of business, and is viewed as the language for economic and social mobility (Ramanathan & Bruning, 2003). It is estimated that 90 million children in India are being formally schooled in English (Kalia, 2007). However, English and the privileges associated with it remain inaccessible to those who are from a lower SES, with the middle class assuming a position of power through its access to English (Ramanathan & Atkinson, 1999).

In India, schools typically follow a three-language formula (Aggarwal, 1991) that is ratified by the National Curriculum Framework 2005 (Ramachandran et al., 2005). The first language is the language of instruction (one of the official languages, English or Hindi); the second is the official language; that is, not the language of instruction (English or Hindi), which is introduced by Grade 5; and the third language is the state language, which is introduced by Grade 7 (Ramachandran et al., 2005). Unfortunately, measuring students' proficiency in these languages is difficult, given the inconsistent time frames in which schools opt to introduce them. An additional complexity is that in most urban centers, a child's home language may differ from the national or state languages introduced in school.

A typical child in India is exposed to at least four languages from ages 0-13 years: a home language (L1); school language 1 (L2) which is the language of instruction (English, in our sample); school language 2 (L3) which is the national language Hindi; and school language 3 (L4) which is the state language (Kannada, in our sample). (Shenoy et al., 2020, p. 2) Eighty percent of Indian schools are government schools, but because of the poor quality of education offered there, 27% of Indian children are privately educated (Annual Status of Education Report, 2016). In urban centers, more

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than 50% of children (27 million) attend private schools (Annual Status of Education Report [ASER], 2016). These schools follow a state, national, or international standardized curriculum, and the language of instruction is English (Kurrien, 2005). Government schools, on the other hand, follow a state-level curriculum, and the language of instruction is the state language.

There is a push towards English medium instruction in the private schools in order to promote social and economic mobility for students attending these schools. According to Kalyanpur (2020), this is creating a new group of marginalized students in India – a group that attends low-cost private schools and for whom English still seems inaccessible because of the poor quality of instruction in these schools.

In schools where English is the language of instruction, in a seven-hour school day, a student is exposed to six hours of instruction in English and one hour of instruction in Hindi and/or the state language (Shenoy et al., 2020). By middle or high school, a large number of students are proficient in all domains of speaking, listening, reading, and writing in English. These students consider the English language to be their dominant language since they have been exposed to it more than the other languages, and it is pervasive across academic content areas.

Focus on Written Assessments

Students in India are typically assessed only on their written content-area skills, based on the assumption that such assessments indirectly also measure students' reading abilities. The assessment method at most schools appears to be primarily concerned with testing written skills and does not account for other aspects such as oral language or reading. The assessments are structured as opportunities for students to reproduce content that has been extensively covered in class (Ramanathan, 2001), and questions are limited to those for which teachers have given students appropriate responses; as a result, the assessment pattern is restricted to testing students' short-term memory, and there is no learning or assessment of non-written English literacy skills, potentially leading to lower learning outcomes in primary education (Vyas, 2014).

The predominant format for testing is targeted at students producing short answers and essays, and it taps into their rote memorization skills alone (Ramanathan, 2008). Linguistic creativity, which is often influenced by the school and home environment, is restricted to the teacher's interpretation of the textbook, and students are not directly tested on other aspects of language, such as speaking, listening, and reading in the elementary grades. This may impede the development of overall English literacy and have significant ramifications for the general learning process (Kumar & Rani, 2016).

Reading Instruction

The predominant method used to teach reading in India is the alphabet-spelling method (Gupta, 2014). Students are taught letter names and how to spell out words and, therefore, bypass the sound structure of the language, acquiring new words by sight-word recognition instead. Students are expected to learn "common" words as a whole and to recognize new, unfamiliar words by rote memorization (Annamalai, 2004). In a similar way, students move from learning letter names and words to learning sentences by rote (Dixon et al., 2011). Thus, they are not taught how to blend or segment letter sounds into words and can only read words that are familiar to them, with limited comprehension.

Further, it is very common for teachers in Indian classrooms to teach reading by focusing on written products, such as copying from the board and choral recitation, rather than comprehension. One teacher in Gupta's (2014) study reported: "These children are not reading because they are not copying the letters. In class, teachers used terms that are central to initial reading – picture, word, letter, sound and spelling – interchangeably" (p. 3912).

Dixon et al. (2011) attempted to introduce phonics-based instruction in English-medium low-income private schools in Hyderabad, India. A control group received traditional English instruction involving rote learning and whole-word recognition and the experimental group received phonics-based instruction. Their findings showed a statistically significant difference between the experimental and control groups, with the experimental group performing better on measures of reading, spelling, and sounding out letters and words (Dixon et al., 2011).

Similar findings have been reported for students attending rural schools in India (Gupta, 2014). For example, Nishanimut et al. (2013) introduced a phonics approach in L2 English, where letter sounds were represented by the symbols used in the child's L1 (Kannada) and found that tapping into their L1 reading instruction helped students learn English better than phonics-based instruction programs in English alone.

Only a limited number of studies have been conducted in the area of reading instruction in India in the last few years, and Shenoy et al. (in review) have recently published a paper to address this gap. Using DIBELSNext (Good et al., 2011) to observe reading progress, we found that students who received both

one and two years of phonics instruction in preschool significantly outperformed those who did not receive any phonics instruction on the literacy skills assessed. Moreover, the incidence of students being at risk for reading difficulties reduced significantly with an increase in years of phonics instruction. Beyond this, as far as we know, no other reading instruction programs have been researched within the Indian context.

Context of the Present Study and Research Questions

We were interested in measuring L2 English reading skills because it was the language of instruction for our sample of students in Bangalore, and represented their access to literacy. But at the time of the study, we could not find any measures that were developed in the Indian context. We, therefore, decided to adapt and use curriculum-based measures developed in the United States (US), namely DIBELSNext (Good et al., 2011), easyCBM (Anderson et al., 2014), and TOSREC (Wagner et al., 2019), and established reliability and validity for these measures (Shenoy et al., 2020).

DIBELSNext (Good et al., 2011) is a widely used tool to measure reading and literacy skills in the US. Measuring students' reading skills is an important component that educators consider while making intervention decisions for their students. Researchers at the University of Oregon developed and revised the easyCBM measures (Anderson et al., 2014). The focus has been to facilitate "data-driven instructional decision making through enhanced reporting options" (Anderson et al., 2014, p. 4), in order to promote progress-monitoring and universal screening in schools (Deno, 2003; Keller-Margulis et al., 2008). These curriculum-based measures were developed in line with the reading areas that were deemed important by the National Reading Panel (National Reading Panel et al., 2000), including phonological awareness, phonics (alphabetic principle), fluency, and comprehension (Riedel & Samuels, 2007). Moreover, these reading skills represent the developmental continuum, and the changes in subtests across grade levels parallel student development (Adams, 1990; Chall, 1996; Ehri, 2005; Paris & Hamilton, 2009). In addition, the National Education Policy of India (NEP; Ministry of Human Resource Development, Government of India, 2020), the latest government mandate, states that there is an urgent national need for students to attain universal foundational literacy and foundational numeracy by Grade 3. Our rationale for using these measures was precisely because they represented a universal trajectory of reading acquisition in English and followed a developmental continuum. We were also interested in aligning our study with the NEP goal and providing schools in our sample a means of measuring foundational reading skills in addition to the measures of foundational writing skills they were using.

Our rationale for using an English measure and not a bilingual or multilingual assessment was as follows: (a) Even though our sample of students were bilingual, they were not biliterate; they were only literate in English and not in their native languages; and (b) though they came from different home language backgrounds, English was their link language in the classroom, and they used it to communicate with their teachers and peers.

Given the context and focus on written assessments and that reading is not explicitly taught, we also wanted to introduce reading assessments and progress-monitoring tools that could not only keep track of student progress but also help guide instruction for teachers. Because teachers in Bangalore, India, did not follow a phonics-based curriculum, we expected to see overall low scores on measures of decoding skills such as letter sounds, nonsense word fluency, and phoneme segmenting, but were still interested in learning how students performed on these critical reading subtests. Additionally, we wanted to explore how students would perform on fluency and comprehension measures and whether the reading instruction they were currently receiving – namely the alphabet-spelling method (Gupta, 2014) – would impact their scores. Our rationale for utilizing both the DIBELSNext and easyCBM was to be able to capture a wide variety of subtests measuring reading in elementary grades that followed a universal developmental continuum, as well as to observe their efficacy and reliability as assessments of L2 English reading development within the Indian context. For consistency, we maintained the content and administration procedures employed in the US. The comprehension passages were modified to reflect names that are common within the Indian context (e.g., *Abby* was replaced with *Asha*), and some words were changed to reflect common usage in the culture (e.g., *jump rope* was replaced with *skipping rope*), but the essence of the passages in terms of meaning and comprehension was not changed.

We were cognizant that our reading measures were measuring skills not taught in the Indian context, especially for students in Grade 1, so we collected data on an equivalent classroom-based written assessment. This served as our primary data source in order to triangulate our reading measures developed in the US with those developed by classroom teachers in India to be able to identify risk. The resulting research questions were the following:

1. Is there any variability in the number of students identified as at risk for reading difficulties across low-cost, middle-cost, and high-cost schools?
2. What is the difference in risk percentages when we

consider only the reading measures vs. the reading measures triangulated with the classroom-based written assessment?

Method

Participants

The sample consisted of 1,025 students from Grades 1, 3, and 5. Students came from different home language backgrounds and were enrolled in English-medium schools. They did not receive any additional bilingual support for the development of their home languages and were not expected to be biliterate in both languages. The demographic information of the students is presented in Table 1.

School Setting

The six participating school sites were located in an urban city center, Bangalore. Two schools were low-cost, two were middle-cost, and two were high-cost schools. Table 1 presents the school characteristics. For the purposes of this study, a low-cost school was defined as a private school in Bangalore, India, where the annual tuition cost per student was approximately Rupees 7,200 ($120); the middle-cost school was a private school where the annual tuition cost per student was approximately Rupees 40,000 ($667); and the high-cost school was a private school where the annual tuition cost per student was approximately Rupees 150,000 ($2,500). Moreover, low-income household was defined as families whose monthly income was between Rupees 0-20,000 ($0-275), middle-income household was defined as families whose monthly income was between Rupees 21,000-70,000 ($285-956) and high-income household was defined as families whose monthly income exceeded Rupees 71,000 (above $1,000).

The low-cost schools followed a state board curriculum that is prescribed by the state of Karnataka; the middle-cost schools followed a national board curriculum that is prescribed by the Central Board of Education in India; one high-cost school followed the national board curriculum, the other followed a Montessori curriculum. The national board curriculum is more rigorous, designed to prepare students to find national and international jobs. The state board curriculum is less rigorous, intended to prepare students to find jobs within the state of Karnataka only.

All schools in our sample introduced English in kindergarten and provided instruction in English in all content areas throughout the school day. Teachers' language proficiency varied considerably, with teachers from the state board schools being less fluent in English than teachers from the national board and Montessori schools. One low-cost school followed the alphabet-spelling method for 100% of their reading instruc-

Table 1
Demographic Data for the Students in the Sample

			Grade 1 (*N* = 346)		Grade 3 (*N* = 328)		Grade 5 (*N* = 329)	
Individual Characteristics			Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
	Gender	Male	171	49.42	179	54.57	189	57.45
		Female	175	50.58	149	45.43	140	42.55
	SES	Low-Income	46	13.29	40	12.20	45	13.68
		Middle-Income	175	50.58	220	67.07	210	63.83
		High-Income	125	36.13	68	20.73	74	22.49
School Characteristics	School Type	Low-Cost 1	37	10.69	36	10.98	37	11.25
		Low-Cost 2	9	2.60	4	1.22	8	2.43
		Middle-Cost 1	74	21.39	84	25.61	83	25. 23
		Middle-Cost 2	101	29.19	136	41.46	127	38.60
		High-Cost 1	107	30.92	51	15.55	71	21.58
		High-Cost 2	18	5.20	17	5.18	3	0.91
	Curriculum	State	46	13.29	40	12.20	45	13.68
		National	282	81.50	271	82.62	281	85.41
		Montessori	18	5.20	17	5.18	3	0.91

tion, one low-cost school, two middle-cost schools, and one high-cost school followed a combination of alphabet-spelling and phonics-based instruction; the Montessori school followed a 100% phonics-based approach.

Measures

The reading measures were administered across three phases during the 2017-18 academic year. The academic year in India is from June-March, so the reading measures were administered during three time periods,July-August, October-November, and January-February to correspond with benchmark assessments that are administered in fall, winter, and spring in the US. The total individual administration time was approximately 30 minutes per student.

DIBELSNext Subtests

All the DIBELSNext subtests were timed measures and were administered for 1 minute each. The following subtests were administered for students in Grade 1.

Letter Naming Fluency. This subtest measures the student's ability to name uppercase and lowercase letters; students earned 1 point for each letter that was correctly named.

Phoneme Segmenting Fluency. In this task, the student has to break up a word into its corresponding sound segments; for example, the word *cat* has three sound segments: /c /a/ /t/. The student earned 1 point for each correct sound produced.

Nonsense Word Fluency. This subtest consists of two parts: correct letter sounds (CLS) and whole words read (WWR). It measures students' knowledge of letter-sound correspondences and their ability to process CVC combinations that are non-words (e.g., /v/ /o/ /l/). Students earned 1 CLS for each correct letter sound read by itself or as part of a make-believe word. They also earned 1 WWR for each whole word read correctly without first being sounded out.

Oral Reading Fluency. The ORF subtest was used to measure the ability to accurately read an unknown passage; the student earned 1 point for each word that was read correctly.

Retell Fluency. After students completed the ORF subtest, they were asked to recall and retell the story that they just read as part of the ORF subtest. They earned 1 point for every word in their retell that was connected to the passage.

The following subtests were administered for students in Grades 3 and 5:

Oral Reading Fluency. The ORF subtest was used to measure the ability to accurately read an unknown passage; the student earned 1 point for each word read correctly. It was a timed test administered for 1 minute.

Retell Fluency. After students completed the ORF subtest, they were asked to recall and retell the story that they just read as part of the ORF subtest. They earned 1 point for every word in their retell that was connected to the passage. It was a timed test administered for 1 minute.

DAZE Comprehension. DIBELS Daze is a close comprehension measure that measures students' understanding of the meaning of a word within the context of a sentence. It was individually administered, and students were given 3 minutes to complete the test. According to the authors' directions, approximately every seventh word was replaced by a box containing the correct word and two distractor words. Students were asked to silently read a passage and circle their word choices. The scores represent the number of correct and incorrect words, and an adjusted score that compensates for guessing is calculated based on the number of correct and incorrect responses.

easyCBM Subtests

All easyCBM subtests were timed and were administered for 1 minute each. The following subtests were administered for students in Grade 1:

Letter Names. This subtest was equivalent to the Letter Naming Fluency subtest on the DIBELSNext.

Letter Sounds. Letters of the alphabet were presented in either upper- or lowercase format, and students were asked to produce the letter sounds. Students had to produce as many letter sounds as possible and earned 1 point per letter sound identified correctly.

Phoneme Segmenting. This subtest was equivalent to the Phoneme Segmentation Fluency subtest on the DIBELSNext.

Word Reading Fluency. A list of words was presented to students, who were asked to read as many words as possible; they earned 1 point for every word correctly read.

Passage Reading Fluency (PRF). The PRF subtest was equivalent to the ORF subtest on the DIBELSNext.

The following subtests were administered for students in both Grades 3 and 5 except for Word Reading Fluency, which was only administered to students in Grade 3.

Word Reading Fluency. A list of words was presented to students, who were asked to read as many words as possible; they earned 1 point for every word correctly read. It was a timed test administered for 1 minute.

Passage Reading Fluency (PRF). The PRF subtest was equivalent to the ORF subtest on the DIBELSNext. It was a timed test administered for 1 minute.

Multiple-Choice Reading Comprehension. Students were instructed to silently read a comprehension passage and answer 20 multiple-choice comprehension questions that followed. This subtest was group-admin-

istered by class sections in the schools, and typically took 30 minutes to complete. Scores were calculated as the number of correct responses out of the 20 questions.

We chose to use both the DIBELSNext and easyCBM measures because (a) we could record reliability and validity of measures within the Indian context; and (b) we wanted to assess which set of subtests was easier for teachers in our sample to access, administer, and score within this context.

Test of Silent Reading Efficiency and Comprehension (TOSREC)

We chose the TOSREC (Wagner et al., 2010) as an added progress-monitoring measure because the DIBELSNext and easyCBM had a reading fluency subtest but not a comprehension test for Grade 1. Students were expected to read various statements and conclude if they were true or false. For example, they read a statement such as "A lion can fly" and checked a box labeled "yes" or "no." The test was timed for 3 minutes, and raw scores were calculated by subtracting incorrect responses from correct ones. Some words that were written in American English were changed to Indian English so that students would comprehend them in this context (e.g., The word *cookies* was changed to *biscuits*). But otherwise, the meaning of the text was retained in all instances. We found that out of all the fluency and comprehension measures, the TOSREC represented a somewhat culture-free test, because of the generic statements, which were either true or false, rather than a passage or story that had many more cultural references. It seemed to be a preferred test for this context and captured comprehension at a sentence level.

Classroom-Based Written Assessment

In addition to the reading measures, we asked teachers to provide us with students' scores on classroom-based written assessments. These assessments, which are administered five times during the school year, play a critical role in the final decision regarding student promotion from one grade to the next. We only collected classroom-based assessment data from tests that were conducted within two weeks of when we collected data on the reading measures so as to capture students' progress in reading and writing skills simultaneously.

These written assessments were curriculum-based measures that reflected what was taught in class. Though students have to take tests in all content areas, we collected data on tests that measured their skills in English grammar (sentence structure, tenses, nouns, singular and plural), vocabulary (synonyms, antonyms, adjectives), comprehension (passage level: read a passage and answer short questions on it), and composition (short essay on a topic). It is important to note that all the content for the exams is covered in class and measures students' rote memorization skills rather than creativity or critical thinking skills. High-Cost School 2 was a Montessori school; they do not have exams, so we could not get these data from that school site.

Data Analysis

We followed the risk tables provided by the authors of the curriculum-based measures. For DIBELSNext, we calculated a composite score per grade level and then coded students' scores as "at or above benchmark," "below benchmark," and "well below benchmark." For easyCBM, we coded students' score per subtest as being "core instructional support," "strategic instructional support," and "intensive instructional support." We then averaged the scores across subtests and recorded student scores that fell below the recommended 20th percentile and coded those students as needing "intensive instructional support across all subtests." For TOSREC, we followed the ratings provided by the authors: "above average," "average," "below average," "poor," and "very poor." We then coded the scores that were below the 10th percentile; that is, the "poor" and "very poor" categories as students needing "intensive instructional support." Finally, for the classroom-based written assessment, we followed the cut-off percentages set by teachers at the school sites: above 60% or "above-average grades," between 41-59% or "passing grades," and below 40% or "failing grades." We then examined the classification of students across data sources and focused on the following ratings: "well below benchmark" on DIBELSNext, "intensive instructional support across all subtests" on easyCBM, "poor/very poor" on TOSREC, and "failing grades" on classroom-based written assessment. These students were classified as "at risk for reading difficulties."

Results

The study sought to ascertain the number of students at each of the school sites who could be identified as at risk for reading difficulties across all four data sources. The data are organized around grade level.

Grade 1

Table 2 and Figure 1 provide a representation of the percentage of students from Grade 1 who were identified as being at risk across all four data sources. A total of 368 students were evaluated across all school sites.

Students Identified as at Risk on the Three Reading Measures

If we were to consider only the reading measures, approximately 80% of students from low-cost schools (*n*

Table 2
Students Identified as at Risk for Reading Difficulties Across All Four Data Sources in Grade 1

N = 368	At risk on DIBELS	At risk on easyCBM	At risk on TOSREC	At risk on classroom-based assessment	At risk across all four data sources
Low-Cost School 1 (*n* = 37)	34 (92%)	35 (96%)	37 (100%)	04 (11%)	03 (8%)
Low-Cost School 2 (*n* = 09)	06 (67%)	06 (67%)	09 (100%)	0	0
Middle-Cost School 1 (*n* = 84)	26 (31%)	32 (38%)	47 (56%)	08 (10%)	06 (7%)
Middle-Cost School 2 (*n* = 105)	55 (52%)	63 (60%)	83 (79%)	08 (10%)	03 (3%)
High-Cost School 1 (*n* = 115)	55 (48%)	57 (50%)	77 (70%)	22 (19%)	18 (16%)
High-Cost School 2 (*n* = 18)	01 (5%)	01 (5%)	03 (13%)	N/A	0

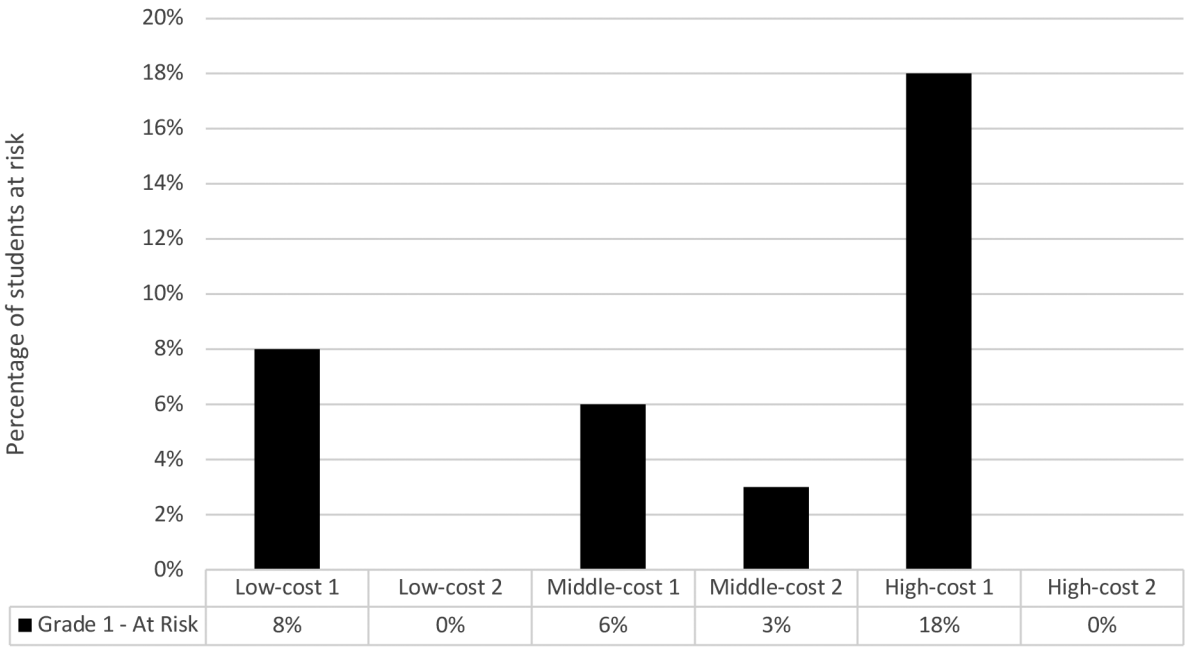

Figure 1
Students at Risk for Reading Difficulties in Grade 1

= 46) would be considered at risk on the DIBELSNext; 80% of students would be considered at risk on the easyCBM, and 100% would be considered at risk on the TOSREC. These numbers dropped for the middle-cost schools (*n* = 189) to approximately 43%, 49%, and 68% on the DIBELSNext, easyCBM, and TOSREC, respectively. We saw a similar trend for students in High-Cost School 1 (*n* = 115), where 48%, 50%, and 70% of students were identified as being at risk on the DIBELSNext, easyCBM, and TOSREC, respectively. In High-Cost School 2 (*n* = 18), however, 5% of students were identified as being at risk on DIBELS and easyCBM and 13% were at risk on TOSREC.

Students Identified as at Risk on the Classroom-Based Writing Measure

When we only considered classroom-based assessment, 11% of students at Low-Cost School 1 ($n = 37$) and no students at Low-Cost School 2 ($n = 9$) were considered at risk. Similarly, for the middle-cost schools, 10% of students at both school sites ($n = 84$; $n = 105$) were considered to be at risk. Finally, 19% of students at High-Cost School 1 ($n = 115$) were classified as being at risk when considering classroom assessment.

Thus, a significantly lower percentage of students were found to be at risk when considering performance on classroom assessment as opposed to performance on reading measures. A drop can be seen in the percentage of students at risk on reading measures, with numbers being higher in low-cost schools and lower in middle-/high-cost schools. The variation between DIBELS, easyCBM, and TOSREC is interesting and will be discussed further.

Students Identified as at Risk When Combining All Four Data Sources

Eight percent of students were at risk at Low-Cost School 1 ($n = 37$) and none at Low-Cost School 2 ($n = 9$) when all four data sources were considered. Similarly, for the middle-cost schools, 7% of students from Middle-Cost School 1 ($n = 84$) and 3% of students from Middle-Cost School 2 ($n = 105$) were found to be at risk. The high-cost schools differed on the number of students identified as at risk, with 16% of students from High-Cost School 1 ($n = 115$) being identified, and none from High-Cost School 2 ($n = 18$).

Grade 3

Table 3 and Figure 2 represent the percentage of students from Grade 3 who were identified as at risk across all four data sources. A total of 328 students were assessed across six school sites.

Students Identified as at Risk on the Three Reading Measures

Students' scores on the reading measures indicated that 100% of students at the low-cost schools ($n = 40$) were seen to be at risk on DIBELS and easyCBM, and 88% of students were observed to be at risk on TOSREC. We observed a difference in the middle-cost schools, with more students being reported as at risk on DIBELS and easyCBM than on the TOSREC. That is, 79% and 63% of students ($n = 220$) were considered at risk on DIBELS and easyCBM, respectively, and 32% of students on TOSREC. High-Cost School 1 ($n = 51$) presented similar trends with 45%, 35%, and 19% of students as at risk on DIBELS, easyCBM, and TOSREC, respectively. In High-Cost School 2 ($n = 17$), on the other hand, 11% of students were considered to be at risk across each of the measures. A drop can be seen in the percentage of students at risk on the reading measures, with numbers being higher in the low-cost schools and in lower in high-cost schools. The variation between DIBELS, easyCBM, and TOSREC is interesting, and will be discussed further.

Students Identified as at Risk on the Classroom-Based Writing Measure

A total of 50% of students from Low-Cost School 1 ($n = 36$) and 25% from Low-Cost School 2 ($n = 4$) were classified as being at risk when considering only classroom assessment. These numbers decreased in the middle-cost schools: 24% of students in Middle-Cost School 1 ($n = 84$) and 5% of students in Middle-Cost School 2 ($n = 136$) were seen to be at risk. These numbers decreased even further in High-Cost School 1, where 14% of students were identified as being at risk based on classroom assessment. Similar to Grade 1, a lower percentage of students would be considered at risk if we only considered classroom assessments.

Students Identified as at Risk When Combining All Four Data Sources

A total of 50% of students from Low-Cost School 1 ($n = 36$) and 25% from Low-Cost School 2 ($n = 4$) were identified as at risk across all four data sources. With respect to the middle-cost schools, 18% of students at School Site 1 ($n = 84$) and 4% at School Site 2 ($n = 136$) were identified to be at risk across all four data sources. Finally, 6% of students in High-Cost School 1 ($n = 51$) and 11% of students at High-Cost School 2 ($n = 17$) were identified to be at risk.

Grade 5

Table 4 and Figure 3 outline the number of students identified as at risk across all four data sources and all six school sites, for a total of 329 students.

Students Identified as at Risk on the Three Reading Measures

When we consider Grade 5 students' performance across reading measures alone, their performance on the DIBELSNext, easyCBM, and TOSREC does not vary greatly. For the low-cost schools ($n = 44$) scores indicate that 100% of students were considered at risk on easyCBM, 94% were at risk on the TOSREC, and 93% are seen to require intensive instructional support on DIBELSNext. For the middle-cost schools ($n = 210$), 60% of students were at risk on DIBELSNext, 69% on easyCBM, and 58% on TOSREC. For students in High-Cost School 1 ($n = 71$), we saw lower percentages, with 32% of students being identified as at risk when considering DIBELS, 34% on TOSREC, and 41% on easyCBM. In High-Cost School 2 ($n = 3$), no students were identified as being at risk on the reading measures.

Students Identified as at Risk on the Classroom-Based Writing Measure

In Low-Cost Schools 1 (n = 37) and 2 (n = 8), 62% of students were seen as at risk when considering only classroom-based assessment. The percentages were the same as students identified as at risk across all four data sources. For Middle-Cost School 1 (n = 83), 17% of students were at risk, and for Middle-Cost School 2 (n = 127) 12% of students were at risk on the classroom assessment. At High-Cost School 1, 28% of students were considered to be at risk.

Results indicate a difference in the number of students identified as at risk across all four data sources vs. when only the reading measures were considered. Mar-

Table 3
Students Identified as at Risk for Reading Difficulties Across All Four Data Sources in Grade 3

N = 328	At risk on DIBELS	At risk on easyCBM	At risk on TOSREC	At risk on classroom-based assessment	At risk across all four data sources
Low-Cost School 1 (n = 36)	36 (100%)	36 (100%)	36 (100%)	18 (50%)	18 (50%)
Low-Cost School 2 (n = 04)	04 (100%)	04 (100%)	03 (75%)	01 (25%)	01 (25%)
Middle-Cost School 1 (n = 84)	62 (74%)	53 (63%)	26 (31%)	20 (24%)	15 (18%)
Middle-Cost School 2 (n = 136)	114 (84%)	86 (63%)	44 (32%)	07 (5%)	6 (4%)
High-Cost School 1 (n = 51)	24 (45%)	18 (35%)	10 (19%)	07 (14%)	3 (6%)
High-Cost School 2 (n = 17)	2 (11%)	2 (11%)	2 (11%)	N/A	2 (11%)

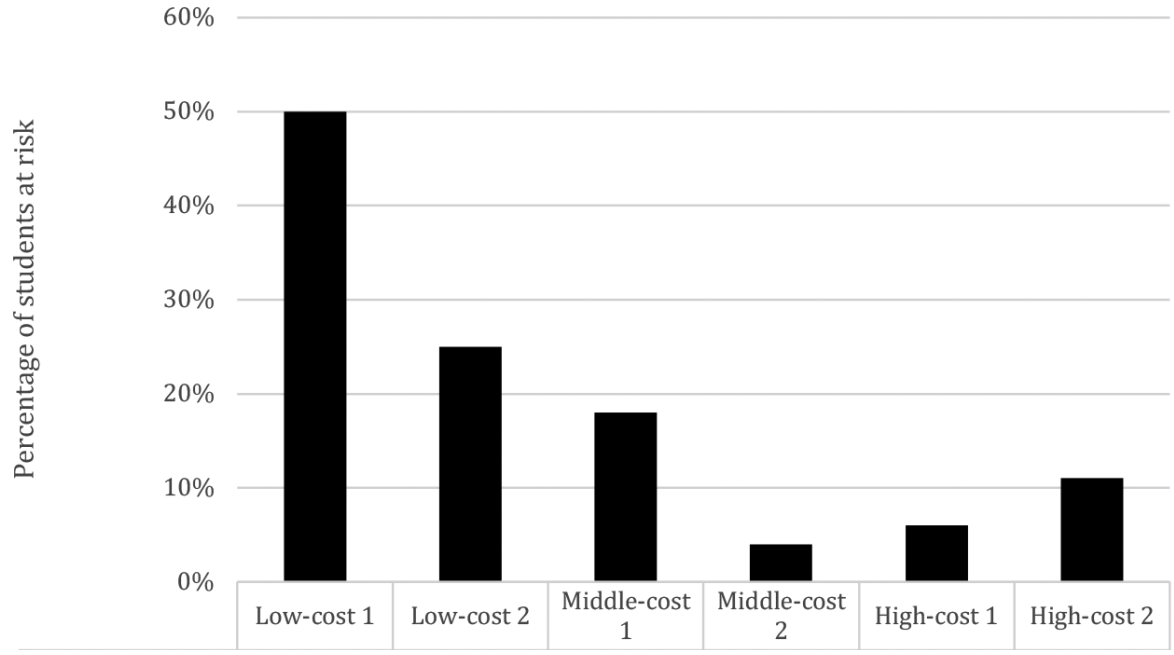

Figure 2
Students at Risk for Reading Difficulties in Grade 3

ginal variations can be noted between reading sources and its implications can be further elaborated. Additionally, the inclusion of written classroom-based assessment may influence these findings and will be further discussed.

Students Identified as at Risk When Combining All Four Data Sources

As evidenced by the analyses, 62% of students at Low-Cost School 1 (n = 37) and 25% of students at Low-Cost School 2 (n = 8) were identified as being at risk for reading difficulties across all four data sources. With respect to the middle-cost schools, 6% of students in School Site 1 (n = 83) and 9% of students in School Site 2 (n = 127) were identified as needing intensive support and were at risk across all four data sources. Additionally, 15% of students at High-Cost School 1 (n = 71) and none at High-Cost School 2 (n = 3) were identified as at risk across all four data sources.

Table 4

Students Identified as at Risk for Reading Difficulties Across All Four Data Sources in Grade 5

N = 329	At risk on DIBELS	At risk on easyCBM	At risk on TOSREC	At risk on classroom-based assessment	At risk across all four data sources
Low-Cost School 1 (n = 37)	36 (97%)	37 (100%)	37 (100%)	23 (62%)	23 (62%)
Low-Cost School 2 (n = 8)	07 (88%)	08 (100%)	07 (88%)	02 (25%)	02 (25%)
Middle-Cost School 1 (n = 83)	41 (49%)	48 (58%)	43 (52%)	14 (17%)	05 (6%)
Middle-Cost School 2 (n = 127)	91 (72%)	102 (80%)	81 (64%)	15 (12%)	11 (9%)
High-Cost School 1 (n = 71)	23 (32%)	29 (41%)	24 (34%)	21 (28%)	11 (15%)
High-Cost School 2 (n = 3)	0	0	0	N/A	0

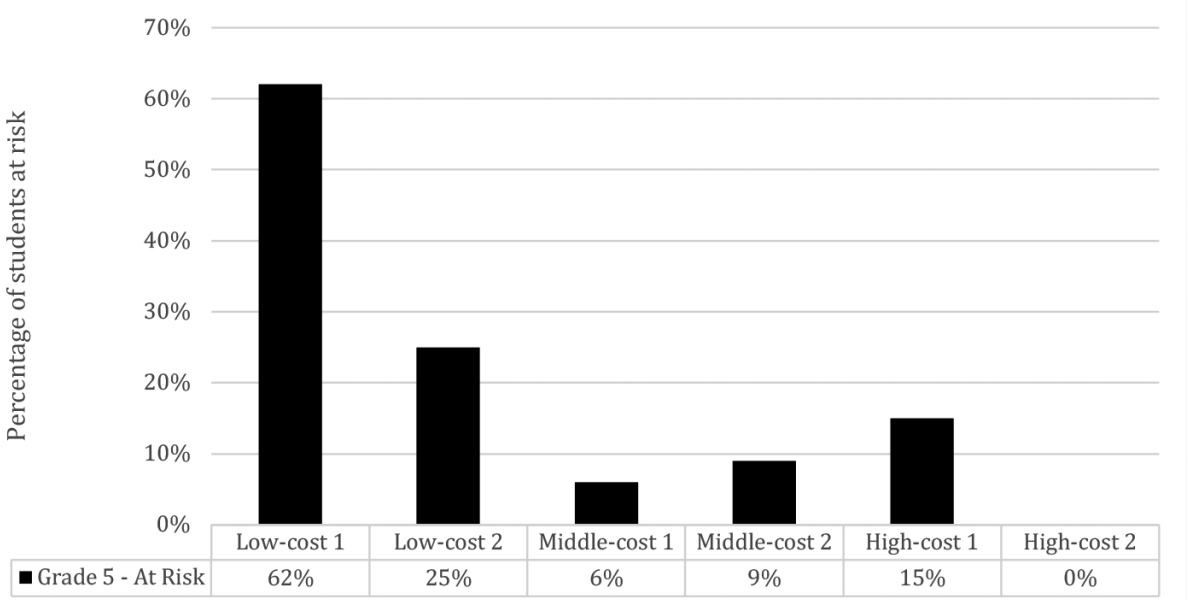

Figure 3

Students at Risk for Reading Difficulties in Grade 5

Discussion

The purpose of this study was to examine (a) the variability in students at risk for reading difficulties across low-cost, middle-cost, and high-cost private schools in India; and (b) the difference in risk percentages when we considered only the reading measures versus the reading measures triangulated with the classroom-based written assessment.

For students in Grade 1, if we examined the reading measures, the median percentages of students who were identified as at risk for reading difficulties varied from 94% in the low-cost school sites, to 54% in the middle-cost school sites, and 50% in High-Cost School 1 and 5% in High-Cost School 2. These median percentages reduced significantly when looking at both reading measures and classroom-based written assessments: 4% in the low-cost schools, 4% in the middle-cost schools, 16% in High-Cost School 1, and 0% in High-Cost School 2. The latter finding, which was established by examining both the reading measures and classroom-based written assessment, is closer to an expected prevalence rate in a given population of students compared to the former finding.

For students in Grade 3, if we examined reading measures, the median percentages of students who were identified as at risk for reading difficulties varied from 100% in the low-cost schools, to 63% in the middle-cost schools, to 35% in High-Cost School 1 and 11% in High-Cost School 2. These median percentages reduced to a great degree when we considered students on both reading measures and classroom-based written assessments: 37.5% in the low-cost schools, 11% in the middle-cost schools, 6% in High-Cost School 1, and 11% in High-Cost School 2. Interesting, the change in median percentages was more significant in Grade 1 than Grade 3, especially for students in low-cost and middle-cost schools. This may be attributed to students finding it more difficult to mask their inability to read by rote memorization of answers to questions on written exams.

For students in Grade 5, if we examined reading measures, the median percentages of students who were identified as at risk for reading difficulties varied from 98.5% in the low-cost schools, to 61% in the middle-cost schools, to 34% in High-Cost School 1 and 0% in High-Cost School 2. These percentages reduced to a great degree when we considered students on both reading measures and classroom-based written assessments: 74.5% in Low-Cost Schools, 7.5% in the Middle-Cost Schools, 15% in t High-Cost School 1, and 0% in High-Cost School 2. By triangulating the data sources, we still found that a quarter to half and more than half of the school population might be at risk for reading difficulties in Grades 3 and 5, respectively, in the low-cost schools. The percentages seem closer to an expected prevalence rate in a given population of students across middle-cost and high-cost schools.

Overall, our results are shocking, showing that a large percentage of students in Indian schools are not able to read at grade level. In schools where students predominantly followed the alphabet-spelling method, the percentage of students at risk in Grade 1 dropped from 87% in the low-cost schools to 54% in middle-/high-cost schools; the percentages of students at risk in Grade 3 dropped from 96% in low-cost schools to 50% in middle-/high-cost schools; and the percentage of students at risk in Grade 5 dropped from 96% in low-cost schools to 54% in middle-/high-cost schools. These numbers suggest that well over half the student population in the middle-/high-cost schools were not able to read at grade level. On the other hand, when these scores are compared to students following the Montessori curriculum in High-Cost School 2, we found that 8%, 11%, and 0% of students were at risk for reading disabilities in Grades 1, 3, and 5, respectively.

Another interesting trend in scores was that when we considered all four data sources, including the classroom-based written assessment, the overall percentage of students identified as being at risk increased from Grade 1 (~ 9%), to Grade 3 (~19%), to Grade 5 (~ 24%) across all schools in the sample. So not only were students not reading at grade level, their reading difficulties were also affecting their scores on written assessments, and more students were being identified as at risk in the later elementary years on classroom-based written assessments. That is, rote memorization of answers on written exams seems to be more difficult for students as they progress through the elementary grades.

Implications for Research

The identification of students at risk for reading difficulties in India is currently tied to underlying environmental factors such as a lack of progress-monitoring tools in reading and limited explicit and systematic reading instruction in schools, as well as limited access to literacy at home. Writing assessment is emphasized more than reading because writing is the medium of assessment for the Grades 10 and 12 national and state-level board exams that prepare students for college. The emphasis on writing is built into the curriculum right from kindergarten, and is entrenched in schooling practices in India as teachers and parents believe that it leads to better success on the school-leaving exams.

Reading, on the other hand, is not viewed as a required skill for future career prospects and is, therefore, not

emphasized within the school system and is assessed as a byproduct of writing. Thus, further research is warranted in areas of reading assessment. As mentioned, at the time when this study was conducted, no progress-monitoring tools were developed for the Indian context, so we opted to use tools that were normed in the US, but recently, Rao et al. (2021) have introduced the Dyslexia Assessment for the Languages of India (DALI), which includes both progress-monitoring tools and a dyslexia screener normed on the Indian population. Moreover, Misquitta et al. (2022) have developed a literacy-based application, FABLe, for the Indian context that complements the DIBELS but introduces reading passages from Indian textbooks. Given these new resources, more studies should incorporate these tools and focus on their efficacy in various settings in order to eventually give them traction needed to become universal screening tools across schools in India.

In addition to assessment, the curriculum does not focus on explicit reading instruction. Current research in the field of reading suggests that phonics-based instructional programs are the most effective at improving reading outcomes for both monolingual and bilingual students. A few recent studies have explored the efficacy of phonics-based instruction programs in the Indian context (Dixon et al., 2011; Patel et al., 2020; Shenoy et al., 2022), and more studies in this area will help establish better reading programs for students across India. Specifically, there is a need for introducing reading instruction as a systemic change to complement current writing instructional practices. Moreover, without reading assessment and intervention in place, we cannot distinguish students who might be at risk for dyslexia. This is especially complicated in a multilingual context with a push towards an English medium of instruction.

Finally, gaps in learning become more apparent as students move through the elementary grades. Whereas students in middle-/high-cost schools have access to English literacy in their homes, students in low-cost schools generally do not have access to English literacy outside of school. This creates a huge gap in learning for these students as they are not able to pick up reading at home in addition to not getting any reading instruction in school. Providing students with reading instruction is not only related to best practices in the field but is also a move towards equity in education – to improve outcomes for all students, irrespective of their socioeconomic status.

Implications for Practice

The practical implications of improving the reading scores of all students, including students at risk for reading difficulties, include moving away from the alphabet-spelling method that emphasizes rote memorization to phonics-based programs and improving family literacy for students from low-income backgrounds.

The teaching of English in India can be traced back to the British colonial rule, more specifically to a policy known as Macaulay's Minute on Education (Macaulay, 1835), which instigated a theme of rote memorization, an absence of inquiry and critical thinking, as well as a centrally imposed curriculum. The post-colonial and independence eras saw the evolution of the English language from being a mere colonial legacy to becoming a primary language of international commerce and communication, which can be attributed to the liberalization of the Indian economy and globalization (Meganathan, 2020). Unfortunately, the Indian education system in general is still geared towards rote memorization of all subject areas, including reading.

One of the key drivers of this problem is the foundational literacy curriculum in India. The complex and vast amount of content that students are expected to complete forces teachers to resort to superficial coverage of learning materials and rote memorization, instead of facilitating deeper thinking (Ministry of Human Resource Development, 2014, 2018). India has been too focused on advanced content rather than building foundational skills in a developmentally appropriate manner (Banerjee & Duflo, 2011; Glewwe et al., 2009; Pritchett & Beatty, 2012). The most empirically supported method for teaching foundational reading in English is systematic phonics (Ehri et al., 2001; Gersten & Baker, 2003; Johnston & Watson, 2005; National Reading Panel et al., 2000; Stuart, 1999, 2004; Torgesen, 2000). However, in India, the predominant method of teaching reading is the alphabet-spelling method (Gupta, 2014) in which students bypass letter-sound correspondences and are taught to read by rote memorization and sight-word recognition. Even the latest revision of The National Education Policy (Ministry of Human Resource Development, Government of India, 2020) does not mention integrating well-established, evidence-based, and developmentally appropriate, English reading instruction approaches like phonics that are highly effective in building foundational reading skills in the younger years.

This paper calls for a breakaway from these archaic policies and a change in the Indian education system to encompass more critical thinking skills and inquiry-based learning, especially in terms of reading instruction. There is an imminent need to teach the science of reading through decoding unfamiliar words rather than creating a large store of recognizing unfamiliar words by rote. This is especially critical for addressing the foundational literacy gap mentioned in the NEP (Ministry of Human Resource Development, Government of India, 2020).

The push towards English education in private schools in India has detrimental effects on students from

low-income backgrounds compared to middle- and high-income backgrounds, creating a new generation of marginalized youth (Kalyanpur, 2020). A protective factor in middle-/high-cost schools seems to be family literacy practices in English that motivate students to learn to read. Improving family literacy practices in either English or the home language in low-cost schools will also positively impact students' reading scores.

Limitations and Future Directions

First, this study reported on a sample of students from Bangalore, an urban city center in India. It would be helpful to conduct studies in other urban and rural areas in India as a comparison and be able to generalize our findings. Second, our sample of students in the Montessori school that received 100% phonics-based instruction is a very small comparison group. There is a need for intervention studies across various subpopulations to illustrate the efficacy of phonics-based instruction in the Indian context and improve the generalizability of our results. Third, the reading assessment tools that were used were normed on a population of students in the US, so there is a need for future studies to use tools that have recently been developed for the Indian context. Taken together, this will facilitate a stronger argument that a systemic change in reading assessment and instructional programs is needed, which, in turn, will improve reading outcomes for students.

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